

London Borough of Waltham Forest Air Quality Annual Status Report for 2023

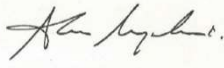



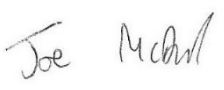
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This report provides a detailed overview of air quality in London Borough of Waltham Forest during 2023. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process¹.

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 not 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	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
WL1	Dawlish Rd	538380	186717	Urban Background	Y	5.5m	15m	3.5m	NO ₂ , PM ₁₀ , PM _{2.5}	Chemiluminescent; NOx analyser
WL4	Crooked Billet Roundabout	537468	191071	Kerbside	Y	11m	0.5m	2m	NO ₂ , PM ₁₀	Chemiluminescent; NOx analyser
WL5	Ruckholt Close	537804	186025	Roadside	Y	8m	1.5m	3.5m	NO ₂ , PM ₁₀	Chemiluminescent; FDMS; NOx analyser

Notes:

- (1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).
- (2) N/A if not applicable

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

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)
A03	<i>Shernhall St, Greville Rd</i>	538311	190904	Roadside	Y	5.0	5.0	2	NO ₂	N
A04	<i>Blackhorse Rd in front of St Patricks Catholic School</i>	536048	189159	Roadside	Y	0.2	2.2	2	NO ₂	N
A05	<i>Boundary Rd & Hoe St</i>	537600	188251	Roadside	Y	3.5	0.2	2	NO ₂	N
A06	<i>Chestnuts House on Hoe St</i>	537498	188436	Roadside	Y	9.0	2.2	2	NO ₂	N
A07	<i>Chingford Assembly Hall</i>	538699	194426	Roadside	Y	4	2.2	2	NO ₂	N
A09	<i>Dawlish Rd (playground area next to 195 Dawlish Rd)</i>	538400	186734	Roadside	Y	2.5	4.5	2.4	NO ₂	N
A10	<i>Forest Rd and Melville Rd</i>	536938	189753	Roadside	Y	0.5	4.5	2	NO ₂	N
A11	<i>Francis Rd & High Rd Leyton</i>	538022	187162	Roadside	Y	13	2	2	NO ₂	N
A12	<i>Gloucester Rd & Lea Bridge Rd</i>	537088	187632	Roadside	Y	3.5	0	2	NO ₂	N
A13	<i>Howard Rd & Church Rd</i>	537583	189310	Roadside	Y	3.5	2.2	2	NO ₂	N
A14	<i>Kings Rd & Kingswood Rd</i>	539259	187567	Roadside	Y	1.8	2.5	2	NO ₂	N
A15	<i>Lea Bridge Rd (entrance of Lea</i>	535928	186914	Roadside	Y	0	2	2	NO ₂	N

	Valley Riding School)									
A16	Lea Bridge Rd and Perth Rd	536457	187238	Roadside	Y	2	1	2	NO ₂	N
A17	Leyton Library	538243	186286	Roadside	Y	4.5	3.8	2	NO ₂	N
A18	Oliver Rd and Ruckholt Rd	538022	186126	Roadside	Y	0.5	2	2	NO ₂	N
A19	Pembroke Rd & Grosvenor Park Rd	537719	188685	Kerbside	Y	1.75	0.2	2	NO ₂	N
A20	Queens Rd near the Cemetery	536951	188436	Roadside	Y	10.5	2.7	2	NO ₂	N
A21	Radlix Rd and Church Rd	537251	187156	Roadside		13.0	0.8	2	NO ₂	N
A22	Ruckholt Close	537937	186109	Roadside	Y	13	0	2	NO ₂	N
A23	Vicarage Rd near St Josephs Junior	537620	187387	Kerbside	Y	8.8	0.2	2.2	NO ₂	N
A24	Winns Ave junct Mersey Rd	536887	189998	Roadside	Y	22.0	0.5	2.2	NO ₂	N
A25	Aymler Rd	539563	187517	Roadside	Y	22	0.5	2	NO ₂	N
A26	Chingford Road junct Loxham Rd	537455	191429	Roadside	Y	12	0.2	2	NO ₂	N
A27	Hale End Road (~230-240)	538632	191096	Roadside	Y	6	0.8	2	NO ₂	N
A28	Hall Lane o/s retail park	538863	191080	Roadside	Y	5.0	1.2	2	NO ₂	N
A29	Winchester Rd (~160-170)	538863	191080	Roadside	Y	3	0.5	2	NO ₂	N
A31	James Lane Leytonstone School	539034	188244	Roadside	Y	12	2.2	2	NO ₂	N
E01	Mornington Rd and High Rd Leytonstone	539664	187618	Roadside	Y	2	1.5	2.2	NO ₂	N
E02	Coppermill School Edward Road	535942	188731	Roadside	Y	6	2.2	2	NO ₂	N

E03	<i>William Marshall Cl and S. Access Rd</i>	536251	188272	<i>Roadside</i>	Y	3.5	1.2	2	NO ₂	N
E04	<i>Argalway Foot Bridge</i>	535891	187365	<i>Roadside</i>	Y	160	4	2.2	NO ₂	N
E05	<i>Veralum Ave</i>	536593	187974	<i>Roadside</i>	Y	4.5	1.2	2.2	NO ₂	N
E06	<i>Markhouse Rd opposite Acacia Rd</i>	536644	188089	<i>Roadside</i>	Y	15	2.5	2.2	NO ₂	N
E07	<i>Station Rd junct with Buxton Rd E4</i>	538954	194512	<i>Kerbside</i>	Y	12	0.2	2	NO ₂	N
E08	<i>86 Palmerston Road</i>	536619	189322	<i>Roadside</i>	Y	4.5	2.5	2.2	NO ₂	N
E09	<i>Chingford Road junct Penhryn Cres</i>	537536	190697	<i>Kerbside</i>	Y	5	0.2	2	NO ₂	N
E10	<i>Forest Rd Bell Corner</i>	537431	189784	<i>Roadside</i>	Y	10	0.2	2	NO ₂	N
E11	<i>Forest Road junct Wood St</i>	538295	189964	<i>Kerbside</i>		25.0	0.2	2.2	NO ₂	N
E12	<i>Friday Hill junct Normanton Pk</i>	539129	193377	<i>Kerbside</i>	Y	5.0	0.2	2.2	NO ₂	N
E13	<i>Fulbourne Rd</i>	538123	190790	<i>Kerbside</i>	Y	5	0.2	2	NO ₂	N
E14	<i>Hale End Road junct The Avenue</i>	538588	191750	<i>Roadside</i>	Y	2.8	0.2	2	NO ₂	N
E15	<i>High Rd E10 junct Buckingham Rd</i>	538072	186479	<i>Roadside</i>	Y	0	3.5	2	NO ₂	N
E16	<i>High Rd E10 junct Etchingham Rd</i>	538386	185800	<i>Roadside</i>	Y	3	2.7	2.2	NO ₂	N
E17	<i>High Rd E11 junct West St</i>	539227	186335	<i>Kerbside</i>	Y	1.8	0.8	2.2	NO ₂	N
E18	<i>Higham Hill junct Forest Road</i>	536547	189641	<i>Roadside</i>	Y	5.6	2.0	2.4	NO ₂	N
E19	<i>Higham Hill Rd junct Claremont Road</i>	536226	190223	<i>Roadside</i>	Y	5.6	2	2	NO ₂	N

