Lewisham Nitrogen Dioxide Diffusion Tube Survey 2021

London Borough of Lewisham

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Quality information

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1. Introduction

AECOM was commissioned by the London Borough of Lewisham to install and maintain a network of NO_2 diffusion tubes to assess the spatial variation of nitrogen dioxide (NO_2) concentrations within the borough. Following the addition of 51 new locations in September 2020, monitoring was carried out at 101 locations in 2021. The diffusion tubes were exposed for periods of between four and five weeks in accordance with the UK NO_2 Survey Timetable. The results of the survey provide the Council with valuable monitoring data for use in their Local Air Quality Review and Assessment (LAQM) process.

This report outlines the results of the original survey for January 2021 to December 2021, inclusive. The spatial variation in NO_2 concentration throughout the borough is discussed and the annual mean concentrations for each location are compared against the annual mean objective for NO_2 to indicate locations that may be likely to exceed the objective. Monthly concentrations are examined for evidence of seasonal trends.

2. Legislative Background

Limit values and air quality objectives for nitrogen dioxide and oxides of nitrogen (NO_X) were set out in the First Daughter Directive (1999/30/EC) and subsequent revisions. An annual mean NO_2 objective was set at 40 µg/m^3 to be achieved by 1st January 2010. A 200 µg/m^3 hourly mean standard not to be exceeded more than 18 hours per year was also outlined, to be achieved by the same compliance date. These objectives were reiterated in the 2008 Directive on ambient air quality and cleaner air for Europe (2008/50/EC).

The UK has published its own Air Quality Strategy[1], which detailed the UK's position on nitrogen dioxide. The UK air quality objectives differ from the European objectives only in their compliance dates; the UK objectives were to be achieved by the end of 2005. European and UK air quality objectives have also been set for oxides of nitrogen for the protection of vegetation and ecosystems. A summary of the principal air quality objectives for NO_2 and NO_X is given in Table 1 and Table 2.

Table 1: UK Air Quality Objectives for NO_2 and NO_x

Pollutant	UK Air Quality Objectives		
	Standard/Concentration	Measured as	Date to be achieved by and maintained thereafter
Nitrogen Dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1 Hour Mean	31st December 2005
	40 µg/m^3	Annual Mean	
Nitrogen Oxides (for the protection of vegetation)	30 µg/m^3	Annual Mean	31st December 2000

Table 2: EU Air Quality Objectives for NO_2 and NO_x

Pollutant	EU Air Quality Objectives		
	Standard/Concentration	Measured as	Date to be achieved by and maintained thereafter
Nitrogen Dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1 Hour Mean	1st January 2010
	40 µg/m^3	Annual Mean	
Nitrogen Oxides (assuming as nitrogen dioxide)	30 µg/m^3	Annual Mean	19th July 2001

[1] Defra, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007.

3. Monitoring Methodology

3.1 Description of Network

The Lewisham Diffusion Tube Network has been maintained by AECOM since January 2011. In 2011, the network consisted of 49 diffusion tubes across 47 sites, including a triplicate co-located site at the automatic monitoring station in New Cross Road, and the remainder single tube sites. In 2012, the network was reduced to 34 diffusion tubes at 32 sites, comprising single tubes at 31 sites and triplicates co-located at the New Cross Road continuous monitoring station. During December 2016, 2 new sites were commissioned at Kender Primary School and Deptford Park Primary School. In October 2017 a new site was also added at St James Hatcham Primary School. In 2018, 16 new sites were added, and one existing site removed, bringing the total number of sites up to 50. In September 2020, 51 New Survey locations were added across the borough, taking the total number of sites up to 101. No additional sites were added to the network in 2021.

The locations of the diffusion tubes are shown in Appendix A. Detailed listing of all monitoring sites from 2011 to present, including those added or removed, are shown in Appendix D.

3.2 Procedures and Site Changes

Diffusion tubes throughout the borough have been deployed and collected at four to five week intervals in accordance with the UK NO_2 Diffusion Tube calendar[2].

All diffusion tubes used in the network were stored in a refrigerator prior to deployment and after collection to reduce the possibility of degradation of the chemicals involved. Tubes subject to contamination (e.g. spider webs, foreign bodies, etc.) or vandalised have been excluded from the final dataset.

3.3 Tube Preparation, Analysis and Laboratory QA/QC

The diffusion tubes were supplied and analysed by Gradko International Ltd, using a 50% triethanolamine (TEA) in acetone method. Gradko participates in the AIR Proficiency Testing (PT) scheme for diffusion tubes, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL), which provides a Quality Assurance / Quality Control (QA/QC) framework for local authorities carrying out diffusion tube monitoring as a part of their local air quality management process.

The percentage of results submitted by Gradko International Ltd that were subsequently determined to be satisfactory was 25% in AIR-PT Round AR042 (January-February 2021), 100% in AIR-PT Round AR043 (May-June 2021), 100% in AIR-PT Round AR045 (July-August 2021) and 100% in AIR-PT Round AR046 (September-October 2021)[3].

3.4 Factors Affecting Diffusion Tube Performance

NO_2 diffusion tubes are an indicative monitoring technique, as they do not offer the same accuracy as the reference method for NO_2, the automatic chemiluminescent analyser. NO_2 diffusion tubes are affected by several factors, which may cause them to exhibit bias relative to the reference technique.

Over-estimation may be attributed to one of the following three interfering factors:

- The shortening of the diffusive path length caused by the wind;
- The blocking of UV light resulting in reduced NO_2 photolysis in the tube; and
- The interference effects of peroxyacetyl nitrate (PAN).

Under-estimation can be caused by the following factors:

[2] Defra, Local Air Quality Management, Diffusion Tubes, Nitrogen Dioxide Diffusion Tube Monitoring, Calendar of Suggested Exposure Periods. Available at http://laqm.defra.gov.uk/diffusion-tubes/data-entry.html
[3] Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/07/LAQM-NO2-Performance-data_Up-to-June-2022_V2.1.pdf

- Increasing exposure period, and is thought to be due to degradation of the absorbed nitrate with time;
- Insufficient extraction of nitrite from the meshes;
- The photochemical degradation of the triethanolamine-nitrite complex by light, although this is minimised by the use of opaque end-caps; and
- The solution used. For example, 50% solution of TEA in water has been reported to lead to comparatively reduced NO_2 uptake.

There are a number of additional factors that may also affect diffusion tube performance including time of the year, the exposure setting (i.e. sheltered or open sites), the proximity to roads, the preparation method and analytical laboratory used, the exposure concentration and the ratio of NO_2 to NO_X.

3.5 Data Validation and Data QA/QC

Validation of diffusion tube readings is vital to ensure public confidence in the measurements produced. Validation is achieved through the following steps described in sub-sections below.

3.5.1 Blanks

The laboratory reserved a set of diffusion tubes for use as laboratory blanks for each dispatch of tubes to the user. These are kept in sealed containers in a refrigerator and analysed with the exposed tubes to provide a measure of concentration on unexposed tubes.

One travelling blank was taken to site during each of the monthly changeovers. These tubes accompany the user during tubes changeover but are not themselves exposed. The purpose of using field blanks is to identify possible contamination of the tubes during transportation or in storage by the user.

