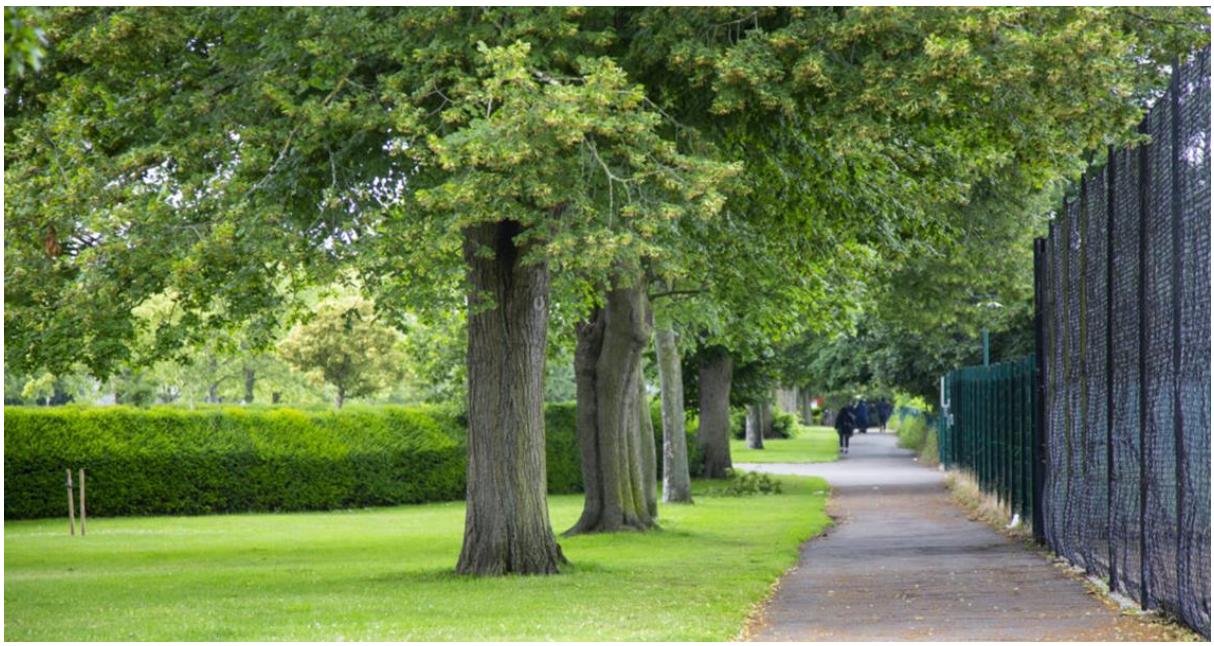
London Borough of Redbridge Air Quality Annual Status Report for 2022

Date of publication: October 2023



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

This report provides a detailed overview of air quality in the London Borough of Redbridge during 2022. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[1].

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[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
AQO	Air Quality Objective
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 Standards and Objectives

Pollutant	Standard / Objective (UK)	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
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})	40 µg m^{-3}	Annual mean	31 Dec 2004
Particles ($PM_{2.5}$)	20 µg m^{-3}	Annual mean	2020
Particles ($PM_{2.5}$)	Target of 15% reduction in concentration at urban background locations	3-year mean	Between 2010 and 2021
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

Notes:

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

1. Air Quality Monitoring

1.1 Locations

Table B. Details of Automatic Monitoring Sites for 2022

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
RB7	Redbridge 7 Ley Street	544454.8	187681.9	Urban background	Y	2.0	40.0	2.7	NO_2,PM_{10}, $PM_{2.5}$,	Chemiluminescent; BAM
RB4	Redbridge 4 Gardner Close	540828.3	188367.9	Roadside	Y	11.0	4.2	2.	NO_2,PM_{10}, $PM_{2.5}$,	Chemiluminescent; BAM

Table C. Details of Non-Automatic Monitoring Sites for 2022

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor. (Y/N)
DT A	Mayfield School	547022.3	187232.3	Urban Background	Y	8.0	2.0	1.5	NO_2	N
DT B	Ilford Lane	543688.0	186139.6	Roadside	Y	4.0	4.0	3.1	NO_2	N
DT C	Ilford Lane BP	544132.4	184945.6	Roadside	Y	3.0	4.0	2.7	NO_2	N

