# Redbridge Air Quality Annual Status Report for 2023

# Date of publication: September 2024

**Picture of Valentine's Park, Gants Hill with a path and trees**

This report provides a detailed overview of air quality in Redbridge during 2023. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[1].

## Contact details:

Luke Drysdale

Luke.Drysdale@redbridge.gov.uk Lynton House (2nd Floor Front)

255-259 High Road, Ilford IG1
1NY

[1] LLAQM Policy and Technical Guidance 2019 (LLAQM.TG(19))

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## Abbreviations

| Abbreviation | Description |
|---|---|
| AQAP | Air Quality Action Plan |
| AQMA | Air Quality Management Area |
| AQN | Air Quality Neutral |
| AQO | Air Quality Objective |
| AQP | Air Quality Positive |
| BEB | Buildings Emission Benchmark |
| CAB | Cleaner Air Borough |
| EV | Electric Vehicle |
| GLA | Greater London Authority |
| LAEI | London Atmospheric Emissions Inventory |
| LAQM | Local Air Quality Management |
| LLAQM | London Local Air Quality Management |
| NRMM | Non-Road Mobile Machinery |
| $PM_{10}$ | Particulate matter less than 10 micron in diameter |
| $PM_{2.5}$ | Particulate matter less than 2.5 micron in diameter |
| TEB | Transport Emissions Benchmark |
| TfL | Transport for London |

## Table A. Summary of National Air Quality and International Standards, Objectives and Guidelines

| Pollutant | Standard / Objective / Guideline | Averaging Period | Date[(1)] |
|---|---|---|---|
| Nitrogen dioxide ($NO_2$) | 200 µg $m^{-3}$ not to be exceeded more than 18 times a year | 1-hour mean | 31 Dec 2005 |
| Nitrogen dioxide ($NO_2$) | 40 µg $m^{-3}$ | Annual mean | 31 Dec 2005 |
| Nitrogen dioxide ($NO_2$) | WHO AQG[(2)]: 10 µg $m^{-3}$ | Annual mean | |
| Particles ($PM_{10}$) | 50 µg $m^{-3}$ not to be exceeded more than 35 times a year | 24-hour mean | 31 Dec 2004 |
| Particles ($PM_{10}$) | WHO AQG[(2)]: 45 µg $m^{-3}$ not to be exceeded more than 3-4 times a year | 24-hour mean | |
| Particles ($PM_{10}$) | 40 µg $m^{-3}$ | Annual mean | 31 Dec 2004 |
| Particles ($PM_{10}$) | WHO AQG[(2)]: 15 µg $m^{-3}$ | Annual mean | |
| Particles ($PM_{2.5}$) | 20 µg $m^{-3}$ | Annual mean | 2020 |
| Particles ($PM_{2.5}$) | London Mayoral Objective[(3)]: 10 µg $m^{-3}$ | Annual mean | 2030 |
| Particles ($PM_{2.5}$) | WHO AQG[(2)]: 5 µg $m^{-3}$ | Annual mean | |
| Particles ($PM_{2.5}$) | Target of 15% reduction in concentration at urban background locations | 3-year mean | Between 2010 and 2021 |
| Particles ($PM_{2.5}$) | WHO AQG[(2)]: 15 µg $m^{-3}$ | 24-hour mean | |
| Sulphur dioxide ($SO_2$) | 266 µg $m^{-3}$ not to be exceeded more than 35 times a year | 15-minute mean | 31 Dec 2005 |
| Sulphur dioxide ($SO_2$) | 350 µg $m^{-3}$ not to be exceeded more than 24 times a year | 1-hour mean | 31 Dec 2004 |
| Sulphur dioxide ($SO_2$) | 125 µg $m^{-3}$ mot to be exceeded more than 3 times a year | 24-hour mean | 31 Dec 2004 |
| Sulphur dioxide ($SO_2$) | WHO AQG[(2)]: 40 µg $m^{-3}$ not to be exceeded more than 3-4 times a year | 24-hour mean | |

**Notes:**

(1) Date by which to be achieved by and maintained thereafter

(2) 2021 World Health Organisation Air Quality Guidelines

(3) London Mayoral Objective

# 1. Air Quality Monitoring

## 1.1 Locations

### Table B. Details of Automatic Monitoring Sites for 2023

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Monitoring Technique | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Inlet Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB7 | Redbridge 7 Ley Street | Urban background | 544454.8 | 187681.9 | $NO_2$,$PM_{10}$, $PM_{2.5}$, | Y | Chemiluminescent; BAM | 2.0 | 40.0 | 2.7 |
| RB4 | Redbridge 4 Gardner Close | Roadside | 540828.3 | 188367.9 | $NO_2$,$PM_{10}$, $PM_{2.5}$, | Y | Chemiluminescent; BAM | 11.0 | 4.2 | 2. |

**Note :** In table B above, PM2.5 monitoring at RB4 is done by a PM2.5 unheated BAM instrument located at Gardner Close, and is not approved for measuring PM2.5 in the UK and, as stipulated under paragraph 7.169 within TG22. PM2.5 monitoring at RB4 is for **indicative** purposes only.

