# M4 East Air Quality Community Consultative Committee

<table>
<thead>
<tr>
<th>Meeting:</th>
<th>M4 East Air Quality Community Consultative Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Tuesday 30 April 2019</td>
</tr>
<tr>
<td>Time:</td>
<td>5.45 pm for 6.00 pm start</td>
</tr>
<tr>
<td>Location:</td>
<td>Canada Bay Club, 4 Willam St, Five Dock</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Attendees:</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Independent Chair (IC)</td>
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<tr>
<td></td>
<td>Lynette Edwards</td>
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<tr>
<td></td>
<td>Samuel Cheok</td>
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<td></td>
<td>Stephen Lancken</td>
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<tr>
<td></td>
<td>Associate</td>
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<td></td>
<td>Raymond McCluskie</td>
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<td></td>
<td>Jonathan Jacobson</td>
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<td></td>
<td>Notetaker</td>
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<tr>
<td></td>
<td>Megan Roberts</td>
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<td></td>
<td>Kendall Banfield</td>
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<td></td>
<td>Terry Chapman</td>
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<td>David Kelly</td>
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<td></td>
<td>Matthew Callander</td>
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<td></td>
<td>Kris Hinks</td>
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<tr>
<td></td>
<td>Rebecca Walker-Edwards</td>
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<td></td>
<td>Ecotech Pty Ltd</td>
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<tr>
<td></td>
<td>Michael Prestin</td>
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<td></td>
<td>Emily Dooley</td>
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<td></td>
<td>Jacinta Hanemann</td>
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<td></td>
<td>Leah Fisher</td>
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<td></td>
<td>Jon Alexander</td>
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<td>Chris White</td>
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<td></td>
<td>Chris White</td>
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<td></td>
<td>Michael Prestin</td>
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<tr>
<td></td>
<td>Representatives from:</td>
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<tr>
<td></td>
<td>Community</td>
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<td></td>
<td>Canada Bay Council</td>
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<td></td>
<td>Megan Roberts</td>
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<td>Inner West Council</td>
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<td>Kendall Banfield</td>
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<td>WestConnex</td>
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<td>Terry Chapman</td>
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<td>Rebecca Walker-Edwards</td>
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<td></td>
<td>Transurban</td>
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<td></td>
<td>Emily Dooley</td>
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<td>Environment Protection Authority (EPA)</td>
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<td>Jacinta Hanemann</td>
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<td>D&amp;C Contractor (CSJ)</td>
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<td></td>
<td>Leah Fisher</td>
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<td></td>
<td>Ecotech Pty Ltd</td>
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<td>Jon Alexander</td>
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<td>Chris White</td>
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<td>Michael Prestin</td>
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Meeting Notes

Key Matters Discussed and Presented

1. Project Update (presentation attached. The tunnel tour on the website was also shown)

Questions and Answers

1.1. The ventilation facilities at Underwood Road and Parramatta Road have lighting technology which can be used to project basic images for building aesthetic. Has this been trialed, and how often would it be switched on?

1.1.1. Yes, it has been trialed and tested. Decision has not been made as to how long or often it would be on.

1.2. The road surface is diamond ground concrete not bitumen (asphalt). How often does the road surface need to be resurfaced and maintained?

1.2.1. The road surface is very durable and very low maintenance. The continuous concrete pavement has a design life of fifty years. Compared to asphalt, which has a 10 – 15 year design life, concrete pavement has a much longer maintenance lifecycle. Concrete roads are also more durable against weathering even though this is less of an issue in a tunnel environment. The concrete pavement is “diamond ground” to remove surface imperfections and make the ride smooth.

2. Air Quality Monitoring and Readings (presentation attached)

2.1. Will the tunnel be equipped to detect “smoky trucks” and will there be penalties and detection technology if smoky trucks are detected in the tunnel?

