

31 August 2020

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 goal recording - 2 August 2020

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 DPIE, EPA and NSW Health for an exceedance which occurred on 2 August 2020, at the St Peters (Campbell St) ambient monitoring site. 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 recorded on 2 August 2020.

2 Analysis of above-goal recordings

The above-goal recording for 24-hour average PM_{2.5} concentrations on 2 August 2020 is summarised in Table 2.1. Data are presented for the reported concentrations in the notification (taken directly from the website) and as revised concentrations, re-calculated from raw hourly average data. It is noted that the averaging period for data reported on the website is hours 1 to 24. However, the data are logged by the instruments for hours 0 to 23. This results in a slightly different 24-hour concentration between the two datasets (ie the website uses the first hour of the next day for the previous day average).

Table 2.1 Summary of above-goal recording

| Date | Site | Pollutant | Concentration ($\mu\text{g}/\text{m}^3$) | |
|----------|---------------------------|-------------------|--|--|
| | | | Originally reported in the notification | Revised following analysis of raw data |
| 02/08/20 | St Peters 1 (Campbell St) | PM _{2.5} | 25.3 | 25.5 |

2.1 Timeseries analysis

A timeseries of the 24-hour average PM_{2.5} concentration from 30 July to 15 August for all sites is presented 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, although above-goal concentrations were recorded at the St Peters (Campbell St) site on the 2 August 2020, the ambient PM_{2.5} concentrations were trending upwards at a similar time and rate at all sites from 30 July 2020. Figure 2.2 plots the hourly PM_{2.5} concentration on the 2 August 2020 only. Concentrations at all sites are elevated from overnight on 2 August 2020, dropping significantly during the day before increasing again during the evening. The elevated concentrations that occur overnight are most likely because of residential wood heating, with a small secondary peak around 06:00 also evident at most sites, resulting from AM peak traffic on surrounding surface roads.

2.2 Source of peak concentrations

Polar plots of the maximum 1-hour PM_{2.5} concentrations for the period 30 July 2020 to 15 August 2020 are presented in Figure 2.3, for the St Peters (Campbell St) site and the background sites at Barton Park and Earlwood. These plots show the wind speed and wind direction under which the highest concentrations occur and are useful to identify where pollution is originating from.

In each plot, the highest concentrations (shown by the darker colour) occur when winds are blowing from the northwest. The St Peters (Campbell St) site is located to the northeast of a ventilation outlet (see locations in Appendix A), therefore the ventilation outlet has not contributed to these highest peak concentrations. The consistency in pattern across each plot, and the associated low wind speeds under which they occur, is evidence of a regional influence on peak concentrations (ie most likely residential wood heating across the inner west region).