**Table C. Details of Non-Automatic Monitoring Sites for 2023**

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| DT A | Mayfield School | Urban Background | 547022.3 | 187232.3 | NO2 | Y | 8.0 | 2.0 | N | 1.5 |
| DT B | Ilford Lane | Roadside | 543688.0 | 186139.6 | NO2 | Y | 4.0 | 4.0 | N | 3.1 |
| DT C | Ilford Lane BP | Roadside | 544132.4 | 184945.6 | NO2 | Y | 3.0 | 4.0 | N | 2.7 |
| DT D | Ley Street | Urban Background | 544454.8 | 187681.9 | NO2 | Y | 2.0 | 40.0 | Y | 2.7 |
| DT E | Gardner Close | Roadside | 540828.3 | 188367.9 | NO2 | Y | 11.0 | 4.2 | Y | 2.6 |
| DT F | Fulwell Cross | Roadside | 544560.7 | 190400.8 | NO2 | Y | 11 | 1.0 | N | 1.7 |
| DT G | Perth Road | Roadside | 543421.7 | 188322.6 | NO2 | Y | 3.0 | 4.0 | N | 2.8 |
| DT H | WestB Eastern Ave | Roadside | 543450.6 | 188371.1 | NO2 | Y | 1.0 | 4.0 | N | 2.4 |
| DT I | Central Res | Roadside | 543453.7 | 188384.4 | NO2 | Y | 12.0 | 3.0 | N | 2.5 |
| DT J | EastB Eastern Ave | Kerbside | 543442.0 | 1888400. 2 | NO2 | Y | 6.0 | 3.0 | N | 2.7 |
| DT K | Parham Drive | Near Road | 543498.3 | 188427.6 | NO2 | Y | 7.0 | 2.0 | N | 2.6 |
| DT L | NCR Nth Royston Gdns | Roadside | 541816.3 | 188161.3 | NO2 | Y | 21.0 | 6.0 | N | 2.8 |
| DT M | NCR Sth Wanstead Park | Roadside | 541887.8 | 188136.2 | NO2 | Y | 17.0 | 0.5 | N | 3.0 |
| DT N | Ethal Davis School | Near Road | 546675.6 | 188886.1 | NO2 | Y | 2.0 | 0.0 | N | 2.8 |
| DT O | Grove Road | Roadside | 540025.7 | 190494.3 | NO2 | Y | 20.0 | 1.0 | N | 2.7 |
| DT P | High Road Woodford | Roadside | 540076.0 | 190682.6 | NO2 | Y | 14.0 | 0.5 | N | 2.6 |
| DT Q | Chigwell Rd M11 | Near Road | 541992.1 | 191799.9 | NO2 | Y | 3.0 | 3.0 | N | 2.4 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| DT R | Winston Way Primary | Roadside | 544364.1 | 186597.4 | NO2 | Y | 0.0 | 6.0 | N | 2.8 |
| DT S | Winston Way Gyratory | Kerbside | 544360.4 | 186615.3 | NO2 | Y | 3.0 | 1.0 | N | 2.6 |
| DT T | Chadwell Heath Primary | Kerbside | 547158.3 | 187699.4 | NO2 | Y | 4.0 | 0.0 | N | 2.8 |
| DT U | Goodmayes Primary | Roadside | 546665.3 | 187046.3 | NO2 | Y | 2.0 | 3.0 | N | 2.6 |
| DT V | Isaac Newton Academy | Near Road | 545030.2 | 186919.8 | NO2 | Y | 4.0 | 0.5 | | 2.6 |
| DT W | Inside Winston Way Prim. | Near Road | 544332.3 | 186571.3 | NO2 | Y | 4.0 | 1 | | 3.0 |

## 1.2 Comparison of Monitoring Results with AQOs

Concentration values are those at the location of the monitoring site (bias adjusted and annualised, as required), not those following any fall-off with distance correction.

**Table D. Annual Mean NO2 Ratified and Bias-adjusted Monitoring Results**

| Site ID | Site type | Valid data capture for monitoring period %[a] | Valid data capture 2023 %[b] | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| RB7 | Automatic Background (Ley Street) | | 67 | 33 | 30.4 | 30.6 | 30 | 21 | 25 | 21.5 annualised |
| RB4 | **Roadside (Gardner Close)** | | 100 | **42.3** | 38.8 | 37.4 | 37 | 27 | **26** | 24 |
| DT A | Urban Background | | | 27.4 | 24.9 | 25.1 | 20.4 | 18.6 | 17.7 | 17.6 |
| DT B | Roadside | | | **52.8** | **45.6** | **43.0** | 36.5 | 34.9 | 31.6 | 31.8 |
| DT C | Roadside | | | **52.6** | **46.9** | **43.2** | 34.4 | 34.7 | 31.5 | 31.9 |
| DT D | Urban Background | | | 28.4 | 25.2 | 25.0 | 20.7 | 21.0 | 19.0 | 17.8 |
| DT E | Roadside | | | **42.4** | 34.5 | 35.7 | 28.0 | 26.1 | 25.8 | 24.0 |
| DT F | Roadside | | | **43.2** | 37.6 | 37.4 | 29.4 | 30.2 | 27.6 | 27.6 |
| DT G | Roadside | | | **55.0** | **51.5** | **42.2** | 35.9 | 34.4 | 34.7 | 31.0 |
| DT H | Roadside | | | **52.7** | **46.8** | **41.3** | 37.2 | 32.5 | 29.8 | 31.4 |
| DT I | Roadside | | | **52.5** | **47.2** | **47.5** | 34.7 | 34.3 | 32.7 | 31.2 |
| DT J | Kerbside | | | **50.3** | **43.4** | **41.4** | 37.1 | 33.5 | 33.9 | 30.1 |
| DT K | Roadside | | | **55.3** | **45.9** | **43.4** | 31.9 | 34.0 | 29.7 | 29.9 |
| DT L | Roadside | | | **42.6** | **42.2** | 36.7 | 27.6 | 28.7 | 22.5 | 22.3 |
| DT M | Roadside | | | **78.9** | **68.4** | **61.4** | **50.3** | **45.7** | **40.7** | 39.6 |

