City of London Corporation Air Quality Annual Status Report for 2022

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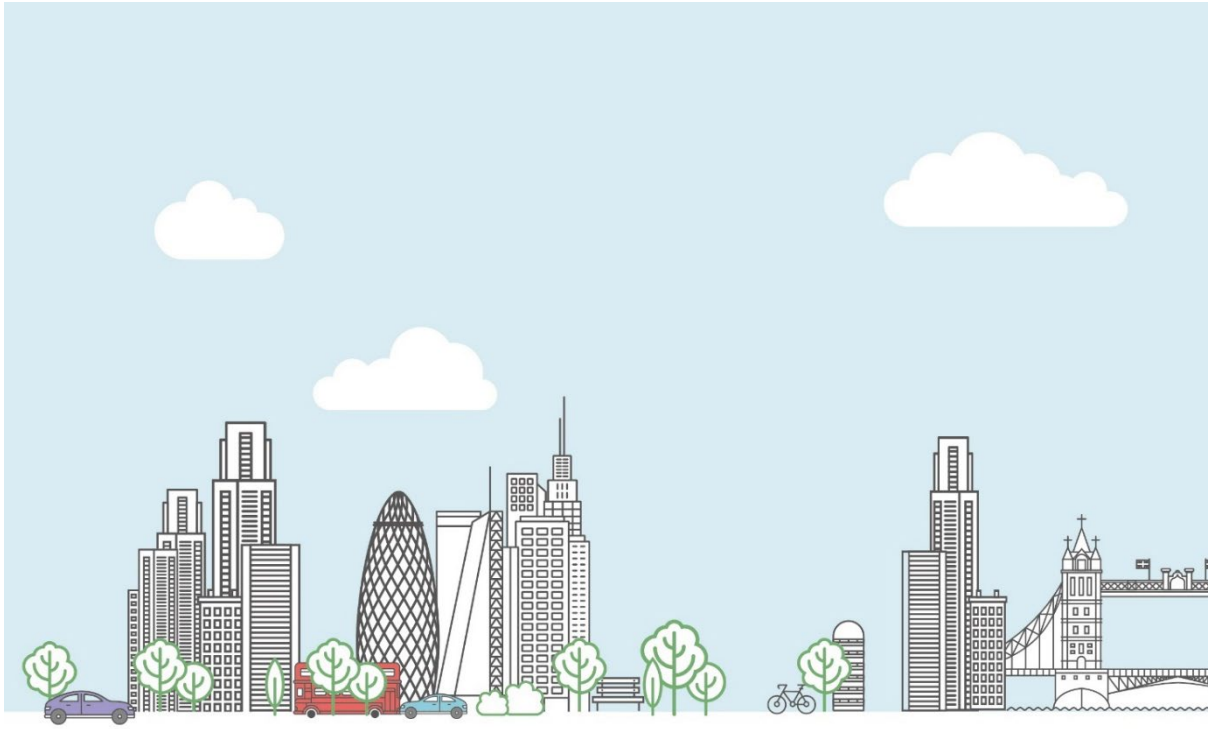

This report provides a detailed overview of air quality in City of London Corporation during 2022. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[1].

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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
CoL	City of London Corporation
DEFRA	Department for Environment, Food and Rural Affairs
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
ZEV	Zero Emission Vehicle

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} not 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

