
UPPER HUNTER AIR QUALITY MONITORING NETWORK (UHAQMN) – ADVISORY COMMITTEE

MEETING MINUTES – Meeting 10

Date: 5 December 2013

Time: 10:00am – 12:00 noon

File: EF13/5718 DOC14/11101-01

Meeting Location: Singleton Civic Centre.

In attendance: John Tate (Chairperson), Cr Wayne Bedggood, Scott Brooks, Dr Richard Broome; Dr Catherine Chicken; Craig Flemming, Dr Suzanne Laucht; Lyn MacBain, Cr Sue Moore; Andrew Speechly, John Watson

Office of Environment and Heritage (OEH): Matt Riley (Director Climate and Atmospheric Science)

Environment Protection Authority (EPA): Barry Buffier (CEO), Gary Davey (Director North Branch), Rebecca Scrivener (A/Unit Head Regional Operations), Leanne Graham (Project Officer).

Apologies: Alan Betts (OEH), Dr Craig Dalton, Patrice Newell, Geoffrey Sharrock, Wendy Wales.

Agenda Item:

1. Welcome from EPA Chair and CEO and Introduction of New Committee Chair

Mr Barry Buffier EPA Chair and Chief Executive Officer (CEO) thanked returning committee members and welcomed new committee members. Mr Buffier acknowledged the valuable role of the founding members of the Advisory Committee, advising the NSW Government on the design and the establishment of the air quality monitoring network.

Mr Buffier introduced the new Chair of the Advisory Committee, Mr John Tate, who was formerly Lord Mayor of Newcastle from 1999 to 2012 and who is currently Chair of the Newcastle Community Consultative Committee on the Environment.

Mr Buffier confirmed the EPA's commitment of significant resources in the Hunter Valley to reduce the impacts of mining on air quality. The EPA works in collaboration with Commonwealth, State and Territory governments and agencies to implement the National Plan for Clean Air to improve air quality and community health and well-being. This includes a review of national air quality standards. The EPA recommends a compliance standard to replace the advisory standard for particulate matter less 2.5 micrometres diameter (PM_{2.5}).

Mr Buffier concluded that the NSW Environment Protection Authority and the Minister for the Environment, Hon Robyn Parker MP, look forward to working with the Advisory Committee to continue the successful operation of the air quality monitoring network. Mr Buffier invited the Advisory Committee to think about becoming more engaged with EPA projects that aim to manage the sources of PM_{2.5} from wood smoke and sources of dust from mining activity.

2. Acknowledgement of Country

3. Welcome and Introductions

Mr Tate thanked Mr Buffier and confirmed his keen interest in helping the wider community to understand the results of air quality monitoring and in ensuring that the community is better informed and more engaged about air quality as a complex environmental issue.

Mr Tate welcomed returning members and new members of the Advisory Committee and invited members to introduce themselves. New members include Councillor Sue Moore of Singleton Shire Council; Dr Suzanne Laucht of Redbank Power representing the power generation industry; and Dr Catherine Chicken of the Hunter Thoroughbred Horse Breeders Association representing non-coal and power industries.

Founding members returning to the Advisory Committee in new roles included Councillor Wayne Bedggood representing the Upper Hunter Shire Council (formerly representing non-coal and power industries) and Ms Patrice Newell, community representative (formerly the community representative nominated by the Minister).

Mr Tate noted that the Mr Geoffrey Sharrock is the new community representative nominated by the Minister. Mr Sharrock sent an apology for this meeting.

Dr Richard Broome, Deputy Director of Environmental Health, NSW Health and public health physician attended the meeting in the absence of returning committee member Dr Craig Dalton, who sent an apology for this meeting.

4. Apologies (see above)

5. Reconstitution of the Advisory Committee

Ms Rebecca Scrivener provided the background the reconstitution of the Advisory Committee. In September 2010, the NSW Government established the Upper Hunter Air Quality Monitoring Network Advisory Committee to advise on the design and operation of an air quality monitoring network in that region. The network became fully operational in early 2012. The term of the first Committee expired in September 2013.

In November 2013, the Minister for the Environment formalised the Committee and the EPA appointed members under the NSW *Protection of the Environment Administration Act 1991*. The terms of reference and composition of the Committee are unchanged from the founding Committee. Members of the founding Committee were invited to re-apply and expressions of interest were called for vacant positions.