DT D	Ley Street	544454.8	187681.9	Urban Background	Y	2.0	40.0	2.7	NO_2	Y
DT E	Gardner Close	540828.3	188367.9	Roadside	Y	11.0	4.2	2.6	NO_2	Y
DT F	Fullwell Cross	544560.7	190400.8	Roadside	Y	11	1.0	1.7	NO_2	N
DT G	Perth Road	543421.7	188322.6	Roadside	Y	3.0	4.0	2.8	NO_2	N
DT H	Westbound Eastern Ave	543450.6	188371.1	Roadside	Y	1.0	4.0	2.4	NO_2	N
DT I	CentralRes Eastern Ave	543453.7	188384.4	Roadside	Y	12.0	3.0	2.5	NO_2	N
DT J	Eastbound Eastern Ave	543442.0	1888400.2	Kerbside	Y	6.0	3.0	2.7	NO_2	N
DT K	Parham Dr	543498.3	188427.6	Near Road	Y	7.0	2.0	2.6	NO_2	N
DT L	North Circ. Rd, Northbound Royston Gd	541816.3	188161.3	Roadside	Y	21.0	6.0	2.8	NO_2	N
DT M	North Circ. Rd, Southbound Wanstead Pk	541887.8	188136.2	Roadside	Y	17.0	0.5	3.0	NO_2	N
DT N	Ethel Davis School	546675.6	188886.1	Near Road	Y	2.0	0.0	2.8	NO_2	N
DT O	Grove Road	540025.7	190494.3	Roadside	Y	20.0	1.0	2.7	NO_2	N
DT P	High Road Woodford	540076.0	190682.6	Roadside	Y	14.0	0.5	2.6	NO_2	N
DT Q	M11	541992.1	191799.9	Near Road	Y	3.0	3.0	2.4	NO_2	N
DT R	Winston Way Primary Sch.	544364.1	186597.4	Roadside	Y	0.0	6.0	2.8	NO_2	N
DT S	Winston Way Gyratory	544360.4	186615.3	Kerbside	Y	3.0	1.0	2.6	NO_2	N
DT T	Chadwell Heath Primary School	547158.3	187699.4	Kerbside	Y	4.0	0.0	2.8	NO_2	N
DT U	Goodmayes Primary School	546665.3	187046.3	Roadside	Y	2.0	3.0	2.6	NO_2	N

DT V	Isaac Newton Academy	545030.2	186919.8	Near Road	Y	4.0	0.5	2.6	NO2	N
DT W	Inside Winston Way Prim.Sch	544332.3	186571.3	Near Road	Y	4.0	1	3.0	NO2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented are after adjustments for “annualisation” and for distance to a location of relevant public exposure (if required), the details of which are described in Appendix A.

Table D. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
RB7	Automatic Background (Ley Street)		22.1	33	30.4	30.6	30	21	25	30
RB4	Roadside (Gardner Close)		98	**42.3**	38.8	37.4	37	27	26	26
DT A	Urban Background		92.3	28.8	27.4	24.9	25.1	20.4	18.6	17.7
DT B	Roadside		92.3	**55.9**	**52.8**	**45.6**	**43.0**	36.5	34.9	31.6
DT C	Roadside		92.3	**57.0**	**52.6**	**46.9**	**43.2**	34.4	34.7	31.5
DT D	Urban Background		84.6	29.0	28.4	25.2	25.0	20.7	21.0	19.0
DT E	Roadside		92.3	**43.4**	**42.4**	34.5	35.7	28.0	26.1	25.8
DT F	Roadside		75.0	**46.0**	**43.2**	37.6	37.4	29.4	30.2	27.6
DT G	Roadside		92.3	**59.1**	**55.0**	**51.5**	**42.2**	35.9	34.4	34.7
DT H	Roadside		92.3	**50.3**	**52.7**	**46.8**	**41.3**	37.2	32.5	29.8

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
DT I	Roadside		92.3	**54.4**	**52.5**	**47.2**	**47.5**	34.7	34.3	32.7
DT J	Kerbside		92.3	**55.3**	**50.3**	**43.4**	**41.4**	37.1	33.5	33.9
DT K	Roadside		92.3	**52.9**	**55.3**	**45.9**	**43.4**	31.9	34.0	29.7
DT L	Roadside		92.3	**47.6**	**42.6**	**42.2**	36.7	27.6	28.7	22.5
DT M	Roadside		92.3	**80.5**	**78.9**	**68.4**	**61.4**	**50.3**	**45.7**	**40.7**
DT N	Roadside		92.3	28.1	26.8	26.3	23.5	19.3	18.8	19.4
DT O	Roadside		92.3	**52**	**45.7**	**49.5**	**47.4**	**44.7**	**41.3**	28.4
DT P	Roadside		92.3	39.8	38.0	38.8	37.6	34.8	32.0	21.8
DT Q	Roadside		92.3	**42.6**	**46.8**	**42.1**	**43.9**	36.7	34.7	22.4
DT R	Roadside		92.3	**50.3**	**50.2**	**57.3**	**54.5**	**53.4**	**47.5**	39.2
DT S	Kerbside		92.3	**49.4**	**52.6**	**58.3**	**55.5**	**54.2**	**45.7**	38.0
DT T	Kerbside		92.3	**41.4**	**42.0**	**47.8**	**43.3**	**44.8**	39.4	32.0
DT U	Roadside		92.3	34.3	34.8	37.6	36.1	36.5	32.6	25.8
DT V	Roadside		92.3	36	31.4	34.0	32.8	31.1	29.2	21.2
DT W	Roadside		76.9	36.4	34.8	38.1	35.8	37.1	30.4	23.0

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%.