| Site ID | Site type | Valid data capture for monitoring period %[a] | Valid data capture 2023 %[b] | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| DT N | Roadside | | | 26.8 | 26.3 | 23.5 | 19.3 | 18.8 | 19.4 | 20.3 |
| DT O | Roadside | | | **45.7** | **49.5** | **47.4** | **44.7** | **41.3** | 28.4 | 26.8 |
| DT P | Roadside | | | 38.0 | 38.8 | 37.6 | 34.8 | 32.0 | 21.8 | 20.0 |
| DT Q | Roadside | | | **46.8** | **42.1** | **43.9** | 36.7 | 34.7 | 22.4 | 21.5 |
| DT R | Roadside | | | **50.2** | **57.3** | **54.5** | **53.4** | **47.5** | 39.2 | 39.0 |
| DT S | Kerbside | | | **52.6** | **58.3** | **55.5** | **54.2** | **45.7** | 38.0 | 38.9 |
| DT T | Kerbside | | | **42.0** | **47.8** | **43.3** | **44.8** | 39.4 | 32.0 | 32.6 |
| DT U | Roadside | | | 34.8 | 37.6 | 36.1 | 36.5 | 32.6 | 25.8 | 26.9 |
| DT V | Roadside | | | 31.4 | 34.0 | 32.8 | 31.1 | 29.2 | 21.2 | 21.0 |
| DT W | Roadside | | | 34.8 | 38.1 | 35.8 | 37.1 | 30.4 | 23.0 | 24.0 |

**Notes:**

The annual mean concentrations are presented as µg $m^{-3}$.

Exceedances of the $NO_2$ annual mean AQO of 40 µg $m^{-3}$ are shown in **bold**.

$NO_2$ annual means in excess of 60 µg $m^{-3}$, indicating a potential exceedance of the $NO_2$ hourly mean AQS objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias.

All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(a) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

**Comment data trends:**

In general, the $NO_2$ concentrations monitored at all monitored locations have decreased. Following the pandemic (2020-2021) this can most likely be attributed to the London wide ULEZ expansion, the impact of EURO vehicle emissions improvements and uptake of ultra-low emission vehicles. In 2023 no diffusion tubes breached the limit value for first time since the council has been monitoring air quality.

Similarly RB4 (roadside) and RB7 (background) sites have decreased, are below the limit value and lower than 2022 concentrations at these sites.

**Table E. $NO_2$ Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 µg $m^{-3}$**

| Site ID | Valid data capture for monitoring period %(a) | Valid data capture 2023 %(b) | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|
| RB7 Urban Background | | | 0 | 0 | **1** | 0 | 0 | 0 | 0 |
| RB4 Roadside | | | | 0 | 0 | 0 | 0 | 0 | 0 |

## Notes

Results are presented as the number of 1-hour periods where concentrations greater than 200 µg $m^{-3}$ have been recorded.

Exceedance of the $NO_2$ short term AQO of 200 µg $m^{-3}$ over the permitted 18 hours per year are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(a) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

The results reveal no recent breaches of the 1 hour mean objective.

**Table F. Annual Mean $PM_{10}$ Automatic Monitoring Results (µg $m^{-3}$)**

| Site ID | Valid data capture for monitoring period %([a]) | Valid data capture 2023 %([b]) | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|
| *RB7(Background)* | | 75 | 15.7 | 18 | 16 | 15 | 13.3 (annualised) | 15 | 13 |
| *RB4(Roadside)* | | 81 | 17.3 | 18 | 19 | 17 | 16 (annualised) | - | 16 |

**Notes**

The annual mean concentrations are presented as µg $m^{-3}$.

Exceedances of the $PM_{10}$ annual mean AQO of 40 µg $m^{-3}$ are shown in **bold**.

All means have been "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.

(a) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

**Table G. $PM_{10}$ Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of $PM_{10}$ 24-Hour Means > 50 µg $m^{-3}$**

| Site ID | Valid data capture for monitoring period %[(a)] | Valid data capture 2023 %[(b)] | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|
| *RB7(Background)* | | 75 | 2 | 1 | 2 | 1 | - data capt 59% | 0 | 0 |
| *RB4(Roadside)* | | 81 | 2 | 1 | 2 | 1 | - data capt 70% | - | 1 |

**Notes**

Exceedances of the $PM_{10}$ 24-hour mean objective (50 µg $m^{-3}$ over the permitted 35 days per year) are shown in **bold.**

Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.

(a) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

(b) data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

RB7 had no exceedences of the hourly mean objective and the trend is downwards. RB4 had one. AQ objectives met at both sites.

**Table H Annual Mean $PM_{2.5}$ Automatic Monitoring Results (µg $m^{-3}$)**

| Site ID | Valid data capture for monitoring period %[(a)] | Valid data capture 2023 %[(b)] | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|
| RB7(Background) | | 84 | 13.6 | 12 | 11 | 13 | 10 | 9 | 7 |

**Notes**

The annual mean concentrations are presented as µg $m^{-3}$.

Exceedances of the $PM_{2.5}$ annual mean AQO of 20 µg $m^{-3}$ are shown in **bold**.

All means have been "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.

(a) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

The 7 year trend of the PM2.5 annual mean at RB7 is decreasing. The 2023 annual mean for PM2.5 is 7 µg $m^{-3}$ which is lower than the pandemic annual means (2020-2021). This result is significantly below the legal limit value of 20 µg $m^{-3}$ and the 2028 target value of 12 µg $m^{-3}$

**Table I. 2023 $SO_2$ Automatic Monitoring Results: Comparison with Objectives**

SO2 is no longer monitored at the Gardner Close location

# 2. Action to Improve Air Quality

## 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

- A summary of AQMAs declared by Redbridge can be found in

Table E. The table presents a description of the 1 brough wide AQMA that is currently designated within London Borough of Redbridge. Appendix C provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- Nitrogen dioxide $NO_2$ - Annual Mean Declared 31/12/2003
- Particulate Matter $PM_{10}$ - 24-Hour Mean Declared 31/12/2003

**Table E. Declared Air Quality Management Areas**

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | One Line Description | Is air quality in the AQMA influenced by roads controlled by Highways England? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | Number of Years Compliant with Air Quality Objective | Name and Date of AQAP Publication | Web Link to AQAP |
|---|---|---|---|---|---|---|---|---|---|
| Redbridge AQMA | 31/12/2003, | Nitrogen dioxide $NO_2$ - Annual Mean<br><br>Particulate Matter $PM_{10}$ - 24-Hour Mean | Borough wide AQMA | YES/NO | NO 2 : 55<br>PM 10: 59 days | NO 2 :24<br>PM 10: 1 day | 5 years | AQAP 2020-2025 | aqap-2020-to-2025.pdf (redbridge.gov.uk) |

☒ **Redbridge confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Redbridge confirm that all current AQAPs have been submitted to GLA .**

## 2.2 Air Quality Action Plan Progress

Table F provides a brief summary of Redbridge progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2023 are shown at the bottom of the table.

