

18 May 2021

Justin Hazelbrook
Community and Conditions Coordinator
Fulton Hogan Egis O&M Pty Ltd
50 Clarence Street
Sydney NSW 2000

Re: M8 MCoA_E17 - Report on above ambient goal recording - 27 April 2021, 30 April 2021, 3 May 2021 and 4 May 2021

Dear Justin,

1 Introduction

The Ministers Condition of Approval (MCoA) E17 for WestConnex M8 (New M5) includes a requirement for ambient monitoring notification and reporting, as follows:

Within 20 working days of any Notification of Above-Goal Recording, the Proponent must prepare and submit to the Secretary a Report on Above-Goal Recording that details the cause and major contributor of the exceedance and the options available to prevent recurrence.

Where the operation of the tunnel is identified to be a significant contributor to the recorded above-goal reading, the Report on Above-Goal Recording must include consideration of improvements to the tunnel air quality management system so as to achieve compliance with the ambient air quality goals, including but not limited to installation of the additional ventilation management facilities allowed for under condition B5, and discussion of whether those improvements are feasible and reasonable.

The Proponent must comply with any requirements arising from the Secretary's review of the Report on Above-Goal Recording.

A *Notification of Ambient Above-Goal Recording* was sent to DPIE¹, NSW EPA and NSW Health for 24-hour PM_{2.5} exceedances which occurred on 27 April 2021, 30 April 2021, 3 May 2021 and 4 May 2021 at a number of the M8 ambient monitoring sites. In accordance with MCoA E17, the purpose of this report is to follow up on the notification and provide a Report on Above-Goal Recording, identifying the cause and major contributor for the exceedance.

2 Analysis of above-goal recordings

The above-goal recordings for 24-hour average PM_{2.5} concentrations on 27 April 2021, 30 April 2021, 3 May 2021 and 4 May 2021 are summarised in Table 2.1.

¹ Department of Planning, Industry and Environment

Table 2.1 Summary of above-goal recording

Date	Site	Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)
			Goal = 25 $\mu\text{g}/\text{m}^3$
27/04/2021	Arncliffe 1 (West Botany St)	PM _{2.5}	29.9
	Arncliffe 2 (Eve St)		28.9
	Barton Park		27.6
	Kingsgrove 1 (MOC1)		35.6
	Kingsgrove 2 (Kingsgrove Rd)		34.2
	St Peters 1 (Campbell St)		29.0
	St Peters 2 (SPI)		27.8
	St Peters 3 (St Peters St)		26.9
30/04/2021	Arncliffe 1 (West Botany St)	PM _{2.5}	26.8
	Kingsgrove 1 (MOC1)		37.3
	Kingsgrove 2 (Kingsgrove Rd)		33.8
3/05/2021	Arncliffe 1 (West Botany St)	PM _{2.5}	33.0
	Arncliffe 2 (Eve St)		32.9
	Barton Park		42.7
	Kingsgrove 1 (MOC1)		48.8
	Kingsgrove 2 (Kingsgrove Rd)		46.3
	St Peters 1 (Campbell St)		30.5
	St Peters 2 (SPI)		32.9
	St Peters 3 (St Peters St)		31.1
4/05/2021	Arncliffe 1 (West Botany St)	PM _{2.5}	26.6
	Kingsgrove 1 (MOC1)		32.8
	Kingsgrove 2 (Kingsgrove Rd)		31.5
	St Peters 1 (Campbell St)		28.4
	St Peters 2 (SPI)		27.7
	St Peters 3 (St Peters St)		28.1

2.1 Timeseries analysis

A timeseries of the 24-hour average PM_{2.5} concentration from 25 April to 5 May for all sites is presented in Figure 2.1. Also presented in the plot are the 24-hour average PM_{2.5} concentrations recorded at the closest 'background' monitoring station operated by DPIE at Earlwood. It is noted that Barton Park is located approximately 1km from the Arncliffe ventilation outlet and therefore also a 'background' site.

Figure 2.1 shows that:

- above-goal concentrations were recorded at all M8 monitoring sites on the 27 April 2021. The DPIE site at Earlwood was also above the impact assessment criteria (26.0 µg/m³);
- above-goal concentrations were recorded at three M8 monitoring sites on the 30 April 2021. All other M8 monitoring sites were elevated, while the DPIE site at Earlwood was close to the impact assessment criteria (24.7 µg/m³);
- above-goal concentrations were recorded at all M8 monitoring sites on the 3 May 2021. The DPIE site at Earlwood was close to the impact assessment criteria (24.9 µg/m³); and
- above-goal concentrations were recorded at six M8 monitoring sites on the 4 May 2021. All other M8 monitoring sites were elevated, while the DPIE site at Earlwood was close to the impact assessment criteria (24.8 µg/m³).