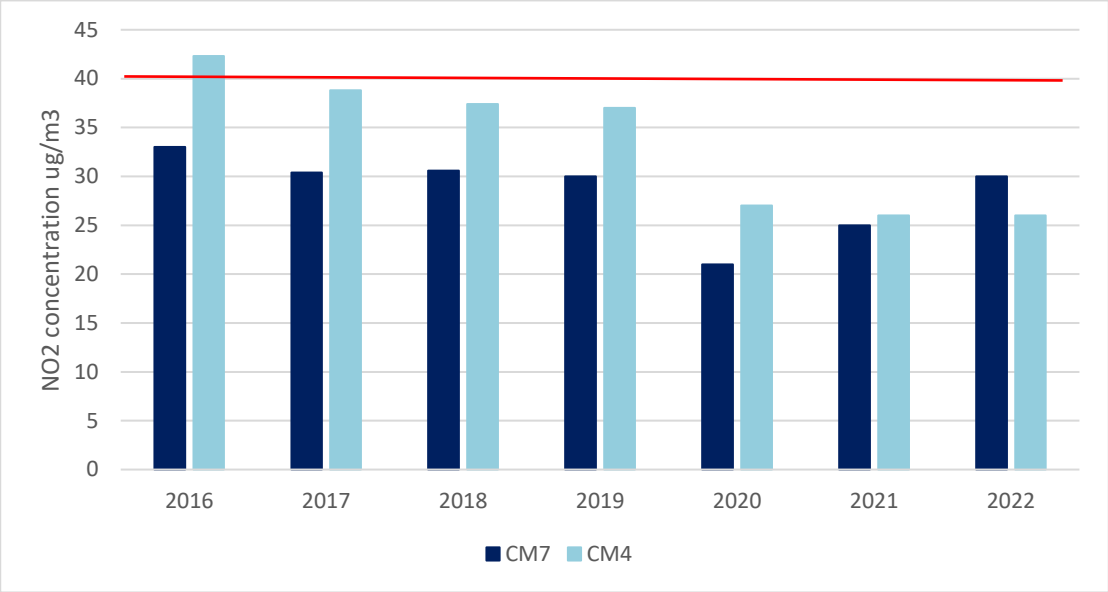
Results have been distance corrected where applicable.

(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%).

Figure 1. Automatic Monitoring Stations Annual Mean 5 Year Trends

Limit Value 40 µg m^{-3}



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 ULEZ expansion, the impact of EURO vehicle emissions improvements and uptake of ultra-low emission vehicles. In 2022 only one diffusion tube location (DT S) breached the limit value.

Although the results are below the limit value, it is interesting to note that RB7 (background) has returned to pre-covid concentration and RB4 (roadside) remains lower.