The EPA appointed the new 14 members Committee for a two year period to November 2015.

6. Previous Meeting Minutes and Actions

The founding members of the Advisory Committee adopted the minutes from the meeting held on 18 April 2013 out of session in November 2013.

The EPA advised that only one action remained outstanding from the previous meeting, namely Action 1, OEHL to add to the Network website an explanation about reduced visibility. Other actions were completed previously or would be completed during the meeting.

7. Overview of the Network and Performance Reporting

Mr Matt Riley advised that the Annual Report 2012 on the Network was close to publication by OEHL. The report would include case studies which add value by turning data into useful information for the community. Mr Riley apologised for the delay in publication.

ACTION 1: EPA to email to the Advisory Committee the link to the Annual Report 2012 on publication and seek feedback on the value and format to improve future reporting. Hard copies will be available on request.

ACTION 2: OEHL to advise local councils in the Upper Hunter on the publication of major reports and studies on the Network.

ACTION 3: Advisory Committee members to facilitate liaison with local libraries to improve access to major reports and studies on the Network.

8. System Performance

Mr Riley reported on the network's system performance for the period 1 April 2013 to 30 November 2013, providing details of the network's operation and data capture, instrument failure and a summary of air quality results.

Mr Riley explained that high values of monthly maxima for PM₁₀ and PM_{2.5} were associated with dry weather conditions and bushfires, particularly from September to November.

For PM₁₀ data, all of the 14 network sites achieved the 95% online operational target for the eight month period.

In the larger population centres, daily average PM₁₀ levels during the period (being 244 days) were above 50 µg/m³ for eight days at Singleton and three days at Muswellbrook. At Aberdeen, all daily average PM₁₀ levels were below 50 µg/m³ throughout the period.

At the smaller population centres, daily average PM₁₀ levels above 50 µg/m³ occurred on 28 days at Camberwell, 21 days at Maison Dieu, seven days at Warkworth, six days at Jerrys Plains, four days at Bulga and two days at Wybong.

At the Network's diagnostic sites, operating close to mines, daily average PM₁₀ levels were above 50 µg/m³ on 21 days at Singleton NW, 20 days at Mount Thorley and 4 days at Muswellbrook NW, which recorded the highest daily average PM₁₀ level of 106.8 µg/m³ for the period in September.

8. System Performance (Cont)

At the PM₁₀ background sites, located at the northern and southern extents of the Upper Hunter coal fields, Merriwa in the north experienced daily average PM₁₀ levels less than 50 µg/m³ throughout the period and Singleton South experienced five days above this level.

For PM_{2.5}, Singleton achieved over 95 % online performance throughout the period. Camberwell achieved over 95% online performance for five of the eight months. Muswellbrook achieved over 95% online performance for three of the eight months. Overall data capture of 75% for Muswellbrook was well above average, however not sufficient for providing detailed statistics. The reduced online performance reflected the age of the instruments, which are due for replacement in the next financial year.

Daily average PM_{2.5} levels were better than the 25 µg/m³ reporting benchmark throughout the reporting period at Singleton. Muswellbrook and Camberwell reported one day each above the benchmark, recording highest daily averages of 36.6 µg/m³ and 29.5 µg/m³, respectively in October 2013.

Sulfur dioxide (SO₂) monitoring achieved above 95% online performance for seven of the eight months at Singleton and five of the eight months at Muswellbrook. Instrument maintenance and annual proficiency audits reduced online performance. Hourly average SO₂ levels were better than the benchmark (20 pphm) throughout the period.

Nitrogen dioxide (NO₂) monitoring at Muswellbrook achieved above 95% online performance for seven of the eight months. Singleton achieved above 95% online performance for three of the eight months, with reduced online performance due to instrument problems. Hourly nitrogen dioxide (NO₂) levels at Singleton and Muswellbrook were better than the benchmark (12 pphm) throughout the period.

Meteorological monitoring achieved above 95% online performance throughout the period at nine of the 14 monitoring stations. Reductions in online performance were due to power supply interruption and instrument failure. For example, at Wybong, meteorological equipment required realignment of the direction sensor which reduced online performance to 67%.

Mr Riley provided an interpretation of the monitoring results presented as time series graphs. The upward trend in PM₁₀ levels was likely to be associated with drier weather conditions in winter, leading to bushfires in spring.