2.1.1. There are cameras to detect smoky vehicles in the tunnel, one for each direction. Fines can be issued if visible smoke is detected from trucks. There is an expectation that there will not be as many smoky trucks in the tunnel as numbers of smoky vehicles have been decreasing over time. The tunnel gradient is also lower compared to other tunnels which
will result in lower pollution levels from vehicles. This also reduces the likelihood of smoke from trucks. Smoky vehicles can be reported to the EPA.

2.2. What about air quality for motorcyclists in tunnels?

2.2.1. The air quality limits are set based on having the windows open in cars and for longer exposure times as eventually WestConnex will be a much longer tunnel. Air quality limits are therefore also set considering pollution exposure of motorcyclists.

2.3. If traffic slows down or if there is a breakdown in the tunnel, how is fresh air going to be brought into the tunnel and air quality managed?

2.3.1. The tunnel is designed for heavy congestion and incidents. The ventilation system will ramp up to push more air if there is congestion. There are 139 jet fans, approximately half in each direction (eastbound and westbound) and axial fans located in the ventilation outlets, which have the capacity to move large volumes of air. The design is conservative and we are confident that air quality is going to be managed in accordance with the conditions of approval. The messaging system will advise motorists of incidents.

3. Data Validation Process (presentation attached)

3.1. What is the 40 degree celsius range referring to? (refer to page 6 of the Data Validation Process presentation)

3.1.1. It describes the maximum temperature within which the equipment and monitoring stations can operate. The air quality monitoring stations have air-conditioning designed to keep within the temperature range of the instruments. If the temperature range is exceeded the data is not valid.

3.2. How strict are Australian standards compared to American and European standards?

3.2.1. The Australian standards are virtually identical to international standards.

3.3. When was the last audit of the air quality reporting and data?

3.3.1. The last audit was in July last year. It is publicly available on the website. There was another audit in February that will be placed on the website.

3.3.2. A methodology will be developed by an independent person for the comparison of air quality data before and after tunnel opening.

4. Complaints (presentation attached)

4.1. There were two air quality complaints referred to in the presentation, one dust complaint at Concord during early March and another dust complaint at Parramatta Road in early April. What were the outcomes of the investigations for these complaints?

4.1.1. The environmental staff investigated them, and assessed to ensure controls were in accordance with the Air Quality Management Plan.

4.2. Were corrections made to methods if needed?
4.2.1. Yes, if it was identified that this was required.
4.3. If a person makes a complaint and is happy with the result of their complaint, what happens?
   4.3.1. It gets added to the database, and recorded as closed.
4.4. Is there a WestConnex Facebook page?
   4.4.1. Yes, WestConnex has three social media platforms – Facebook, Twitter and LinkedIn.

5. **Air quality results at Haberfield – Presented by Ecotech**

5.1. Slide 47 (page 4 of the Ecotech presentation) refers to Beta Attenuation Monitor (BAM). Does Beta mean ‘on trial’?
   5.1.1. Beta refers to Beta waves not on trial
5.2. In relation to the anomaly referenced in the data in November was the maintenance zeroing error communicated and discussed with the independent auditor?
   5.2.1. Yes.
5.3. Why is there no recording of the change in zero values by the maintenance technician, or by the system/computer?
   5.3.1. Human error resulted in incorrect change in the zero value. There is a different value for the 72 hour testing and the analysis indicates the zero value was changed again. The system does not store historical values, it only shows current values.
5.4. If the annual calibration is important, and there is reliance on one operator per testing site, is there a routine check that the system is calibrated correctly? (Ecotech Actions Slide)
   5.4.1. There was no measures before to check this, however, there are measures in place now.
5.5. In terms of publicising the data anomalies on the website, what measures are to be taken to minimise confusion in the community?
   5.5.1. The independent auditor has recommended the data with anomalies be omitted (invalidate). The gap in the data will be flagged with an explanation in the monthly report that there is a discrepancy.
5.6. The independent auditor has commented that gaps within data sets are absolutely normal and commended Ecotech’s data set.
5.7. Should the community be concerned about the gap in the data set and that people of Haberfield were exposed to high levels of PM2.5?
   5.7.1. There was no exceedances in PM2.5 at any of the other stations or any other monitors within the station during the period and therefore it is very unlikely that there were elevated PM2.5 levels.
5.8. EPA, Department of Health and the Parents and Citizens Associations (P&C) had a meeting at Haberfield school. They expressed concerns about levels of PM2.5.
5.8.1. WestConnex will take responsibility for explaining the situation to Haberfield school after this meeting and will provide copies of the updated reports and air quality monitoring information on the website.