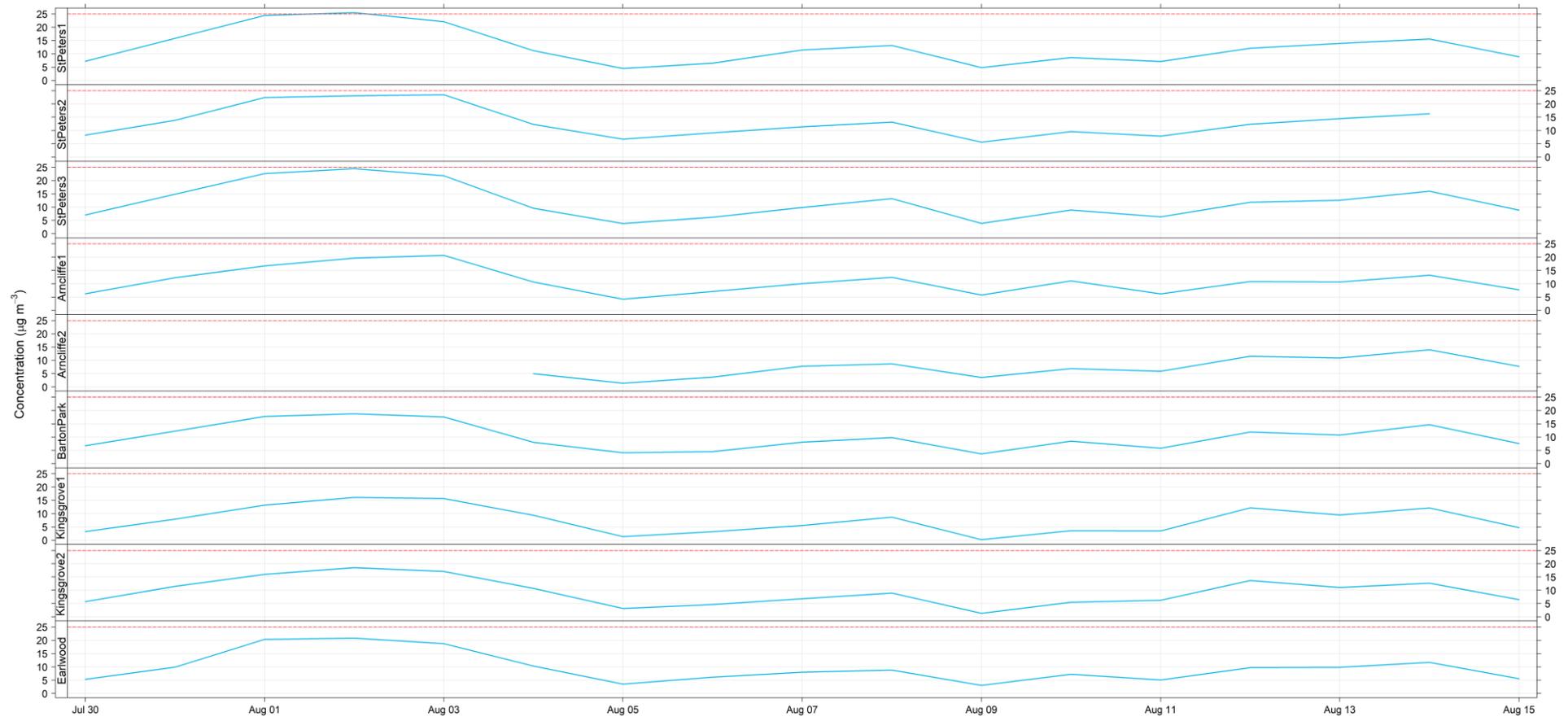


Figure 2.1 Time series plot of 24-hour average PM_{2.5} concentration (µg/m³) for all sites – 30/07/2020 to 15/08/2020

