MEETING No. 42
Newcastle Community Consultative Committee on the Environment (NCCCE)

Meeting Minutes

Date:	**20 April 2016**	**Time:**	**5.30 pm**
File:	**EF13/8273**		
Location:	**EPA Office Paterson Room, 117 Bull Street, Newcastle**		
In attendance:	Members: John Tate (Chair), Rick Banyard (Community), A/Prof Howard Bridgman (Minister's Community Nominee), Keith Craig (Community), Dr Craig Dalton (NSW Health), Michael Dowzer (Industry), Peter Kibble (Industry), John Mackenzie (Environment). Presenters/Visitors: Ann-Louise Crotty (EPA Acting Director, Reform and Compliance), Gary Davey (EPA Director North Branch), Adam Gilligan (EPA Manager Hunter Region), Dr Mark Hibberd (CSIRO Oceans and Atmosphere Principal Researcher), Matt Riley (Office of Environment and Heritage (OEH) Director, Climate and Atmospheric Science), Scot MacDonald (MLC Parliamentary Secretary for the Hunter and Central Coast) and Leanne Graham (EPA Project Officer).		
Apologies:	Andrew Baxter (City of Newcastle), Sherree Woodroffe (Industry)		

Meeting Record

Agenda Item	Meeting Details
Item 1	**Welcome** Chair welcomed attendees.
Item 2	**Apologies** As above.
Item 3	**Lower Hunter Particle Characterisation Study** This study investigated the chemical components and likely sources of airborne particles that are respirable and invisible to the human eye. It focussed on particles known as $PM_{2.5}$ (particles with diameters equal to or less than 2.5 micrometres (µg) and $PM_{2.5\text{-}10}$ (particles with diameters larger than 2.5 µg and less than 10 µg). Mr Riley commended the EPA for commissioning the study and appointing the OEH as project managers for the collaborative research by OEH, CSIRO and ANSTO (the Australian Nuclear Science and Technology Organisation).

	Dr Hibberd described air quality levels during the 12 month sampling period from March 2014 to February 2015 and presented the study's findings, identifying chemical components and likely sources of airborne particles.
	
	Key points included:
	
	• Air quality levels of $PM_{2.5}$ and PM_{10} showed the following:
	  ○ $PM_{2.5}$ levels at Stockton were comparable to levels at Beresfield and Wallsend. Stockton recorded higher levels in late autumn, winter and November 2014.
	  ○ PM_{10} levels at Stockton, Newcastle, Beresfield and Wallsend showed similar trends during the sampling period, with low levels in winter and higher levels in spring and summer.
	  ○ PM_{10} levels at Stockton are almost always significantly higher than other sites. Many days with peaks above 50 µg m^{-3} were recorded during October 2014 – February 2015. Similar peaks were recorded in 2012-2013 and 2013-2014, mainly associated with easterly winds.
	  ○ Particle sampling involved collecting 24-hour samples every third day from March 2014 to February 2015, for $PM_{2.5}$ at Newcastle, Mayfield, Beresfield and Stockton and for $PM_{2.5-10}$ at Mayfield and Stockton. Sampling included days with higher PM_{10} levels at Stockton.
	• $PM_{2.5}$ levels, components and sources were similar at Newcastle, Mayfield and Wallsend. The annual average at Stockton was 40% higher than other sites, due to the presence of ammonium nitrate and more sea salt.
	• $PM_{2.5-10}$ levels were 2.5 times higher at Stockton than Mayfield, mainly due to more fresh sea salt.
	• $PM_{2.5-10}$ particles contained about 10% carbon at Mayfield and Stockton. Some of this may be coal particles.
	• Likely source factors and components for $PM_{2.5}$ at all four sites included:
	  ○ Fresh sea salt (13-24%)
	  ○ Pollutant-aged sea salt (23%)
	  ○ Wood smoke (6-15%)
	  ○ Soil dust (10%)
	  ○ Secondary ammonium sulfate (10%)
	  ○ Vehicles (10%, and 5% at Stockton)
	  ○ Industry (13%, and 24% at Stockton)
	  ○ Shipping and mixed industry (3%)
	• Likely source factors and components for $PM_{2.5-10}$ at Mayfield and Stockton were:
	  ○ Fresh sea salt (13.6–3.3 µg m^{-3})
	  ○ Pollutant-aged sea salt and industry (2.4 µg m^{-3})
	  ○ Carbon (2.2–0.8 µg m^{-3}), potentially containing coal
	  ○ Soil dust (2.3–1.2 µg m^{-3})
	  ○ Bioaerosol (fungal spores) (1.1–0.5 µg m^{-3})
	
	In addition to the main study, computer modelling was used to estimate the distribution of particles over the broader Lower Hunter region. The model predicted that levels and composition of fine particles across the region, including at Lake Macquarie and Maitland, would be similar to levels measured at the study sites. This finding aligned with the nature of fine particles, staying suspended for long periods, travelling long distances and mixing well in the air.