5.9. What will happen in the December report in relation to annual averages, given the gap in the data set?

5.9.1. It will be updated to an average of 10.5 months, with the gap accounted for.

5.9.2. Given that the data has been deemed “invalid” for PM2.5 between the months of mid November 2018 to mid January 2019, (approximately two months), the monthly reports for these periods will need to be reissued with the correct/adjusted data sets.

5.10. Comment from community members. The intensive investigations and explanations are appreciated. The level of competence and explanations by the professional representatives today is impressive. The community appreciate the presence of the EPA and the Auditor at the meeting.

6. Other business


6.2. How will the new community representatives be updated and integrated in the committees?

6.2.1. They will have an orientation. IC and WestConnex to organise.

6.3. It is anticipated that community representatives will be invited to tour the tunnel prior to it opening.

Meeting closed at 8:04pm

These minutes were accepted on 8 May 2019 by

Stephen Lancken
Independent Chair
## ACTIONS ARISING

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions Arising</th>
<th>Timeframe</th>
<th>Responsibility / Status Update</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>WestConnex will take responsibility for explaining the situation to Haberfield school after this meeting</td>
<td>Prior to next meeting</td>
<td>WestConnex</td>
</tr>
<tr>
<td>2</td>
<td>Data anomalies for the elevated PM2.5 anomalies are to be omitted (invalidated). The gap in the data will be flagged with an explanation in the monthly report that there is a discrepancy.</td>
<td>Prior to next meeting</td>
<td>Ecotech</td>
</tr>
<tr>
<td>3</td>
<td>The monthly reports for November 2018 to January 2019 are to be reissued with the adjusted data sets and placed on the website.</td>
<td>Prior to next meeting</td>
<td>Ecotech / WestConnex</td>
</tr>
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</table>
Air Quality Community Consultative Committee
M4 East

30 April 2019
## Agenda

<table>
<thead>
<tr>
<th></th>
<th>Welcome and introductions</th>
<th>Independent Chair</th>
<th>5 mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Project Update</td>
<td>Terry Chapman - WestConnex</td>
<td>15 mins</td>
</tr>
<tr>
<td>3</td>
<td>Air quality monitoring and readings</td>
<td>Matt Callander - WestConnex</td>
<td>20 mins</td>
</tr>
<tr>
<td>4</td>
<td>Data validation process</td>
<td>Claire Richardson - ANE</td>
<td>15 mins</td>
</tr>
<tr>
<td>5</td>
<td>Complaints</td>
<td>Rebecca Walker-Edwards - WestConnex</td>
<td>10 mins</td>
</tr>
<tr>
<td>6</td>
<td>Air quality results at Haberfield</td>
<td>Jon Alexander and Chris White - Ecotech</td>
<td>40 mins</td>
</tr>
<tr>
<td>7</td>
<td>Other business</td>
<td>Independent Chair</td>
<td>5 mins</td>
</tr>
</tbody>
</table>
Project update
Terry Chapman, Project Director
Project update

- Very final stages of construction and will be open to traffic soon
- Mechanical and electrical fit-out in final stages
- Surface works largely complete - final tasks landscaping and site remediation
- All new surface road alignments are completed, final line marking to be completed just prior to opening.
Project update
Project update

Parramatta Road looking east
Project update

Mechanical and electrical fit out
Project update
Underwood Road ventilation facility