Figure 2. Diffusion Tube Monitoring Annual Mean 5 Year Trends DT A – DT F

Limit Value 40 µg m^{-3}

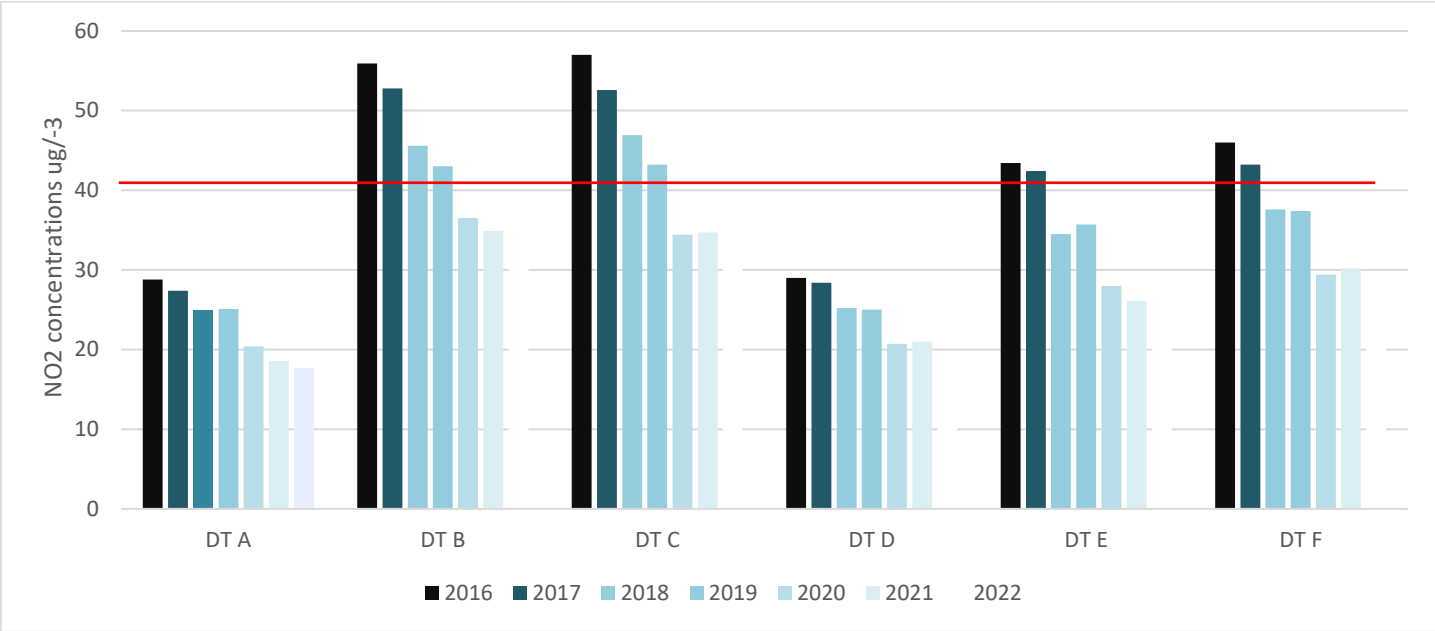


Figure 3. Diffusion Tube Monitoring Annual Mean 5 Year Trends DT F – DT L

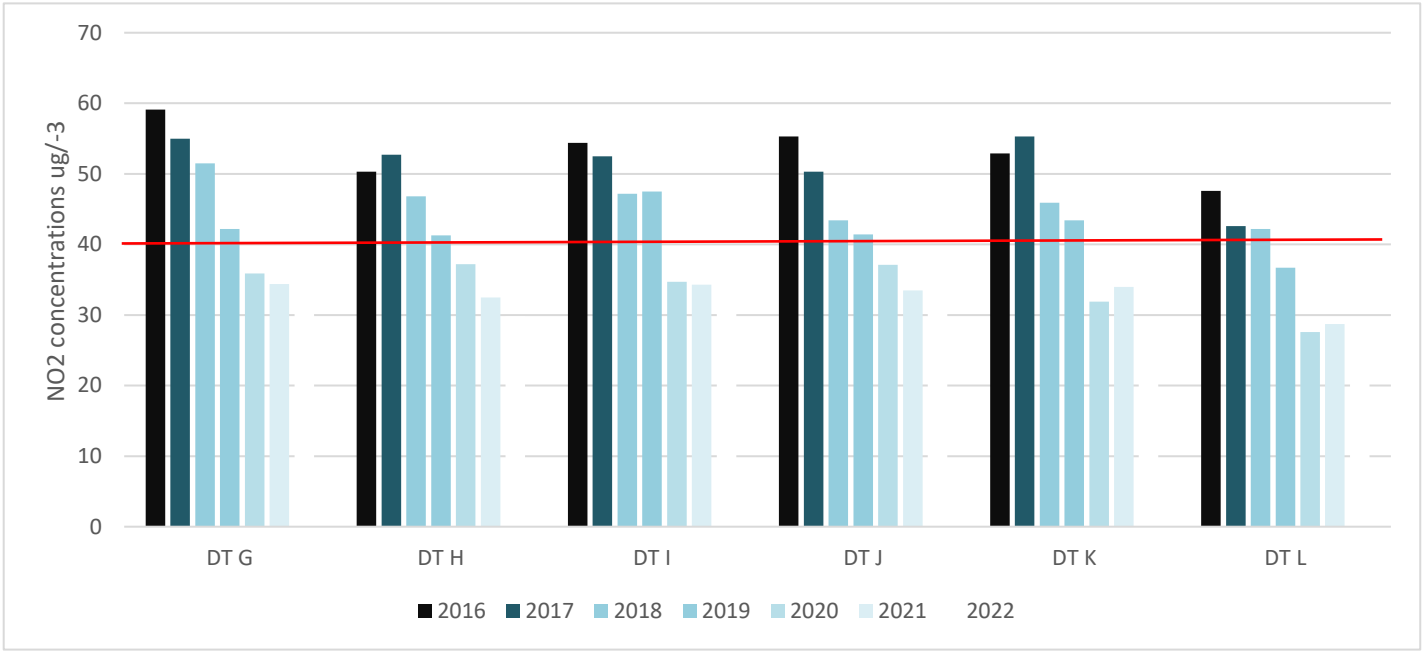


Figure 4. Diffusion Tube Monitoring Annual Mean 5 Year Trends DT M – DT R

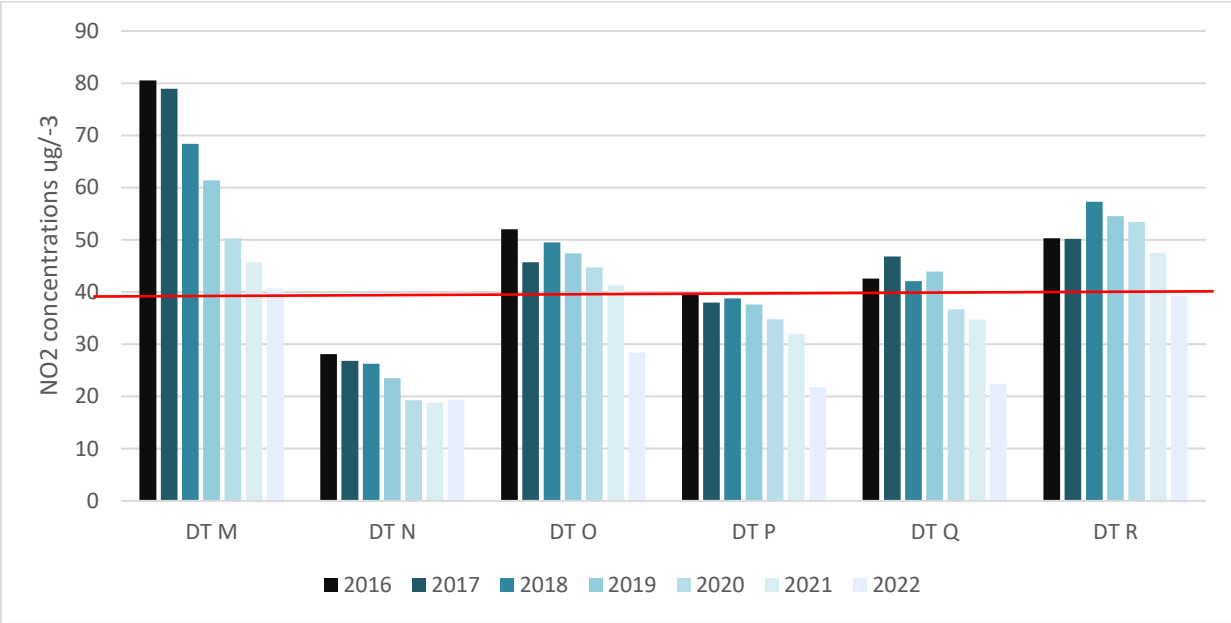


Figure 5. Diffusion Tube Monitoring Annual Mean 5 Year Trends DT S – DT W

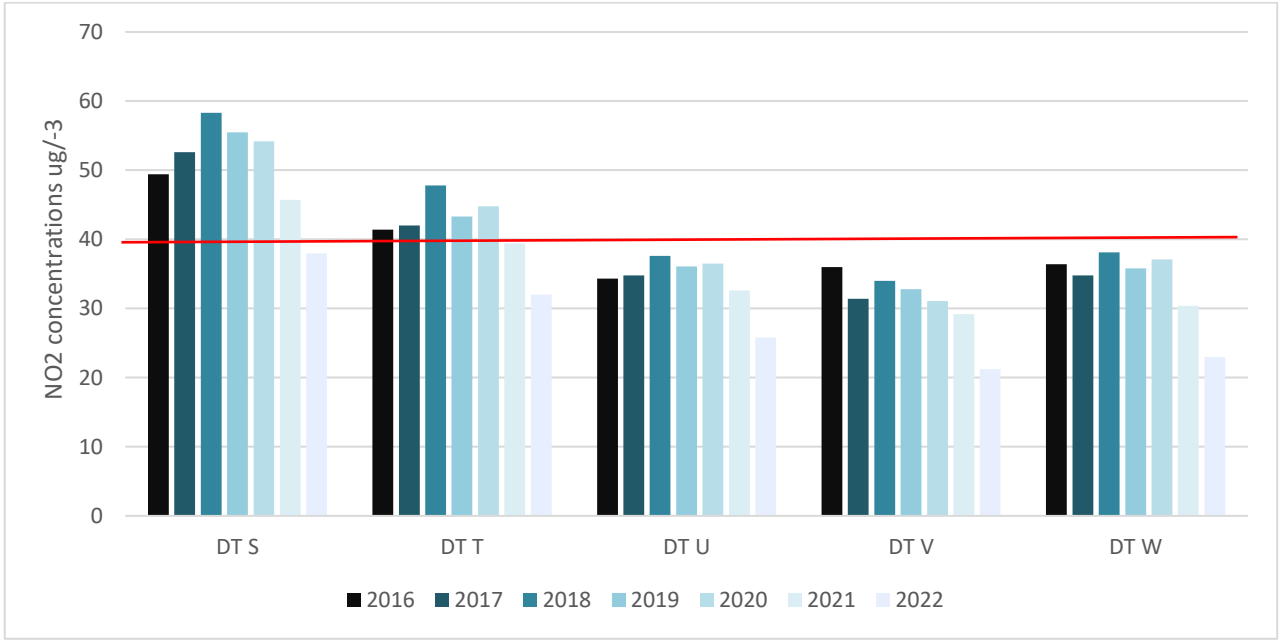


Table E. NO_2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 µg m^{-3}

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
RB7 Urban Background		98	0	0	0	**1**	0	0	0
RB4 Roadside		22.1	-	-	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 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
RB7(Background)		84	16.9	15.7	18	16	15	13.3 (annualised)	15
RB4(Roadside)		-	18.8	17.3	18	19	17	16 (annualised)	**-**

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%).