E20	Larkshall Rd junct Dale View Cres E4	538627	193361	Roadside	Y	6	2.4	2	NO ₂	N
E21	Lea Bridge Rd Bakers Arms	537792	188144	Kerbside	Y	0.0	0.5	2.4	NO ₂	N
E23	Old Church Rd o/s Mansfield Park	537660	193854	Kerbside	Y	11	0.2	2	NO ₂	N
E24	Selbourne 1 (South Grove)	536732	188811	Roadside	Y	45	0.4	2	NO ₂	N
E25	Selbourne 2	536791	188897	Kerbside	Y	49	0.4	2.2	NO ₂	N
E26	Selbourne 3	536999	188939	Kerbside	Y	45	0.4	2.5	NO ₂	N
E27	Selbourne 4	537142	188976	Roadside	Y	55	2.5	2.5	NO ₂	N
E28	Francis Road	538321	186872	Roadside	Y	4	0.8	2	NO ₂	N
E29	Orford Road	537786	188946	Roadside		5.0	0.8	2.2	NO ₂	
E30	Woodville Mornington	539707	187463	Roadside	Y	5	0.8	2.2	NO ₂	N

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

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 Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	Site type	Valid data capture for monitoring period % ^(a)	Valid data capture 2023 % ^(b)	2017	2018	2019	2020	2021	2022	2023
WL1	Automatic	N/A	98	28	23	24	19	18	20	17
WL4	Automatic	N/A	78	61	58	58	42	45	41	40
				<u>46</u> ^(c)	<u>43</u> ^(c)	<u>43</u> ^(c)	33 ^(c)	31 ^(c)	30 ^(c)	27.3 ^(c)
WL5	Automatic	N/A	90	33	30	31	25	23	22	21

Notes:

The annual mean concentrations are presented as µg m⁻³.

Exceedances of the NO₂ annual mean AQO of 40 µg m⁻³ are shown in **bold**.

NO₂ annual means in excess of 60 µg m⁻³, indicating a potential exceedance of the NO₂ 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%).

(c) Fall of distance from roads calculated

Table E. Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
A03	538311	190904	Roadside	N/A	100	38.1	37.4	33.9	31.5		22.6	16.7
A04	536048	189159	Roadside	N/A	100	49.4	44.6	45.2	32.4	28.7	29.9	30.1
A05	537600	188251	Roadside	N/A	100	43.1	41.6	41.6	37.3		27.3	26.2
A06	537498	188436	Roadside	N/A	92	40.2	32.7	36.3	34.7		30.0	29.7
A07	538699	194426	Roadside	N/A	100	25.3	29.6	29.7	22.4	20.8	21.6	20.3
A09	538400	186734	Roadside	N/A	67	27.3	22.8	25.1	21.5		16.7	15.2
A10	536938	189753	Roadside	N/A	100	33.6	33.1	31	22.1	21.7	20.9	19.2
A11	538022	187162	Roadside	N/A	100	35.1	30.9	30.2	22.8	23.8	21.5	19.5
A12	537088	187632	Roadside	N/A	100	40.9	38.6	38.3	27.7	26.7	25.8	23.7
A13	537583	189310	Roadside	N/A	100	35.4	31	31.2	22.4	20.6	20.6	18.7
A14	539259	187567	Roadside	N/A	100	36.9	32	32.9	22	23.2	21.3	19.2
A15	535928	186914	Roadside	N/A	100	29.2	27.3	27.1	20	20.3	19.9	18.7
A16	536457	187238	Roadside	N/A	100	37.8	31.7	31.6	23.6	23.7	22.1	21.3
A17	538243	186286	Roadside	N/A	58	50.6	37	41.2	36.6	35.1	31.8	29.0
A18	538022	186126	Roadside	N/A	92	49.3	44.7	43	33.2	32.5	29.9	27.1
A19	537719	188685	Kerbside	N/A	100	32.8	28.1	29.6	21.1	19.6	21.4	19.1
A20	536951	188436	Roadside	N/A	100	31.8	28.4	28.5	20.6	19.7	19.6	17.9
A21	537251	187156	Roadside	N/A	100	38.7	39.5	32.5	30.3		30.8	29.7
A22	537937	186109	Roadside	N/A	100	40.6	34.6	35.8	25.7	25.6	24.5	22.7
A23	537620	187387	Kerbside	N/A	100	30	26.4	26.6	21.9		17.8	17.3
A24	536887	189998	Roadside	N/A	100		29.6	28.1	18.8		18.0	16.5
A25	539563	187517	Roadside	N/A	100	32.7	29.8	37.4	28.5	29.5	26.1	25.5
A26	537455	191429	Roadside	N/A	100		34.2	35.1	27.5	38.1	29.6	36.7
A27	538632	191096	Roadside	N/A	100		34.2	36.6	25.5	24.5	25.7	24.3
A28	538863	191080	Roadside	N/A	100		38.5	38.9	33.3		34.0	32.5
A29	538863	191080	Roadside	N/A	100		48.7	35.2	27.5	27.9	25.5	23.0
A31	539034	188244	Roadside	N/A	100		38.3	37.6	29.4	29.4	24.5	22.7
E01	539664	187618	Roadside	N/A	100				35.7	34.1	33.8	32.5
E02	535942	188731	Roadside	N/A	100		34.6	28.4	19	16.3	16.0	15.3
E03	536251	188272	Roadside	N/A	100		39.3	27.2	18.6	17	17.3	16.0
E04	535891	187365	Roadside	N/A	100				22.6	23.8	23.1	21.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
E05	536593	187974	Roadside	N/A	100				25.6	18.1	18.4	18.1
E06	536644	188089	Roadside	N/A	92				27.3	26.2	28.8	29.4
E07	538954	194512	Kerbside	N/A	100		50.3	33.1	22.4	24.5	25.3	24.4
E08	536619	189322	Roadside	N/A	100		43.7	36.1	28.5	27.8	24.8	23.6
E09	537536	190697	Kerbside	N/A	100		46.4	35.6	26.1	25.9	25.6	23.9
E10	537431	189784	Roadside	N/A	100		30.2	38.1	32.3	35.2	33.0	29.3
E11	538295	189964	Kerbside	N/A	100		27.3	40.8	31		28.3	25.0
E12	539129	193377	Kerbside	N/A	100		50.9	29.4	17.5		18.7	18.0
E13	538123	190790	Kerbside	N/A	100		43.5	36	25.4	24.6	24.3	22.1
E14	538588	191750	Roadside	N/A	100		39	35.9	22.9	26.8	26.7	24.8
E15	538072	186479	Roadside	N/A	100	39.9	40.7	36.6	28.3	27.6	25.0	24.5
E16	538386	185800	Roadside	N/A	100	57.3	59.6	47.2	38.2	35	34.5	35.0
E17	539227	186335	Kerbside	N/A	100	61	57	40.9	32.4	34	32.0	30.4
E18	536547	189641	Roadside	N/A	100	45.8	43.2	37	30.6		31.4	30.7
E19	536226	190223	Roadside	N/A	100			31.6	22.1	20.6	21.4	18.8
E20	538627	193361	Roadside	N/A	100			27.4	19.9	19.6	17.2	17.5
E21	537792	188144	Kerbside	N/A	100			51.5	30.7		35.0	32.6
E23	537660	193854	Kerbside	N/A	100			30.2	28.5	28.5	27.4	25.8
E24	536732	188811	Roadside	N/A	100	39.9	40.7 ^c	42.7 ^c	34.4	25.9	30.1	28.4
E25	536791	188897	Kerbside	N/A	100	57.3 ^c	59.6 ^c	58.4 ^c	47.6 ^c	46.2 ^c	36.2 ^c	21.5 ^c
E26	536999	188939	Kerbside	N/A	92	61 ^c	57 ^c	58.0 ^c	41.6 ^c	40.4 ^c	36.6 ^c	22.1
E28	537142	188976	Roadside	N/A	83			30.7	20.8	22	20.0	21.6
E29	538321	186872	Roadside	N/A	92			29.6	27.9		21.1	19.4
E30	537786	188946	Roadside	N/A	92				31.7	24.8	20.4	20.2

Annualisation has been conducted where data capture is <75% and >25% in line with LLAQM.TG19.

