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COMMUNICATE INNOVATE COLLABORATE FACILITATE NEGOTIATE MEDIATE EDUCATE

## M4 East Air Quality Community Consultative Committee

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<b>Meeting:</b>	New M4 Air Quality Community Consultative Committee (AQCCC)	
<b>Date:</b>	Tuesday, 16 March 2021	
<b>Time:</b>	6:00pm to 7:30pm	
<b>Location:</b>	Zoom Online Meeting	
<b>Attendees:</b>	<b>Independent Chair (IC)</b> Notetaker	Lynette Edwards Samuel Cheok
	<b>WestConnex   Transurban</b> Head of Operations and Maintenance Environments Officer Community Engagement Advisor Health, Safety, Environment Advisor	Peter Redwin Kris Hinks Karina Wilson Shannon Weller
	<b>O&amp;M Contractor (Fulton Hogan Egis)</b> Community and Conditions Coordinator	Justin Hazelbrook
	<b>Independent Air Quality Expert</b> Principal Scientist – Air Quality, The National Institute of Water and Atmospheric Research (NIWA)	Dr Ian Longley
	<b>Councils</b> Inner West Council Strathfield Council	Brin Baskaran Councillor Gulian Vaccari
	<b>Community</b>	Bryan Smyth-King Jonathan Jacobson Raymond McCluskie Neil Kenzler Steve O'Brien

# Meeting Notes

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## Key Matters Discussed and Presented

### 1. Welcome and Introductions

No questions

### 2. Operations and Maintenance Update by FHEOM (Presentation attached)

2.1. A community member had an experience in the M4 East tunnel where a wire was hanging from the ceiling and they could not find a tunnel support hotline to ring. What is the tunnel hotline, and can this number be signposted in the tunnel?

2.1.1. Generally, such events are picked up by Traffic Control Room Operators (TCRO's) monitoring the tunnel and incident response vehicles arrive, on average, within six (6) minutes.

2.1.2. There is a hotline number on the Linkt website. The number is: 13 33 31.

2.1.3. Regulation governs what can be displayed inside and outside the tunnel. In this case, the provided support number is outside the tunnel, and not in the tunnel.

2.1.4. Taken on notice to determine if numbers can be provided inside the tunnel.

2.2. Do the ventilation fans run at full power, and what information is recorded from the fans and flow of air?

2.2.1. No, the fans do not run at full power. The rate of the fans is based on traffic numbers, congestion, and in-tunnel air quality sensors. Typically, three out of five fans are running at 60% power. Fan usage is rotated between the fans, so that all fans get utilised equally.

2.2.2. Data such as run time, power usage, flow sensors and volume of air exiting the fan are recorded.

2.3. How will the fan system change when the tunnel is extended from the M4 East to the M4-M5 Link Tunnels?

2.3.1. This is currently being discussed and will be finalised closer to the commissioning stage.

2.4. If the M4 East AQCCC is not continued after the required two (2) year post operational stage and there is an additional ventilation facility from the M4-M5 Link Tunnels that will increase output to the Haberfield area, who will monitor the output?

2.4.1. Integration is a responsibility of the M4-M5 Link Tunnels AQCCC. It is the responsibility of that AQCCC committee to consider the shared outlets.

2.4.2. The Parramatta Road Ventilation Facility has two outlets, only one is currently in use. Each ventilation facility has its own monitoring equipment. The second ventilation facility will be commissioned when the M4-M5 Link Tunnels project becomes operational.

2.5. Were there two ventilation facilities built at Haberfield, under the knowledge that the M4-M5 Link Tunnels were going to be constructed?

2.5.1. Yes, there were actually three ventilation facilities built at the same time. One for the M4 East, one for the M4-M5 Link Tunnels and the third is an inlet facility which will pump fresh air into the tunnel, if fresh air is ever required.

**3. Community Update and Complaints, by WestConnex Transurban (Presentation attached)**

3.1. The next community grants will open on 29 March 2021.

3.2. A community representative commented that the Strathfield School for Seniors upgraded computers obtained through the community grant and are appreciative and grateful of the grant provided by WestConnex | Transurban.

**4. Air Quality Reporting by WestConnex | Transurban (Presentation attached)**

No questions

**Air Quality comparison between pre-operation and operation, Independent Air Quality Expert (IAQE) (Presentation attached)**

4.1. Why are there no Air Quality Monitoring Stations (AQMS) at the western end of the entry/exit tunnel portal?

4.1.1. It is very difficult to find a suitable location for AQMS. The stations need open space, (not overlooked by buildings or trees), permissions from the owner of the land and access to power sources. There were very few locations that were suitable.

4.1.2. Most areas have common wind directions. The dispersion modelling shows the common prevailing wind directions for the area. This helps determine the most likely distance from the outlet where emissions would reach the surface. This modelling is used as a guide to help determine the locations for monitoring stations.

4.2. Are the minimum guidelines for air quality set by the World Health Organisation (WHO)?

4.2.1. The guidelines are set by multiple entities. The guidelines for Particulate Matter (PM) in ambient air are set by the WHO. Other levels, such as in-tunnel air quality guidelines, are developed independently by Transport for NSW (TfNSW) and the Department of Health. These levels are consistent with international standards. The approval limits for ventilation facility outlets are unique for each emission source pollutant, calculated to ensure air quality at ground levels are safe.

4.3. Is the ambient air quality monitored independently by the Environment Protection Authority (EPA)?

4.3.1. The EPA have their own air quality monitoring stations at many sites across Sydney.

4.4. How high up into the atmosphere does the emissions plume from the ventilation outlet travel, and how does air from the ventilation facility disperse before it reaches ground level?