**Table F. Delivery of Air Quality Action Plan Measures**

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| 1 | Monitoring and other core statutory duties | Maintenance of monitors, and target to install new monitors subject to available funding | Ongoing. Currently 26 Diffusion tube and 2 AMS sites are located across the borough. A network of Breathe London Nodes have been installed across the borough to monitor the effects of project work outside schools, the efficacy of the Business Low Emission Neighbourhood, and the effects of ULEZ extension. |
| 2 | Emissions from developments and buildings | Ensuring major sites have a dust management plan (DMP) and construction management plan (CMP) and appropriate real-time monitoring in accordance with the identified risk of the site | Ongoing. Number of planning applications conditioned for dust management best practice and automatic air quality monitoring. |
| 3 | Emissions from developments and buildings | Adoption of a Planning Obligations SPD and securing additional funding from developers through s.106 agreements to manage and enforce construction impacts | Completed. The S106 SPD has been adopted by Redbridge. |
| 4 | Emissions from developments and buildings | Educate, raise awareness and enforce Non Road Mobile Machinery (NRMM) air quality policies | Ongoing for planning conditions refer to Table K |
| 5 | Emissions from developments and buildings | Annual reporting on number of planning applications conditioned for CHP or biomass in line with SPG Guidance | Ongoing, refer to Table K |

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| 6 | Emissions from developments and buildings | Enforcing Air Quality Neutral and Air Quality Positive policies for new developments and require Air Quality Assessments where necessary | Ongoing, refer to Table K |
| 7 | Emissions from developments and buildings | Ensuring adequate, appropriate, and well located green space and infrastructure is included in new developments | Planning policy LP29 sets out amenity space for developments. - Private amenity space for flatted development is generally provided as balconies/terraces etc and is a small space (5sq.m for a 2-person unit, increasing by 1m2 per additional person). - Communal amenity space is separate and requires 5m2 per unit – so this would be the green space for most development. (the policy says this is only required for developments over 50 units, however we apply this for all housing schemes where possible, and definitely for all 10+ major developments). - Playspace is required by the London Plan/Local Plan and usually is assessed separately to the above amount required for communal space, but is usually integrated into the wider green space in a development as most provide more than the minimum communal space required |
| 9 | Emissions from developments and buildings | Promoting and delivering in the Council's own stock energy efficiency retrofitting projects in workplaces and homes (Including using the GLA RE:NEW and RE:FIT programmes) to replace old polluting heat and energy plant with new low emission plant (e.g. old boilers with new ultra-low-NOx boilers); in combination with other energy conservation measures | Ongoing. Measured by the number of eligible buildings to benefit from these programmes and delivery date. The council has signed up to take part in Re-fit for the corporate estate. This programme isn't running anymore so the council is devising new policies to meet climate change targets |
| 10 | Public health and awareness raising | Director has been fully briefed and will be rebriefed annually and at interim AQ meetings/projects that require public health input. AQ problems are in the | Ongoing. The Public Health team contributes to all MAQF school projects in Redbridge through awareness raising through local GP surgeries and local schools. |

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| | | council JSNA and amongst Health and Well Being Board priorities. | |
| 11 | Public health and awareness raising | Public Health are supporting engagement with local stakeholders (businesses, schools, community groups and healthcare providers) | Ongoing. Monthly meetings with public health, gain input into MAQF projects. |
| 12 | Public health and awareness raising | Joint Strategic Needs Assessment (JSNA) has up to date information on air quality impacts on the population. Revised Health & Well Being Strategy to integrate air quality objectives. | Ongoing. Current JSNA been revised and due to be published in late 2024. Air quality continues remains a key measure. The new Health & Wellbeing Strategy has been published for measures from 2024 to 2028 |
| 13 | Public health and awareness raising | Strengthening coordination with Public Health by ensuring that at least one Consultant grade public health specialist within the borough has air quality responsibilities outlined in their job profile | Completed. Ian Diley is the AQ lead in Public Health |
| 14 | Public health and awareness raising | Engagement with businesses: disseminate information to Redbridge's GP surgeries and pharmacies on how to help improve air quality and reduce exposure for patients and employees. | Ongoing. Collating contact details for GP Surgeries and pharmacies. |
| 15 | Public health and awareness raising | Promotion of availability of airTEXT and the Mayor of London's air pollution forecast - Number of new airTEXT subscribers | Ongoing. Measured by Increase in number of Redbridge users annually. Interim reports received from AirText |
| 16 | Public health and awareness raising | Encourage schools to join the TfL STARS accredited travel planning programme and retain/improve STARS rating through the MAQF school projects. Promoting sustainable travel | 47% share of schools are signed up to TfL Travel for Life programme (previously STARS) |

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| | | and cleaner walking routes with supported mapping | |
| 17 | Public health and awareness raising | Reducing pollution in and around schools to improve local air quality at schools. MAQF Project to implement anti-idling and road closure measures around targeted schools. Extending Mayor's school audits to all polluted schools. | 6 further school streets going live June 24, consulting on a further 20 in 2024/25 |
| 18 | Delivery servicing and freight | Update Redbridge procurement policies to reduce pollution from logistics/servicing and to include a requirement for suppliers with large fleets to have attained Bronze Fleet Operator Recognition Scheme (FORS) accreditation | Waiting for approval from council's Governance group |
| 19 | Delivery servicing and freight | Update Redbridge procurement policies to preferentially score bidders delivering goods and services with zero or low emission vehicles | Currently, in the process of setting up procedures for Social Value scoring in the procurement system |
| 20 | Borough fleet | The council will investigate which truck Excellence accreditation scheme to join; equivalent to bronze (FORS) accreditation. | No further update. |