The plots in Figure 2.1 show that all sites increase at the same time and rate on each of the exceedance days, despite being spatially distant from each other and located in different directions from the ventilation stacks. Figure 2.2 plots the hourly PM_{2.5} concentration for the same period. Peak hourly concentrations on each of the exceedance days follow the same pattern and occur at the same time of day. The elevated concentrations and consistent diurnal profile recorded across all sites is indicative of a regional influence on recorded concentrations, rather than any localised impact from ventilation outlets.

From 27 April 2021 the NSW National Parks and Wildlife Service (NPWS) and Rural Fire Service (RFS) were carrying out hazard reduction burns across Sydney. Smoke advisory alerts were issued by the RFS and poor air quality forecasts were issued by DPIE. The hazard reduction burns continued between 30 April 2021 and 3 May 2021, with smoke lingering across the Sydney Basin due to prevailing stable weather patterns. The highest concentrations occurred 3 May 2021, when the impact from smoke was compounded by early morning fog across Sydney. By the 5 May, hazard reduction burns had finished and a change in weather conditions and onset of rain, reduced concentration to below 10 µg/m³ across all sites.

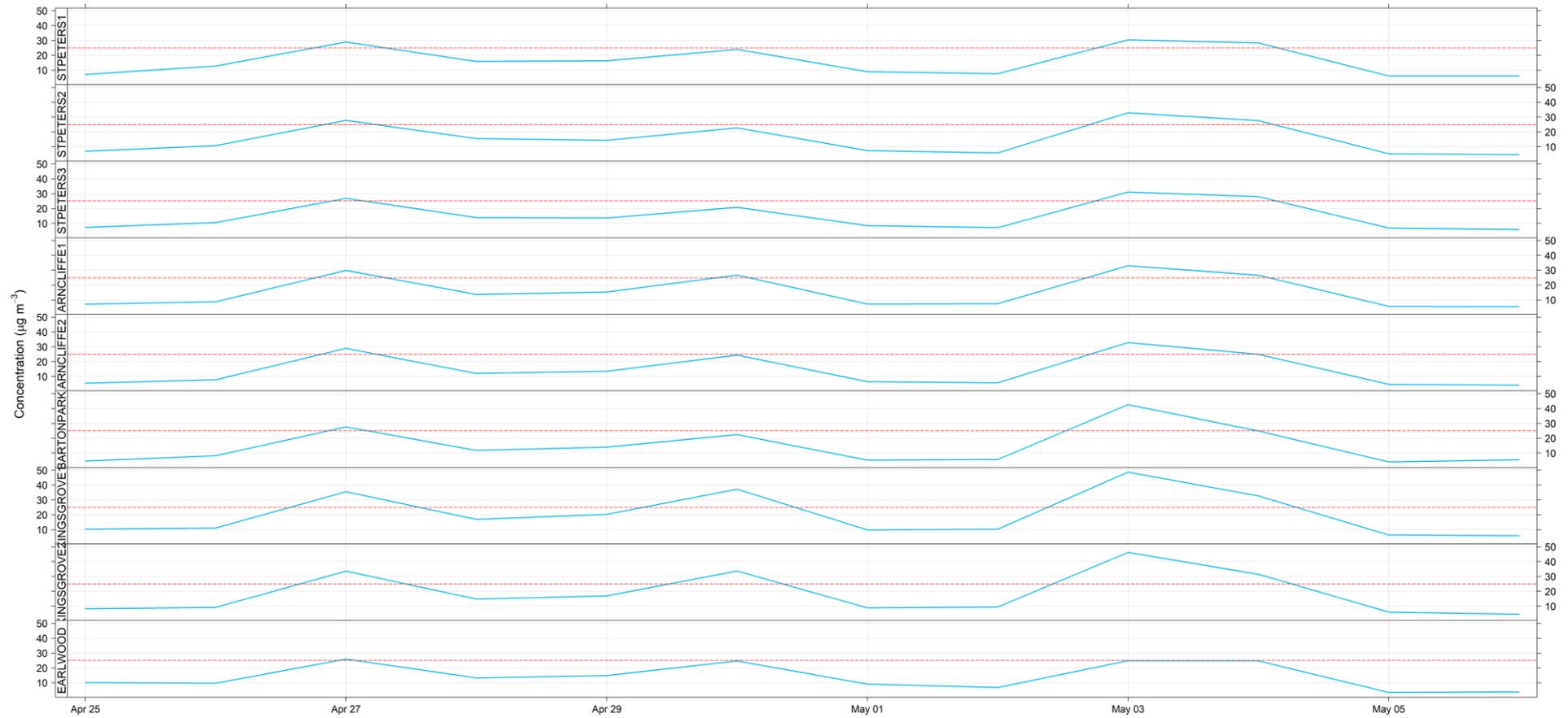


Figure 2.1 Time series plot of 24-hour average PM_{2.5} concentration (µg/m³) for all sites – 25/04/2021 to 5/05/2021

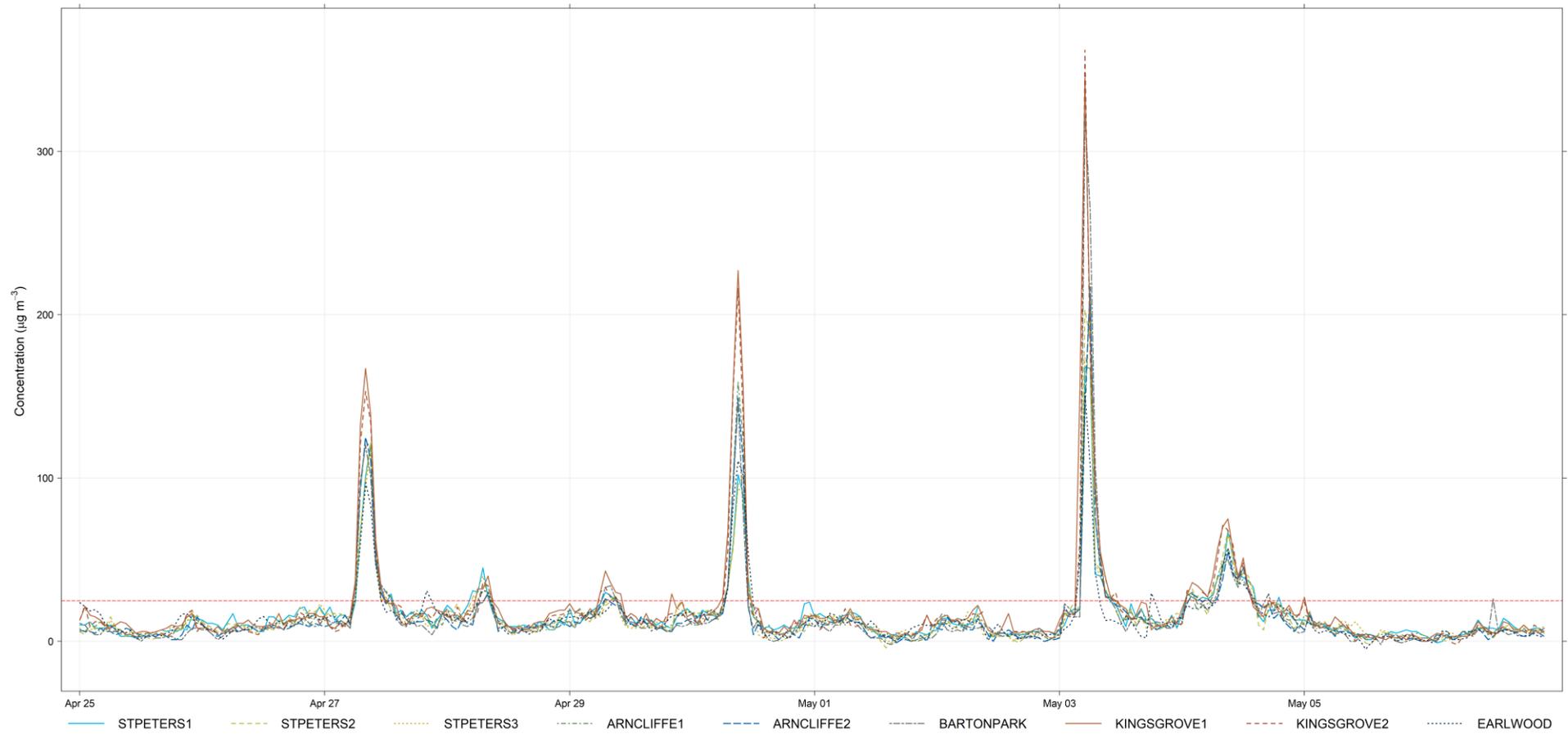


Figure 2.2 Time series plot of 1-hour average PM_{2.5} concentration (µg/m³) for all sites – 25/04/2021 to 5/05/2021