- 4.4.1. Fans within the ventilation outlet push air upwards to expel the air from the outlet into the atmosphere. Then, the air travels horizontally carried by winds at that height.
- 4.4.2. The height that the plume reaches is roughly double the height of the outlet. Strong winds at that height start to dilute and disperse the emitted air. This is accounted for in the dispersion model in the Environment Impact Statement (EIS).
- 4.4.3. Prior to the air being emitted into the atmosphere air quality measurements are recorded.
- 4.4.4. There are also general rules as to how close a building should be to the facility which is generally accepted as not having a building five (5) times the height of the outlet. This is based on observational monitoring. The dispersion models have been validated in other contexts, to show they can correctly make predictions at height. It is very difficult to confirm concentration levels at height, as it is not possible to install an air quality monitoring station on a balcony due to the size, space required and noise generated from the station.
- 4.5. If an apartment balcony is close to the top of the ventilation outlet, facing the outlet, how dangerous would it be for the resident to be on the balcony approximately 250m to 300m away during peak hour?
  - 4.5.1. The M4 East tunnel is a relatively 'clean' tunnel. The levels of air pollutant concentrations are lower than the pollutants monitored at Marylebone Road in London, England, a well-established air quality monitoring station.
  - 4.5.2. Exceedances are rarely passed, and someone standing next to a single truck passing by at ground level would be exposed to a higher level of pollutant.
  - 4.5.3. The monitoring that has been undertaken validates other aspects of the EIS modelling that has been undertaken.
- 4.6. When the tunnel is extended for the M4-M5 Link Tunnels and M4 East, there will be double the emissions from the outlet. Will this be an issue?
  - 4.6.1. Potentially there will be double the emission from the ventilation outlet and double the impact on the surface. However, the impact on the surface is currently so low that it cannot be detected, so a doubling of pollutant would still be extremely low.
  - 4.6.2. There is a small chance that pollutants could be detected, which is why monitoring for that outlet will continue. The Ramsay Street site will continue monitoring air quality, and data set from a single outlet, and a data set with double the outlets will be recorded to verify these claims.
- 4.7. Members expressed concern by the community that 50% of the air emitted from the Haberfield ventilation facility, located within the Haberfield Public School will not be

monitored past July 2021. How will the community know if data coming out of that facility into ambient space around it is reflected in the recordings?

4.7.1. Monitoring of the ventilation facility will continue as long as the tunnel is operational.

The Haberfield Public School AQMS will be relocated because it is overshadowed by buildings and trees and a new site will be established near the intersection of Ramsay and Wattle Street, Haberfield.

4.7.2. The new site near the intersection of Ramsay and Wattle Street, Haberfield will inform the community about the project as a whole by picking up changes in traffic at Wattle Street as well.

4.7.3. There is a lack of monitoring to the south west of Parramatta Road because it is difficult to acquire monitoring sites. A monitoring station in this area would be a good location.

4.8. Algie Park was determined to be too far away from the ventilation outlet. What would be the ideal distance from the outlets which would be reflect a maximum impact area?

4.8.1. This item relates to the M4-M5 Link Tunnels AQCCC and it is suggested that this question is put to that AQCCC's Chair.

4.9. Will the IAQE commit to reviewing the document and report back on the maximum impacted area to the AQCCC?

4.9.1. This item relates to the M4-M5 Link Tunnels AQCCC and it is suggested that this question is put to that AQCCC's Chair.

4.9.1.1. The community representatives expressed concern regarding continuity, correlation and impact of the new M4-M5 Link Tunnels ventilation facility in the future in addition to the existing ventilation facility in relation to monitoring Parramatta Road facility.

4.9.2. This item relates to the M4-M5 Link Tunnels AQCCC, however in terms of the continuity of the data, the M4 East AQMS were not intended to be operated in perpetuity. The M4 Minister's Conditions of Approval require air quality to be monitored for a period of two years from commencement of operation.

4.9.3. The M4-M5 Link Tunnels AQCCC will also continue to use the Ramsay Street monitoring station to monitor air quality.

4.9.4. It is important to note that ventilation outlets and in-tunnel monitoring will continue for the life of the tunnel.

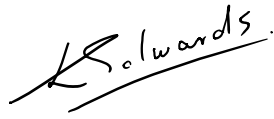
## 5. Other Business

5.1. Jonathan Jacobson resigned from the committee after this meeting. The IC thanked him for his commitment and contributions over the years.

5.2. Next M4 East AQCCC will be 15 June 2021.

**Meeting closed at 7:28pm**

These minutes were accepted on 22 March 2021 by

A handwritten signature in black ink, reading "L. Edwards", written over a horizontal line.