Laboratory and field blanks were routinely screened by AECOM to ensure quality of data. Neither the laboratory blanks nor the travel blank results were subtracted from the results of exposed tubes, in accordance to Defra and the GLA's London Local Air Quality Management Technical Guidance (LLAQM.TG(19))[4] and the Diffusion Tube Practical Guidance.

3.5.2 Rejection of Diffusion Tube Results

Diffusion tube results obtained for each month were checked to meet the following criteria for inclusion in the final dataset:

- Correct calculation of exposure hours;
- Concentrations less than 3 $\mu g/m^3$ were rejected as these concentrations are unlikely to occur in an urban area;
- Concentrations at the high end were not routinely rejected unless good evidence can be shown to prove they were spurious results;
- Exposure records were checked for possible explanation of any unusual results (e.g. foreign objects, bonfires, pollution episodes, construction works, tampering, etc; and
- For a triplicate site, diffusion tubes that exhibit poor precision (>20%) were excluded from the final dataset. For single sites, professional judgement was used to accept or reject the results based on observations made during site visits.

3.5.3 Bias Adjustment Factor

Diffusion tube monitoring is indicative and does not offer the same accuracy as the reference method for monitoring NO_2 i.e. using an automatic chemiluminescent analyser. Several factors could affect NO_2 concentrations measured with diffusion tubes, which may cause them to exhibit bias (over-read or under-read readings) relative to the reference method (see section 3.4). To correct this bias, comparison of the NO_2 concentration as measured by diffusion tubes is made with continuous monitoring data to derive a bias-adjustment factor.

[4] Defra & the GLA, London Local Air Quality Management Technical Guidance LLAQM.TG(19).

Bias adjustment factors can be obtained using the Nitrogen Dioxide Diffusion Tube Bias Adjustment spreadsheet[5], which is updated periodically and collates the bias-adjustment factors obtained in co-location studies conducted nationally. It can also be derived locally through co-location of diffusion tubes with automatic analysers and comparison of results obtained from both methods of monitoring.

Further details of the monitoring sites used, and the derivation of the factor can be found in Appendix B and Appendix C. The local bias factor was applied to all diffusion tube results in the period unless indicated otherwise.

3.5.4 Annualisation Factor

Where data capture is less than 75% of a full calendar year (less than 9 months), the mean should be "annualised" – i.e. adjusted using the methodology outlined in LLAQM.TG(19)[4] before being compared to annual mean objectives. The site requiring annualisation was L19, which is the co-located triplicate site at Lewisham – New Cross. This site had a data capture of less than 75%, although the average data capture for the triplicate site (sites L17, L18 and L19) was 75%. To carry out annualisation, the following continuous Urban Background monitors were used; London – Bexley, Lewisham – Honour Oak Park and Lewisham – Deptford.

3.6 Site Designations

The designation of site types is used to compare different locations statistically. Sites were categorised as kerbside, roadside, and urban background sites according to the definitions given in LLAQM.TG(19)[4]. These definitions are reproduced in Table 3 below.

Table 3: Site Designation Criteria

Type	Definition
Urban Centre	An urban location representative of typical population exposure in towns or city centres, for example, pedestrian precincts and shopping areas.
Urban Background	An urban location distanced from sources and therefore broadly representative of city-wide background conditions, e.g. urban residential areas. For example: > 50m from any major source of NO_2, such as multi-storey car parks; >30m from any very busy road (> 30000 vehicles per day); > 20m from any busy road (10000 – 30000 vehicles per day); > 10m from any main road (quiet roads e.g. within residential estates are acceptable); and > 5m from any area where vehicles are likely to be idling.
Suburban	A location type situated in a residential area on the outskirts of a town or city
Roadside	A site sampling typically 1-5m of the kerb of a busy road (can be up to 15 m from kerb in some cases)
Kerbside	A site sampling within 1m of the kerb of a busy road
Industrial	An area where industrial sources make an important contribution to the total pollution burden
Rural	An open countryside location, in an area of low population density distanced as far as possible from roads, populated and industrial areas
Other	Any special source-orientated or location category covering monitoring undertaken in relation to specific emission sources such as power stations, car-parks, airports or tunnels

[5] Defra, Diffusion tube bias adjustment spreadsheet March 2022, available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/

4. Results and Discussion

4.1 Data Capture

Data capture rates for the Lewisham Diffusion Tube Survey Network during 2021 were high, achieving an overall average of 96.7% for all site types. The lowest annual data capture for any site was 67% (4 months missing out of 12), at site L19 (New Cross AQMS). As data capture was above 75% for all other sites, annualisation of data was therefore only required for this tube at New Cross AQMS.

Sites recording lower than 100% data capture were as a result of tubes being stolen, clips being vandalised or data not being included in the final dataset (see the Section 3.5.2)

4.2 Bias Adjustment

4.2.1 Local Bias Adjustment Factor

The co-location site's annual mean NO_2 concentrations measured by the diffusion tubes and the continuous monitors are displayed in Table 4.

The AEA Diffusion Tube Precision Accuracy Bias Spreadsheet[6] tool was used to calculate the local bias adjustment factor for the co-location site. Continuous monitoring data was sourced from the London Air Quality Network (LAQN) website[7]. Further details can be found in Appendix C.

The complete diffusion tube results without the application of a bias adjustment factor can be found in Appendix B.

Table 4: Comparison of Diffusion Tube Measurement and Continuous Monitors at Co-located Site

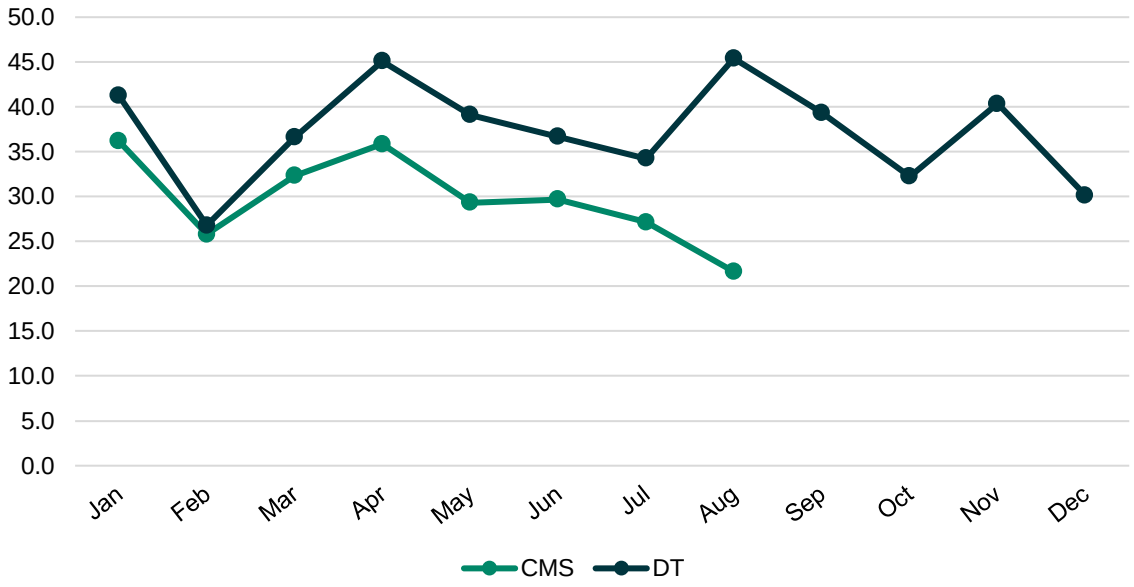
Site Name	2021 Annual Mean NO_2 Concentration (µg/m^3)	
	Unadjusted Diffusion Tube	Continuous Monitor
Lewisham – New Cross	37.1	32.6

The data capture at New Cross was poor in 2021, with only 58.2% valid data capture for the whole year. Due to low data capture the local bias adjustment factor was not calculated.