3 Conclusion

Our review of ambient air quality data has found that the operation of the tunnel has not caused nor is a major contributor to the above-goal recording on 27 April 2021, 30 April 2021, 3 May 2021 and 4 May 2021, for the following reasons:

- elevated concentrations and similar diurnal profile recorded across all sites is indicative of a regional influence on recorded concentrations, rather than any localised impact from ventilation outlets;
- a number of hazard reduction burns taking place caused smoke across the Sydney basin which lingered until a change in weather conditions on 5 May 2021; and
- none of the ventilation outlets recorded above-limit readings.

Yours sincerely



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Appendix A

Monitoring locations

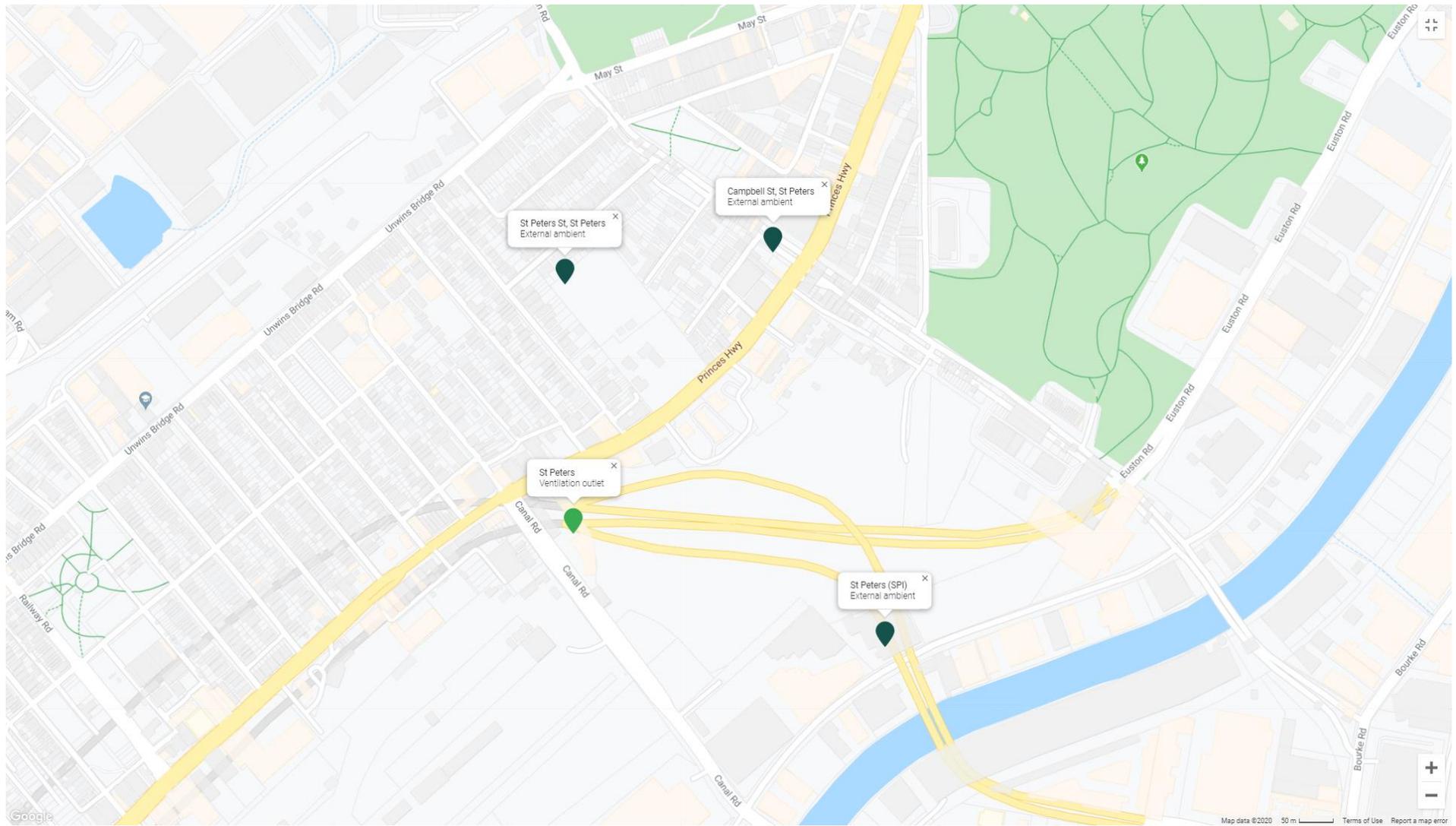


Figure A.1 St Peters monitoring locations

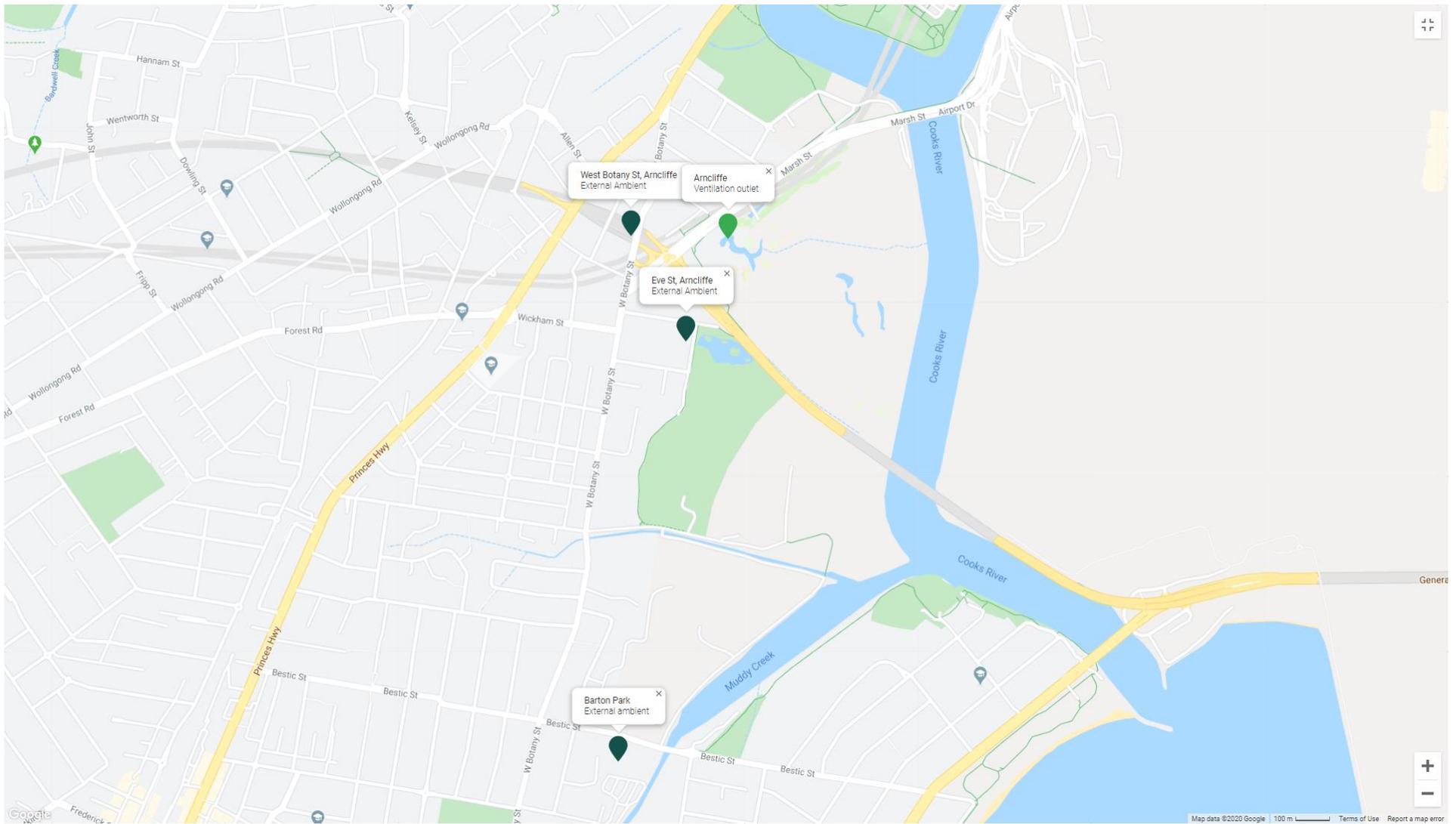


Figure A.2 Arcliffe monitoring locations

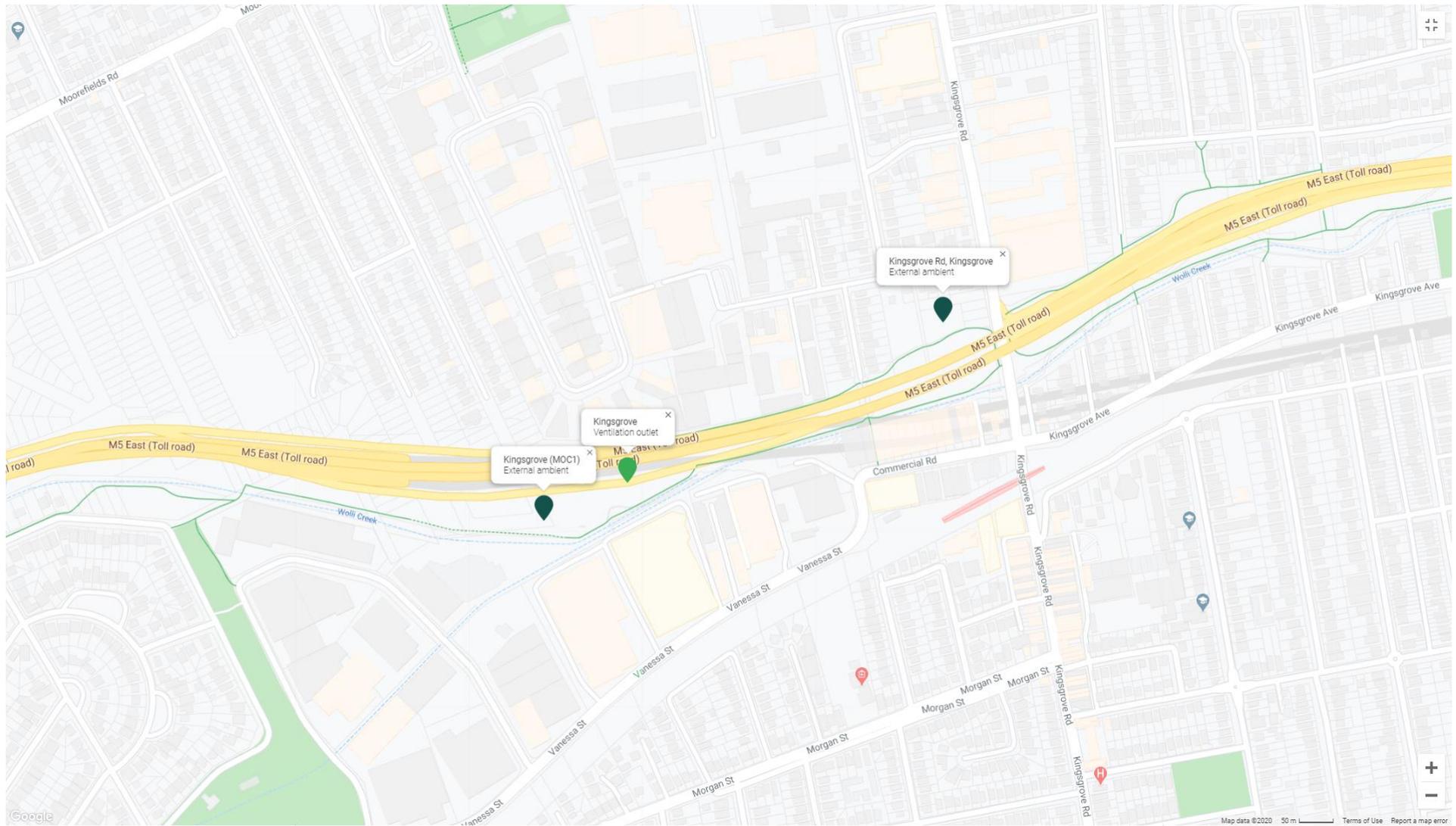


Figure A.3 Kingsgrove monitoring locations