RB4 monitoring station has low data capture due to issues with the analysers. ERG are currently reassessing the data. This report will be updated accordingly. In light of this, annualization has not been completed.

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 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
RB7(Background)		84	3(28)	2	1	2	1	- data capt 59%	0
RB4(Roadside)		85	6	2	1	2	1	- data capt 70%	-

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 has low data capture due to issues with the oxygen analyser. ERG are currently reassessing the data. This report will be updated accordingly. Irrespective of this, it is unlikely that the hourly mean objective will be breached.

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 2022 %[(b)]	2016	2017	2018	2019	2020	2021	2022
RB7(Background)		85		13.6	12	11	13	10	9
RB4 (Roadside)		71				-	-	-	9.4

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 2022 annual mean for PM2.5 is 9 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. 2022 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 Action Plan Progress

Table J provides a brief summary of London Borough of Redbridge progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2022 are shown at the bottom of the table.

Table J. Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
1	Monitoring and 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 • Emissions/Concentration data • Benefits • 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.
8	Emissions from developments and buildings	Ensuring the Borough Smoke Control Zone requirements are fully enforced and that information about the requirements are readily available to the public.	Enforcement of non-compliant fuels has been set up. Awareness will be raised with residents through direct engagement and website information.
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.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
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 council JSNA and amongst Health and Well Being Board priorities.	Ongoing. The Public Health team contributes to all MAQF school projects in Redbridge through awareness raising through local GP surgeries and local schools.
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 is being revised and due to be published in April 2024. Air quality continues remains a key measure. A Health & Wellbeing Strategy will be adopted in December 2023.
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 and cleaner walking routes with supported mapping	Ongoing. All schools that were signed up to STARS have transferred over to the Travel for Learning scheme.
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. 5 out of 10 schools completed in 2022, the remainder in 2023

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
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	Ongoing. Redbridge and Waltham Forest procurement services have merged and this requirement will carry forward.
19	Delivery servicing and freight	Update Redbridge procurement policies to preferentially score bidders delivering goods and services with zero or low emission vehicles	Ongoing. Annual reporting summarising number procured services delivering to Redbridge using low emission/zero emission vehicles
20	Delivery servicing and freight	Reducing emissions from deliveries to local businesses and residents. Evaluate transport being used services such as Age UK Redbridge (DaisyFresh) for potential emission reductions.	Cancelled. It was decided that this project was not viable.
21	Delivery servicing and freight	Redbridge's own fleet is a member of the Freight Transport Association with Truck Excellence accreditation; equivalent to bronze (FORS) accreditation.	Measure will be updated in next AQAP. A decision regarding which scheme to sign up to has not been made.
22	Borough fleet actions	Increasing the number of electric, hybrid and cleaner vehicles in the boroughs' fleet. Redbridge are seeking to comply with the ULEZ standard.	Annual report summarising progress
23	Borough fleet actions	Increase the uptake of new Euro VI vehicles in borough fleet.	More NetZero vehicles are added each year. Measure will be updated in next AQAP update in light of NetZero by 2030. See section 4.1 hereafter.
24	Borough fleet actions	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	Ongoing. Training completed in 2019 and is provided to new drivers each year.
25	Localised solutions	Green Infrastructure	Ongoing. Planning policy team are writing new guidance in line with London Plan policy G5. Redbridge LP29 refers to amenity space only.
26	Localised solutions	Low Emission Neighbourhoods (LENs) Ilford Garden Junction and Ley Street LEN	Ilford LEN complete, Ley Street BLEN anticipated completion September 2023
27	Cleaner transport	Discouraging unnecessary idling by taxis, coaches and other vehicles through participation in the Pan London	Ongoing. Engine idling is enforced by parking officers