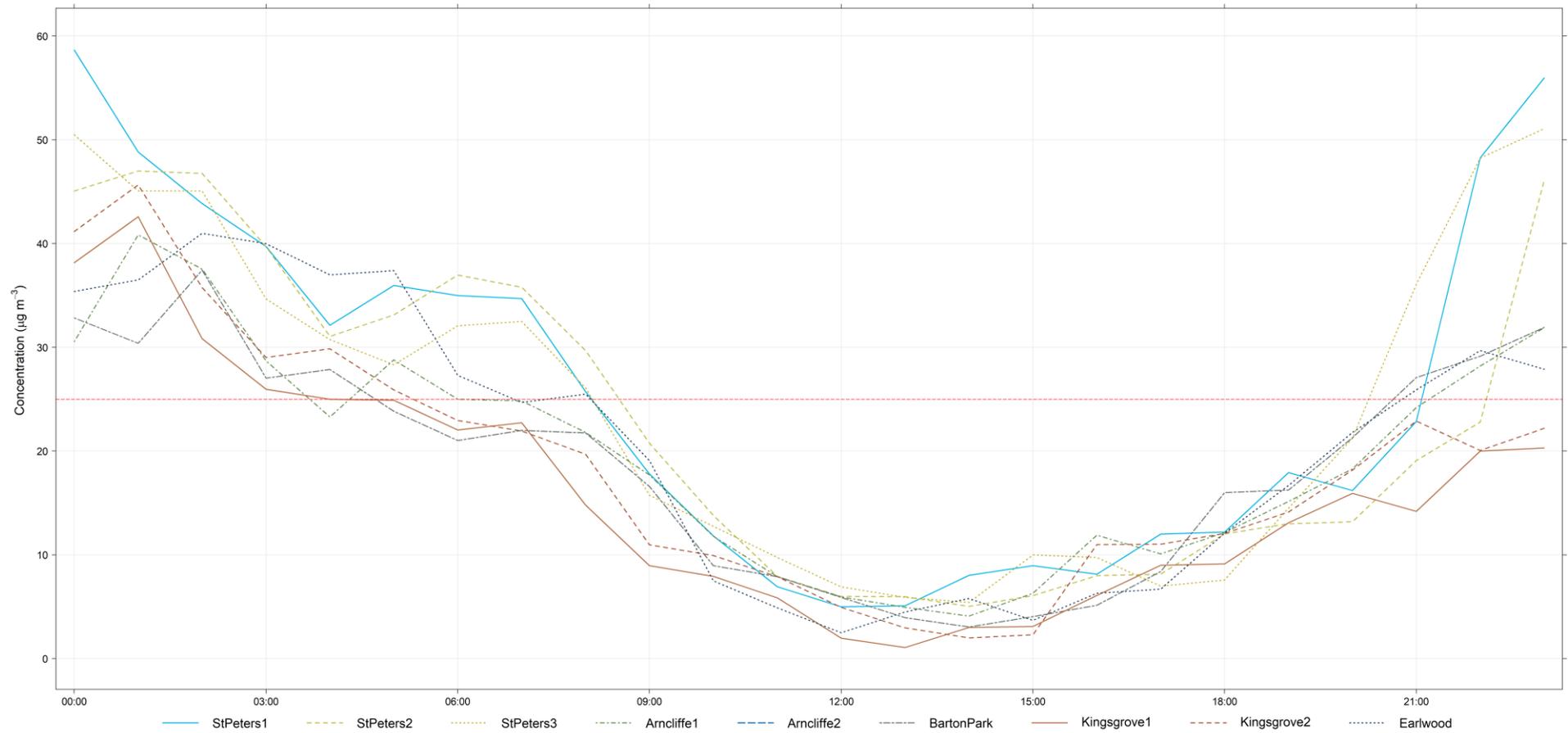


Figure 2.2 Time series plot of 1-hour average PM_{2.5} concentration (µg/m³) for all sites – 02/08/2020

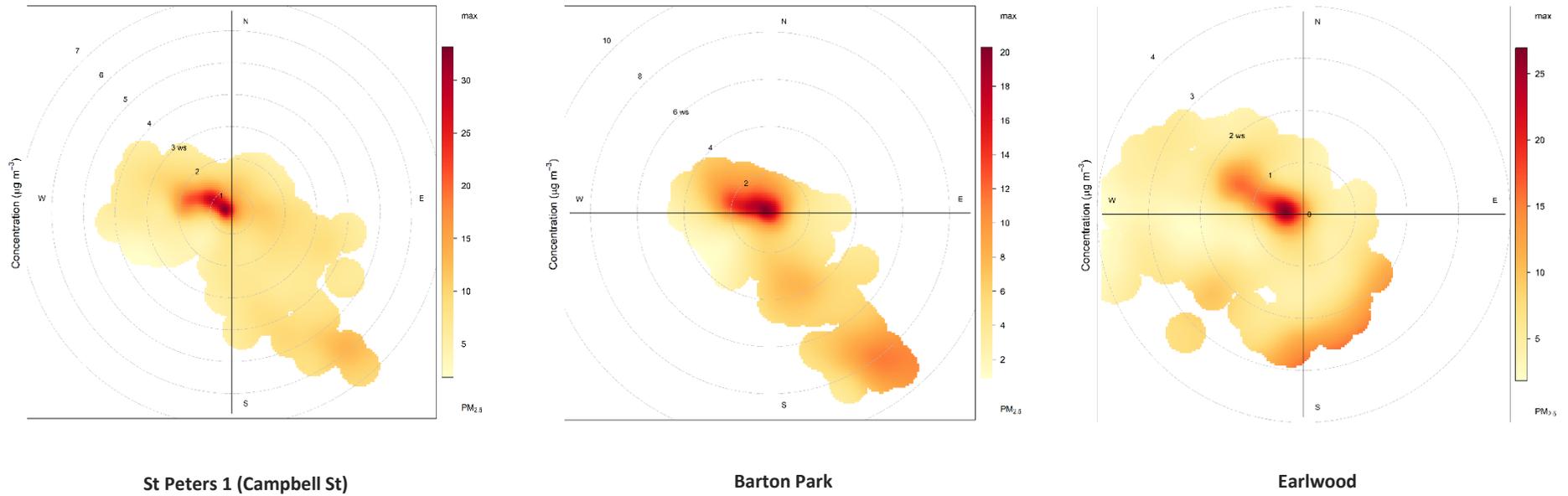


Figure 2.3 Polar plot of maximum hourly PM_{2.5} concentration (µg/m³) – St Peters (Campbell St) and background sites

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 2 August 2020, for the following reasons:

- similar trends are observed across all monitoring sites, including background locations, trending upwards at a similar time and rate from 30 July 2020. This is indicative of a regional influence rather than a specific local source;
- the diurnal pattern of concentrations indicate that residential wood heating has contributed most to 24-hour average concentrations on 2 August 2020;
- plots of peak concentrations with wind speed and direction indicate that the ventilation outlets are not associated with peak concentrations and a regional influence is more likely; and
- the ventilation outlet did not record above-limit readings on the 2 August 2020.