Figure A. Automatic Monitoring Stations

Figure B. Diffusion Tube Monitoring Locations

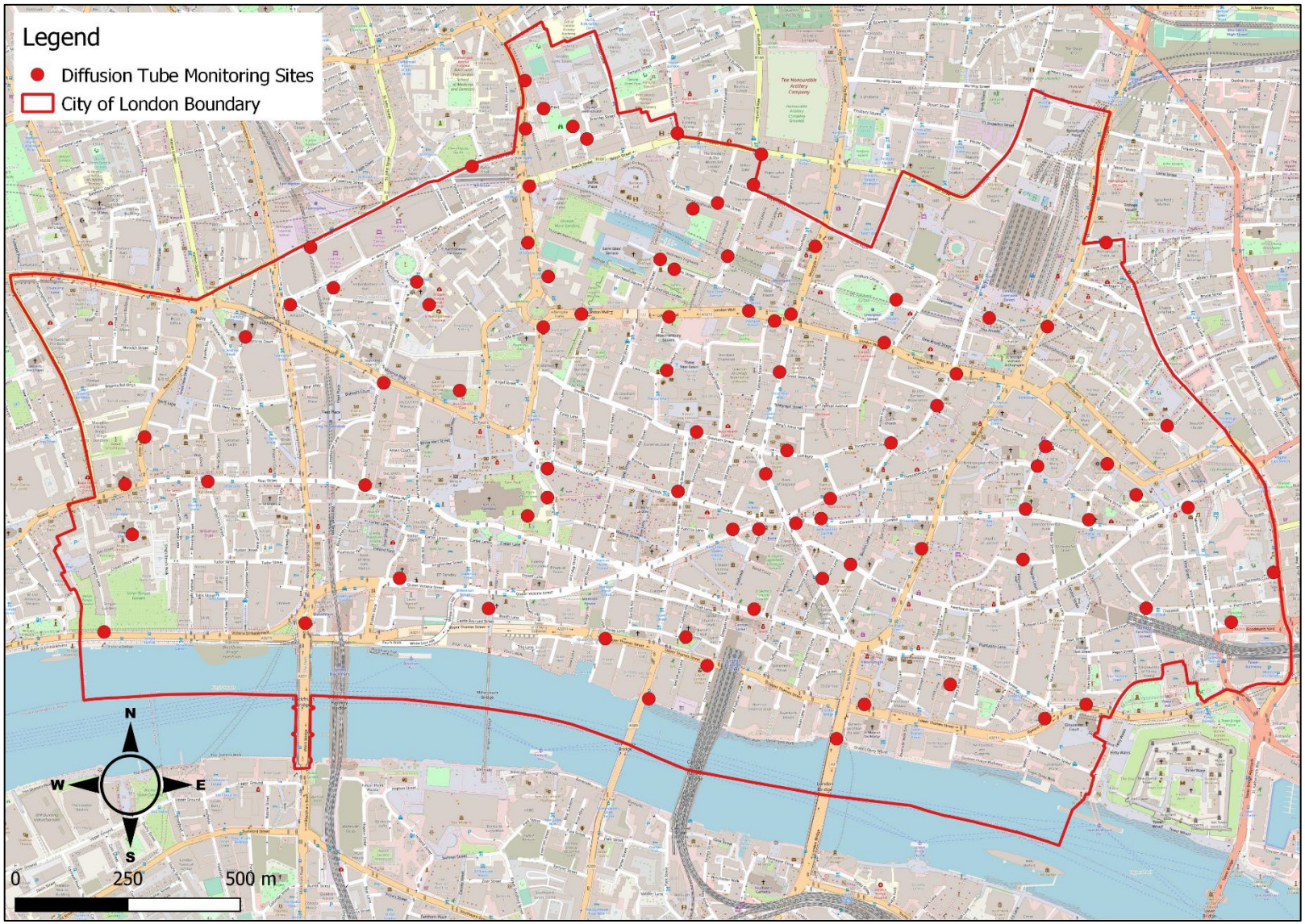


Table B. Details of Automatic Monitoring Sites for 2022

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
CT2	Farringdon Street	531623	181238	Roadside	Y	N/A	2.5m	2m	$PM_{2.5}$	BAM
CT3	The Aldgate School	533484	181190	Urban Background	Y	0m	N/A	1.5m	NO_2, PM_{10} $PM_{2.5}$	Chemiluminescent and BAM
CT4	Beech Street	532167	181857	Roadside	Y	10m	3m	3m	PM_{10}	BAM
CT4	Beech Street	532176	181862	Roadside	Y	0m	1.5m	2m	NO_2	Chemiluminescent
CT6*	Walbrook Wharf	532540	180786	Roadside	Y	0m	2.5m	3m	NO_2	Chemiluminescent
CT8**	Upper Thames Street	532834	180691	Roadside	Y	N/A	2m	1.5m	PM_{10}	BAM
CT9	Guildhall	532471	181424	Urban Background	Y	N/A	N/A	25m	O_3	UV Absorption
CTA***	Bell Wharf Lane	532495	180791	Roadside	Y	0m	10.5m	1.5m	NO_2, PM_{10}	Chemiluminescent and BAM

Notes:

* The NO_x analyser at CT6 was removed in January 2023 and relocated to CTA. This site has now been decommissioned.