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| 21 | Borough fleet | Increasing the number of electric, hybrid and cleaner vehicles in the boroughs' fleet. Redbridge are seeking to comply with the ULEZ standard. Draft Green Fleet Strategy cabinet in Dec 2023 | Further delayed due to Capita review. |
| 22 | Borough fleet | Increase the uptake of new Euro VI vehicles in borough fleet. | All but two vehicles not EuroVI diesel, some older petrol. Plans to replace the two diesel vehicles in next 12 months. |
| 23 | Borough fleet | Smarter Driver Training for drivers of vehicles in Borough Own Fleet i.e. through training of fuel-efficient driving and providing regular retraining of staff new starter training programme to be established. | Vocational drivers (non RCS) undertaking LoCity driving course (FORS accredited fuel efficiency driving course). Further training to be rolled out budget allowing. |
| 24 | Localised solutions | Expanding and improving green infrastructure. | Ongoing. Planning policy team are writing new guidance in line with London Plan policy G5. Redbridge LP29 refers to amenity space only. |
| 25 | Localised solutions | Low Emission Neighbourhoods (LENs) Ilford Garden Junction and Ley Street BLEN | Ilford LEN complete, Ley Street BLEN complete. |
| 26 | Cleaner transport | Discouraging unnecessary idling by taxis, coaches and other vehicles through participation in the Pan London anti idling campaign and through targeted education and enforcement activity around schools in the borough | Continued enforcement of idling engines is by parking officers |
| 27 | Cleaner transport | Promote and deliver projects with Car Free Days and Road Closures. | Promoted and delivered at the Wanstead Festival and the borough working with Vision are looking at supporting another closure this year. |
| 28 | Cleaner transport | Promote the existing free residential parking permit scheme for electric | Promoted on the LBR website |

| Measure | LLAQM Action Matrix Theme | Action | Progress<br>• Emissions/Concentration data<br>• Benefits<br>• Negative impacts / Complaints |
|---|---|---|---|
| | | vehicles (EV) to encourage increased uptake | |
| 29 | Cleaner transport | Installation of rapid chargers to help enable the take up of electric taxis, cabs and commercial vehicles (in partnership with TfL and/or OLEV) | Installing a range of chargers from grant funding from UBER, OZEV for fast and slow chargers, and future LEVI funding which the borough are applying to install some rapid charge points. |
| 30 | Cleaner transport | Provision of infrastructure to support walking and cycling | See Cabinet Report for the schemes that are looking to be progressed this FY: https://moderngov.redbridge.gov.uk/ieListDocuments.aspx?CId=267&MId=8645. Future LIP programme is being developed. |
| 31 | Cleaner transport | Introduce parking surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits | In light of borough wide ULEZ this has been cancelled |
| 32 | Cleaner transport | Reallocation or restriction of road space around schools located in areas of high pollution. | In light of borough wide ULEZ this has been cancelled |
| 33 | Cleaner transport | School Superzones | Received Funding and implementing project |
| 34 | Cleaner transport | Solar panels fitted to 26 mini buses, 15 nuscats, 5 vans. Dust carts and lorries will be required going forward. | Complete |
| 35 | Cleaner transport | Piloting an EV dust cart mid 2024. | Completed small pilot with Scania Renault and Electra trucks - not a long pilot however |

# 3. Planning Update and Other New Sources of Emissions

## Table G. Planning requirements met by planning applications in London Borough of Redbridge in 2023

| Condition | Number |
|---|---|
| Number of planning applications where an air quality impact assessment was reviewed for air quality impacts | 82 |
| Number of planning applications required to monitor for construction dust | 67 |
| Number of CHPs/Biomass boilers refused on air quality grounds | 0 |
| Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions | 0 |
| Number of developments required to install Ultra-Low $NO_X$ boilers | 31 |
| Number of developments where an AQ Neutral building and/or transport assessments undertaken | 51 |
| Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation | 7 |
| Number of planning applications with S106 agreements including other requirements to improve air quality | 0 |
| Number of planning applications with CIL payments that include a contribution to improve air quality | 0 |
| **NRMM: Central Activity Zone, Canary Wharf and Opportunity Areas**<br>Number of conditions related to NRMM included.<br>Number of developments registered and compliant.<br>Number of audits<br>% of sites unregistered prior to audit<br>Please include confirmation that you have checked that the development has been registered with the GLA through the relevant NRMM website and that all NRMM used on-site is compliant with Stage IV of the Directive and/or exemptions to the policy. | N/A |
| **NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas)**<br>Number of conditions related to NRMM included.<br>Number of developments registered and compliant.<br>Number of audits<br>% of sites unregistered prior to audit<br>Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy. | NRMM Conditions 16<br>Number of Audits : 16<br>Self-compliant : 4<br>Non-compliant: 0<br>No NRMM: 2<br>Site Complete 1 |

### 3.1 New or significantly changed industrial or other sources

London Borough of Redbridge confirms that there are no new or significantly changed industrial or other sources identified.

## 4

# Additional Activities to Improve Air Quality

### 4.1 London Borough of Redbridge Fleet

There are 285 vehicles in Redbridge's fleet 11 are electric and 5 are hybrid. Redbridge are seeking to increase the number of electric, hybrid and cleaner vehicles in the boroughs' fleet. Redbridge are seeking to comply with the ULEZ standard as specified in the council's Draft Green Fleet Strategy cabinet in Dec 2023. This action to expand the fleet as afore mentioned has been further delayed due to Capita review.

### 4.2 NRMM Enforcement Project

Redbridge will not participate in the NRMM Enforcement project in 2024-2025.

The council uses the standard wording as recommended by the GLA and Merton.