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		anti idling campaign and through targeted education and enforcement activity around schools in the borough	
28	Cleaner transport	Promote and deliver projects with Car Free Days and Road Closures.	Ongoing. Annual event at the Wanstead Festival. In 2022 road closure at Cleveland school.
29	Cleaner transport	Promote the existing free residential parking permit scheme for electric vehicles (EV) to encourage increased uptake	Completed. Parking permits are free for EVs.
30	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)	Ongoing. Annual report summarising progress/number of chargers installed per year. 2 EV rapid charging points to be installed in the Council's Ley Street Depot detailed in the MAQF Ley Street Bid. Uber rapid charger funding granted. OZEV and LEVI funding granted.
31	Cleaner transport	Provision of infrastructure to support walking and cycling	Ongoing schemes. Annual report summarising progress in key schemes implemented from the LIP
32	Cleaner transport	Introduce parking surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits	In light of the borough wide ULEZ this has been cancelled.
New Project	Cleaner transport	School Superzones	Received funding and being implemented
New Project	Cleaner Transport	Trialling EV dust cart	Commencing mid 2024

3. Planning Update and Other New Sources of Emissions

Table K. Planning requirements met by planning applications in the London Borough of Redbridge in 2022

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	75
Number of planning applications required to monitor for construction dust	51
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	
Number of developments required to install Ultra-Low NO_x boilers	27
Number of developments where an AQ Neutral building and/or transport assessments undertaken	48
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	11
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 Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit 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 Stage IV of the Directive and/or exemptions to the policy.	0
NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas) Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit 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.	13 conditions included 13 registered and compliant .

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

285 vehicles in Redbridge Fleet

- 11 are electric
- 5 are hybrid
- 4% of fleet are EVs

By the end of 2023 the council will procure another 13 electric vehicles

Over the last year EV charging has been significantly increased across the Borough:

Chargers currently in Redbridge:

- 45 charge points bollard lamp column chargers
- 8 fast chargers mulberry way car park
- 1 fast chargers Wanstead high street by mobility hub

Rapid chargers in the borough:

- 4 chargers installed as part of the pool car scheme at Lynton House

Chargers to come:

- 310 funded OZEV by end of 2023
- 174 funded by Uber and supplier end of by 2023

OZEV funding awarded as part of the LEVI pilot for 60 fast chargers to be installed by the end of 2024

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4.2 NRMM Enforcement Project

We would look to work with planning enforcement to ensure a regime is in place however we do not wish continue participation in the Pan London Enforcement Project in 2023 to 2024

4.2 Air Quality Alerts

Redbridge does support alerts through AirText.

Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

Routine calibrations are completed by Redbridge staff on a monthly basis. 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.

In 2022 the oxygen analyser was not functioning at RB7 Ley Street location. The data is still being reviewed by ERG.

PM_{10} Monitoring Adjustment

The LLAQM.TG16 guidance highlights that Met-One PM_{10} 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:
06/23

Diffusion Tube Bias Adjustment Factors 06/23 Issue of the Spreadsheet							
			Previous Number of Studies	New (06/23) Update			
Laboratory	Method	Year		No. Studies Added	Total No. of Studies	Factor	Change in Factor
Aberdeen Scientific Services	20% TEA in water	2022	7	0	7	0.75	-0.01
Edinburgh Scientific Services	50% TEA in acetone	2022	1	0	1	0.81	0.00
Glasgow Scientific Services	20% TEA in water	2022	6	0	6	1.05	0.00
Gradko	20% TEA in water	2022	27	6	33	0.84	0.01
Gradko	50% TEA in acetone	2022	14	1	15	0.82	0.00
Lambeth Scientific Services	50% TEA in acetone	2022	3	7	10	0.86	-0.09
Milton Keynes Council	20% TEA in water	2022	1	0	1	0.78	0.00
SOCOTEC Didcot	20% TEA in water	2022	5	6	11	0.76	0.00
SOCOTEC Didcot	50% TEA in acetone	2022	26	1	27	0.76	0.00
SOCOTEC Glasgow	20% TEA in water	2022	1	0	1	0.74	0.00
SOCOTEC Glasgow	50% TEA in acetone	2022	1	0	1	0.76	0.00
Somerset County Council	20% TEA in water	2022	6	8	14	0.85	0.03
Staffordshire Scientific Services	20% TEA in water	2022	12	1	13	0.86	-0.01
Tayside Scientific Services	20% TEA in water	2022	1	0	1	0.75	0.00
Number of Studies Included			111	30	141		

Factor from Local Co-location Studies

Gardner Close local bias adjustment factor 0.84, good precision and good data capture.

Ley Street local bias adjustment factor 0.082, good precision and poor data capture.

It is not appropriate to use the combined factor calculated in DEFRA's Diffusion Tube Toolkit spreadsheet because data capture was 22% at Ley Street. Therefore, the Gardner Close local factor is appropriate to use.

Discussion of Choice of Factor to Use

As a result of the analyser issues at Ley Street, this station's data cannot be used to calculate a combined bias adjustment factor for the two colocation sites. The local bias adjustment factor is 0.84 and the national factor is 0.82. The national factor is slightly more conservative, so this factor has been chosen.