** The BAM at CT8 was removed in September 2021 and relocated to CTA. This site has now been decommissioned.

*** CTA is listed as having NO_2 and PM_{10} monitored at the location. PM_{10} monitoring began in May 2022 and NO_2 monitoring began in January 2023, therefore there is no NO_2 data from CTA to present within the 2022 ASR.

Table C. Details of Non-Automatic Monitoring Sites for 2022: Long Term Diffusion Tube Sites

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)
CL5	St. Bartholomew's Hospital Courtyard	531901	181571	Urban Background	Y	0m	N/A	1.5m	NO_2	N
CL38	St. Andrew's Church, Queen Victoria Street	531851	180962	Roadside	Y	N/A	2m	2.75m	NO_2	N
CL39	St. Dunstan's Church, Fleet Street	531235	181155	Roadside	Y	N/A	2m	1.5m	NO_2	N
CL55	Speed House, Barbican Centre	532482	181799	Urban Background	Y	0m	N/A	0.5m	NO_2	N
CL40	Guinness Trust Estate, Mansell Street	533794	181026	Roadside	Y	0m	5.5m	2m	NO_2	N

Table D. Details of Non-Automatic Monitoring Sites for 2022: Bank Area Diffusion Tube Sites

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)
Bank 1	Cannon Street	532641	180914	Kerbside	Y	N/A	0.3m	2m	NO_2	N
Bank 2	Queen Victoria Street	532589	181090	Kerbside	Y	N/A	1m	2m	NO_2	N
Bank 3	King Street	532465	181171	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 5	Magistrates Court	532647	181092	Roadside	Y	15m	3.7m	2m	NO_2	N
Bank 6	King William Street	532791	180986	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 8	Lombard Street	532853	181019	Kerbside	Y	N/A	1m	2m	NO_2	N
Bank 10	Cornhill Bank Junction	532729	181107	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 11	Cornhill-Royal Exchange	532785	181119	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 12	Threadneedle Street	532804	181164	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 13	31 Old Broad Street	533036	181376	Kerbside	Y	N/A	1m	2m	NO_2	N
Bank 14	Wormwood Street	533077	181448	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 15	3 London Wall	532915	181513	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 16	81 London Wall	532670	181555	Kerbside	Y	2m	0.75m	2m	NO_2	N
Bank 17	55 Moorgate	532684	181442	Roadside	Y	N/A	2m	2m	NO_2	N
Bank 18	85 Gresham Street	532503	181304	Kerbside	Y	N/A	0.5m	2m	NO_2	N
Bank 19	Lothbury	532705	181268	Roadside	Y	N/A	2.2m	2m	NO_2	N
Bank 20	Princes Street	532659	181215	Kerbside	Y	N/A	0.5m	2m	NO_2	N

Bank 22	Gracechurch Street Leadenhall	533010	181058	Kerbside	Y	N/A	1m	2m	NO_2	N
Bank 23	Fish Street Hill	532892	180709	Kerbside	Y	N/A	0.5m	2m	NO_2	N

Table E. Details of Non-Automatic Monitoring Sites for 2022: LEN Area Diffusion Tubes