Spikes in SO₂ levels over Muswellbrook were likely to be associated with a plume of power station emissions dispersing directly over the town. Mr Riley explained that poor dispersion of a power station plume may occur either during an atmospheric temperature inversion when a layer of warm air aloft traps the plume nearer to ground level; or when a neutral or stable atmosphere causes a plume to waft around closer to ground level rather than disperse into the upper atmosphere.

In response to questions, Mr Riley noted that OEH would consider including a case study of sulfur dioxide spikes over Muswellbrook in the next annual report.

8. System Performance (Cont)

Web site statistics for the eight month period showed an increase in interest from August to November. The number of unique page-views for the Network's information webpage increased to 5,910, compared with 5,511 during the previous seven month period. The number of unique page-views for the Air Quality Index general map webpage increased to 43,262, compared with 13,793 in the previous seven month period. Subscriptions to Network air pollution alerts increased, with email subscribers increasing from 1,070 to 1,386 and SMS subscribers increasing from 501 to 641.

In response to questions Mr Riley explained that peak levels of PM₁₀ were likely to include particle matter transported into the region from continental sources. Mr Buffier noted the challenge for the EPA of explaining to the wider community that particles transported long distance can influence local air quality.

Mr Riley concluded that the growing size of the data set allowed OEH to turn data into information to increase knowledge and understanding of air quality in the Upper Hunter for the government and the community.

The Chair thanked Mr Riley and confirmed the value of communicating meaningful information on air quality to the wider community

ACTION 4: OEH to consider preparing a case study of sulfur dioxide levels recorded at Muswellbrook for the Annual Report on monitoring results for 2013.

9. Upper Hunter Particle Characterisation Study

Mr Matt Riley presented an overview of the recent Upper Hunter Fine Particle Characterisation Study. The study was co-funded by the Office of Environment and Health (OEH) and NSW Health; and undertaken by the Australian Nuclear Science and Technology Organisation (ANSTO) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The study aimed to determine the chemical composition of PM_{2.5}; the main sources of PM_{2.5} and their relative contributions; and any seasonal variations in composition. Samples of PM_{2.5} were collected for 24-hours every third day during 2012 at the Upper Hunter Air Quality Monitoring Stations at Muswellbrook and Singleton.

The samples were analysed by ANSTO and CSIRO, and common factors or patterns of chemicals occurring together, were used to 'fingerprint' likely sources of particles.

In Muswellbrook, on an annual basis, woodsmoke accounts for 30% of PM_{2.5}, followed by local and regional power station emissions (17%); reactions between sea salt and power station emissions over a regional scale (13%); and wildfires and hazard reduction burning (12%). Soil and fugitive coal dust makes up 11%.

In Singleton, on an annual basis, 20% of PM_{2.5} is attributable to local and regional scale power station emissions; followed by reactions between sea salt and power station emissions over a regional scale (18%); vehicle and industry emissions (17%) and woodsmoke (14%). Soil and fugitive coal dust makes up 12 %.

9. Upper Hunter Particle Characterisation Study (Cont)

In winter, woodsmoke is the dominant source of particles in winter at both sites (Muswellbrook 62%, Singleton 38%).

In response to questions from the Committee Mr Riley confirmed the following:

- Local geographical effects may explain the difference in concentrations of woodsmoke and sea salt at Muswellbrook compared to Singleton.
- Regional power station emissions may include sources in the upper Hunter, central coast and western coal fields of NSW.
- Soils sources were not differentiated to identify natural top soil or sandstone in stockpiles of mine overburden.
- International literature reviews provide no evidence to suggest that PM_{2.5} particles composed of sea salt cause less harm to health compared with PM_{2.5} particles from combustion sources.

Mr Riley emphasised that PM_{2.5} particles are very fine and potentially remain airborne for very long periods and may be transported for long distances over local, regional and national scales.

Mr Riley noted that the results at Muswellbrook and Singleton generally were similar, showing the influence of local and regional scale power station emissions and a local woodsmoke impact in winter.

The study concluded that the dominant sources of fine particles are likely to be local and regional scale power station emissions in summer and local woodsmoke in winter.