Diffusion tube data has been bias adjusted

Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO_2 annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO_2 1-hour mean 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.

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

There continues to be a decreasing trend in NO_2 levels in the vast majority of the monitoring sites. This demonstrates that local actions in Waltham Forest, combined with regional policies have led to sustained air quality improvements.

Figure 1.1 shows the 7-year trend in NO_2 concentrations in the air quality focus areas identified in our Air Quality Action Plan.

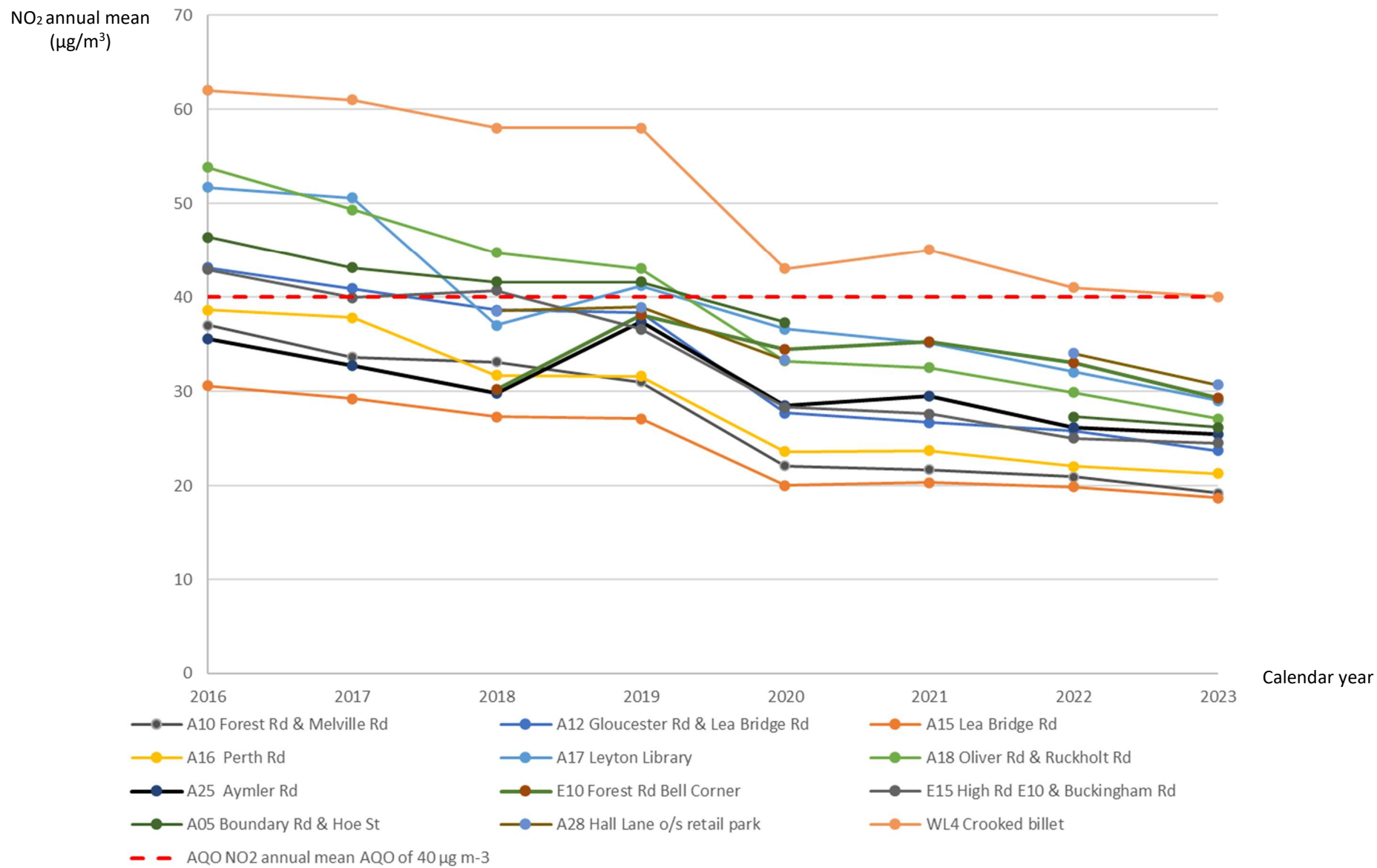


Figure A. Trends in Nitrogen Dioxide Concentrations in AQ focus areas within the London Borough of Waltham Forest 2016-2023

Table F. NO2 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
<i>WL1 Dawlish Road</i>	<i>N/A</i>	98	0	0	0	0	0	0	0
<i>WL4 Crooked Billet</i>	<i>N/A</i>	78	0	0	2	0	0	0(121)	0(120)
<i>WL5 Ruckholt Close</i>	<i>N/A</i>	90	0	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 NO₂ 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%)

Table G. Annual Mean PM₁₀ 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
WL1 Dawlish Road	N/A	98	18	17	19	17	15	15	16
WL4 Crooked Billet	N/A	92	29	28	29	25	23	25	26
WL5 Ruckholt Close	N/A	97	19	18	19	17	15	15	14

Notes

The annual mean concentrations are presented as µg m⁻³.

Exceedances of the PM₁₀ 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 H. PM₁₀ Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM₁₀ 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
WL1 Dawlish Road	N/A	98	18	17	19	1	0	0	0
WL4 Crooked Billet	N/A	92	29	28	15	10	5	6	6
WL5 Ruckholt Close	N/A	97	19	18	19	4	1	3	0

Notes

Exceedances of the PM₁₀ 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%).

Table I. Annual Mean PM2.5 Automatic Monitoring Results ($\mu\text{g m}^{-3}$)

Site ID	Valid data capture for monitoring period % ^(a)	Valid data capture 2023 % ^(b)	2017	2018	2019	2020	2021	2022	2023
WL1 Dawlish Road	N/A	96	-	-	12	10	9	10	9

Notes

The annual mean concentrations are presented as $\mu\text{g m}^{-3}$.

Exceedances of the PM_{2.5} annual mean AQO of $20 \mu\text{g m}^{-3}$ 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%).

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.

The entire borough of Waltham Forest has been declared an AQMA, as shown in Table J. Appendix C provides maps of the air quality monitoring locations in Waltham Forest. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO₂ annual mean;
- PM₁₀ 24-hour mean;

Table J. 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
Waltham Forest AQMA	31/10/2001	NO ₂ annual mean (40 µg m ⁻³)	Whole Borough	YES	Modelling identified a number of roads with NO ₂ exceedances (e.g. A406, A104 A12 A112, A11 High Road Leytonstone, A503, A106, parts of B160, B159, B179) The highest measured concentration was approx. 60 µg m ⁻³	36.7 µg m ⁻³	1	Air Quality Action Plan 2023-2028 (April 2023)	https://www.walthamforest.gov.uk/sites/default/files/2023-04/Air%20Quality%20Action%20Plan%202023-2027_v3%20LR_0.pdf

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
Waltham Forest AQMA	31/10/2001	PM ₁₀ 24-hour mean (50 µg m ⁻³ not to be exceeded more than 35 times a year)	Whole Borough	YES	Information not held	PM10 24-hour exceeded 6 times at one monitoring location	17	Air Quality Action Plan 2023-2028 (April 2023)	https://www.walthamforest.gov.uk/sites/default/files/2023-04/Air%20Quality%20Action%20Plan%202023-2027_v3%20LR_0.pdf

London Borough of Waltham Forest confirm the information on UK-Air regarding their AQMA(s) is up to date.