Monthly readings from the triplicate diffusion tubes were compared with the concentration at Lewisham New Cross (Figure 1). It can be seen that for 8 months of the year, the monthly average diffusion tube concentration was greater than the monthly average concentration recorded by the New Cross AQMS, with no data recorded for September, October, November and December from the AQMS. In general, at locations close to sources of NO_X such as roadside and kerbside sites, within-tube chemical reactions of NO and O_3 have been found to result in over-reading in relation to reference method[8]. Note that data capture for the triplicate site was 75%, and data capture for the AQMS was 58.2%.

[6] AEA Diffusion Tube Precision Accuracy Bias Spreadsheet. Downloaded from http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html
[7] London Air Quality Network Website. Available at http://www.londonair.org.uk.
[8] Cape, J.N., Review of the Use of Passive Diffusion Tubes for Measuring Concentrations of Nitrogen Dioxide in Air, 2005. Available at http://uk-air.defra.gov.uk/reports/cat05/0810141025_NO2_review.pdf

Figure 1: Comparison of Diffusion Tube Measurement and Continuous Monitors at Co-located Site



4.2.2 National Bias Adjustment Factor

The national bias adjustment factor for 2021 is 0.83 for the laboratory and preparation method, based on 14 studies (spreadsheet version 03/22). Based primarily on the fact that the national factor was greater than the local factor, and the fact the co-location diffusion tubes had data capture <75%, it was recommended that the national bias adjustment factor was used in 2021, to ensure a more conservative estimate was obtained of annual mean NO_2 concentrations from the diffusion tubes.

4.3 Annual Mean NO_2 Concentrations

The mean NO_2 concentration over the whole network during 2021 was 21.9 µg/m^3 applying the national bias adjustment factor of 0.83. This is below the annual mean NO_2 objective of 40 µg/m^3. The maximum annual mean NO_2 concentration, after application of the national bias adjustment factor, was measured at the L51 site at 290 Brownhill Road, South Circular (33.3 µg/m^3).

Table 5: 2021 Average Annual Mean NO_2 Concentration (µg/m^3) across Site Types

Site Type	Raw	Bias Adjusted, using National Bias Adjustment Factor (Factor = 0.83)
All Sites	26.4	21.9
Roadside	27.2	22.6
Urban Background	23.2	19.2

4.3.1 Comparison with Objectives

The air quality objectives of relevance to NO_2 in the UK are detailed in Table 1. The results in Table 5, obtained after applying the national bias adjustment factor, indicate that the annual mean NO_2 objective of 40 µg/m^3 was not exceeded by the mean diffusion tube network concentration during 2021.

Where diffusion tube locations are not representative of relevant exposure (for example, where a tube is kerbside, but residential facades are several metres back from the kerb), annual mean NO_2 concentrations can be distance-corrected to take into account the fall-off in concentration away from

the kerb. No sites required distance correction, as concentrations were below the objective, as illustrated in Appendix B.

A report issued by Air Quality Consultants[9] analysed the relationship between annual mean and hourly mean NO_2 concentrations, concluding that locations where the annual mean concentration is greater than 60 µg/m^3 may be susceptible to breaches of the hourly mean objective (hourly mean NO_2 concentration of 200 µg/m^3 or more not to be exceeded more than 18 occasions per year). After bias adjustment, there are no sites with measured NO_2 concentrations greater than 60 µg/m^3 in 2021.

4.3.2 Seasonal Variation

The seasonal variation in NO_2 concentrations during 2021 are shown in Table 6. Due to seasonal variations in the bias adjustment that can occur at diffusion tube sites, the results presented in Table 6 are the raw concentrations with no bias adjustment applied.

The highest mean concentrations occurred in January, February and November at roadside and urban background sites. Mean NO_2 concentrations were lowest in the summer months for all site types.

Table 6: Monthly Mean NO_2 Concentrations in Lewisham, 2021 (µg/m^3; Unadjusted)

Site Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
All Sites	33.8	29.7	28.4	27.0	24.7	22.0	21.3	17.9	28.7	26.4	31.1	25.3
Roadside	34.4	30.7	29.4	27.8	25.7	23.1	22.0	18.4	29.7	27.1	31.5	25.6
Urban Background	31.1	26.5	24.7	23.3	20.8	17.6	17.9	14.8	25.0	23.5	29.2	23.6

Table 7: Unadjusted Winter and Summer Period Mean Concentrations in Lewisham, 2021

Site Type	Winter Mean Concentration (October – March) (µg/m^3)	Summer Mean Concentration (April – September) (µg/m^3)	Ratio Winter : Summer
All Sites	29.1	23.6	1.23
Roadside	29.8	24.4	1.22
Urban Background	26.5	19.9	1.33

Table 7 shows that the ratio of winter to summer mean NO_2 concentration was 1.22 for roadside sites, indicating mean concentrations were higher in the winter than the summer period. The urban background sites display a greater winter: summer ratio compared to roadside sites with a value of 1.33 in 2021. For all sites, collectively, the average ratio of winter to summer mean NO_2 concentration was 1.23.

4.4 Historical Trends

Table 8 summarises the results of the Lewisham Tube Network by site type from 2016 to 2021; results for each site in 2021 are detailed in Appendix B. These results have been bias-adjusted using the factor derived in Appendix C.

Measurements from the past year showed a decrease in annual mean NO_2 concentration across the network between 2020 and 2021.

[9] Air Quality Consultants (2007). Deriving NO_2 from NO_X for Air Quality Assessments of Roads.