- Final landscaping and civil works nearing completion
- Architectural façade complete
- Successfully completed test run
- Five axial fans in total (all installed and currently being tested)
- Ventilation outlet monitoring equipment installed and currently being tested
Project update
Underwood Road ventilation facility
Project update
Parramatta Road ventilation facility

- Final landscaping and civil works nearing completion
- Architectural façade complete
- Six exhaust axial fans and two supply axial fans (all installed and currently being tested)
- Ventilation outlet monitoring equipment installed and currently being tested
Project update
Parramatta Road ventilation facility
Project update
Motorway Control Centre

- Central building for all communications and control of the project’s operational management control systems
- Staffed 24 hours a day, seven days a week
- The control centre monitors the air quality within tunnel

Motorway Control Centre panels - jet fans in-tunnel

Motorway Control Centre panels - air quality readings
Variable message signs
Western end - Eastbound
Variable message signs
Eastern end - Westbound
Variable message signs
Eastern end - Eastbound

- R TMC fixed VMS
- F WCX fixed VMS
- 6 WCX portable VMS
- * JV portable VMS

Sydney dust storm
Air quality monitoring and readings
Matthew Callander
Air quality
February 2019 – PM$_{10}$

PM$_{10}$ 24 hour average
February 2019

Goal: 50 µg/m$^3$

Figure 4: M4 East Project Air Monitoring Stations - PM$_{10}$ 24 Hour graph for February 2019
Air quality
February 2019 – PM$_{10}$ comparison with EPA sites
Air quality
February 2019

Dust blowing in to Sydney. #duststorm
27 5:27 PM - Feb 12, 2019
17 people are talking about this
Air quality
March 2019

PM$_{10}$ 24 hour average
March 2019

Figure 4: M4 East Project Air Monitoring Stations - PM$_{10}$ 24 Hour graph for March 2019
Air quality
March 2019

Sydney Dust Storm Incoming

PUBLISHED ON: MARCH 6, 2019  BY SYDNEY NEWS EDITOR
Data validation process
Claire Richardson
Independent auditor
Air Noise Environment Pty Ltd
AQCCC 30th April 2019

Data Quality Management and Validation

Claire Richardson
Presentation Overview

- Overview of Role of Auditor
- Monitoring Standards
- Data validation and verification
- Third party accreditation
- ANE verification process
Role of the Independent Auditor

- Purpose
- Scope
- Approval process
- ANE experience in role
Monitoring Standards

• Methods defined in Australian Standards:
  • Define a type of measurement or measurement instrument
  • Define specific performance and operating requirements
### TABLE 2
SYSTEM CALIBRATION

<table>
<thead>
<tr>
<th>Calibration component</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Operational mass precision check</td>
<td>≤3 months</td>
</tr>
<tr>
<td>Particle mass calibration</td>
<td>≤12 months</td>
</tr>
<tr>
<td>Volumetric flow rate check</td>
<td>≤3 months</td>
</tr>
<tr>
<td>Volumetric flow rate calibration</td>
<td>≤12 months*</td>
</tr>
<tr>
<td>Pressure transducer check and calibration</td>
<td>≤12 months</td>
</tr>
<tr>
<td>Temperature sensor check and calibration</td>
<td>≤12 months</td>
</tr>
<tr>
<td>Zero check</td>
<td>≤12 months</td>
</tr>
</tbody>
</table>