London Borough of Waltham Forest confirm that all current AQAPs have been submitted to GLA.

2.2 Air Quality Action Plan Progress

Table K provides a brief summary of London Borough of Waltham Forest progress against its Air Quality Action Plan 2023-2028, showing progress made in 2023. Actions which have been scheduled for years 2-5 of the Action Plan have not been included.

Table K. Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	<p style="text-align: center;">Progress</p> <ul style="list-style-type: none"> • Emissions/Concentration data <ul style="list-style-type: none"> • Benefits • Negative impacts / Complaints
A01	Monitoring and other core statutory duties	Maintain the current core monitoring network	<p><u>Action ongoing</u> The current monitoring network is being maintained and consists of 3 automatic stations and 56 diffusion tubes</p>
A02	Monitoring and other core statutory duties	Continue trials of small sensors to complement the core monitoring network	<p><u>Action ongoing</u> In 2023 three Vortex VTX Air for Hyper-local Air Pollution Monitoring were installed on Leytonstone High Road. Another approximately 60 sensors have been deployed within the Lloyd Park & Higham Hill Area Improvement Scheme and recent school street interventions. 2 Breathe London nodes were also used in 2023</p>
A03	Monitoring and other core statutory duties	Investigate the installation of a PM2.5 monitor at the Crooked Billet automatic monitoring station	<p><u>Action in progress</u> The cost analysis for new PM2.5 monitors and replacement of old monitoring equipment has been completed. Procurement process has not yet commenced, as there has been some delay in receiving s106 funding, which will cover this upgrade.</p>

B01	Emissions from developments and buildings	Adopting a code of construction practice to set an expected standard for control of dust and other air pollution emissions from development sites and construction activities/	<u>Action in progress</u> Codes of construction practice adopted by other LAs have been reviewed, but currently waiting for the relevant Supplementary Planning Guidance (SPG) to be reviewed. Next step will be to create a draft document, which most likely will be part of the local SPD, which is scheduled to start in Year 3 of the AQAP.
B06	Emissions from developments and buildings	Continue to participate in the London-wide NRMM monitoring project	<u>Action ongoing</u> LB Waltham Forest continues to participate in the NRMM scheme. In 2023, 15 audits were carried out. All sites were either self-compliant or complied following engagement.
B08	Emissions from developments and buildings	Undertaking a promotional campaign to make people aware of the harm caused by woodburning and bonfires	<u>Action ongoing</u> LB Waltham Forest is part of the multi-borough wood burning project. As part of this, the resources and comms messages which were developed, were shared with the residents in our Newsletter in December 23.
B09	Emissions from developments and buildings	Increasing awareness of the borough's smoke control areas and actively taking enforcement action where necessary	<u>Action ongoing</u> The Council's relevant webpage provides extensive information and useful links regarding wood burning, the key rules that apply in the borough and how smoke issues can be reported. All domestic chimney complaints which were received in 2023 were investigated. Enforcement action was not necessary.
C02	Public health and awareness raising	Develop communications plan to raise awareness of air pollution effects and measures residents can take to reduce air pollution effects	<u>Action ongoing</u> Throughout the year there are various communication actions around air quality. Some of them are regular (e.g. on Clean Air Day each) and others depend on the progress of specific schemes.

			Examples in 2023 were messages on social media, events (mini Tour de Waltham Forest, anti-idling workshop, opening of the 11 th cycle hub in the borough) and press release, in celebration of the Clean Air Day.
C03	Public health and awareness raising	Public Health department taking shared responsibility for borough air quality issues and implementation of Air Quality Action Plans	<u>Action ongoing</u> Publication of a local report A Fairer and Healthier Waltham Forest highlighted inequalities in health outcomes related to air quality including mortality attributable to air pollution slightly above London average.
C06	Public health and awareness raising	Engagement with schools to raise awareness of pollution effects and supporting measures to improve air quality around schools, including promotion of the TfL Travel for Life accredited travel planning programme	<u>Action ongoing</u> In December 2023, 69 schools held a Travel for Life accreditation, 38 at the gold level. Second school superzone programme completed with Mission Grove Primary School. Activities included: <ul style="list-style-type: none"> • new air quality monitor installed nearby • pupils took part in air quality workshops • an anti-idling awareness raising event • installation of parking buddies.
C07	Public health and awareness raising	Maintaining School Streets and seeking to undertake further School Street projects	<u>Action ongoing</u> 2 additional School Street schemes were completed in 2023. In total, there are 22 School Street zones (18 permanent and 4 experimental).
D02	Delivery servicing and freight	Support existing zero emission delivery (ZED) services	<u>Action ongoing</u> ZED in 2023: <ul style="list-style-type: none"> • Number of deliveries – 86,238 • Number of km travelled – 329,140 • Estimated CO2e saved – 112.5 tonnes
F02	Localised solutions	Implementation of the Council's Trees Strategy, including aiming to maintain and, where possible, increase tree canopy cover	<u>Action ongoing</u> In 2023, 1177 trees and 5000 whips were planted

F03	Localised solutions	Supporting research into air pollution issues affecting the borough	<u>Action in progress</u> A research study was commissioned to better understand the sources of the key pollutants in the borough, in order to target actions which will help the Council accelerate air quality improvements.
F04	Localised solutions	Working with neighbouring boroughs, the GLA, and other stakeholders on projects to tackle poor air quality	<u>Action ongoing</u> LB Waltham Forest has been part of many multi-borough / London-wide schemes. In 2023, we participated in the London wood burning project, which will be continued over the next three years. Wood burning is a significant source of PM2.5 and joint actions across London to tackle this source are expected to add value to individual actions. The council has also been supporting the NRMM scheme, aiming to reduce emissions from construction.
G01	Cleaner transport	Promoting and implementing Low Emission Neighbourhoods	<u>Action ongoing</u> The Council continues to implement and promote LENs. In December 2023, there were in total 85 modal filters and 45 pocket parks/parklets.
G02	Cleaner transport	Continue installation of EV infrastructure	<u>Action ongoing</u> Installation of EV charging points has continued in 2023. The figures in December 2023 were as follows: 700 EV charging sockets in the borough consisting of: <ul style="list-style-type: none"> • 318x 5.5kW lamp column sockets • 66x 7kW freestanding sockets • 312x 22kW freestanding sockets • 4x 50kW freestanding sockets
G03	Cleaner transport	Installation and maintenance of cycling and walking infrastructure	<u>Action ongoing</u> In December 2023 there were 55km protected cycle lanes. Four new Cycle Hubs were opened in 2023 at Blackhorse Road (x2), Highams Park and Chingford Stations (11 in total) and 122 Bikehangars (763 in total).