Table 8: Annual Mean NO_2 Concentration (bias-adjusted) by Site Type, 2016 – 2021

Site Type	Bias Adjusted Annual Mean NO_2 Concentration (µg/m^3)					
	2016		2017		2018	
	Bias Adjusted using New Cross Co-located tubes (Factor = 0.92)	Bias Adjusted using National Bias Adjustment factor (Factor = 1.03)	Bias Adjusted using New Cross Co-located tubes (Factor = 1.00)	Bias Adjusted using National Bias Adjustment factor (Factor = 0.97)	Bias Adjusted using New Cross Co-located tubes (Factor = 0.91)	Bias Adjusted using National Bias Adjustment factor (Factor = 0.92)
All Sites	34.5	38.7	35.5	34.4	31.5	31.9
Roadside	39.4	**44.1**	**40.1**	38.9	35.7	36.1
Urban Background	27.4	30.7	29.9	29.0	26.2	26.5

Site Type	Bias Adjusted Annual Mean NO_2 Concentration (µg/m^3)					
	2019		2020		2021	
	Bias Adjusted using New Cross Co-located tubes (Factor = 0.91)	Bias Adjusted using National Bias Adjustment factor (Factor = 0.87)	Bias Adjusted using New Cross Co-located tubes (Factor = 0.78)	Bias Adjusted using National Bias Adjustment factor (Factor = 0.82)	Bias Adjusted using New Cross Co-located tubes (Factor = N/A)	Bias Adjusted using National Bias Adjustment factor (Factor = 0.83)
All Sites	29.6	28.3	22.2	23.3	N/A	21.9
Roadside	33.2	31.8	24.8	26.0	N/A	22.6
Urban Background	25.0	23.9	18.8	19.8	N/A	19.2

*Note: Concentrations marked in **bold** indicate exceedance of the annual mean NO_2 objective.*

5. Conclusions

The main conclusions of the 2021 Lewisham Diffusion Tube Network study are:

- The raw mean NO_2 concentration for the whole network was 26.4 µg/m^3. Adjusted using the national adjustment factor, this was 21.9 µg/m^3;
- NO_2 concentrations were greatest at roadside monitoring locations, and lowest at urban background sites, as would be expected;
- The maximum bias adjusted annual mean NO_2 concentration was measured at the L51 site at 290 Brownhill Road, South Circular (33.3 µg/m^3);
- The mean roadside NO_2 concentration across the network was 22.6 µg/m^3 based on the national bias adjustment factor and the mean urban background concentration was 19.2 µg/m^3;
- Results based on applying the national bias adjustment factor showed no diffusion tube locations exceeding the annual mean NO_2 objective; and
- None of the locations recorded an annual mean above 60 µg/m^3, indicating that it is unlikely that the short-term objective was exceeded in 2021.

Appendix A Diffusion Tube Locations

Figure 2: LB Lewisham Diffusion Tube Network (North) in 2021

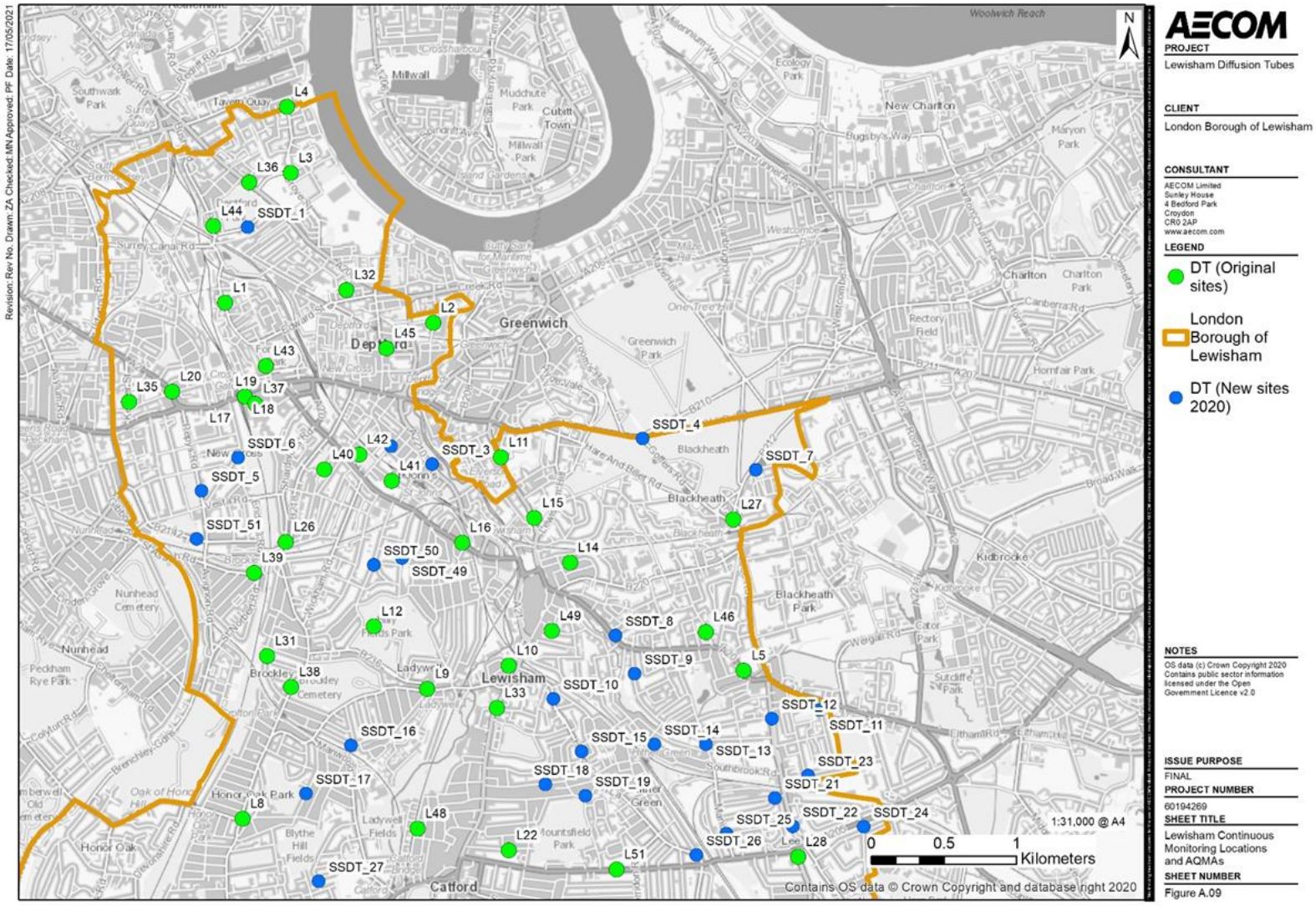
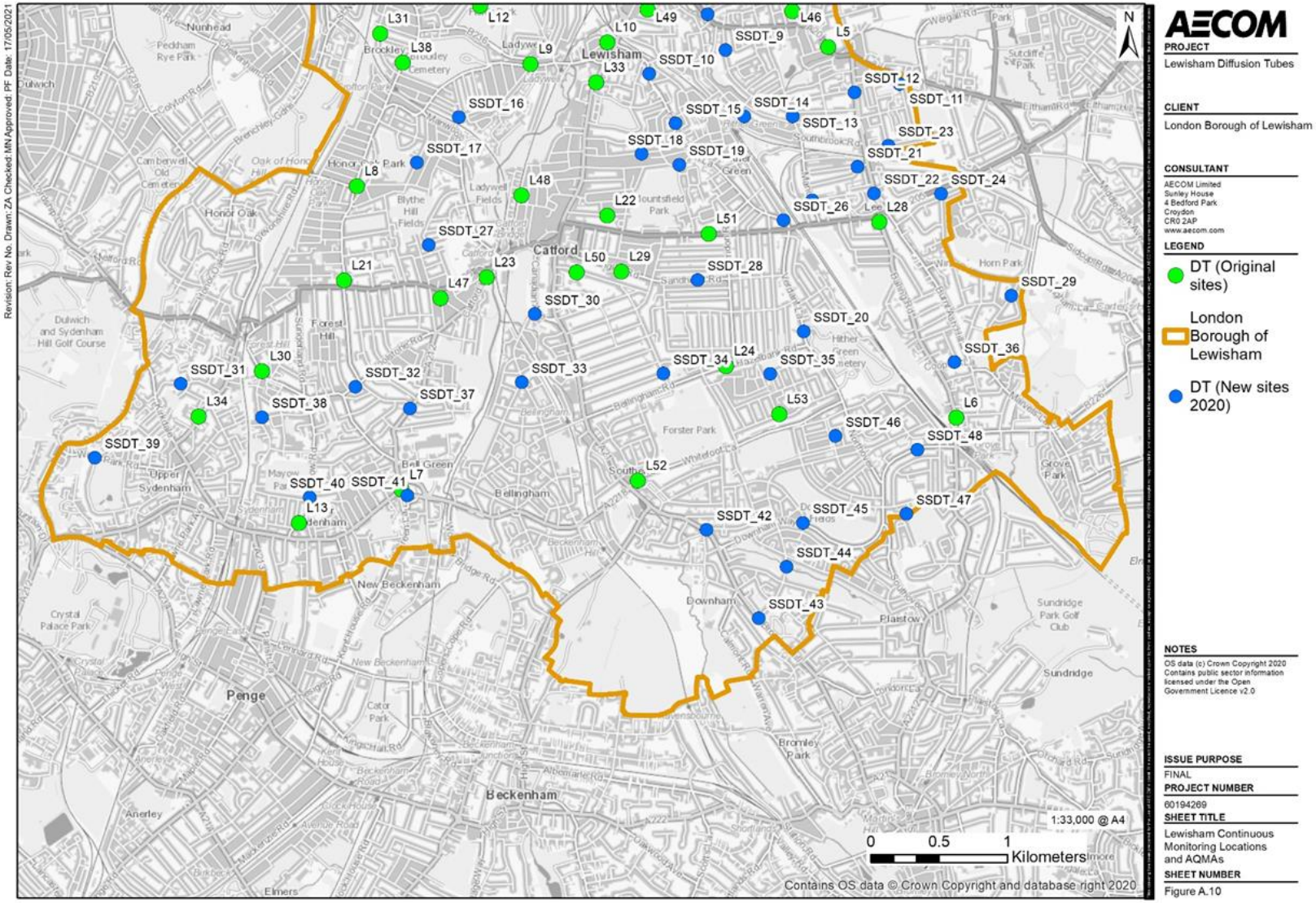