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)
LEN 1	Giltspur Street	531872	181621	Roadside	Y	10m	5.5m	2m	NO_2	N
LEN 3	Beech Street-Near Barbican Station	532117	181840	Roadside	Y	17m	2.5m	2m	NO_2	N
LEN 4	Aldersgate	532117	181714	Kerbside	Y	N/A	0.5m	2m	NO_2	N
LEN 5	Viscount Street	532242	181948	Roadside	Y	10m	1.5m	2m	NO_2	N
LEN 6	Whitecross Street/ Beech Street	532443	181966	Roadside	Y	N/A	1.5m	2m	NO_2	N
LEN 7	Silk Street	532536	181813	Kerbside	Y	5m	0.5m	2m	NO_2	N
LEN 8	Fore Street	532444	181664	Kerbside	Y	2.5m	0.5m	2m	NO_2	N
LEN 9	London Wall/ Brewers Hall Gardens	532435	181558	Kerbside	Y	11m	0.5m	2m	NO_2	N
LEN 10	Aldermanbury	532433	181439	Roadside	Y	N/A	1.5m	2m	NO_2	N
LEN 15	Fann Street	532144	182013	Kerbside	Y	20m	2m	2m	NO_2	N
LEN 16	Moor Lane	532562	181696	Roadside	Y	16.5m	2.25m	2m	NO_2	N

Table F. Details of Non-Automatic Monitoring Sites for 2022: City Diffusion Tubes

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)
SJC1, 6, 8	The Aldgate School rear playground (co-location)	533484	181190	Urban Background	Y	0m	N/A	1.5m	NO_2	Y
WW1, 2, 3	Walbrook Wharf (co-location)	532540	180786	Roadside	Y	N/A	2.5m	3m	NO_2	Y
PLA5	Southwark Bridge	532412	180709	Urban Centre	Y	N/A	N/A	2m	NO_2	N
PLA6	London Bridge	532832	180631	Urban Centre	Y	N/A	N/A	2m	NO_2	N
LS	Liverpool Street	533147	181574	Urban Centre	Y	N/A	0.5m	2m	NO_2	N
FA	Fenchurch Avenue	533236	181040	Urban Centre	Y	N/A	1.1m	2m	NO_2	N
FL	Fetter Lane	531276	181261	Roadside	Y	N/A	1.5m	2m	NO_2	N
OS1	St Mary at Hill's Churchyard	533082	180758	Urban Background	Y	0m	2m	2m	NO_2	N
OS3	St Pauls	532132	181108	Urban Centre	Y	15m	35m	2m	NO_2	N
OS5	Whittington Gardens	532491	180848	Urban Background	Y	N/A	0.5m	2m	NO_2	N
OS6	Finsbury Circus	532939	181609	Roadside	Y	N/A	0.5m	2m	NO_2	N
OS7	Christchurch Greyfriars Garden	531974	181382	Urban Background	Y	N/A	38m	2m	NO_2	N
BS	Brushfield Street	533402	181748	Roadside	Y	N/A	1.5m	2m	NO_2	N

GY	Goodmans Yard	533703	180913	Roadside	Y	N/A	6m	2m	NO_2	N
GS	Goldman Sachs, Shoe Lane	531494.5	181489	Roadside	Y	N/A	2m	2m	NO_2	N
CT	Citigen	531634	181692	Roadside	Y	N/A	2m	2m	NO_2	N
N1	Hatching Dragons Nursery	532164	181640	Urban Background	Y	0m	N/A	2m	NO_2	N
N2	Bright Horizons Nursery	532210	181975	Urban Background	Y	0m	1.5m	2m	NO_2	N
SPS2	St Pauls School front railings	532175	181150	Roadside	Y	9m	3.5	2m	NO_2	N
CLS2	CoL Boys School access ramp	532050	180900	Urban Background	Y	0m	40m	2m	NO_2	N
CHS	Charterhouse Square School	531988	181880	Roadside	Y	0m	3m	2m	NO_2	N
CSG	Cheapside Sunken Garden	532173	181214	Roadside	Y	N/A	10m	2m	NO_2	N
TC	Temple Church Courtyard	531254	181044	Urban Background	Y	N/A	N/A	2m	NO_2	N