* Calibrate volumetric flow rate after any pressure transducers and temperature sensors are calibrated.
## TABLE 1  
### INSTRUMENT PERFORMANCE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirements</th>
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<tbody>
<tr>
<td>Minimum range</td>
<td>0–1000 μg/m³</td>
</tr>
<tr>
<td>Minimum reporting interval</td>
<td>24 h</td>
</tr>
<tr>
<td>Lower detectable limit (24 h sample)</td>
<td>2 μg/m³</td>
</tr>
<tr>
<td>Repeatability (2 co-located samplers, 24 h sample)</td>
<td>±3 μg/m³</td>
</tr>
<tr>
<td>Minimum sample reading resolution (24 h sample)</td>
<td>1 μg/m³</td>
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<tr>
<td>Linearity</td>
<td>&lt;1% FS</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>10–40°C</td>
</tr>
<tr>
<td>Operating relative humidity</td>
<td>10–80%</td>
</tr>
<tr>
<td>Maintenance component</td>
<td>Frequency</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Leak check (where required by manufacturer)</td>
<td>≤3 months</td>
</tr>
<tr>
<td>Vacuum pump check</td>
<td>≤12 months</td>
</tr>
<tr>
<td>Clean PM size-selective air inlets</td>
<td>≤3 months</td>
</tr>
<tr>
<td>Clean air inlet system</td>
<td>≤12 months</td>
</tr>
<tr>
<td>Clean measurement chamber</td>
<td>As specified by manufacturer</td>
</tr>
</tbody>
</table>
Monitoring Standards

• Calculation and expression of results
• Quality Assurance & Data Validation
Data Validation

• Stage 1: Automated data screening
• Stage 2: Review by Qualified Personnel:
  • Review all calibration information, recorded data, status flags, notes etc
  • Compare data to historic or reasonably expected values
  • Complete regularly
  • Underlying assumption is data is valid unless there is evidence to support invalidation
  • All data since last check is invalidated unless failure can be traced to a single definable event
Monitoring Precision and Accuracy
Third Party Accreditation

- ISO 17025 processes and procedures
- NATA Certifies compliance with AS/ISO requirements
- Annual audits
- Objective: Accuracy and Precision
- Does not address data interpretation
ANE Data Validation and Verification

• Confirmed sampling methods,
• Checked routine maintenance/calibrations
• Confirmed data completeness
• Repeated data analysis and calculations
• Follow parcels of data through analysis
• Verify data invalidation process
Conclusions

• Suitable instrumentation, operational processes in place to achieve standards
• One non-compliance in relation to reporting
• Data invalidation and calculations appropriate
• ANE audit specifically targeted data invalidation procedures
• Third party audits provide additional checks

Any Questions?
Complaints
Rebecca Walker-Edwards
Air quality complaints
March to April 2019

1 x dust complaint at Concord Rd civil site (early March 2019)

1 x dust complaint at the Parramatta Rd civil site (early April 2019)
Complaint and enquiry process

Complaint received 1800 660 248

M4 West Widening
  Stage 1a

M4 East
  Stage 1b

New M5
  Stage 2

M4-M5 Link
  Stage 3A

Rozelle Interchange
  Stage 3B

Complaint received
info@westconnex.com.au

WestConnex

Complaint received
info@m4east.com.au

WestConnex M4 East Contractor

Complaint received
info.westconnex@rms.nsw.gov.au

Roads and Maritime Services

Complaint received
info@m4-m5linktunnels.com.au

Complaint received
info@newm5.com.au

Complaint received
info@rozelleinterchange.com.au

Complaint received
info@m4-m5linktunnels.com.au
Complaint and enquiry process

Escalation

Complaint received – 2 hours record detail and aim to resolve

If can’t resolve it goes to the Community Relations Manager (CRM)

CRM discusses with Site Manager

CRM discusses with Work Director

CRM discusses with WestConnex

WestConnex Project Director and Contractor Project Director

Complaints Management and Escalation Process

- Complaint received and acknowledged by the nominated SME call centre and referred to the Community Relations Team
- Community Relations Team member records the detail in Consultation Manager and the complaint is registered and shared with complainant immediately, if possible
- Community Relations Team will immediately inform the Environmental and Sustainability Manager of environmental complaints. A report will be submitted to RMS within one business day and included in a weekly report within two business days. The ER will also be informed.
- If not able to resolve, the Community Relations Team member verbally confirms the action to be taken with complainant and records action in Consultation Manager
- Community Relations Team records the complaint to the Community Relations Manager who discusses with Asset Trustees communications team, if required
- Community Relations Team discusses with relevant CSU manager and collects details to resolve/respond as necessary
- If required, the Community Relations team works with relevant CSU manager to prepare a draft written response to the complainant. Community Relations Manager to approve
- Once the response is approved, it is issued to the complainant. The correspondence is recorded in Consultation Manager and the complaint register spread sheet with closed out information
- Consultation Manager and the complaint is closed spread sheet to include details of feedback, close out action and close out of action were implemented
- If an issue is not able to be resolved through the above process, escalation as per the Complaints Resolution Protocol is implemented
Air quality results at Haberfield
Jon Anderson and Chris White
Independent monitoring organisation
Ecotech
M4 East AQCCC Meeting 30/4/19
Haberfield School PM2.5 data
Overview by Chris White & Jon Alexander
Outline