Figure 3: LB Lewisham Diffusion Tube Network (South) in 2021



Appendix B Diffusion Tube Results

Table 9: Lewisham Diffusion Tube Network 2021 – Raw and Bias Adjusted Results

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
L1	L1	Chubworthy Street	536109	177580	Roadside	100	26.4	-	21.9	-	
L2	L2	Bronze Street	537540	177439	Urban Background	100	22.9	-	19.0	-	
L3	L3	Grove Street	536561	178471	Urban Background	92	25.0	-	20.8	-	
L4	L4	Plough Way	536534	178926	Urban Background	100	25.0	-	20.8	-	
L5	L5	Lee High Road	539678	175050	Roadside	100	27.4	-	22.7	-	
L6	L6	Le May Avenue	540615	172337	Urban Background	100	26.8	-	22.2	-	
L7	L7	Bell Green	536556	171810	Roadside	100	37.5	-	31.1	-	
L8	L8	Stondon Park	536229	174032	Roadside	100	29.9	-	24.8	-	
L9	L9	Ladywell Road	537500	174925	Roadside	100	30.2	-	25.0	-	
L10	L10	Whitburn Road	538062	175085	Roadside	100	30.4	-	25.2	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
L11	L11	Sparta St, opp Morden Mount School	538007	176517	Roadside	100	31.4	-	26.0	-	
L12	L12	Hilly Fields	537132	175353	Urban Background	100	22.4	-	18.6	-	
SCH 8	L29	Holy Cross School	538165	173406	Roadside	100	23.6	-	19.6	-	
SCH 13	L30	St George's CofE School	535535	172679	Roadside	100	22.6	-	18.7	-	
SCH 16	L31	St Mary Magdalen's School	536399	175150	Urban Background	100	21.0	-	17.4	-	
SCH 18	L32	Grinling Gibbons School	536944	177665	Urban Background	92	23.7	-	19.7	-	
SCH 20	L33	St Mary's Lewisham School	537979	174792	Roadside	100	32.5	-	27.0	-	
SCH 21	L34	Sydenham School	535071	172346	Urban Background	100	20.7	-	17.2	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SCH 22	L35	Kender Primary School	535447	176897	Roadside	100	23.7	-	19.6	-	
SCH 23	L36	Deptford Park School	536275	178405	Roadside	100	30.6	-	25.4	-	
SCH 24	L37	St James Hatcham School	536317	176883	Urban Background	100	23.7	-	19.7	-	
LWS 53	L13	Mayow Road	535804	171567	Urban Background	100	21.4	-	17.8	-	
LWS 002	L14	Boyne Road	538482	175792	Urban Background	100	24.1	-	20.0	-	
LWS 003	L15	Lewisham Road	538237	176101	Roadside	92	30.6	-	25.4	-	
LWS 004	L16	Loampit Vale	537740	175930	Roadside	100	38.0	-	31.6	-	
LWS 005	L17	New Cross AQMS	536246	176934	Roadside	75	36.3	-	28.1	-	
LWS 006	L18	New Cross AQMS	536246	176934	Roadside	83	38.7	-	30.5	-	
LWS 007	L19	New Cross AQMS	536246	176934	Roadside	67	36.3	-	28.4	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
LWS 008	L20	Hatcham Park Road	535746	176969	Roadside	83	29.3	-	24.3	-	
LWS 009	L21	Brockley Rise	536133	173341	Roadside	100	33.8	-	28.1	-	
LWS 010	L22	Ringstead Road	538060	173816	Urban Background	100	23.8	-	19.8	-	
LWS 011	L23	Catford Hill	537178	173365	Roadside	100	34.2	-	28.4	-	
LWS 015	L26	Shardeloes Road	536527	175935	Roadside	92	34.4	-	28.6	-	
LWS 016	L27	Montpelier Vale	539605	176090	Roadside	83	36.8	-	30.5	-	
LWS 017	L28	Baring Road	540051	173769	Roadside	100	37.3	-	31.0	-	
LWS 018	L24	Torridon School Hazelbank Road	538930	172713	Urban Background	92	27.7	-	23.0	-	
L38	L38	Beecroft Primary School	536564	174937	Roadside	92	26.2	-	21.7	-	
L39	L39	John Stainer Primary School	536308	175721	Roadside	100	25.6	-	21.2	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
L40	L40	Myatt Garden Primary School	536792	176432	Urban Background	100	21.3	-	17.7	-	
L41	L41	Ashmead Primary School	537256	176353	Urban Background	92	20.7	-	17.2	-	
L42	L42	Lucas Vale Primary School	537032	176534	Urban Background	100	24.3	-	20.2	-	
L43	L43	Childeric Primary School	536389	177144	Urban Background	100	24.3	-	20.2	-	
L44	L44	Sir Francis Drake Primary School	536028	178107	Roadside	100	31.7	-	26.3	-	
L45	L45	Tidemill Academy	537219	177264	Roadside	100	23.9	-	19.8	-	
L46	L46	St Margaret Lee Primary School	539416	175315	Urban Background	100	21.5	-	17.9	-	
L47	L47	Rathfern Primary School	536839	173211	Roadside	100	21.3	-	17.7	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
L48	L48	Holbeach Primary School	537433	173965	Urban Background	100	24.5	-	20.3	-	
L49	L49	St Saviours RC Primary School	538358	175324	Urban Background	100	24.8	-	20.6	-	
L50	L50	Rushey Green Primary School	537836	173400	Urban Background	100	20.0	-	16.6	-	
L51	L51	290 Brownhill Road S Circular	538803	173683	Roadside	100	40.1	-	33.3	-	
L52	L52	St John CofE School	538285	171877	Roadside	100	29.2	-	24.2	-	
L53	L53	Greenvale School	539319	172362	Urban Background	100	20.2	-	16.8	-	
SSDT_1	SSDT_1	46 Grinstead Road	536263	178099	Roadside	100	28.0	-	23.3	-	