Table G. Details of Non-Automatic Monitoring Sites for 2022: Transport Strategy

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)
T2	Byward Street	533294	180688	Roadside	Y	6.5m	3.5m	2m	NO_2	N
T3	Seething Lane	533385	180722	Roadside	Y	N/A	3.2m	2m	NO_2	N
T4	Crosswall	533513	180939	Kerbside	Y	N/A	1m	2m	NO_2	N
T5	Minories	533600	181165	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T6	Stoney Lane	533549	181345	Roadside	Y	12m	2.5m	2m	NO_2	N
T7	Heneage Lane	533418	181257	Urban Centre	Y	N/A	12m	2m	NO_2	N
T9	150 Bishopsgate	533277	181558	Kerbside	Y	N/A	1m	2m	NO_2	N
T10	St Mary Axe	533239	181152	Kerbside	Y	N/A	1m	2m	NO_2	N
T11	Old Broad Street	532951	181273	Roadside	Y	N/A	3m	2m	NO_2	N
T12	Upper Thames Street	532312	180840	Roadside	Y	N/A	2m	2m	NO_2	N
T13	Blackfriars Bridge	531644	180857	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T14	Victoria Embankment	531197	180826	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T15	Fleet Street	531419	181166	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T16	Ludgate Hill	531769	181167	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T17	Museum of London	532156	181528	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T18	London Wall	532240	181559	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T19	West Poultry Ave	531687	181603	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T20	The Fable	531592	181563	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T21	North Old Bailey	531804	181395	Kerbside	Y	N/A	0.5m	2m	NO_2	N
T22	Leadenhall St / Creechurch Ln	533380	181132	Roadside	Y	N/A	1.2m	2m	NO_2	N
T23	The Gherkin	533263	181248	Roadside	Y	N/A	2m	2m	NO_2	N
T24	St Mary's Axe / Bury Court	533280	181292	Kerbside	Y	N/A	1m	2m	NO_2	N

Table H. Details of Non-Automatic Monitoring Sites for 2022: Beech Street ZEV Street Project

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)
BS1	Aldersgate Street	532105	181967	Kerbside	Y	25m	0.5m	2m	NO_2	N
BS14	Bunhill Row/Chiswell Street	532631	181924	Kerbside	Y	N/A	1m	2m	NO_2	N
BS16	Moore Lane/Ropemaker Street	532615	181856	Kerbside	Y	N/A	0.5m	2m	NO_2	N
BS17	Moorgate	532756	181723	Kerbside	Y	N/A	0.5m	2m	NO_2	N
BS18	London Wall/ Moorgate	532706	181571	Kerbside	Y	16m	0.5m	2m	NO_2	N
BS19	London Wall	532612	181576	Kerbside	Y	N/A	1m	2m	NO_2	N
BS20	Wood Street	532412	181685	Roadside	Y	15m	2m	2m	NO_2	N
BS21	Goswell Road	532101	182074	Kerbside	Y	2m	0.5m	2m	NO_2	N

The diffusion tubes listed in Table H above have been deployed to gather data for monitoring the impacts of the Beech Street ZEV Street project. Some of the sites monitored lie outside of the CoL's boundary to assess the impact in neighbouring Boroughs, these have not been included within Table H.

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, NO_2 annual mean only), the details of which are described in Appendix A. There have been periods where the deployment of diffusion tubes have deviated from the LAQM NO_2 Diffusion Tube Monitoring Calendar, therefore as per LLAQM.TG(19) guidance a time weighted average has been calculated rather than a simple average. The Diffusion Tube Data Processing Tool (version 3.0) has been used to complete these calculations.