	In discussion, the following points were raised or addressed: • One committee member queried whether the report over-estimated the contribution of wood heaters because very few people had wood heaters in Newcastle. Other members disagreed with this point. • One committee member queried why sources such as locomotives and aircraft did not show up as bigger contributors. Dr Hibberd advised that locomotives would contribute a greater share to hourly levels. Emissions would disperse and therefore not contribute significantly when averaged over 24 hours or annually. Aircraft emissions would not show up as a contributor at ground level. • The community was interested mostly in the fraction of particles that could be controlled, rather than sea salt, insects or soil. • The committee advised the EPA to focus on the potential contribution of coal, at up to 10% of $PM_{2.5-10}$ particles. • The committee asked what could contribute to carbon in $PM_{2.5-10}$ particles, in addition to coal. Combustion sources could contribute soot, from the burning of vegetation and fossil fuels, including coal. • One committee member asked about additional analysis for the Stockton site and actions to reduce impacts from Orica. Mr Gilligan advised that Orica would fund the analysis. The Chair thanked Dr Hibberd and commended the high quality of the research.
Item 4	**Lower Hunter Dust Deposition Study** This study investigated the chemical components and likely sources of black dust observed on household surfaces, such as window sills and the tops of electricity meter boxes. Mr Gilligan, project manager for the study, presented the background, methods and findings, on behalf of the researchers. The EPA initiated the study in response to community concerns, at the request of the NCCCE. The EPA formed the Lower Hunter Dust Deposition Project Reference Group, comprising two community representatives, two industry representatives, two technical representatives and two EPA representatives. The Project Reference Group was integral in planning the project's research questions, scope and methodology. The EPA commissioned the environmental consultancy AECOM Australia, after a competitive tender process, in consultation with the group. The study investigated the levels, composition and distribution of black dust deposited on households, in proximity to the rail corridor and in areas identified in complaints reported to the EPA Environment Line. The Project Reference Group designed a community flyer, calling for expressions of interest from residents willing to host dust deposition gauges (DDG). The 12-month monitoring program commenced in October 2014 and used three methods to collect samples:

	1. Dust deposition gauges: Monthly samples were collected from 12 sites to calculate dust deposition rates. Each month, a sample from a site, down-wind of potential dust sources, was selected for analysis of particle composition.
	2. Petri dishes: 36 samples were collected downwind of potential dust sources, with sampling periods of one to four days and were used for particle identification.
	3. Brush samples: 24 brush samples were collected from household surfaces, such as window sills and the tops of meter boxes.
	
	Laboratory analysis of DDG samples involved weighting of insoluble solid particles to calculate dust deposition rate for regulatory compliance. One of the 12 DDG samples was identified each month for particle characterisation analysis.
	
	The 36 Petri dish samples, 24 brush samples and 12 DDG samples were analysed for particle composition at the University of Queensland, using a three-staged method:
	
	1. Stereomicroscopy identified individual dust particles and allowed visual estimates of the percentage contributions of dust components,
	2. Scanning Electron Microscopy provided additional magnification of particle geometry and structure, confirming the findings of stereomicroscopy, and
	3. Energy Dispersive X-ray Spectroscopy identified the chemical elements in samples and their abundance. The portions of elements in the sample indicated the sources of the dust. For example, high counts of aluminium and silica and low counts of carbon indicated a high amount of soil and a low amount of coal, confirming the findings of the methods above.
	
	Key findings included:
	
	• Dust deposition rates ranged from 0.5 to 1.1 grams per square metre per month (g/m^2/month) and were below the EPA's annual criterion of 4 g/m^2/month.
	• Laboratory analysis revealed that the samples, visible to the eye as black dust, were comprised of:
	  ○ Brown particles of soil or rock;
	  ○ Black particles of coal, soot and rubber; and
	  ○ Lighter coloured particles of salt, ash, plant and insect debris, alumina and paint
	• Dust particle composition in 72 samples averaged:
	  ○ 69% soil, ranging from 40% to 90%
	  ○ 10% coal, ranging from 0% to 25 %
	  ○ 4% rubber, ranging from 0% to 20%
	  ○ 3% soot, ranging from 0% to 20%
	  ○ 14% other, including salt, ash, insect and plant debris, alumina and paint.
	• Dust particle composition in the 12 DDG samples comprised 17% black particles, contributing 0.09 to 0.19 g/m^2/month to annual average dust composition. Coal would contribute 0.05 to 0.11 g/m^2/month to annual average dust composition.
	