1. PM2.5 Particulate Monitor
2. Station Datalogger
3. Airodis Data Management
4. Data processing & Project website
5. Field Operations overview
6. BAM Maintenance & annual zero test
7. Summary of events
8. PM2.5 Measurements
9. PM2.5 Data
10. Actions
11. Questions?
Supply of Integrated Systems

Ecotech designed, built, & operate the 6 Air Quality Monitoring Stations' for M4 East
PM2.5 Beta Attenuation Monitor (BAM)

Real time particulate monitor
Australian Standards compliant PM2.5 monitor
USEPA approved
Station datalogger

Continuously records and averages data from all sensors & analysers
Airodis Software

Used to

- Download data from stations
- Display tables & charts
- Validation
- Produce reports
- Maintain traceability
- Website raw data
Data Processing Overview - Raw

- PM2.5 data continuously recorded by BAM instrument (hourly)
- Datalogger in station continuously records all data
- Datalogger continuously performs averaging of data such as 5min, 1 hr etc
- Very basic automatic invalidation of some data, eg calibrations, maintenance etc by logger
- Data transmitted via data modem to Ecotech Airodis database Melbourne
- Data uploaded to project website
Data Processing Overview - Validated

- Data analyst reviews data month by month
- Using Airodis software
- All data checked by
  - Reviewing AMS and maintenance forms by Techs
  - Invalidating bad data
  - Reviewing zero and span calibrations
  - Offsetting baselines if required (instrument drift around zero)
  - Scaling data if required (instrument drift around span)
- Any change to data requires traceable log
- Produce the report
- Validated data uploaded to website once complete
- NATA Accreditation to each Australian Standard
Project Air Quality Website
Field Operations Overview – AMS (Asset Management System)

- System used by Ecotech to manage on site maintenance
- Used to schedule visits
- Used to record details of visits
- Forms for each instrument uploaded directly once completed on site
BAM PM2.5 Monitor Maintenance

- Background test run for 72 hours on install
- Each site visited monthly
- Filter tape change every 2 months
- Zero check every 12 months
BAM Maintenance – annual zero

- Zero reference set to zero to run annual test
- Existing value re-entered if pass, or
- New value entered if fails test (> +/- 5ug/m3)

### Inlet Head Type

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<thead>
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<th>Value</th>
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<tr>
<td>BAM Sample time</td>
<td>42min</td>
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<tr>
<td>MET Sample time</td>
<td>1min</td>
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<tr>
<td>OFFSET (-0.015mg)</td>
<td>-0.015</td>
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<tr>
<td>Flow Rate (16.7 Lpm)</td>
<td>16.7</td>
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<td>Conc Type</td>
<td>STD</td>
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<tr>
<td>Flow Type</td>
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<td>Cv</td>
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<tr>
<td>ABS</td>
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### Date and Time Correct?