Table I. Annual Mean NO_2 Ratified Monitoring Results: Automatic Monitoring Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
CT3	98.7	98.7	**42**	38	32	33	22	23	22.8
CT4	98.1	98.1	**85**	**80**	**69**	**62**	29	31	**40.6**
CT6	96.9	96.9	**92**	**92**	**87**	**73**	**45**	**46**	**52.0**

Table J. Annual Mean NO_2 Bias-adjusted Monitoring Results: Long Term Diffusion Tube Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
CL5	100.0	100.0	**49**	**63**	**50**	**42**	33	31	32.2
CL38	100.0	100.0	**56**	**52**	**50**	**41**	28	28	30.0
CL39	100.0	100.0	**81**	**82**	**70**	**57**	31	36	37.4
CL55	75.0	75.0	35	32	31	28	19	19	19.5

CL40	91.7	91.7	**51**	**48**	**46**	39	33	27	27.0

Table K. Annual Mean NO_2 Bias-adjusted Monitoring Results: Bank Diffusion Tube Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
Bank 1	83.3	83.3	**78**	**65**	**50**	**40**	38	37	38.0
Bank 2	50.0	50.0	**72**	**59**	**58**	**51**	35	31	39.1
Bank 3	91.7	91.7	**52**	**52**	**52**	**47**	30	30	28.1
Bank 5	91.7	91.7	**66**	**63**	**53**	**56**	36	32	33.4
Bank 6	91.7	91.7	**76**	**70**	**61**	**61**	**42**	35	36.2
Bank 8	91.7	91.7	**59**	**56**	**56**	**45**	30	28	28.1
Bank 10	91.7	91.7	**71**	**67**	**66**	**57**	31	30	32.4
Bank 11	66.7	66.7	**61**	**57**	**62**	**41**	26	27	28.7
Bank 12	58.3	58.3	**85**	**69**	**62**	**42**	31	28	28.7
Bank 13	75.0	75.0	**59**	**57**	**53**	**45**	28	26	26.8
Bank 14	75.0	75.0	**64**	**61**	**57**	**49**	32	32	35.5
Bank 15	75.0	75.0	**64**	**54**	**65**	**53**	33	38	37.1
Bank 16	100.0	100.0	**60**	**59**	**62**	**53**	36	**41**	39.9
Bank 17	100.0	100.0	**69**	**66**	**66**	**52**	36	36	34.4

Bank 18	100.0	100.0	**53**	**54**	**52**	**46**	30	30	27.1
Bank 19	75.0	75.0	**45**	**44**	**45**	39	24	24	23.5
Bank 20	75.0	75.0	**78**	**74**	**69**	**49**	36	34	34.0
Bank 22	83.3	83.3	-	**66**	**62**	**51**	33	36	**41.8**
Bank 23	66.7	66.7	-	**66**	**61**	**43**	32	31	34.7

Table L. Annual Mean NO_2 Bias-adjusted Monitoring Results: LEN Area Diffusion Tube Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
LEN 1	83.3	83.3	-	**53**	**43**	38	28	27	28.5
LEN 3	91.7	91.7	-	**69**	**62**	**50**	33	30	36.7
LEN 4	83.3	83.3	-	**62**	**57**	**47**	**41**	35	**43.0**
LEN 5	100.0	100.0	-	**40**	37	-	24	22	23.2
LEN 6	100.0	100.0	-	**46**	**42**	**40**	23	25	26.2
LEN 7	91.7	91.7	-	**41**	**41**	36	25	24	23.9
LEN 8	75.0	75.0	-	**41**	38	34	25	25	22.5
LEN 9	91.7	91.7	-	**48**	**49**	**42**	29	36	31.7
LEN 10	100.0	100.0	-	38	37	31	24	23	22.1
LEN 15	91.7	83.3	-	-	**41**	36	23	23	24.6

LEN 16	75.0	75.0	-	-	39	30	23	23	23.2

Table M. Annual Mean NO_2 Bias-adjusted Monitoring Results: City Area Diffusion Tube Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
SJC1/6/8*	91.7	91.7	39	**40**	39	33	22	24	22.9
WW1/2/3*	97.2	97.2	-	**82**	**77**	**64**	**41**	**44**	**49.8**
PLA5	75.0	75.0	-	-	**41**	35	29	31	33.9
PLA6	58.3	58.3	-	-	37	35	26	26	24.5
LS	91.7	91.7	-	-	**71**	**52**	35	35	30.9
FA	91.7	91.7	-	**46**	36	35	26	25	24.4
FL	66.7	66.7	-	-	**56**	**44**	29	30	31.3
OS1	100.0	100.0	-	-	33	31	20	21	20.9
OS3	83.3	83.3	-	-	**41**	39	24	24	26.3
OS5	91.7	91.7	-	-	**42**	37	26	26	28.5
OS6	58.3	58.3	-	-	-	-	-	25	24.9
OS7	100.0	100.0	-	-	-	-	-	27	27.2
BS	33.3	33.3	-	-	-	-	-	23	24.3
GY	83.3	83.3	-	-	-	**44**	25	28	28.3