G04	Cleaner transport	Promotion of cycling and walking	<p><u>Action ongoing</u> 81 Dr Bikes were held in 2023 and 154 cycling events (including Dr Bike sessions).</p> <p>On Clean Air Day a Mini Tour de Waltham Forest was also held. As part of this, educational sessions around air quality, causes, impacts and potential solutions were carried out at 13 primary schools.</p> <p>There was a 3.4% decrease in the average number of cycle journeys per day as counted by our permanent cycle counter network in 2023 compared to 2022, however there were some technical issues with some of the count sites which may have impacted this result.</p>
G05	Cleaner transport	Actively discouraging unnecessary idling of petrol and diesel vehicles, especially around schools, and taking enforcement action where possible	<p><u>Action ongoing</u> The Council in liaison with MP Smarter Travel organised the following</p> <ul style="list-style-type: none"> • AQ workshops and anti-idling events: <ul style="list-style-type: none"> ○ Greenleaf School (AQ workshop, involving the installation of 8 NO2 diffusion tubes, assembly explaining diffusion tube results) ○ Jenny Hammond Primary (AQ workshop, followed by anti-idling event) ○ Mission Grove Primary School (AQ workshops, followed by anti-idling event). This was part of our School Superzone project, delivered in partnership with the GLA. • 610 students participated, all of whom were in years 4-6. • 6 AQ workshops delivered • 1 air quality monitoring programme delivered • 2 anti-idling events delivered with 100% of idling engines turned off.

3. Planning Update and Other New Sources of Emissions

Table L. Planning requirements met by planning applications in Waltham Forest in 2023

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	21
Number of planning applications required to monitor for construction dust	<u>19</u>
Number of CHPs/Biomass boilers refused on air quality grounds	<u>0</u>
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	All Applicable Major Developments
Number of developments where an AQ Neutral building and/or transport assessments undertaken	<u>18</u>
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	<u>0</u>
Number of planning applications with S106 agreements including other requirements to improve air quality	<u>8</u>
Number of planning applications with CIL payments that include a contribution to improve air quality	
<p>NRMM: Central Activity Zone, Canary Wharf and Opportunity Areas</p> <p>Number of conditions related to NRMM included.</p> <p>Number of developments registered and compliant.</p> <p>Number of audits</p> <p>% of sites unregistered prior to audit</p> <p>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.</p>	N/A
<p>NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas)</p> <p>Number of conditions related to NRMM included.</p> <p>Number of developments registered and compliant.</p> <p>Number of audits</p> <p>% of sites unregistered prior to audit</p> <p>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.</p>	<p>21 conditions included</p> <p>15 audits were carried out, of which 8 were self compliant, 3 had no NRMM on site and 4 complied following engagement.</p>

Construction dust monitoring requirements:

For developments assessed to be medium risk or greater for any of the steps required in an Air Quality and Dust Risk Assessment (AQDRA), regular or continuous PM10 monitoring should be carried out on site. Baseline monitoring should commence 3 months before the commencement of works and continue throughout all construction phases. Details of the equipment to be used, its positioning, additional mitigation to be employed during high pollution episodes and a proposed alert system should be submitted to the Council for approval.

Boiler / CHP / Biomass requirements:

Prior to installation, details of the boilers shall be forwarded to the Local Planning Authority for approval. The boilers shall have dry NOx emissions not exceeding 40 mg/kWh (0%). Should the development have CHP or biomass, the CHP and or biomass boilers must not exceed the Band B Emission Standards for Solid Biomass Boilers and CHP Plant as listed in Appendix 7 of the London Plan's Sustainable Design and Construction SPG document and must have a discharge stack which is at least 3m above any openable windows or ventilation air inlets within a distance of 5Um. Prior to the development commencing, evidence to demonstrate compliance with these emission limits will be submitted to the Local Planning Authority for approval.

3.1 New or significantly changed industrial or other sources

No new sources were identified in 2023.

4. Additional Activities to Improve Air Quality

4.1 London Borough of Waltham Forest Fleet

The Council operates a total of 76 vehicles, 11 of which are Council-owned. Three of these are electric and one diesel hybrid.

4.2 NRMM Enforcement Project

Waltham Forest has continued to support the NRMM enforcement scheme and intends to continue supporting it in 2024/25.

The NRMM related condition which is currently used to all planning applications and attached to decision notices, is the following:

Condition: No NRMM shall be used on the site unless it is compliant with the NRMM Low Emission Zone requirements (or any superseding requirements) and until it has been registered for use on the site on the NRMM register (or any superseding register).

Reason: To ensure that air quality is not adversely affected by the development in line with London Plan policy 7.14 and the Mayor's SPG: The Control of Dust and Emissions during Construction and Demolition.

4.3 Air Quality Alerts

Waltham Forest supports airText and has raised awareness of the benefits of using this app.

Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

The three automatic monitoring sites in the London Borough of Waltham Forest are currently part of the Air Quality England Network operated by Ricardo Energy & Environment. Ricardo Energy & Environment are the current data management providers. The data has traceability to national standards and operational procedures defined for the AURN network. All the monitoring sites are currently audited by Ricardo Energy & Environment. Data from the Council's automatic monitoring data can be found on the following site: <http://www.airqualityengland.co.uk/>

The sites are serviced every six months and are calibrated every 2 weeks by our current service and maintenance provider, Matts Monitors.

PM₁₀ Monitoring Adjustment

Ricardo Energy & Environment add the Volatile Correction Model (VCM) for correction of conventional TEOM PM10 datasets to the Air Quality England web pages. This function automates the VCM process and enables near real time VCM corrected TEOM datasets and statistics to be generated and downloaded. Annually, when AURN FDMS TEOM datasets on which the model is based are ratified, the provisional VCM corrected data will be replaced by ratified VCM corrected datasets.

Ricardo Energy & Environment version of the VCM model follows best practice as advised by Defra and will use available FDMS data as set out within the guidance. For example, the model uses the volatile fraction measured by FDMS analysers within a 130 km range where available. This process will correct conventional TEOM measurement to account for the loss of the volatile component of particulate matter due to the high sampling temperatures generated by the TEOM instrument.

A.2 Diffusion Tubes

The Council currently uses Gradko International for the supply and analysis of its diffusion tubes. The tubes are prepared using a 20%TEA/water solution. Gradko International is UKAS accredited and follows the procedures set out in the Practical Guidance.

Refer to https://laqm.defra.gov.uk/wp-content/uploads/2024/03/Database_Diffusion_Tube_Bias_Factors_v03_24-

[FINAL.xlsx](#) for the summary of precision results for nitrogen dioxide diffusion tube collocation studies. Precision Summary Table in <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/#SummaryPrecision> demonstrates Gradko International's performance summary for WASP/AIR quality scheme.

Table M. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.81
2022	National	03/23	0.83
2021	National	03/22	0.84
2020	National	09/21	0.81
2019	National	06/20	0.93
2018	National	03/19	0.93
2017	Local	-	0.89
2016	Local	-	0.94
2015	Local	-	0.88

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Where data capture is less than 75% and greater than 25% of a full calendar year (between 3 and 9 months), the mean should be “annualised” – i.e. adjusted using the methodology outlined in LLAQM.TG(19) before being compared to annual mean objectives.

Table M was completed using the outputs from the LAQM annualisation tool. The tool should be used to ensure the correct methodology for the annualisation of diffusion tubes is utilised, the tool can be downloaded from <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/>.

Distance Adjustment

If an exceedance is measured at a monitoring site which is not representative of public exposure, use the procedure specified in LLAQM.TG(19) to estimate the concentration at the nearest receptor and describe the process followed here. Table N was completed using the outputs from the NO₂ fall off with distance tool, the tool can be downloaded from <https://laqm.defra.gov.uk/tools-monitoring-data/no2falloff.html>.