Lynette Edwards

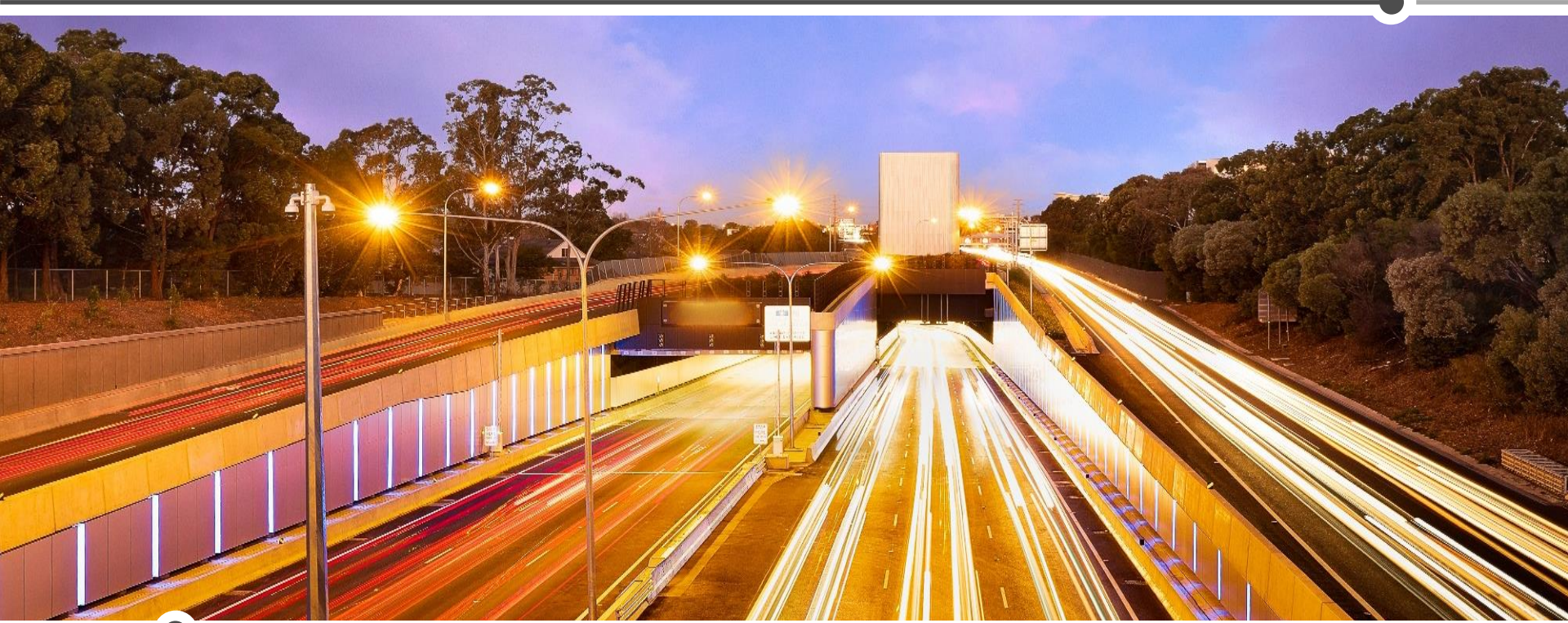
Independent Chair

## ACTIONS ARISING

Item	Actions Arising	Timeframe	Responsibility / Status Update	Response
2.1	A community member had an experience in the M4 East tunnel where a wire was hanging from the ceiling and they could not find a number to ring. What is the tunnel support hotline, and can this number be signposted in the tunnel?	Next AQCCC	WestConnex   Transurban	<p>The Linkt phone number is 13 33 31 and should be utilised to report issues in the tunnel.</p> <p>The contact information is currently located at the M4 entry and exits (around the toll points). WestConnex will look into the signage that is in place to communicate the contact information for the tunnel operator and will take this into consideration.</p>
5.8	Algie Park was determined to be too far away from the ventilation outlet. What would be the ideal distance from the outlets which would be a maximum impact area?		WestConnex   Transurban	This is out of scope for the M4 East AQCCC and falls within the M4-M5 Link Tunnels AQCCC determination of new monitoring sites. This item has been forwarded to the M4-M5 Link Tunnels AQCCC for consideration.

# M4 Tunnels

Air Quality Community Consultative Committee  
16 March 2021



**WestConnex**

**Transurban**



# Agenda

Agenda Items		Time	Responsibility
1	Welcome and introduction	5 mins	Independent Chair
2	Operations and Maintenance update	10 mins	Justin Hazelbrook
3	Community update & complaints	5 mins	Karina Wilson
4	Air Quality reporting	20 mins	Kris Hincks
5	Air Quality comparison between pre-operation and operation	20 mins	Ian Longley
6	Other business	10 mins	Independent Chair

# Operation and Maintenance update

Justin Hazelbrook

# Operation and Maintenance

## Incident Response

Incident Response statistics since the last M4 East AQCCC.

- Average 506 incidents per month
- 73% of incidents in peak (Mon – Sat; 5am – 8pm)
- 17% of incidents in non-peak
  
- 96.1% attended to within 10 minutes (peak) and 20 minutes (non-peak)



Average response time across the WCX network are:

- Peak = 6.5 (KPI = 10mins)
- Non-Peak = 7.2 (KPI = 20 mins)

# Operation and Maintenance - Maintenance

## Axial Fans



Uni-directional Flow Axial Fan

- Size: 3.45m
- Volume Flow: 210 m<sup>3</sup>/s
- Weight: 20t
- Motor Rating: 375 kW

# Operation and Maintenance - Maintenance

## Jet Fans



Banana Jet-Fan

- Size: 1.70m
- Volume Flow: 46.18 m<sup>3</sup>/s
- Weight: 1.63t
- Motor Rating: 55 kW

# Community update and complaints

Karina Wilson

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**WestConnex**

 **Transurban**

# Community update

## Community initiatives

### Community Grants Program

- WestConnex | Transurban supported 25 local organisations in the most recent round of community grants.
- Approximately half of these applications came from organisations along the M4 corridor.
- Initiatives chosen will directly benefit more than 19,000 people and indirectly benefit almost 52,000 people across the WestConnex corridor.
- Next round will open on 29 March 2021.

### WestConnex social

- @WestConnex



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# Complaints – Air Quality

Complaints received since last AQCCC meeting

- There have been no complaints received between 1 December 2020 to date.
- We have received one enquiry relating to availability of air quality monitoring data on the website.