GS	100.0	100.0	-	-	-	-	24	25	26.1
CT	83.3	83.3	-	-	-	-	30	30	30.0
N1	91.7	91.7	-	-	-	-	22	22	22.8
N2	91.7	91.7	-	-	-	-	24	21	20.6
SPS2	83.3	83.3	-	-	-	**42**	31	28	30.3
CLS2	100.0	100.0	-	-	-	-	21	23	24.0
CHS	91.7	91.7	-	-	-	-	-	25	24.7
CSG	91.7	91.7	-	-	-	-	-	-	27.4
TC	91.7	91.7	-	-	-	-	-	-	21.4

* SJC and WW are sites of triplicate diffusion tubes co-located with automatic NO_2 analysers. The results presented are an average of the triplicate tubes at each site.

Table N. Annual Mean NO_2 Bias-adjusted Monitoring Results: Transport Strategy Diffusion Tube Sites

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
T2	100.0	100.0	-	-	**67**	**51**	**33**	**40**	38.3
T3	91.7	91.7	-	-	**71**	**57**	**41**	**46**	**45.1**
T4	83.3	83.3	-	-	**50**	**44**	26	27	30.0
T5	100.0	100.0	-	-	**62**	**49**	36	37	39.5
T6	75.0	75.0	-	-	**40**	39	25	25	27.4

T7	91.7	91.7	-	-	**42**	33	25	25	26.0
T9	33.3	33.3	-	-	**74**	**48**	33	34	38.5
T10	91.7	91.7	-	-	**50**	**42**	24	25	23.7
T11	33.3	33.3	-	-	**40**	31	25	27	24.0
T12	100.0	100.0	-	-	**48**	**53**	38	39	**43.5**
T13	83.3	83.3	-	-	**62**	**56**	**41**	38	37.3
T14	75.0	75.0	-	-	**68**	**57**	36	38	39.9
T15	83.3	83.3	-	-	**62**	**47**	33	30	35.1
T16	83.3	83.3	-	-	**61**	**50**	31	31	34.2
T17	91.7	91.7	-	-	**66**	**55**	36	35	36.7
T18	75.0	75.0	-	-	**65**	**52**	36	36	36.8
T19	91.7	91.7	-	-	**51**	38	28	26	27.2
T20	100.0	100.0	-	-	**58**	**51**	35	30	35.7
T21	91.7	91.7	-	-	**73**	**56**	36	**43**	**44.4**
T22	91.7	91.7	-	-	-	-	-	28	28.6
T23	83.3	83.3	-	-	-	-	-	27	26.0
T24	91.7	91.7	-	-	-	-	-	26	26.1

Table O. Annual Mean NO_2 Bias-adjusted Monitoring Results: Beech Street Project Diffusion Tubes

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2022 % [b]	2016	2017	2018	2019	2020	2021	2022
BS1	50.0	50.0	-	-	-	**47**	37	39	**43.5**
BS14	50.0	50.0	-	-	-	**40**	25	25	27.9
BS16	91.7	91.7	-	-	-	34	27	26	25.1
BS17	50.0	50.0	-	-	-	**52**	30	34	31.2
BS18	91.7	91.7	-	-	-	**52**	34	37	36.1
BS19	100.0	100.0	-	-	-	**49**	34	35	34.6
BS20	91.7	91.7	-	-	-	29	23	24	20.7
BS21	58.3	58.3	-	-	-	-	31	36	34.7

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%.

