

Champion Hill Trial 'No Entry' – Air Quality Monitoring Summary

Background

In late November 2018, the Highway Project Officer asked Environmental Protection Team to monitor air quality in two locations for the Champion Hill road closure project. Two lamppost locations were chosen adjacent to the Dog Kennel Hill School on Grove Lane, and at the site of the closure at the Champion Hill T - junction. Following a focus group meeting, three further monitoring sites were added in March 2019. The site details are shown in the Table below and the following map. The table contains two sites in the wider area for comparison.

| LONDON BOROUGH OF SOUTHWARK NO₂ DIFFUSION TUBE SITE INFORMATION | | | | | | | |
|---|--|---------------|-----------------|-----------|---------------|----------------------|-------------------|
| SITE NUMBER | SITE DESCRIPTION | MAP REFERENCE | PERIOD FROM | PERIOD TO | SITE LOCATION | LABORATORY | Tube Preparation |
| SDT 54 | Camberwell Grove | 532951 176417 | 5 December 2015 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT 114 | Lamppost No 1 Goose Green / East Dulwich Road | 533799 175324 | 28 June 2017 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT 119 | Lamppost (21) Camberwell Grove | 533101 176152 | 7 August 2018 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT 136 | Lamppost 2160- 12 adjacent to Dog Kennel Hill School | 533232 175775 | 5 December 2018 | Present | Kerbside | Gradko Environmental | 20% TE A Water |
| SDT 137 | Lamppost 2136 - 18 at the T-junction adjacent to Champion Hill | 532987 175568 | 5 December 2018 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT 138 | Lamppost 2127 - 11 Pytchley Road | 533364 175561 | 6 March 2019 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT139 | Lamppost 2139 - 29 Grove Lane | 533030 176022 | 6 March 2019 | Present | Kerbside | Gradko Environmental | 20% TEA Water |
| SDT140 | Post near the Dog Kennel Hill school entrance on Dog Kennel Hill | 533221 175715 | 6 March 2019 | Present | Kerbside | Gradko Environmental | 20% TEA Water |

SDT 54



Map showing the Champion Hill Diffusion Tube monitoring locations.

SDT 114

Results

The results from the Nitrogen Dioxide Diffusion tubes can be seen in the table below.

| Month | Start Date | End Date | Sampling Period | Site reference | | | | | | | | |
|---|------------|------------|-----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| | | | | SDT 54 | SDT114 | SDT 119 | SDT136 | SDT137 | SDT 138 | SDT139 | SDT140 | |
| D | 05/12/2018 | 09/01/2019 | 5 | 37.01 | 35.71 | 31.43 | 41.80 | 30.84 | | | | |
| J | 09/01/2019 | 06/02/2019 | 4 | 42.33 | 51.05 | 47.41 | 53.87 | 41.94 | | | | |
| F | 06/02/2019 | 06/03/2019 | 4 | 45.48 | 52.59 | 37.61 | 51.55 | | | | | |
| M | 06/03/2019 | 03/04/2019 | 5 | 32.94 | 37.44 | 32.73 | 42.12 | 29.38 | 38.06 | 40 | 34.07 | |
| A | 03/04/2019 | 01/05/2019 | 5 | 33.60 | 36.07 | 34.74 | 36.88 | 32.83 | 38.63 | 45.18 | 41.92 | |
| M | 01/05/2019 | 05/06/2019 | 4 | 24.50 | 28.37 | 21.13 | 22.28 | 20.60 | 26.14 | 35.65 | 28.58 | |
| J | 05/06/2019 | 03/07/2019 | 4 | 24.60 | 27.47 | 24.50 | 30.35 | | 26.78 | 31.27 | 29.12 | |
| J | 03/07/2019 | 07/08/2019 | 5 | 21.93 | 27.85 | | 29.68 | 17.79 | 26.88 | 29.86 | 31.41 | |
| A | 07/08/2019 | 04/09/2019 | 4 | 24.99 | 27.57 | 25.79 | 30.74 | 18.38 | 29.21 | 27.57 | 28.61 | |
| S | 04/09/2019 | 02/10/2019 | 4 | 25.85 | 30.16 | 27.76 | 32.20 | 24.04 | 36.27 | 34.92 | 36.88 | |
| O | 02/10/2019 | 06/11/2019 | 5 | 27.78 | 32.72 | 32.92 | 32.56 | 26.57 | 34.63 | 38.73 | 33.11 | |
| N | 06/11/2019 | 04/12/2019 | 5 | 34.58 | 40.43 | 40.92 | 49.17 | 37.78 | 40.96 | 41.76 | 46.72 | |
| D | 04/12/2019 | 08/01/2020 | 5 | 34.22 | 43.18 | | 34.45 | 27.92 | 43.96 | 39.61 | 34.05 | |
| Average (09/01/2019 to 08/01/2020) | | | | 31.07 | 36.24 | 32.55 | 37.15 | 23.84 | 34.15 | 36.46 | 34.45 | |

The results show the normal seasonal variation in the concentrations of Nitrogen Dioxide, with a reduction during the summer when traffic is reduced due to holidays, and increase in the autumn and winter periods due to an increase in gas usage for heating. Also there is a variation due to metrological condition during the year and topographical features of the monitoring locations.