# Air Quality reporting

Kris Hincks and Justin Hazelbrook

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**WestConnex**

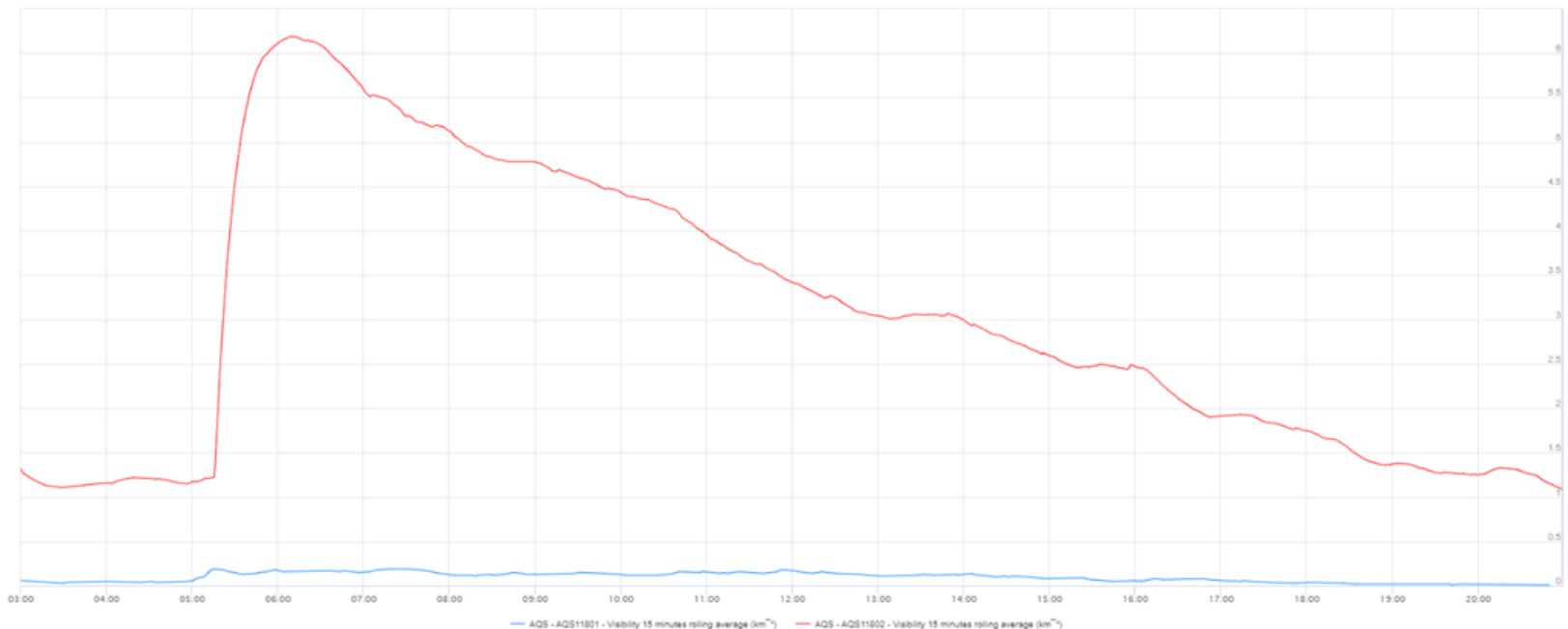
 **Transurban**

# Air Quality reporting

## Exceedances occurring since last AQCCC meeting (1 December 2020)

- **13/02/2021 – In-tunnel visibility exceedance**

- The in-tunnel visibility above-limit reading was isolated to a singular air quality sensor, AQS11802. Ecotech, the air quality maintenance contractor inspected the analyser on the latest maintenance closure. A spider-web was found inside the sight tube. This caused a spike in readings which can be seen below in red.



# M4 Tunnels E8 & E24 audit reports

## E8 Audit - Wolfpeak

- *'Monitoring results must be made publicly available and must be subject to an independent audit at six-monthly intervals (or at a longer interval, if approved by the Secretary). The auditor must be approved by the Secretary in consultation with the EPA and the AQCCC, and the auditor's report must be directly provided to the Proponent and the AQCCC.'*



## E24 Audit - Wolfpeak

- *'The Proponent must appoint an external auditor to conduct an audit of the air quality monitoring (in tunnel and external) at six-monthly intervals or at any longer interval if approved by the Secretary. Air quality audits must commence six months from commencement of operation.'*