Yours sincerely



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Appendix A

Monitoring locations

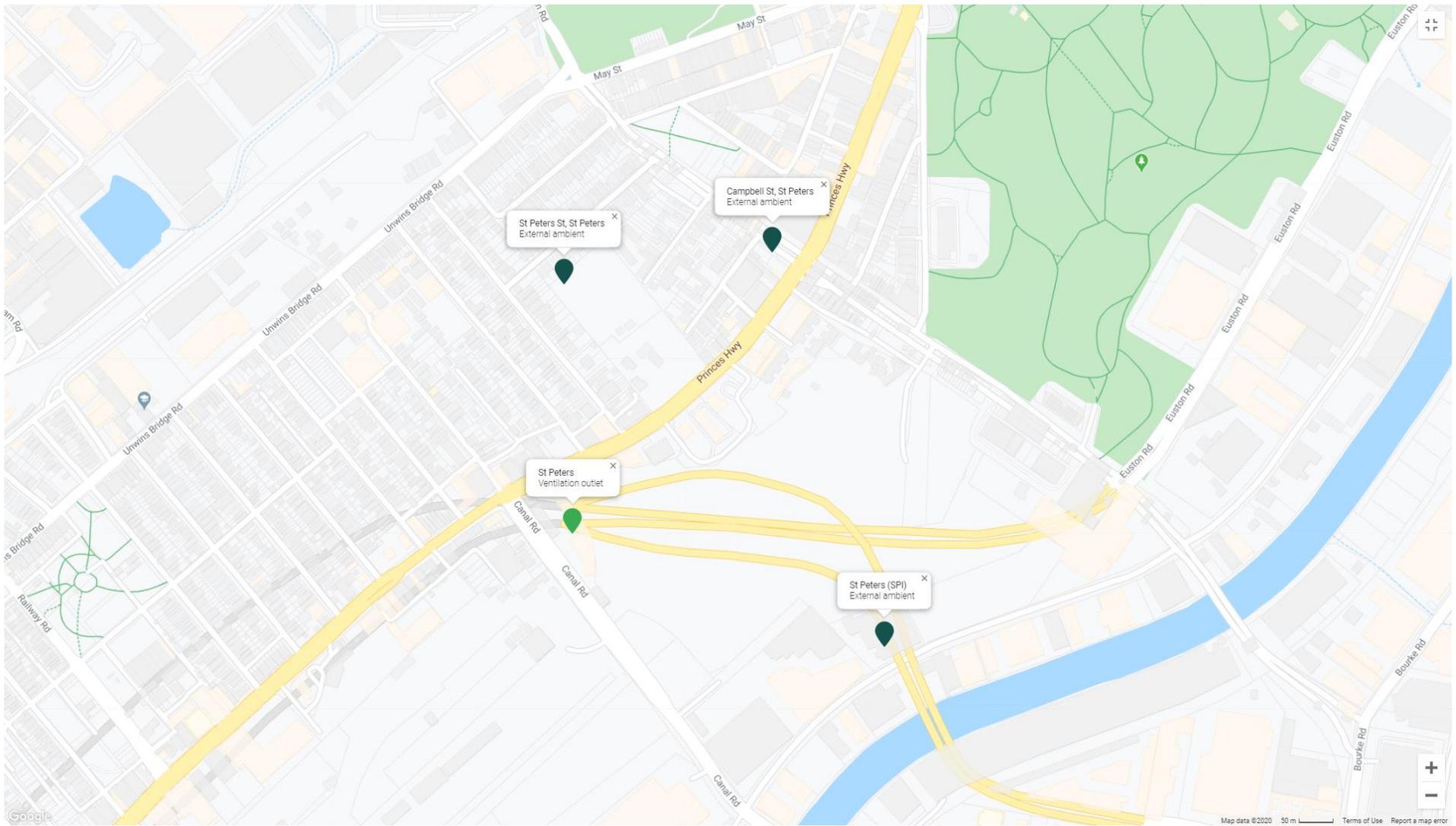