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

Site ID	Annualisation Factor Dawlish Road WL1	Annualisation Factor Tower Hamlets - Victoria Park (TH002)	Average Annualisation Factor	Raw Data Annual Mean ($\mu\text{g m}^{-3}$)	Annualised Annual Mean ($\mu\text{g m}^{-3}$)	Comments
A09	0.9911	1.0060	0.9986	18.8	18.7	
A17	0.9083	0.9278	0.9180	38.9	35.7	

Table O. NO₂ Fall off With Distance Calculations

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted ($\mu\text{g m}^{-3}$))	Background Concentration ($\mu\text{g m}^{-3}$)	Concentration Predicted at Receptor ($\mu\text{g m}^{-3}$)	Comments
A26	0.8	7.6	36.7	17.0	28.2	
E25	0.4	45.8	40.0	17.0	21.5	<i>Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.</i>
E26	2.5	49.5	36.6	17.0	22.1	<i>Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.</i>
WL4	0.5	11.5	40.0	17	27.3	<i>Automatic Station</i>

Appendix B Full Monthly Diffusion Tube Results for 2023

Table P. NO₂ 2023 Diffusion Tube Results (µg/m³)

Site ID	Valid data capture for monitoring period % ^(a)	Valid data capture 2023 % ^(b)	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
A03	N/A	100	29.5	30.2	22.0	21.4	11.3	15.7	8.2	16.0	27.0	23.2	27.6	16.0	20.7	16.7
A04	N/A	100	49.2	43.6	33.8	38.3	26.6	27.4	31.3	33.6	45.6	42.8	41.8	31.9	37.2	30.1
A05	N/A	100	37.0	40.1	33.0	32.6	28.3	29.0	21.9	35.9	35.7	34.6	32.4	27.8	32.4	26.2
A06	N/A	92	45.0	47.7		34.0	30.5	31.3	29.1	30.9	40.0	40.2	39.8	34.3	36.6	29.7
A07	N/A	100	33.8	31.1	25.9	22.6	14.4	17.4	23.0	20.0	24.6	29.6	32.7	25.0	25.0	20.3
A09	N/A	67		28.0	21.7			11.6	9.9	14.0	19.0	21.0	24.8		18.8	15.2
A10	N/A	100	33.8	33.3	22.8	23.2	17.8	17.5	16.2	18.3	23.6	26.9	28.9	22.7	23.8	19.2
A11	N/A	100	33.9	34.9	25.4	22.7	14.9	14.8	16.1	17.1	24.0	28.8	32.4	24.3	24.1	19.5
A12	N/A	100	39.8	39.5	28.9	27.1	23.3	25.2	22.5	22.6	28.7	32.8	32.8	27.7	29.2	23.7
A13	N/A	100	33.4	33.1	23.0	21.5	13.9	15.3	17.2	17.5	23.4	25.7	28.6	23.8	23.0	18.7
A14	N/A	100	31.4	32.6	22.8	24.9	18.1	18.0	16.2	19.1	25.1	26.9	28.1	20.9	23.7	19.2
A15	N/A	100	31.8	37.2	25.4	20.6	13.7	16.5	15.4	16.7	24.1	25.4	26.4	23.2	23.0	18.7
A16	N/A	100	34.5	31.8	22.8	24.2	22.5	23.3	20.6	21.8	27.1	29.1	31.8	25.9	26.3	21.3
A17	N/A	58		34.2		32.2		33.2			45.2	42.7	47.6	37.4	38.9	29.0
A18	N/A	92		45.1	35.7	34.8	28.1	29.7	27.5	28.4	37.0	34.2	36.8	30.6	33.4	27.1
A19	N/A	100	34.4	33.6	24.1	23.2	16.5	15.3	16.5	17.9	23.3	27.7	28.1	21.7	23.5	19.1
A20	N/A	100	30.4	31.7	22.5	21.5	15.0	14.3	15.9	17.0	21.6	26.5	26.8	22.3	22.1	17.9
A21	N/A	100	45.4	45.9	38.4	35.6	26.9	26.4	31.1	33.0	40.7	44.5	37.6	34.4	36.7	29.7
A22	N/A	100	39.2	36.4	29.2	27.6	19.6	21.6	19.0	22.0	30.8	29.3	34.5	27.1	28.0	22.7
A23	N/A	100	30.9	32.1	22.5	20.8	14.1	14.1	13.2	15.5	20.6	24.1	27.7	20.9	21.4	17.3
A24	N/A	100	30.0	29.7	20.6	19.7	13.8	13.6	13.0	14.7	20.3	24.1	25.4	20.1	20.4	16.5
A25	N/A	100	42.3	38.8	29.5	31.9	30.8	28.4	25.9	22.7	28.2	30.9	38.8	29.2	31.4	25.5
A26	N/A	100	54.4	54.2	43.3	44.4	36.4	37.0	39.5	40.4	50.8	50.2	52.4	41.3	45.4	36.7
A27	N/A	100	38.9	41.2	30.9	29.7	24.0	22.7	24.4	24.4	30.3	31.3	36.1	26.5	30.0	24.3