# Changes to local air quality since the M4 East opening – 20-month analysis

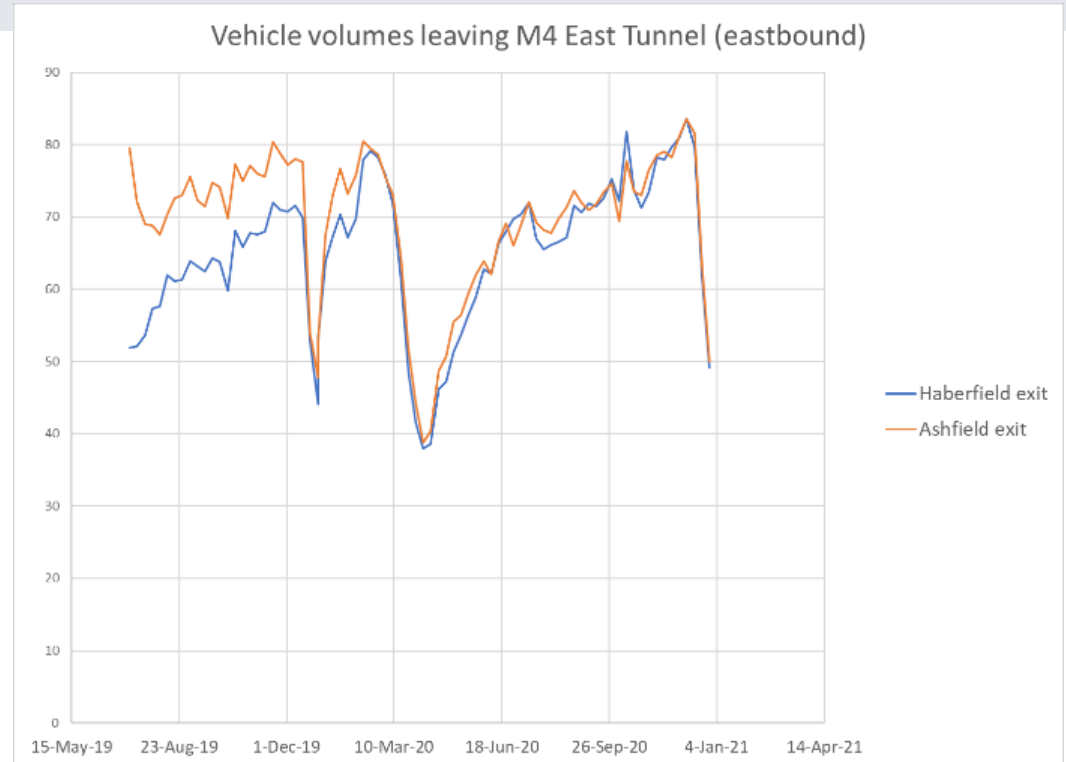
**Dr Ian Longley**  
Principal Air Quality Scientist, NIWA

# Comparing data

- 18 months pre-opening
- 20 months post-opening
  - 8 months pre-COVID
  - 3 months “deep” COVID
  - 9 months post-COVID

# COVID-19

- Traffic volumes down by half in early April
- Traffic volumes down 10 – 20 % Jun – Nov 2020



# Nitrogen Dioxide (NO<sub>2</sub>)

- Air pollutant mainly from road traffic exhaust
- Emitted as “NO<sub>x</sub>” = NO + NO<sub>2</sub>
- NO<sub>2</sub> directly linked with various respiratory effects, especially asthma and reduced lung development in children
- Ambient and in-tunnel guidelines for NO<sub>2</sub>
- Often used as “proxy” measure for other traffic-related pollutants and hence cardiovascular and cancer risk
- Previous analyses considered NO<sub>x</sub> in ambient air – changes in NO<sub>2</sub> slightly smaller

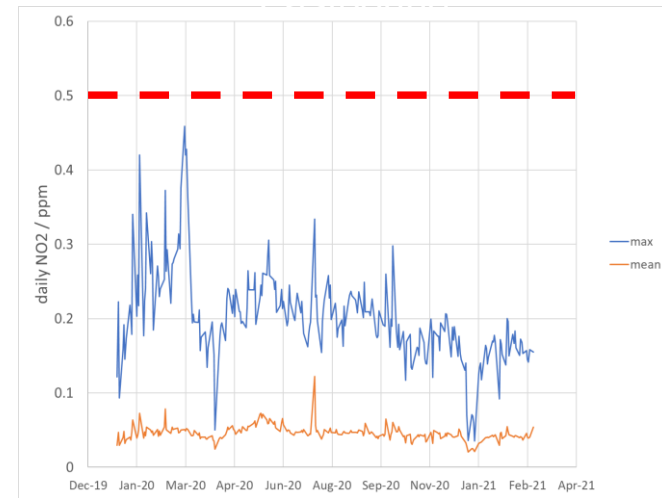
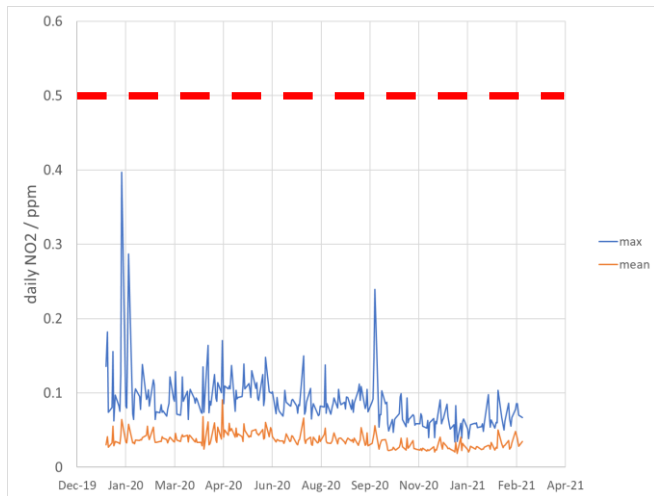
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## Did the ventilation outlets impacts ambient air quality?

- **NO!**
- This is entirely consistent with in-tunnel and outlet monitoring....