Mr Riley tabled a factsheet which provides a summary report on the study and noted that the factsheet (summary report) and full report are available on OEH website at <http://www.environment.nsw.gov.au/aqms/uhaqmnfpcs.htm>.

In response to questions Mr Riley noted the following:

- Factors influencing the higher relative contribution of woodsmoke in Muswellbrook compared to Singleton may include:
 - the narrower local valley terrain in Muswellbrook is more likely to trap woodsmoke, while the flatter terrain of Singleton allows greater dispersion of woodsmoke;
 - the air quality monitoring station at Muswellbrook is located closer to residences with woodsmoke chimneys, while at Singleton the monitor is located on the edge of the residential area;
 - Night time temperatures generally may be cooler in Muswellbrook and wood heating activities may be more intensive and more frequent, in contrast with Singleton,
- Factors influencing the higher relative contribution of vehicle emissions in Muswellbrook may be related to the closer proximity of off-road vehicles used in coal mining activity, in contrast with Singleton

9. Upper Hunter Particle Characterisation Study (Cont)

Mr Buffier noted that the EPA continues to invest considerable resources in working with local councils to reduce woodsmoke

In conclusion, Mr Riley noted that a more complete understanding of the results would involve a closer analysis of variations over time and spatial differences.

The Chair noted the information and thanked Mr Riley.

10. Adaptation of the Network to Change: Proposed Extension of Drayton Coal Mine

Responding to Action 2 from the previous meeting of 18 April 2013, Ms Rebecca Scrivener facilitated the Advisory Committee's discussion of the need for an additional monitoring station that may result from approval of the proposed expansion of the Drayton South coal mine.

Ms Scrivener noted the following points:

- The EPA ensures that the Director General's Requirements for environmental assessment for new mines in the Upper Hunter require the proponent provide the necessary information to enable the EPA to make an assessment of the need for a new monitoring station.
- The proposed expansion of the Drayton South coal mine is currently being assessed by the Planning Assessment Commission
- Results of the air quality impact assessment study prepared by the proponent predicted that the expansion of the mine would contribute an increment of $5 \mu\text{g}/\text{m}^3$ to $10 \mu\text{g}/\text{m}^3$ to the maximum average 24 hour PM_{10} concentration and an increment of approximately $1 \mu\text{g}/\text{m}^3$ to the annual average PM_{10} concentration.
- At sensitive receptors (residences, indicated on the map by Point 24A and Point 25) located between the town of Denman and the proposed mine, the study predicted an increment of $7 \mu\text{g}/\text{m}^3$ to the maximum average 24 hour PM_{10} concentration. Therefore, the predicted increment in the maximum average 24 hour PM_{10} concentration at Denman would be expected to be less than $7 \mu\text{g}/\text{m}^3$.

In response to discussion, Ms Scrivener noted the importance of assessing predictions of short term and long term exposure of impacted populations when considering the need for a new monitor. The predicted maximum average 24 hour PM_{10} concentration represents a short term exposure for a population, being the maximum daily average that potentially could occur once in a year. Annual average reflects long term exposure.

In the case of Drayton South, the predicted increment to the annual average PM_{10} concentration of approximately $1 \mu\text{g}/\text{m}^3$ is unlikely to trigger the need for a new monitor at Denman.

Ms Scrivener noted that to date the EPA had not consulted with industry regarding the proposal and its implications for the network. Discussion with industry would be sought if a new monitor was to be considered.

10. Adaptation of the Network to Change: Proposed Extension of Drayton Coal Mine (Cont)

The EPA clarified that when the need for new monitor is triggered then the proponent would be required to fund the establishment of the new monitoring station and the ongoing operational costs would be shared by all contributing industries which fund the network.

Advisory Committee members requested clarification of the specific circumstances likely to trigger the need for a network monitor, including reference to an appropriate network monitor to represent background air quality.

ACTION 5: EPA to prepare a discussion paper on a proposed method to determine how the Advisory Committee is to assess the need for a new air quality monitor for the network.

11. Community Feedback

No discussion.

12. General Business

The Chair opened discussion on increasing the meeting frequency of the Advisory Committee.

ACTION 6: EPA in consultation with the Advisory Committee and OEH to propose meeting dates for 2014.

The meeting closed at 12:25 pm.

Next meeting date: Thursday 27 February 2014

Minutes Reviewed by: John Tate (Chair)