A28	N/A	100	49.7	50.4	39.4	43.5	32.5	38.4	29.4	33.1	44.3	42.4	45.6	33.0	40.2	32.5
A29	N/A	100	39.8	39.2	28.5	26.8	20.7	18.9	25.8	24.5	30.0	31.3	28.0	27.3	28.4	23.0
A31	N/A	100	35.6	35.3	25.8	28.9	22.8	26.0	23.5	24.4	30.8	27.8	30.5	24.4	28.0	22.7
E01	N/A	100	45.2	51.6	40.0	44.8	41.0	39.3	26.1	33.9	41.8	37.7	46.7	32.9	40.1	32.5
E02	N/A	100	31.2	28.7	19.2	18.3	12.2	10.6	11.2	12.7	18.5	20.7	23.8	19.6	18.9	15.3
E03	N/A	100	29.0	29.0	17.9	18.8	12.4	12.0	13.5	15.4	19.6	21.9	27.0	21.1	19.8	16.0
E04	N/A	100	32.7	42.9	26.6	27.1	22.3	22.2	18.3	19.8	27.8	29.3	29.7	23.9	26.9	21.8
E05	N/A	100	32.1	32.9	20.6	21.6	14.7	23.9	13.9	15.1	21.4	23.8	25.4	22.2	22.3	18.1
E06	N/A	92	45.3	44.7	33.1	34.3	28.0	28.7		34.2	39.8	40.4	38.5	31.7	36.3	29.4
E07	N/A	100	39.2	41.2	28.5	29.3	23.5	25.4	24.7	25.9	31.5	32.3	33.9	26.2	30.1	24.4
E08	N/A	100	40.3	51.1	29.9	29.8	22.8	21.9	19.5	20.8	28.6	29.7	30.4	25.1	29.2	23.6
E09	N/A	100	38.5	38.3	29.3	29.6	29.2	26.0	19.3	21.6	31.2	33.0	33.1	25.4	29.6	23.9
E10	N/A	100	45.3	38.6	34.8	35.7	26.2	32.9	30.1	32.2	43.9	42.8	39.0	32.9	36.2	29.3
E11	N/A	100	40.2	39.7	30.5	31.1	26.4	27.9	24.8	26.3	33.7	31.8	32.9	25.5	30.9	25.0
E12	N/A	100	31.2	36.3	21.8	20.4	15.6	16.2	16.3	17.3	21.0	23.7	26.2	20.4	22.2	18.0
E13	N/A	100	38.8	37.9	28.2	22.6	22.3	20.1	21.2	22.6	27.3	29.5	31.8	24.6	27.3	22.1
E14	N/A	100	41.0	39.6	32.4	31.7	27.4	28.1	22.1	23.9	30.2	31.8	33.2	25.6	30.6	24.8
E15	N/A	100	35.2	37.9	31.0	34.5	31.6	26.7	19.9	24.8	30.0	30.3	34.3	27.5	30.3	24.5
E16	N/A	100	48.5	53.4	43.1	47.4	46.8	40.5	32.0	36.1	45.1	43.0	45.3	37.9	43.3	35.0
E17	N/A	100	43.5	43.0	43.5	38.2	30.2	31.1	33.8	31.2	40.2	40.3	42.8	32.6	37.5	30.4
E18	N/A	100	44.8	46.6	37.9	39.1	33.5	34.3	31.3	28.6	39.4	44.0	42.7	33.2	37.9	30.7
E19	N/A	100	33.3	32.6	23.2	22.5	15.9	15.6	16.3	17.2	22.6	27.4	28.2	23.0	23.2	18.8
E20	N/A	100	33.0	30.3	23.2	19.3	13.8	13.6	17.1	16.4	19.5	23.3	26.6	22.5	21.5	17.5
E21	N/A	100	50.1	51.5	40.2	39.4	34.8	35.3	34.0	24.8	43.5	46.5	44.4	38.5	40.3	32.6
E23	N/A	100	42.1	41.6	30.0	33.3	27.1	25.3	28.4	27.1	33.6	32.2	32.2	29.1	31.8	25.8
E24	N/A	100	47.8	43.4	30.3	51.1	23.7	24.0	23.8	25.5	50.5	32.4	37.2	30.5	35.0	28.4
E25	N/A	100	57.7	61.2	46.9	52.7	50.5	51.0	39.4	46.2	53.2	48.2	47.5	38.8	49.4	40.0
E26	N/A	92	52.0	58.6		30.1	48.6	50.1	42.8	48.1	32.4	44.6	48.8	40.6	45.1	36.6
E28	N/A	83	35.0	35.8	27.7	24.1	17.5			20.0	24.7	27.2	30.3	24.8	26.7	21.6
E29	N/A	92	33.0	34.7	23.6	23.3	15.4	9.2	17.3	17.8	22.8	27.1	39.6		24.0	19.4
E30	N/A	92	33.3	34.8	23.5	22.3	17.0	16.2		20.0	23.6	27.3	32.5	23.3	24.9	20.2

- ☒ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table
- ☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22
- ☒ Local bias adjustment factor used
- ☒ National bias adjustment factor used
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column
- ☒ Waltham Forest confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

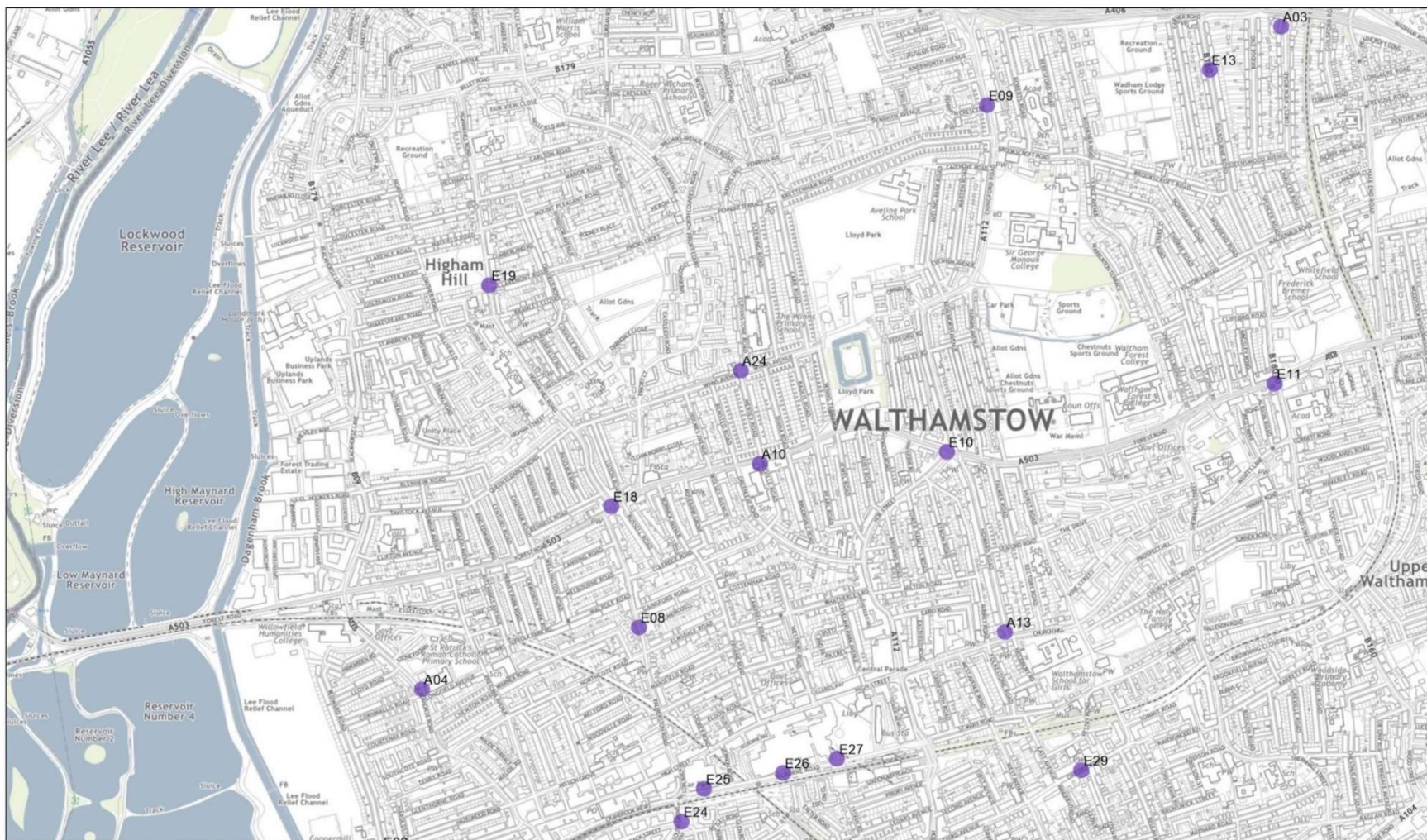
Appendix C Map(s) of Monitoring Locations and AQMAs

Figure B. Map of Non-Automatic Monitoring Sites (Chingford)