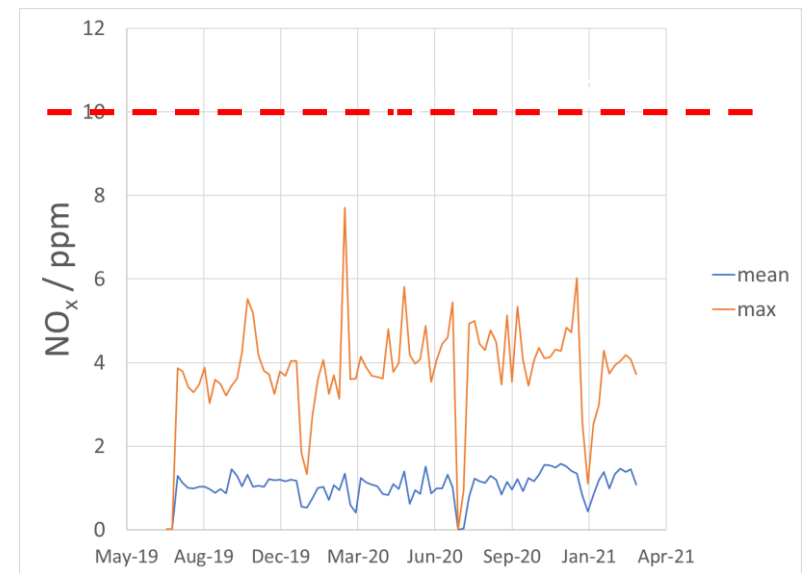
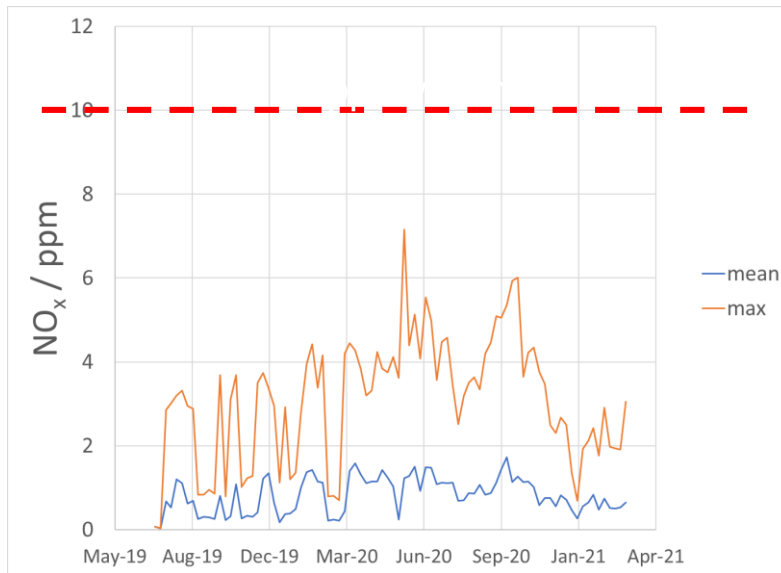


## Air in the tunnel –NO<sub>2</sub> concentrations

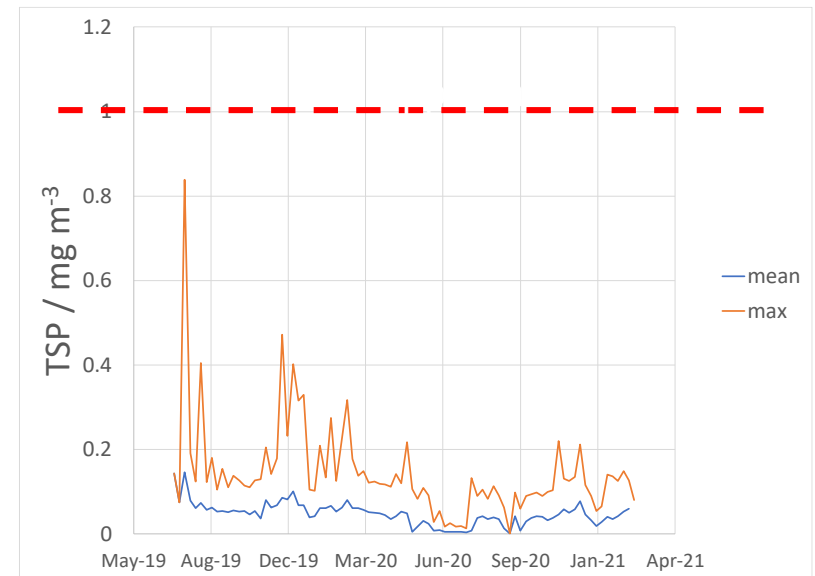
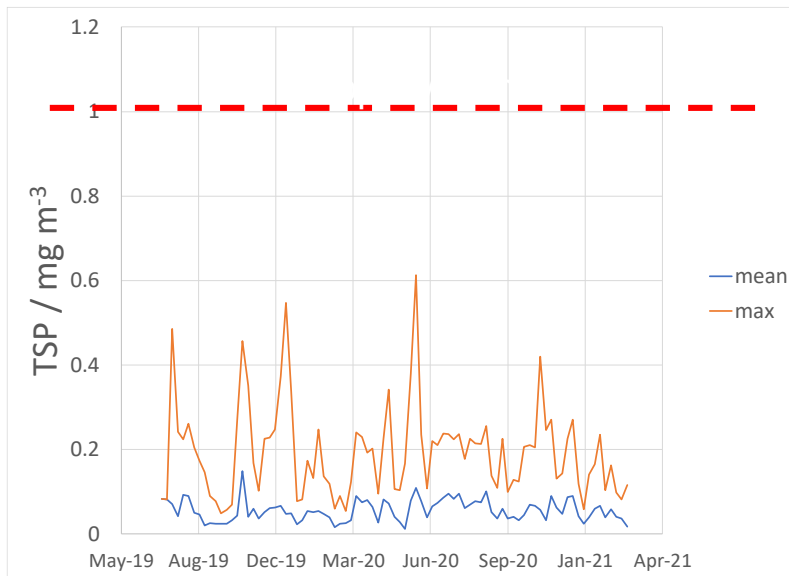


