APPENDIX 3

BREATHE LONDON MOBILE MONITORING DOCUMENTATION

APPENDIX 3
Mobile Monitoring Documentation

The following documents and repositories, identified as Appendices 3A – 3E, provide detailed information on the deployment, instrumentation, calibrations and data processing used in the Breathe London mobile monitoring campaign.

3A   **Google Street View Cars Instrumentation Operating Procedure**

This document outlines the layout, instrumentation and specifications of the Breathe London mobile monitoring platform. It also describes the routines for visual inspections, filter changes, leak and flow checks and calibrations conducted by the Breathe London team.

3B   **Mobile Deployment Strategy**

This overview describes the driving strategy for the Breathe London mobile campaign and details modifications that were made over the course of the project to ensure sufficient drive coverage.

3C   **Breathe London Mobile QA/QC Protocol**

This document outlines the routine Quality Control/Quality Assurance (QA/QC) protocol for the Breathe London mobile monitoring data collection. The methods in each stage of data processing are described in detail. Related code for the QA/QC can be found in the GitHub repository linked below.

3D   **London Quality Control / Quality Assurance GitHub Code**

This repository contains software to post-process and analyse the Breathe London data. This includes the quality control/data cleaning and flagging, assignment of measurements to spatial location, calculation of central statistics, visualisation, and uncertainty evaluation. The system architecture includes Google Cloud Storage and BigQuery. Spatial processing relies on BigQuery geography datatypes and related SQL functions.

3E   **Mobile Uncertainty Documentation**

These documents summarise the instrument uncertainties for each pollutant measured, including minimum detection limit (MDL), bias, accuracy, and precision. This documentation also outlines bias corrections made to the particulate matter data. The three sections are divided based on methodology used to estimate instrument uncertainty, which varied depending on the data available for each pollutant. The sections are as follows:

- **Section 1 (NO_2, NO, and CO_2)**
- **Section 2 (O_3, LDSA, and Black Carbon)**
- **Section 3: $PM_{2.5}$ sampling losses**
- **Section 3: $PM_{2.5}$ instrumental uncertainties**