Discussions are currently taking place with our planning department regarding a revaluation of which sites this will be applied to going forward. We are in discussions with planning enforcement to ensure a regime is in place.

### 4.2 Air Quality Alerts

Redbridge currently supports *air*TEXT (https://www.airtext.info/) or, if not, which other direct alerts service is supported. Redbridge also cascades the Mayor's air quality alert messaging.

# Appendix A Details of Monitoring Site Quality QA/QC

## A.1 Automatic Monitoring Sites

Air quality monitoring data provides a measure of actual concentrations and therefore exceedences of air quality objectives. Data also provides information on trends in air pollution and can provide the basis for verifying the various models used to predict future pollution levels.

In 2023 London Borough of Redbridge undertook automatic monitoring at the following two sites:

• CM7 - Redbridge 7 (Ley Street) located northeast of Ilford – an urban background site within the Ley Street Depot that is sited on Ley Street. The site monitored nitrogen dioxide, PM10 (by BAM), and ozone. Since 2016 this site began monitoring PM2.5 (by BAM). Redbridge 7 (Ley Street) was set up in 2014, and is also identified in this report as CM7.

• CM4 - Redbridge 4 (Wanstead) – an urban traffic site close to the A12 towards the southwest of the Borough. The site started operating in November 1999. The site monitors nitrogen dioxide, PM10 and PM2.5 (both by BAM). Until March 2012 it also monitored carbon monoxide and sulphur dioxide.

The sites represent relevant exposure within the Borough. The sites are part of the London Air Quality Network for 2023 and therefore the standards of QA/QC are similar to those of the government's AURN sites. Fortnightly local site operator (LSO) zero/span calibrations of the gas analysers are carried out by the local authority, with subsequent data collection, validation and ratification undertaken by the ERG at King's College London. In all cases the data are fully ratified unless reported otherwise. Details of the sites can be found at www.londonair.org.uk.

For 2024, our site will be managed by Ricardo.

UKCAS accredited independent site audits are carried out every 6 months by the National Physics Laboratory (NPL). Additional six monthly equipment service visits by Enviro Technology Services Plc.

The Council previously operated three other automatic monitoring stations in the Borough: Redbridge 2 - a roadside site on Ilford Broadway closed in 2003,

Redbridge 3 – a kerbside site at Fulwell Cross closed in 2012, and Redbridge 5 – a roadside site in South Woodford closed in2012

$PM_{10}$ Monitoring Adjustment

The LLAQM.TG16 guidance highlights that Met-One PM10 Unheated BAM 1020 instruments conform to the equivalence criteria relating to the gravimetric European reference method. A correction using a factor of 1.2 is automatically applied to adjust for slope.

## A.2 Diffusion Tubes

Diffusion Tubes are prepared and analysed by UKAS accredited Gradko International Ltd. • Diffusion Tubes are prepared using 50% triethanolamine with acetone method and analysed using UV spectrophotometry

▪ The lab follows the procedures set out in the Defra Technical Guidance for LAQM TG (22).

• For details attaining to 'results' – precision, bias adjustment factors; and reference methods are as follows: Results of laboratory precision (tube precision and WASP results): The LAQM website gives the following precision results for Gradko 50% TEA in acetone: 2022 Good (26 studies)

The laboratory performance of Gradko International was tested in January 2019 to March 2021 under AIR NO2 PT Rounds AR030, AR031, AR033, AR034 , AR036, AR040 and AR042. The performance was 100% in all rounds except AR30, AR036 and AR040 which reported at 75%.

The version of the bias adjustment factor database used is: 06/24

Factor from Local Co-location Studies

I experienced difficulties entering the diffusion tube data into the diffusion tube database processing tool. The LAQM help desk advised me to use the national factor which I have used.

Discussion of Choice of Factor to Use

I experienced difficulties entering the diffusion tube data into the diffusion tube database processing tool. The LAQM help desk advised me to use the national factor which I have used which is 0.83

## Table H. Bias Adjustment Factor

| Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
|---|---|---|---|
| 2023 | National | 06/24 | 0.83 |
| 2022 | National | 06/23 | 0.82 |
| 2021 | National | | 0.82 |
| 2020 | National | | 0.83 |
| 2019 | National | | 0.89 |
| 2018 | National | - | 0.92 |
| 2017 | National | - | 0.97 |
| 2016 | National | - | 1.03 |

## A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Distance Adjustment

.

**Table I. Short-Term to Long-Term Monitoring Data Adjustment**

N/A

**Table J. $NO_2$ Fall off With Distance Calculations (From Diffusion Tube Data Processing Tool)**

| Site ID | Distance (m): Monitoring Site to Kerb | Distance (m): Receptor to Kerb | Monitored Concentration (Annualised and Bias Adjusted (µg $m^{-3}$) | Background Concentration (µg $m^{-3}$) | Concentration Predicted at Receptor (µg $m^{-3}$) | Comments |
|---|---|---|---|---|---|---|
| DT M | 0.5 | 17.5 | 39.6 | 24.9 | 30.3 | |
| DT S | 1.0 | 4.0 | 38.9 | 20.7 | 33.8 | |