- Air in the tunnel *relatively* clean (for a major tunnel) and getting cleaner...
- High values getting less frequent

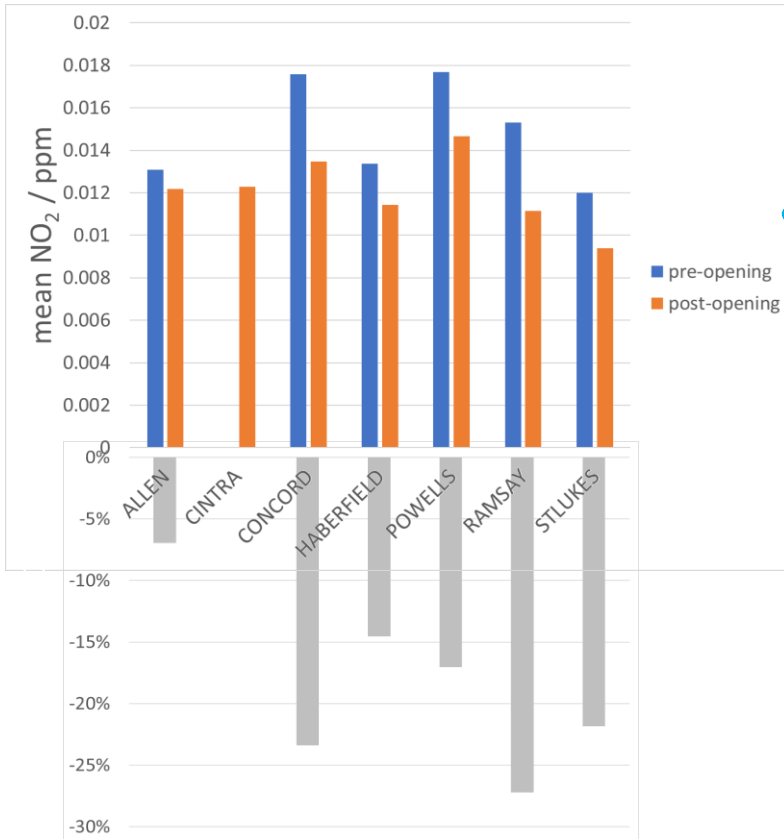
# Air in the ventilation outlets



# Air in the ventilation outlets (particles)



# Overall changes in local ambient air quality

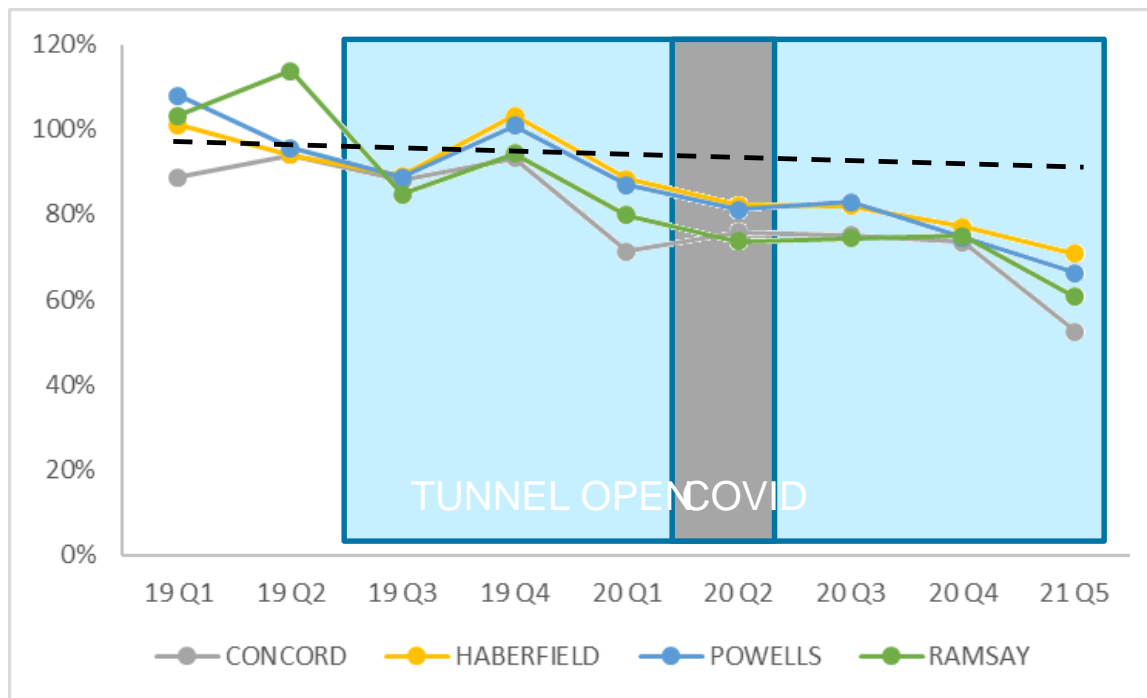


How much is due to...