- AP: 150
- FRI: 10
- FRh: 20%
- Cycle Mode: STANDARD
- RH Control: YES
- RH Setpoint (35%): 35%
- Datalog RH: YES CHAN 4
- Delta T Control: NO
- Delta T Setpoint: 99C
- Datalog Delta T: NO CHAN5
- Firmware Rev: v1.0.2

Note: Where possible, Concentration type should be set to Standard and Flow type should be set to Actual.
<table>
<thead>
<tr>
<th>Event #</th>
<th>Date</th>
<th>Event at Air Monitoring Station</th>
<th>Observed impact on data</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7/11/18 - 9/11/2018</td>
<td>Annual maintenance, including zero test</td>
<td>Positive step change observed</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9/1/2019</td>
<td>Monthly maintenance, including filter tape change</td>
<td>Negative step change data</td>
<td>Matching other sites</td>
</tr>
<tr>
<td>3</td>
<td>6/02/2019</td>
<td>Monthly maintenance</td>
<td>Positive step change</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>25/02/2019</td>
<td>Replacement BAM installed</td>
<td>Negative step change</td>
<td>Matching other sites. Original BAM unit underwent reference test</td>
</tr>
<tr>
<td>5</td>
<td>06/03/2019</td>
<td>Original BAM returned to service</td>
<td>No change observed</td>
<td></td>
</tr>
</tbody>
</table>
PM2.5 Data before & after reprocessing

- Ref value removed, in error for zero test, large step up afterwards, suggests incorrect value was put back.
- Data very consistent in it's offset relative to nearby site indicates systematic error rather than random one.
- Maintenance visits, marked change in data but no recorded change to reference value.
- BAM replaced, Ref identified as incorrect value of 5ug/m³.
PM2.5 Measurements

Measured data impacted by several variables including:
• Regional air quality
• Location
• Meteorology
• Traffic
• Local sources
• Monitor itself

<table>
<thead>
<tr>
<th>Month</th>
<th>Allen Street</th>
<th>Concord Oval</th>
<th>Haberfield school</th>
<th>Powells Creek</th>
<th>Ramsay Street</th>
<th>Saint Lukes Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM$_{10}$ (µg/m$^3$)</td>
<td>PM$_{2.5}$ (µg/m$^3$)</td>
<td>PM$_{10}$ (µg/m$^3$)</td>
<td>PM$_{2.5}$ (µg/m$^3$)</td>
<td>PM$_{10}$ (µg/m$^3$)</td>
<td>PM$_{2.5}$ (µg/m$^3$)</td>
</tr>
<tr>
<td>Average</td>
<td>21.1</td>
<td>8.1</td>
<td>23.0</td>
<td>8.5</td>
<td>20.3</td>
<td>11.2</td>
</tr>
</tbody>
</table>
Project PM2.5 Air Quality Goals

- 24 hour is 25 ug/m3
- Annual 8 ug/m3
- Based on National Legislation (NEPM)

**Ambient Air Quality — Goals**

E9 Should ambient monitoring of air pollutants exceed the following goals, the provisions of conditions E10, E11 and E12 will apply:

- (a) CO – 8 hour rolling average of 9.0 ppm (NEPM);
- (b) NO₂ – One hour average of 0.12 ppm (245 μg/m³) (NEPM);
- (c) PM₁₀ – 24 hour average of 50 μg/m³ (NEPM);
- (d) PM₂.₅ – 24 hour average of 25 μg/m³ (proposed NEPM);
- (e) PM₁₀ – annual average of 25 μg/m³ (Meeting of Environment Ministers – Agreed Statement); and
- (f) PM₂.₅ – annual average of 8 μg/m³ (Meeting of Environment Ministers – Agreed Statement).
Actions

- An offset of negative 3.9 μg/m³ be applied to the Haberfield PM$_{2.5}$ data from 9 November 2018 to 9 January 2019
  - The data included in reissued November 2018, December 2018, and January 2018 reports for the affected monitor will have to be marked as indicative/non-compliant
- Additional training of Field Technicians in performing the zero reference test, and zero tests
- Routine internal auditing of Field Technicians
- Additional documentation requirements, including the use of BAM maintenance forms on every visit including routine bi-monthly filter tape changes
- Improved peer review of BAM forms to check consistency of completed records such as reference values
- Actions reviewed during next routine independent audit scheduled for August 2019
Questions?
Other business
Independent Chair