## Appendix B Full Monthly Diffusion Tube Results for 2023

**Table K. $NO_2$ 2023 Diffusion Tube Results (µg/m$^3$)**

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Jan | Feb | Mar | Apr | May | June | Jul | Aug | Sept | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted <(x.x)> | Annual Mean: Distance Corrected to Nearest Exposure | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT A | *547022.3* | *187232.3* | 31.1 | 28.9 | 25.0 | 15.0 | 14.0 | 14.6 | 16.7 | 18.3 | 16.0 | 26.9 | 28.3 | 19.2 | 21.2 | 17.6 | | |
| DT B | *543688* | *186139.6* | 46.2 | 47.9 | 45.3 | 30.7 | 32.1 | 36.7 | 35.9 | 35.7 | 32.1 | 50.2 | 36.1 | 31.6 | 38.4 | 31.9 | | |
| DT C | *544132.4* | *184945.6* | 47.8 | 47.9 | 46.0 | 33.6 | 29.1 | 32.0 | 35.7 | 34.3 | 34.0 | 49.0 | 36.5 | 36.0 | 38.5 | 31.9 | | |
| DT D | *544454.8* | *187681.9* | 28.6 | 27.3 | 27.8 | 27.4 | 14.1 | 14.3 | 14.2 | 15.6 | 17.7 | 24.8 | 27.0 | 17.9 | 21.4 | 17.8 | | |
| DT E | *540828.3* | *188367.9* | 36.1 | 34.9 | 33.1 | 24.9 | 18.2 | 21.4 | 27.0 | 27.3 | 25.3 | 42.7 | 29.5 | 27.0 | 29.0 | 24.0 | | |
| DT F | *544560.7* | *190400.8* | 34.7 | 46.4 | 34.7 | 26.8 | 25.1 | 30.9 | 29.4 | 24.9 | 32.3 | 41.4 | 40.3 | 31.8 | 33.2 | 27.6 | | |
| DT G | *543421.7* | *188322.6* | 47.3 | 39.3 | 42.4 | 33.2 | 22.8 | 35.6 | 21.0 | 41.2 | 36.6 | 45.5 | 38.8 | 43.9 | 37.3 | 31.0 | | |
| DT H | *543450.6* | *188371.1* | 56.4 | 48.6 | 34.3 | 31.3 | 27.4 | 33.1 | 48.5 | 32.3 | 31.4 | 37.2 | 31.6 | 41.2 | 37.8 | 31.4 | | |
| DT I | *543453.7* | *188384.4* | 41.2 | 53.5 | 41.8 | 29.8 | 25.4 | 33.1 | 29.1 | 32.8 | 41.6 | 44.5 | 45.4 | 32.5 | 37.6 | 31.2 | | |
| DT J | *543442* | *188161.3* | 40.5 | 37.6 | 49.0 | 35.6 | 17.3 | 38.1 | 31.5 | 31.5 | 24.7 | 61.2 | 40.4 | 27.6 | 36.3 | 30.1 | | |
| DT K | *543498.3* | *188840.2* | 43.6 | 34.0 | 41.6 | 35.9 | 37.8 | 25.0 | 31.6 | 34.3 | 25.1 | 56.4 | 35.6 | 31.2 | 36.0 | 29.9 | | |
| DT L | *541816.3* | *188161.3* | 35.1 | 31.1 | 30.7 | 27.2 | 31.8 | 31.8 | 15.4 | 24.1 | 19.1 | 28.1 | 29.3 | 18.8 | 26.9 | 22.3 | | |
| DT M | *541887.8* | *188136.2* | 56.9 | 59.5 | 54.0 | 39.6 | 44.1 | 43.5 | 48.4 | 48.6 | 40.5 | 50.5 | 53.8 | 33.5 | **47.7** | 39.6 | 30.3 | |
| DT N | *546675.6* | *188886.1* | 28.7 | 31.1 | 30.6 | 32.7 | 16.9 | 14.1 | 19.1 | 19.8 | 19.5 | 28.6 | 32.0 | 20.0 | 24.4 | 20.3 | | |
| DT O | *540025.7* | *190494.3* | 31.1 | 35.5 | 36.1 | 27.5 | 23.7 | 25.6 | 31.2 | 28.7 | 34.9 | 48.4 | 34.2 | 31.0 | 32.3 | 26.8 | | |
| DT P | *540076* | *190682.6* | 40.5 | 31.1 | 25.5 | 20.3 | 16.5 | 16.1 | 18.1 | 17.4 | 22.9 | 32.5 | 27.7 | 20.0 | 24.1 | 20.0 | | |
| DT Q | *541992.1* | *191799.9* | 31.6 | 36.2 | 26.8 | 18.4 | 15.5 | 16.7 | 28.6 | 21.6 | 24.8 | 33.4 | 31.0 | 26.5 | 25.9 | 21.5 | | |
| DT R | *544364.1* | *186597.4* | 54.2 | 52.5 | 50.2 | 41.9 | 43.0 | 44.5 | 49.1 | 43.7 | 47.4 | 53.6 | 47.5 | 35.8 | **47.0** | 39.0 | | |
| DT S | *544360.4* | *186615.3* | 52.6 | 53.5 | 52.4 | 40.1 | 49.5 | 46.5 | 42.2 | 40.9 | 42.9 | 55.0 | 53.4 | 32.8 | **46.8** | 38.9 | 33.8 | |
| DT T | *547158.3* | *187699.4* | 48.9 | 49.4 | 43.6 | 35.9 | 32.2 | 24.8 | 36.3 | 38.9 | 34.5 | 53.6 | 41.2 | 31.5 | 39.2 | 32.6 | | |
| DT U | *546665.3* | *187046.3* | 42.0 | 41.0 | 36.9 | 25.2 | 24.5 | 35.3 | 25.7 | 28.4 | 25.7 | 42.9 | 35.8 | 24.8 | 32.4 | 26.9 | | |
| DT V | *545030.2* | *186919.8* | 34.5 | 32.1 | 28.7 | 19.9 | 19.5 | 20.8 | 20.7 | 23.1 | 20.1 | 35.2 | 27.9 | 21.4 | 25.3 | 21.0 | | |
| DT W | *544332.3* | *186571.3* | 37.3 | 34.0 | 34.2 | 39.3 | 26.9 | 20.1 | 19.9 | 22.5 | 25.4 | 27.9 | 35.9 | 23.3 | 28.9 | 24.0 | | |
| DT D | *543688* | *186139.6* | 46.2 | 47.9 | 45.3 | 30.7 | 32.1 | 36.7 | 35.9 | 35.7 | 32.1 | 50.2 | 36.1 | 31.6 | 21.2 | 17.6 | | |