Table L. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	National Bias Adjustment Factor	Local Bias Adjustment Factor
2022	National	06/23	0.82	0.84
2021	National	-	0.82	1.16
2020	National	-	0.83	1.13
2019	National	-	0.89	1.006
2018	National	-	0.92	1.02
2017	National	-	0.97	0.95
2016	National	-	1.03	1.08
2015	National	-	0.95	0.955

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

The Gardner Close monitoring data was 22% for 2022, which is below the acceptable threshold and is not appropriate for completing annualization calculations.

The Ley Street monitoring data was 98% and annualization was not required.

Distance Adjustment

One location (North Circular Road at Wanstead Park) in the borough exceeded the legal limit value of NO2 40.7 µg m^{-3} and this was distance corrected to 37.5 µg m^{-3}

Table M. Short-Term to Long-Term Monitoring Data Adjustment

Not applicable all monitoring data capture was ≥ 75%..

Table N. NO_2 Fall off With Distance Calculations

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 RED 37, 38, 39	4.8	7.8	40.7	23.0	*38.1*	*Predicted concentration at Receptor within 10% the AQS objective.*
DT R RED 52, 53, 54	3.2	8.2	39.2	17.0	33.7	
DT S RED 55, 56, 57	0.9	10.9	38.0	17.0	27.7	

Appendix B Full Monthly Diffusion Tube Results for 2022

Table O. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
DT A		92.3	33.3	18.0	25.8	20.4	18.3	13.2	15.0	17.4		22.1	26.2	27.8	21.6	17.7
DT B		92.3	49.7	31.6	36.8	37.4	44.0	33.3	31.6	39.2		36.5	46.4	37.1	38.5	31.6
DT C		92.3	49.9	32.3	41.7	39.2	40.2	31.5	33.3	35.7		34.9	46.8	37.0	38.4	31.5
DT D		84.6	33.9	19.8	25.6	23.7	26.8	13.7	16.4			20.9	25.0	26.4	23.2	19.0
DT E		92.3	37.1	27.9	31.5	34.6	32.4	24.5	19.0	33.4		25.3	36.6	44.4	31.5	25.8
DT F		75.0	45.8	27.7	31.7	29.1	29.6	34.5	23.6	32.8				47.7	33.6	27.6
DT G		92.3	55.8	45.0	46.7	28.5	24.2	34.5	27.4	60.1		38.4	43.2	61.2	42.3	34.7
DT H		92.3	55.3	35.3	38.0	38.1	29.6	23.6	26.4	40.6		35.4	37.4	39.8	36.3	29.8
DT I		92.3	60.3	37.8	35.7	26.8	39.2	36.9	14.5	31.5		55.3	38.7	61.9	39.9	32.7
DT J		92.3	61.1	23.6	43.8	33.3	47.9	50.1	30.5	39.0		51.6	21.5	51.7	41.3	33.9
DT K		92.3	47.8	28.0	31.3	37.0	51.7	31.7	21.2	35.8		37.4	28.1	47.8	36.2	29.7
DT L		92.3	34.7	11.2	36.1	30.1	34.4	26.0	18.5	37.2		20.9	17.0	35.9	27.4	22.5
DT M		92.3	66.1	42.3	52.1	45.5	55.7	41.8	47.2	58.2		34.2	46.8	55.4	49.6	**40.7**
DT N		92.3	37.1	17.7	24.4	23.5	22.5	14.7	15.8	19.6		24.8	26.5	33.8	23.7	19.4
DT O		92.3	41.6	36.5	30.2	34.2	36.9	26.9	30.5	34.9		28.3	44.6	36.5	34.7	28.4
DT P		92.3	34.3	26.7	26.3	26.9	22.7	15.9	19.7	24.5		19.8	32.1	43.6	26.6	21.8
DT Q		92.3	33.2	29.3	21.5	22.3	26.5	25.0	16.6	26.4		23.2	36.4	39.6	27.3	22.4
DT R		92.3	61.4	42.3	37.8	46.3	52.8	45.9	43.6	49.5		42.5	53.2	50.3	47.8	**39.2**
DT S		92.3	56.5	41.5	40.9	49.8	52.1	39.0	41.7	47.9		40.0	48.5	51.8	46.3	**38.0**
DT T		92.3	56.2	29.3	37.6	36.5	42.2	28.5	33.7	37.9		37.7	48.2	41.0	39.0	32.0
DT U		92.3	48.5	26.7	32.9	31.0	32.7	21.9	25.5	27.7		30.4	37.4	31.0	31.4	25.8
DT V		92.3	40.0	20.6	29.7	24.7	27.5	16.8	18.3	23.4		24.2	31.6	28.3	25.9	21.2
DTW		76.9		19.9	32.1	26.4	26.7	18.6	20.1	25.7		25.3		57.5	28.0	23.0

Notes

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**.

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%.

(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%).

Appendix C Location Maps of Monitoring Sites

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