SSDT_2	SSDT_2	58 Friendly Street	537250	176593	Roadside	75	24.1	-	20.0	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_3	SSDT_3	1 Lind Street	537534	176469	Roadside	100	27.3	-	22.6	-	
SSDT_4	SSDT_4	Goffers Road	538982	176645	Roadside	100	30.7	-	25.5	-	
SSDT_5	SSDT_5	121 Pepys Road	535947	176287	Roadside	100	25.4	-	21.1	-	
SSDT_6	SSDT_6	101 Jerningham Road	536197	176514	Roadside	75	25.7	-	21.3	-	
SSDT_7	SSDT_7	41 South Row	539761	176431	Roadside	100	29.5	-	24.5	-	
SSDT_8	SSDT_8	1 Belmont Park	538795	175291	Roadside	100	29.5	-	24.5	-	
SSDT_9	SSDT_9	19 Manor Road	538926	175030	Roadside	100	22.7	-	18.8	-	
SSDT_10	SSDT_10	94 Hither Green Lane	538367	174857	Roadside	92	32.8	-	27.3	-	
SSDT_11	SSDT_11	1 Woodville Close	540200	174781	Roadside	92	21.0	-	17.4	-	
SSDT_12	SSDT_12	4 Burnt Ash Road	539871	174720	Roadside	92	30.5	-	25.3	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_13	SSDT_13	101 Manor Lane	539418	174543	Roadside	92	23.7	-	19.7	-	
SSDT_14	SSDT_14	160 Leahurst Road	539063	174543	Roadside	100	24.9	-	20.6	-	
SSDT_15	SSDT_15	185 Hither Green Lane	538562	174494	Roadside	92	27.4	-	22.7	-	
SSDT_16	SSDT_16	140 Chudleigh Road	536975	174537	Roadside	100	25.0	-	20.7	-	
SSDT_17	SSDT_17	112 Crofton Park Road	536666	174206	Roadside	100	21.7	-	18.0	-	
SSDT_18	SSDT_18	George Lane, Holy Trinity Church	538313	174269	Roadside	100	24.1	-	20.0	-	
SSDT_19	SSDT_19	193 George Lane	538589	174189	Roadside	100	22.3	-	18.5	-	
SSDT_20	SSDT_20	208 Verdant Lane	539498	172969	Roadside	100	27.1	-	22.5	-	
SSDT_21	SSDT_21	Holme Lacey Road	539892	174174	Roadside	100	22.4	-	18.6	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_22	SSDT_22	40B Burnt Ash Road	540014	173979	Roadside	100	30.9	-	25.6	-	
SSDT_23	SSDT_23	75 Leyland Road	540119	174329	Roadside	100	22.2	-	18.5	-	
SSDT_24	SSDT_24	131 Woodyates Road	540504	173977	Roadside	100	27.7	-	23.0	-	
SSDT_25	SSDT_25	268 Manor Lane	539559	173929	Roadside	100	27.4	-	22.8	-	
SSDT_26	SSDT_26	389 Hither Green Lane	539352	173783	Roadside	100	29.3	-	24.3	-	
SSDT_27	SSDT_27	51 Polstead Road	536753	173603	Roadside	92	22.3	-	18.5	-	
SSDT_28	SSDT_28	119 Sandhurst Road	538723	173345	Roadside	100	30.5	-	25.3	-	
SSDT_29	SSDT_29	18 Jevington Way	541019	173231	Roadside	100	21.9	-	18.2	-	
SSDT_30	SSDT_30	7 Fordmill Road	537530	173095	Roadside	92	24.3	-	20.2	-	
SSDT_31	SSDT_31	38 Thorpewood Avenue	534939	172586	Roadside	100	20.5	-	17.0	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_32	SSDT_32	155 Woolstone Road	536217	172563	Roadside	92	23.4	-	19.4	-	
SSDT_33	SSDT_33	3 Brookehowse Road	537436	172596	Roadside	100	23.9	-	19.8	-	
SSDT_34	SSDT_34	136 Thornsbeach Road	538471	172660	Roadside	100	22.0	-	18.3	-	
SSDT_35	SSDT_35	49 Castillion Road	539254	172658	Roadside	92	21.8	-	18.1	-	
SSDT_36	SSDT_36	12 Pragnell Road	540601	172744	Roadside	100	18.5	-	15.3	-	
SSDT_37	SSDT_37	147 Perry Hill	536618	172405	Roadside	100	34.6	-	28.7	-	
SSDT_38	SSDT_38	Dacres Road	535533	172340	Roadside	100	19.0	-	15.8	-	
SSDT_39	SSDT_39	Wells Park Road	534309	172044	Roadside	92	22.0	-	18.3	-	
SSDT_40	SSDT_40	22 Mayow Road	535883	171754	Roadside	92	27.1	-	22.5	-	
SSDT_41	SSDT_41	5 Stanton Way	536598	171766	Roadside	100	37.2	-	30.9	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_42	SSDT_42	Oakridge Road	538788	171517	Roadside	83	29.3	-	24.3	-	
SSDT_43	SSDT_43	198 Glenbow Road	539170	170869	Roadside	100	20.3	-	16.9	-	
SSDT_44	SSDT_44	Glenbow Road, Playing Fields	539374	171246	Roadside	92	17.5	-	14.5	-	
SSDT_45	SSDT_45	165 Downham Way	539492	171567	Roadside	92	21.1	-	17.5	-	
SSDT_46	SSDT_46	Daneswood Avenue, 90 Passfields	539732	172202	Roadside	100	24.7	-	20.5	-	
SSDT_47	SSDT_47	398 Downham Way	540249	171633	Roadside	100	29.4	-	24.4	-	
SSDT_48	SSDT_48	549 Downham Way	540331	172103	Roadside	100	24.9	-	20.7	-	
SSDT_49	SSDT_49	72 Tyrwhitt Road	540734	175912	Roadside	100	21.0	-	17.4	-	
SSDT_50	SSDT_50	53 Tressillian Road	540965	175804	Roadside	100	21.6	-	17.9	-	

Original Site Name	New Site Name	Address	X	Y	Site Type	Data Capture	Raw	Locally Adjusted	Nationally Adjusted	Distance Corrected	Comment
SSDT_51	SSDT_51	110 Drakefell Road	542142	176126	Roadside	100	34.0	-	28.2	-	

Notes: due to poor data capture at New Cross (LW2), a local bias adjustment factor has not been calculated. Distance correction has not been applied as all monitored concentrations are below 36 µg/m^3.