| DT E | *544132.4* | *184945.6* | 47.8 | 47.9 | 46.0 | 33.6 | 29.1 | 32.0 | 35.7 | 34.3 | 34.0 | 49.0 | 36.5 | 36.0 | 38.4 | 31.9 | | |
| DT F | *544454.8* | *187681.9* | 28.6 | 27.3 | 27.8 | 27.4 | 14.1 | 14.3 | 14.2 | 15.6 | 17.7 | 24.8 | 27.0 | 17.9 | 38.5 | 31.9 | | |
| DT G | *540828.3* | *188367.9* | 36.1 | 34.9 | 33.1 | 24.9 | 18.2 | 21.4 | 27.0 | 27.3 | 25.3 | 42.7 | 29.5 | 27.0 | 21.4 | 17.8 | | |
| DT H | *544560.7* | *190400.8* | 34.7 | 46.4 | 34.7 | 26.8 | 25.1 | 30.9 | 29.4 | 24.9 | 32.3 | 41.4 | 40.3 | 31.8 | 29.0 | 24.0 | | |
| DT I | *543421.7* | *188322.6* | 47.3 | 39.3 | 42.4 | 33.2 | 22.8 | 35.6 | 21.0 | 41.2 | 36.6 | 45.5 | 38.8 | 43.9 | 33.2 | 27.6 | | |
| DT J | *543450.6* | *188371.1* | 56.4 | 48.6 | 34.3 | 31.3 | 27.4 | 33.1 | 48.5 | 32.3 | 31.4 | 37.2 | 31.6 | 41.2 | 37.3 | 31.0 | | |
| DT K | *543453.7* | *188384.4* | 41.2 | 53.5 | 41.8 | 29.8 | 25.4 | 33.1 | 29.1 | 32.8 | 41.6 | 44.5 | 45.4 | 32.5 | 37.8 | 31.4 | | |
| DT L | *543442* | *188161.3* | 40.5 | 37.6 | 49.0 | 35.6 | 17.3 | 38.1 | 31.5 | 31.5 | 24.7 | 61.2 | 40.4 | 27.6 | 37.6 | 31.2 | | |
| DT M | *543498.3* | *188840.2* | 43.6 | 34.0 | 41.6 | 35.9 | 37.8 | 25.0 | 31.6 | 34.3 | 25.1 | 56.4 | 35.6 | 31.2 | 36.3 | 30.1 | | |
| DT N | *541816.3* | *188161.3* | 35.1 | 31.1 | 30.7 | 27.2 | 31.8 | 31.8 | 15.4 | 24.1 | 19.1 | 28.1 | 29.3 | 18.8 | 36.0 | 29.9 | | |
| DT O | *541887.8* | *188136.2* | 56.9 | 59.5 | 54.0 | 39.6 | 44.1 | 43.5 | 48.4 | 48.6 | 40.5 | 50.5 | 53.8 | 33.5 | 26.9 | 22.3 | | |
| DT P | *546675.6* | *188886.1* | 28.7 | 31.1 | 30.6 | 32.7 | 16.9 | 14.1 | 19.1 | 19.8 | 19.5 | 28.6 | 32.0 | 20.0 | **47.7** | 39.6 | 30.3 | |
| DT Q | *540025.7* | *190494.3* | 31.1 | 35.5 | 36.1 | 27.5 | 23.7 | 25.6 | 31.2 | 28.7 | 34.9 | 48.4 | 34.2 | 31.0 | 24.4 | 20.3 | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT R | *540076* | *190682.6* | 40.5 | 31.1 | 25.5 | 20.3 | 16.5 | 16.1 | 18.1 | 17.4 | 22.9 | 32.5 | 27.7 | 20.0 | 32.3 | 26.8 | | |
| DT S | *541992.1* | *191799.9* | 31.6 | 36.2 | 26.8 | 18.4 | 15.5 | 16.7 | 28.6 | 21.6 | 24.8 | 33.4 | 31.0 | 26.5 | 24.1 | 20.0 | | |
| DT T | *544364.1* | *186597.4* | 54.2 | 52.5 | 50.2 | 41.9 | 43.0 | 44.5 | 49.1 | 43.7 | 47.4 | 53.6 | 47.5 | 35.8 | 25.9 | 21.5 | | |
| DT U | *544360.4* | *186615.3* | 52.6 | 53.5 | 52.4 | 40.1 | 49.5 | 46.5 | 42.2 | 40.9 | 42.9 | 55.0 | 53.4 | 32.8 | **47.0** | 39.0 | | |
| DT V | *547158.3* | *187699.4* | 48.9 | 49.4 | 43.6 | 35.9 | 32.2 | 24.8 | 36.3 | 38.9 | 34.5 | 53.6 | 41.2 | 31.5 | 46.8 | 38.9 | 33.8 | |
| DT W | *546665.3* | *187046.3* | 42.0 | 41.0 | 36.9 | 25.2 | 24.5 | 35.3 | 25.7 | 28.4 | 25.7 | 42.9 | 35.8 | 24.8 | 39.2 | 32.6 | | |

**✓ All erroneous data has been removed from the $NO_2$ diffusion tube dataset presented in Table K**

**✓ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22 N/A**

**☐ Local bias adjustment factor used No**

**✓ National bias adjustment factor used YES**

**✓ Where applicable, data has been distance corrected for relevant exposure in the final column YES**

**✓ Redbridge confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

**Notes:**

Exceedances of the $NO_2$ annual mean objective of 40µg/$m^3$ are shown in **bold**.

$NO_2$ annual means exceeding 60µg/$m^3$, indicating a potential exceedance of the $NO_2$ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

# Appendix C Map(s) of Monitoring Locations and AQMAs

### Automatic Monitoring Site(s)

### Figure A. Map of Non-Automatic Monitoring Site(s)

The location details on the council's mapping system are incorrect and will be updated before publication of this report on LBR's website

**Figure B. Map of Automatic Monitoring Site(s)**

The location details on the council's mapping system are incorrect and will be updated before publication of this report on LBR's website