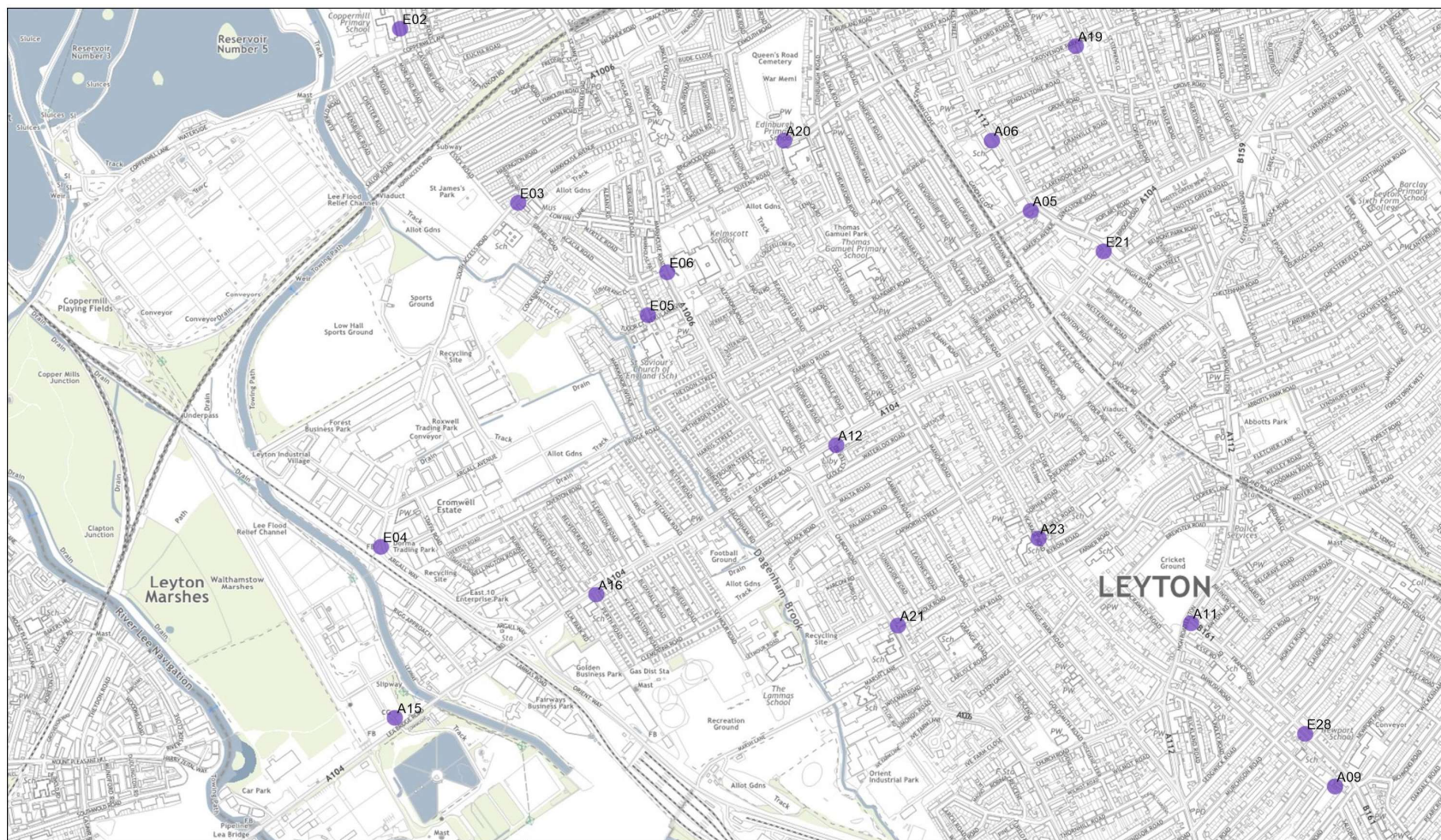
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Figure C. Map of Non-Automatic Monitoring Sites (Walthamstow)



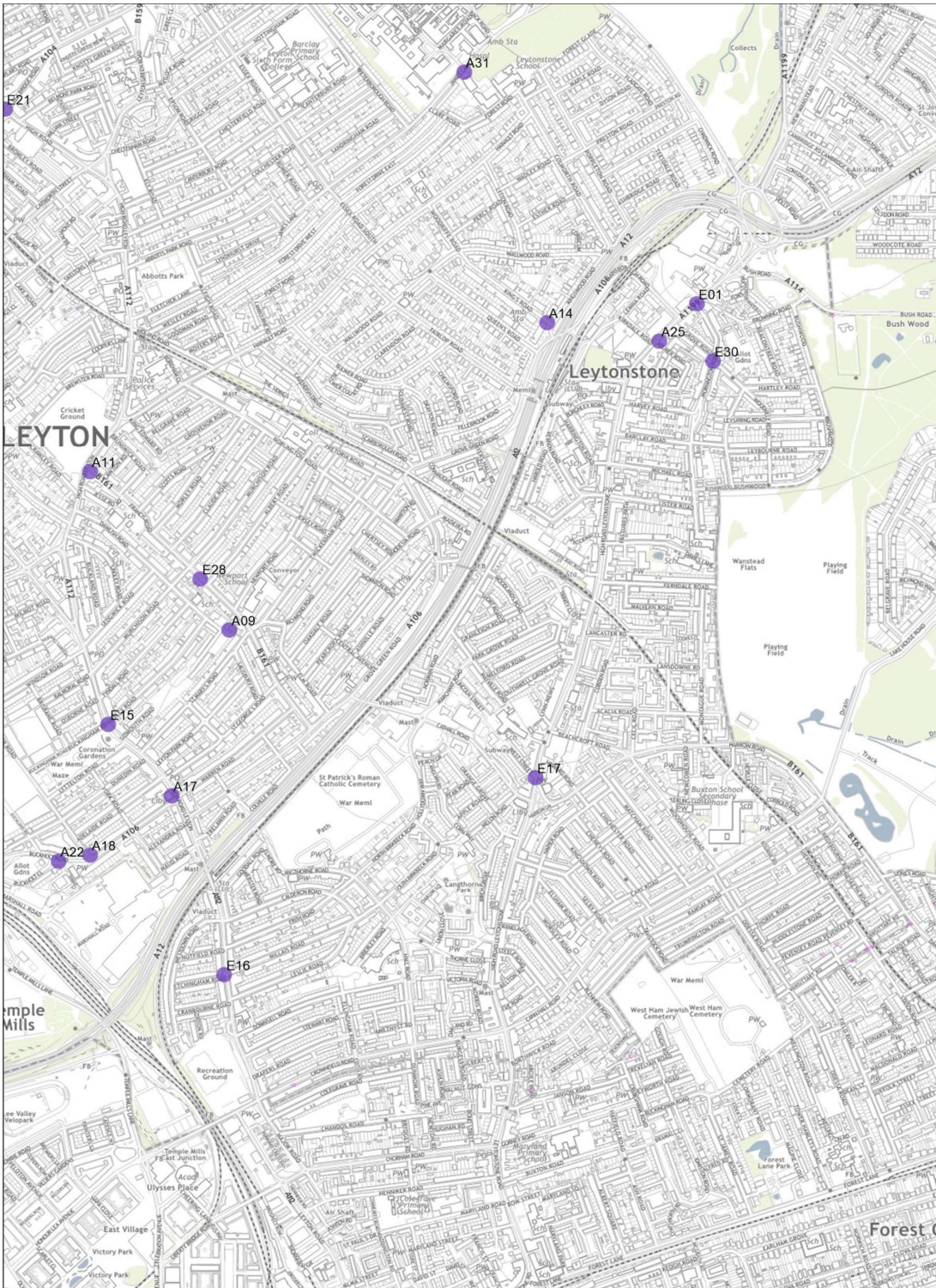
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Figure D. Map of Non-Automatic Monitoring Sites (Walthamstow & Leyton)



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Figure E. Map of Non-Automatic Monitoring Sites (Leyton & Leytonstone)



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Figure F. Map of Automatic Monitoring Sites



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