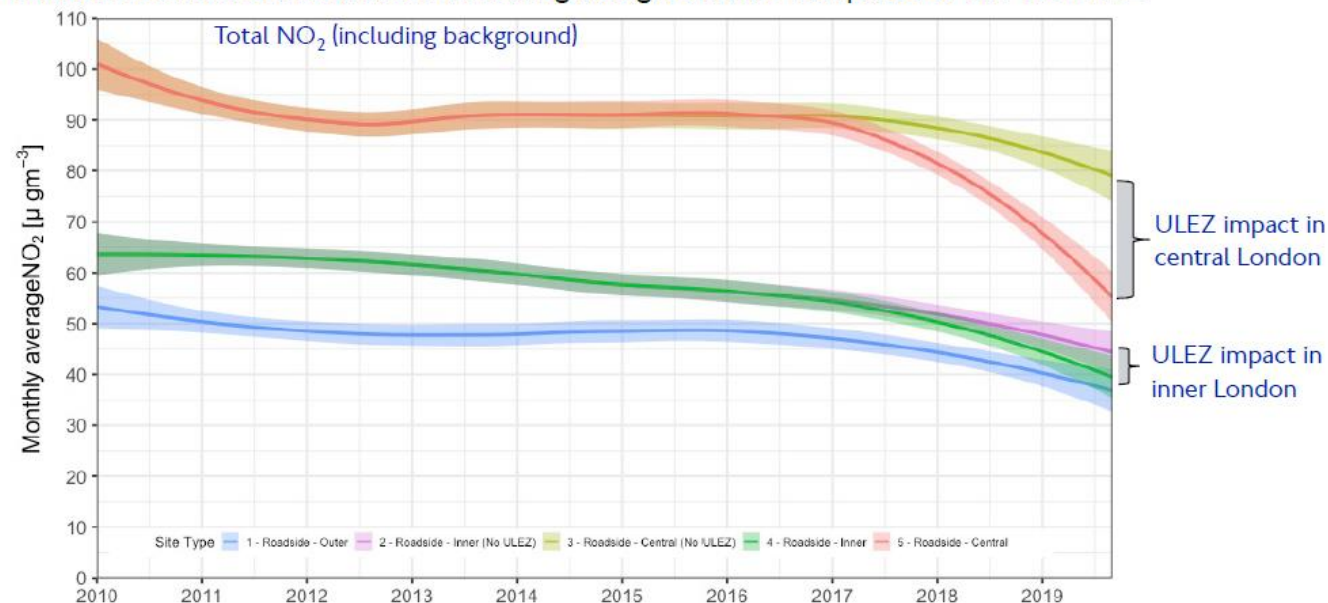
The results have not been bias adjusted, as ratification from the continuous air quality monitoring data was not available at the time of writing. The results will be bias adjusted in the spring, when bias adjustment data has been released

The national air quality objective for Nitrogen Dioxide is an annual mean average of $40\mu\text{g}\cdot\text{m}^{-3}$. The mean average results of the monitoring are below the annual mean average objective level.

Air quality in Southwark has improved over the last decade, due to national, regional and local air quality initiatives. The London Mayor has recently introduced the Central London Ultra – Low Emission Zones for vehicles, following the Low Emission Zone for the majority of the London area. These initiatives have reduced vehicle emissions. The Central London Ultra- Low Emission Zone has shown a reduction in air pollution in the central London area, and a smaller reduction in the Inner London area¹. The reduction in Nitrogen Dioxide concentrations is shown in the figure below.

Impact of ULEZ after six months

- Trends in measured total concentrations (including background) are compared to the “no ULEZ”



¹ Central London Area is defined as the area within the London Congestion Area. Inner London is defined as the area of London outside the central London area and within the North and South Circular roads

A recent Champion Hill Focus Group asked whether it is possible for the Authority to model the Nitrogen Dioxide concentrations during the rush hour periods from the available data. This is not possible as the datasets required to model the area are not sufficiently complete.

The figure below shows a typical variation in Nitrogen Dioxide levels during the day, with the condensed morning rush hour exhibiting higher concentrations than the extended evening rush hour period. There is no values shown as these vary depending on local conditions.