Appendix C Diffusion Tube Bias Adjustment

Table 10: Local & National Bias Adjustment Factors for Lewisham NO_2 Diffusion Tube Surveys, 2009 to 2021

Site Type	Mean Local Factor	National Factor[a]
2009	0.84	0.97
2010	0.69	1.03
2011	0.59	0.95
2012	0.79	1.01
2013	0.93	1.00
2014	0.82	0.97
2015	1.02	0.95
2016	0.92	1.03
2017	1.00	0.97
2018	0.91	0.92
2019	0.91	0.87
2020	0.78	0.82
2021	-	0.83

Notes: [a] National factor obtained from Bias Adjustment Factor spreadsheet[3] version 03/21 based on Gradko as the analysing laboratory using the 50% TEA in acetone method

Figure 4: National Bias Adjustment Factor Calculator

National Diffusion Tube Bias Adjustment Factor Spreadsheet — **Spreadsheet Version Number: 03/22**

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2022
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List
If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List
If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List
If a year is not shown, we have no data[2]

Step 4:
Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.
Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2021	UC	Falkirk Council	12	35	34	3.5%	G	**0.97**
Gradko	50% TEA in acetone	2021	UB	Falkirk Council	12	16	13	22.5%	G	**0.82**
Gradko	50% TEA in acetone	2021	SU	Redcar & Cleveland Borough Council	11	14	11	29.2%	G	**0.77**
Gradko	50% TEA in acetone	2021	R	Royal Borough of Windsor and Maidenhead	12	29	26	9.3%	G	**0.91**
Gradko	50% TEA in acetone	2021	R	Royal Borough of Windsor and Maidenhead	11	26	25	7.2%	G	**0.93**
Gradko	50% TEA in Acetone	2021	R	Sandwell MBC	12	37	28	31.4%	G	**0.76**
Gradko	50% TEA in Acetone	2021	UB	Sandwell Metropolitan Borough Council	11	23	19	22.2%	G	**0.82**
Gradko	50% TEA in acetone	2021	UB	Middlesbrough	12	18	14	32.6%	G	**0.75**
Gradko	50% TEA in acetone	2021	R	London Borough of Richmond upon Thames	12	24	21	15.1%	G	**0.87**
Gradko	50% TEA in acetone	2021	B	London Borough of Richmond upon Thames	9	16	13	21.5%	G	**0.82**
Gradko	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	10	52	41	24.2%	G	**0.81**
Gradko	50% TEA in acetone	2021	R	Reading Borough Council	12	30	26	15.9%	G	**0.86**
Gradko	50% TEA in acetone	2021	R	Merton Council	9	50	32	55.4%	G	**0.64**
Gradko	50% TEA in acetone	2021	UB	Wandsworth Council	11	29	26	9.8%	G	**0.91**
Gradko	50% TEA in acetone	2021		**Overall Factor[3] (14 studies)**				**Use**		**0.83**

Appendix D Diffusion Tube Locations – 2011 to Present

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SSDT_1	SSDT_1	46 Grinstead Road	536263	178099	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_2	SSDT_2	58 Friendly Street	537250	176593	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_3	SSDT_3	1 Lind Street	537534	176469	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_4	SSDT_4	Goffers Road	538982	176645	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_5	SSDT_5	121 Pepys Road	535947	176287	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_6	SSDT_6	101 Jerningham Road	536197	176514	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_7	SSDT_7	41 South Row	539761	176431	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_8	SSDT_8	1 Belmont Park	538795	175291	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_9	SSDT_9	19 Manor Road	538926	175030	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_10	SSDT_10	94 Hither Green Lane	538367	174857	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SSDT_11	SSDT_11	1 Woodville Close	540200	174781	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_12	SSDT_12	4 Burnt Ash Road	539871	174720	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_13	SSDT_13	101 Manor Lane	539418	174543	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_14	SSDT_14	160 Leahurst Road	539063	174543	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_15	SSDT_15	185 Hither Green Lane	538562	174494	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_16	SSDT_16	140 Chudleigh Road	536975	174537	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_17	SSDT_17	112 Crofton Park Road	536666	174206	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_18	SSDT_18	George Lane, Holy Trinity Church	538313	174269	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_19	SSDT_19	193 George Lane	538589	174189	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_20	SSDT_20	208 Verdant Lane	539498	172969	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_21	SSDT_21	Holme Lacey Road	539892	174174	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SSDT_22	SSDT_22	40B Burnt Ash Road	540014	173979	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_23	SSDT_23	75 Leyland Road	540119	174329	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_24	SSDT_24	131 Woodyates Road	540504	173977	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_25	SSDT_25	268 Manor Lane	539559	173929	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_26	SSDT_26	389 Hither Green Lane	539352	173783	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_27	SSDT_27	51 Polstead Road	536753	173603	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_28	SSDT_28	119 Sandhurst Road	538723	173345	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_29	SSDT_29	18 Jevington Way	541019	173231	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_30	SSDT_30	7 Fordmill Road	537530	173095	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_31	SSDT_31	38 Thorpewood Avenue	534939	172586	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_32	SSDT_32	155 Woolstone Road	536217	172563	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SSDT_33	SSDT_33	3 Brookehowse Road	537436	172596	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_34	SSDT_34	136 Thornsbeach Road	538471	172660	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_35	SSDT_35	49 Castillion Road	539254	172658	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_36	SSDT_36	12 Pragnell Road	540601	172744	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_37	SSDT_37	147 Perry Hill	536618	172405	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_38	SSDT_38	Dacres Road	535533	172340	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_39	SSDT_39	Wells Park Road	534309	172044	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_40	SSDT_40	22 Mayow Road	535883	171754	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_41	SSDT_41	5 Stanton Way	536598	171766	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_42	SSDT_42	Oakridge Road	538788	171517	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_43	SSDT_43	198 Glenbow Road	539170	170869	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SSDT_44	SSDT_44	Glenbow Road, Playing Fields	539374	171246	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_45	SSDT_45	165 Downham Way	539492	171567	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_46	SSDT_46	Daneswood Avenue, 90 Passfields	539732	172202	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_47	SSDT_47	398 Downham Way	540249	171633	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_48	SSDT_48	549 Downham Way	540331	172103	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_49	SSDT_49	72 Tyrwhitt Road	540734	175912	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_50	SSDT_50	53 Tressillian Road	540965	175804	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
SSDT_51	SSDT_51	110 Drakefell Road	542142	176126	Roadside	2020	-	Monitoring as part of modal filters work being undertaken by LBL's transport department
L1	L1	Chubworthy Street	536109	177580	Roadside	2011	-	Representative of Chubworthy Street
L10	L10	Whitburn Road	538062	175085	Roadside	2011	-	Representative of Lewisham High Street
L11	L11	Sparta St, opp Morden Mount School	538007	176517	Roadside	2011	-	Located near school