Figure A.1 St Peters monitoring locations

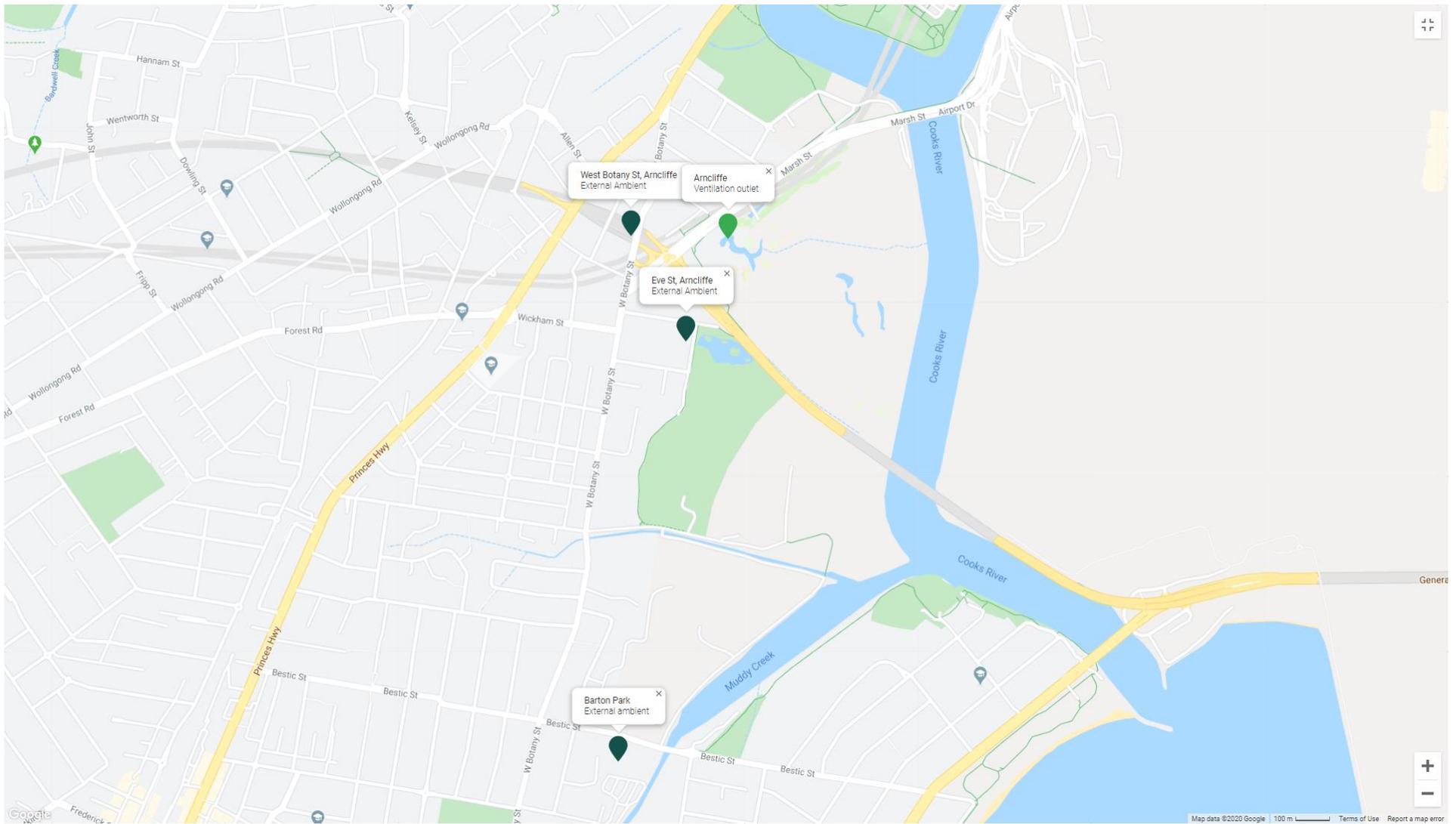


Figure A.2 Arnccliffe monitoring locations