	The study report addressed the research questions set by the Project Reference Group.
	
	The EPA would publish the reports of the particle characterisation study and the dust deposition study on 27 April 2016. A community briefing session would be held at the Newcastle City Hall from 5:30 pm to 7:30 pm.

	Committee members emphasised the importance of explaining to the community the following points: • How the studies complement each other or differ, • How and why the studies focussed on different particle sizes, and • How the studies differed in their methods to identify the potential for coal and the degrees of certainty. A glossary of terms for the community was suggested. Dr Dalton offered to provide an example. Mr Gilligan noted that two handouts prepared for the community forum would address the committee's concerns. The Chair thanked Mr Gilligan and commended the NCCCE for initiating the research.
Item 5	**Air Quality in Newcastle: Summer 2015-2016** Mr Riley noted the key points in the Newcastle air quality newsletter for Summer, reporting on the Lower Hunter and Newcastle Local Air Quality Monitoring Networks: • Air quality was generally good from 1 December 2015 to 28 February 2016. • The daily level of $PM_{2.5}$ (particles less than or equal to 2.5 microns in diameter) was above the 25 µg/m^3 benchmark at Mayfield on 20 December 2015. There was a large fire at Williamtown from 18 to 22 December 2015. • Daily levels of PM_{10} (particles less than or equal to 10 microns in diameter) were above the 50 µg/m^3 benchmark at Stockton on 27 days. Maximum daily levels ranged from 51.3 to 83.3 µg/m^3 and averaged 62.0 µg/m^3. This was comparable to the previous summer season. • Stockton recorded elevated hourly PM_{10} levels (>75 µg/m^3) 11 % of the time during summer, predominantly under onshore north-east winds. • The region experienced very much above average rainfall during summer, higher than the previous three summers. Mr Riley noted that the results of the Lower Hunter Particle Characterisation Study confirmed that onshore winds in warmer months contributed to the higher levels of sea salt in particulate matter at Stockton. Mr Riley noted that the wind rose of ammonia concentrations recorded at Stockton during summer 2015-2016 showed dominant onshore winds. Mr Craig noted that the highest concentrations were associated with offshore northwesterly winds. The Chair thanked the Mr Riley and commended the report.
Item 6	**Minutes from Previous Meeting (17 February 2016)** The minutes of the previous meeting were adopted as a true and accurate record.
Item 7	**Actions Arising from Previous Meetings summary** The EPA advised that seven of nine actions were completed. Updates on Actions 2 and 8 would be provided at the next meeting.

Item 11	**General Business** The Committee supported the Chair's recommendation for the EPA to write a letter thanking Mr MacDonald for attending the meeting. **Action 1. The EPA to write a letter of thanks to Mr Scot MacDonald, MLC, Parliamentary Secretary for the Hunter and Central Coast, for attending the NCCCE meeting on 20 April 2016, to hear the findings of Lower Hunter particle characterisation and dust deposition studies.** A/Prof Bridgman advised that the NSW Minerals Council published a report on coal train dust management in the Hunter Valley coal industry. The document outlines the steps that the coal industry has taken to understand air quality around the rail corridor, the effect of coal trains on air quality and appropriate management practices. **Action 2. The EPA to circulate the link to the NSW Minerals Council's report Coal Train Dust Management, Hunter Valley Coal Industry, March 2016.** Mr Davey advised the Committee of his retirement on 1 July 2016. Mr Davey thanked the Committee members for their outstanding work and instrumental role in achieving significant change since 2011. He expressed his pleasure in working with the Committee and encouraged the members to recognise their admirable progress. Mr Davey thanked Mr Riley and the OEH team, collaborative partners to the EPA. Mr Davey thanked Mr Tate for his professionalism as Chair and his commitment to the establishment of the Newcastle Local Air Quality Monitoring Network. Mr Davey wished the Committee well for its continuing success. The Chair thanked Mr Davey for support for the Committee.
Item 12	**Next Meeting** 20 July 2016
Meeting ended at 7.45 pm	

ACTION ITEM LOG **NCCCE MEETING NO. 42, 20 April 2016**	**DUE**	**RESP**
Action 1: The EPA to send a letter of thanks to Mr Scot MacDonald, MLC, Parliamentary Secretary for the Hunter and Central Coast, for attending the NCCCE meeting on 20 April 2016, to hear the findings of Lower Hunter particle characterisation and dust deposition studies.	ASAP	EPA
Action 2. The EPA to circulate the link to the NSW Minerals Council's report Coal Train Dust Management, Hunter Valley Coal Industry, March 2016.	ASAP	EPA