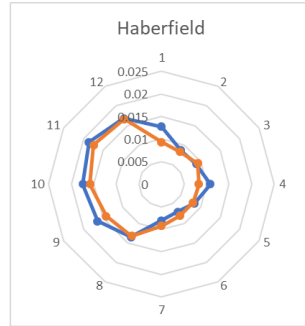
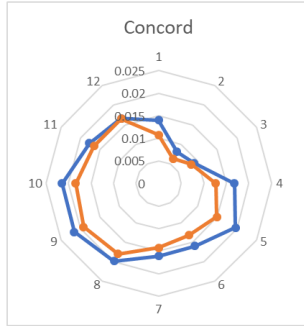
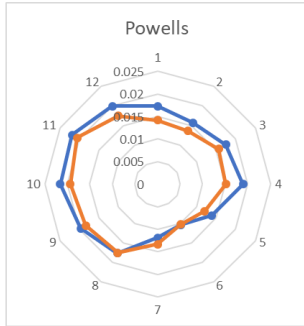
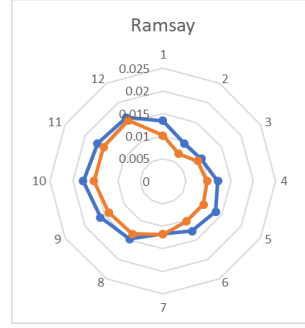
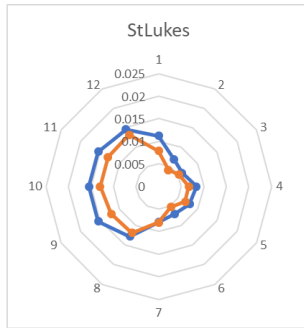
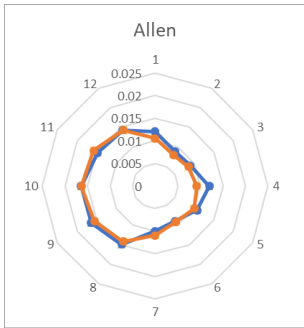
- Long-term trends?
- M4 East Tunnel?
- COVID lockdown?

- ~3 %
- ~9 %
- ~10 %

# Changes in NO<sub>2</sub> by quarter compared to 2018

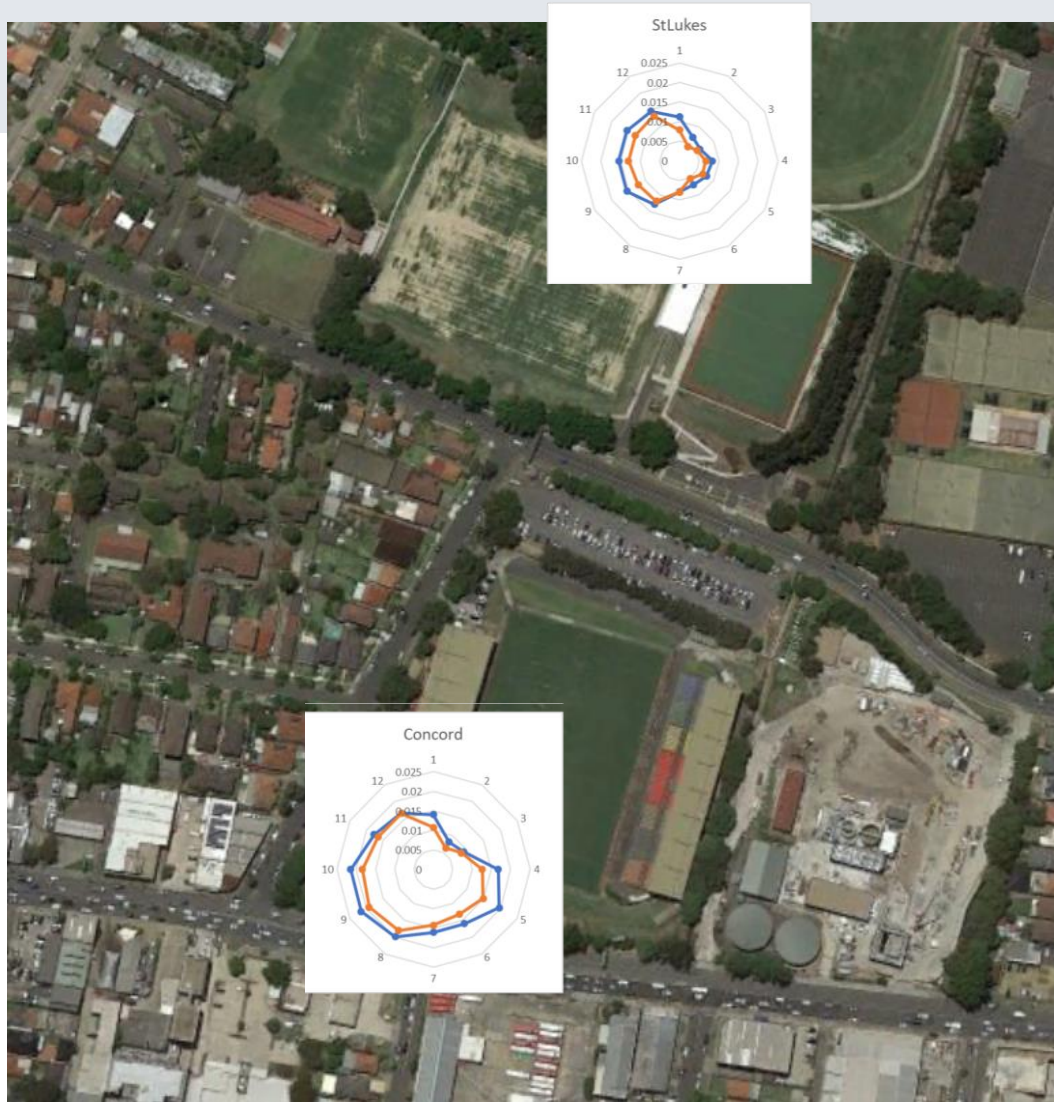


# First 8 months (before COVID)



- Compared with same 8 months 1 year before
- Average reduction of 9%
- Largest reductions (20 – 30 %) at Concord and Ramsay Str in easterly winds









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Any questions?