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
L12	L12	Hilly Fields	537132	175353	Urban Background	2011	-	Representative of Hilly Fields
L2	L2	Bronze Street	537540	177439	Urban Background	2011	-	Representative of Sue Godfrey Local Nature Reserve
L3	L3	Grove Street	536561	178471	Urban Background	2011	-	Representative of Deptford Park Primary School
L38	L38	Beecroft Primary School	536564	174937	Roadside	2018	-	Located near school
L39	L39	John Stainer Primary School	536308	175721	Roadside	2018	-	Located near school
L4	L4	Plough Way	536534	178926	Urban Background	2011	-	Representative of South Docks
L40	L40	Myatt Garden Primary School	536792	176432	Urban Background	2018	-	Located near school
L41	L41	Ashmead Primary School	537256	176353	Urban Background	2018	-	Located near school
L42	L42	Lucas Vale Primary School	537032	176534	Urban Background	2018	-	Located near school
L43	L43	Childeric Primary School	536389	177144	Urban Background	2018	-	Located near school
L44	L44	Sir Francis Drake Primary School	536028	178107	Roadside	2018	-	Located near school

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
L45	L45	Tidemill Academy	537219	177264	Roadside	2018	-	Located near school
L46	L46	St Margaret Lee Primary School	539416	175315	Urban Background	2018	-	Located near school
L47	L47	Rathfern Primary School	536839	173211	Roadside	2018	-	Located near school
L48	L48	Holbeach Primary School	537433	173965	Urban Background	2018	-	Located near school
L49	L49	St Saviours RC Primary School	538358	175324	Urban Background	2018	-	Located near school
L5	L5	Lee High Road	539678	175050	Roadside	2011	-	Considered worst case location in local area due to A20
L50	L50	Rushey Green Primary School	537836	173400	Urban Background	2018	-	Located near school
L51	L51	290 Brownhill Road S Circular	538803	173683	Roadside	2018	-	Considered worst case location in local area due to A205
L52	L52	St John CofE School	538285	171877	Roadside	2018	-	Located near school
L53	L53	Greenvale School	539319	172362	Urban Background	2018	-	Located near school
L6	L6	Le May Avenue	540615	172337	Urban Background	2011	-	Representative of Baring Road

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
L7	L7	Bell Green	536556	171810	Roadside	2011	-	Considered worst case location in local area due to A212 and A2218
L8	L8	Stondon Park	536229	174032	Roadside	2011	-	Representative of Stondon Park
L9	L9	Ladywell Road	537500	174925	Roadside	2011	-	Representative of Ladywell Road
LWS 002	L14	Boyne Road	538482	175792	Urban Background	2011	-	Representative of Boyne Road
LWS 003	L15	Lewisham Road	538237	176101	Roadside	2011	-	Representative of Lewisham Road
LWS 004	L16	Loampit Vale	537740	175930	Roadside	2011	-	Representative of Loampit Vale
LWS 005	L17	New Cross AQMS	536246	176934	Roadside	2011	-	Representative of New Cross AQMS
LWS 006	L18	New Cross AQMS	536246	176934	Roadside	2011	-	Representative of New Cross AQMS
LWS 007	L19	New Cross AQMS	536246	176934	Roadside	2011	-	Representative of New Cross AQMS
LWS 008	L20	Hatcham Park Road	535746	176969	Roadside	2011	-	Representative of Hatcham Park Road
LWS 009	L21	Brockley Rise	536133	173341	Roadside	2011	-	Representative of Brockley Rise

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
LWS 010	L22	Ringstead Road	538060	173816	Urban Background	2011	-	Representative of Ringstead Road
LWS 011	L23	Catford Hill	537178	173365	Roadside	2011	-	Representative of Catford Hill
LWS 015	L26	Shardeloes Road	536527	175935	Roadside	2011	-	Representative of Shardeloes Road
LWS 016	L27	Montpelier Vale	539605	176090	Roadside	2011	-	Representative of Montpelier Vale
LWS 017	L28	Baring Road	540051	173769	Roadside	2011	-	Representative of Baring Road
LWS 018	L24	Torridon School Hazelbank Road	538930	172713	Urban Background	2011	-	Located near school
LWS 53	L13	Mayow Road	535804	171567	Urban Background	2011	-	Representative of Mayow Road
SCH 13	L30	St George's CofE School	535535	172679	Roadside	2011	-	Located near school
SCH 16	L31	St Mary Magdalen's School	536399	175150	Urban Background	2011	-	Located near school
SCH 18	L32	Grinling Gibbons School	536944	177665	Urban Background	2011	-	Located near school
SCH 20	L33	St Mary's Lewisham School	537979	174792	Roadside	2011	-	Located near school

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SCH 21	L34	Sydenham School	535071	172346	Urban Background	2011	-	Located near school
SCH 22	L35	Kender Primary School	535447	176897	Roadside	2016	-	Located near school
SCH 23	L36	Deptford Park School	536275	178405	Roadside	2016	-	Located near school
SCH 24	L37	St James Hatcham School	536317	176883	Urban Background	2017	-	Located near school
SCH 8	L29	Holy Cross School	538165	173406	Roadside	2011	-	Located near school
LWS 014	L25	Downpipe to 8 Stanstead Road	535536	173192	Urban Background	2011	2018	Representative of Stanstead Road
SCH 1	-	All Saints Primary School	539250	176402	Urban Background	2011	2012	Located near school
SCH 2	-	Lee Manor	539348	174477	Urban Background	2011	2012	Located near school
SCH 3	-	Cooper’s Lane	540545	172840	Urban Background	2011	2012	Located near school
SCH 4	-	Launcelot	540149	171652	Urban Background	2011	2012	Located near school
SCH 5	-	Bonus Pastor	539063	171632	Urban Background	2011	2012	Located near school

Original Site Name	New Site Name	Address	X	Y	Site Type	Date of Diffusion Tube Added	Date of Diffusion Tube Removed	Reasoning behind location
SCH 6	-	Forster Park	539369	172480	Urban Background	2011	2012	Located near school
SCH 7	-	Sandhurst Juniors & Infants	539089	173398	Urban Background	2011	2012	Located near school
SCH 9	-	Catford High School	538456	172426	Urban Background	2011	2012	Located near school
SCH 10	-	Athelney JMI	537453	172410	Urban Background	2011	2012	Located near school
SCH 11	-	St Michael's CE	536245	171849	Urban Background	2011	2012	Located near school
SCH 12	-	St William of York	536241	173493	Urban Background	2011	2012	Located near school
SCH 14	-	Perrymount	535862	172685	Urban Background	2011	2012	Located near school
SCH 15	-	Holbeach	537438	173941	Urban Background	2011	2012	Located near school
SCH 17	-	Turnham	536118	175119	Urban Background	2011	2012	Located near school
SCH 19	-	St Saviour's	538311	175304	Urban Background	2011	2012	Located near school

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