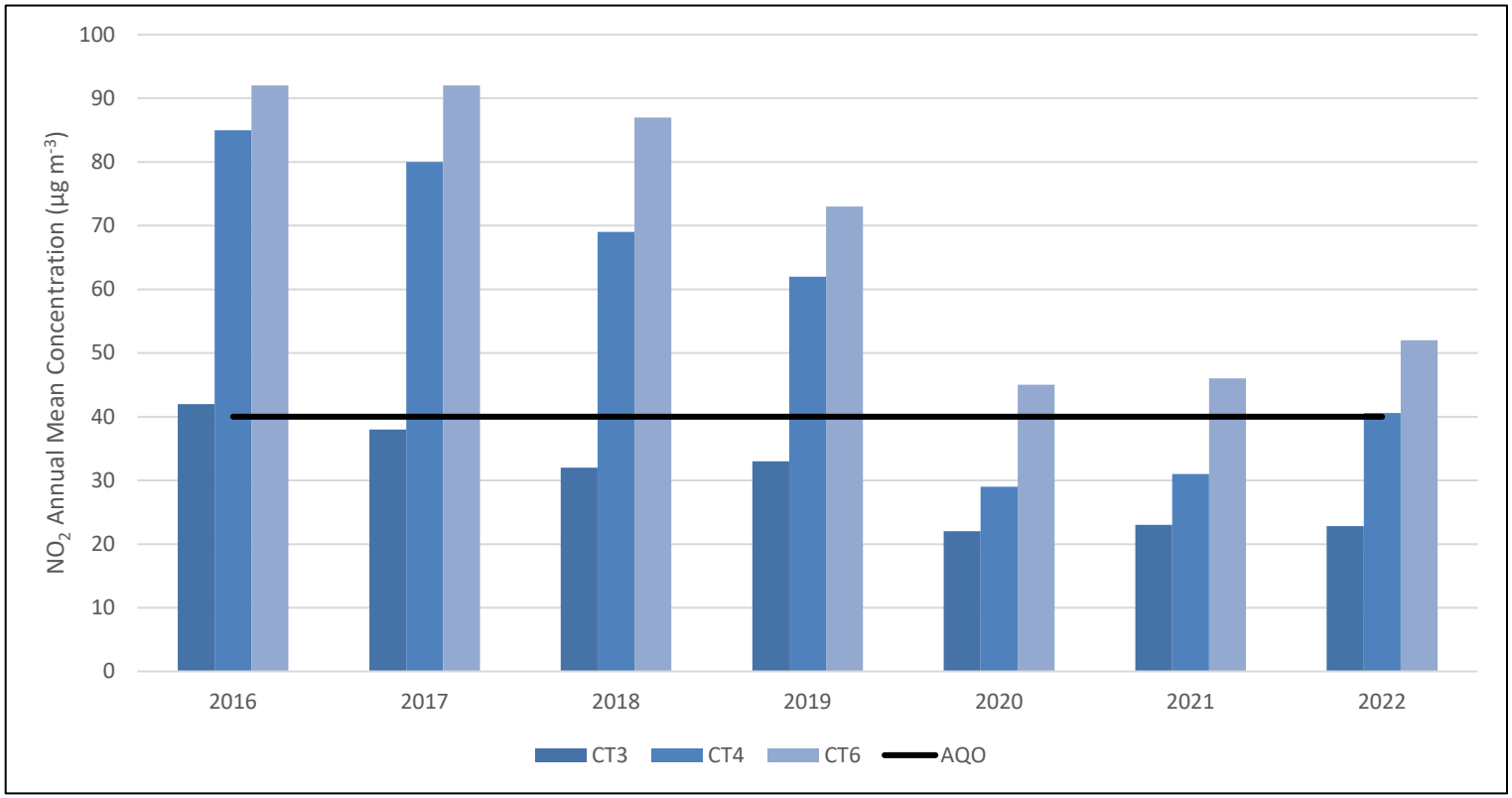
If the monitoring periods varied from the LAQM NO_2 Diffusion Tube Monitoring Calendar a time weighted average has been calculated.

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.

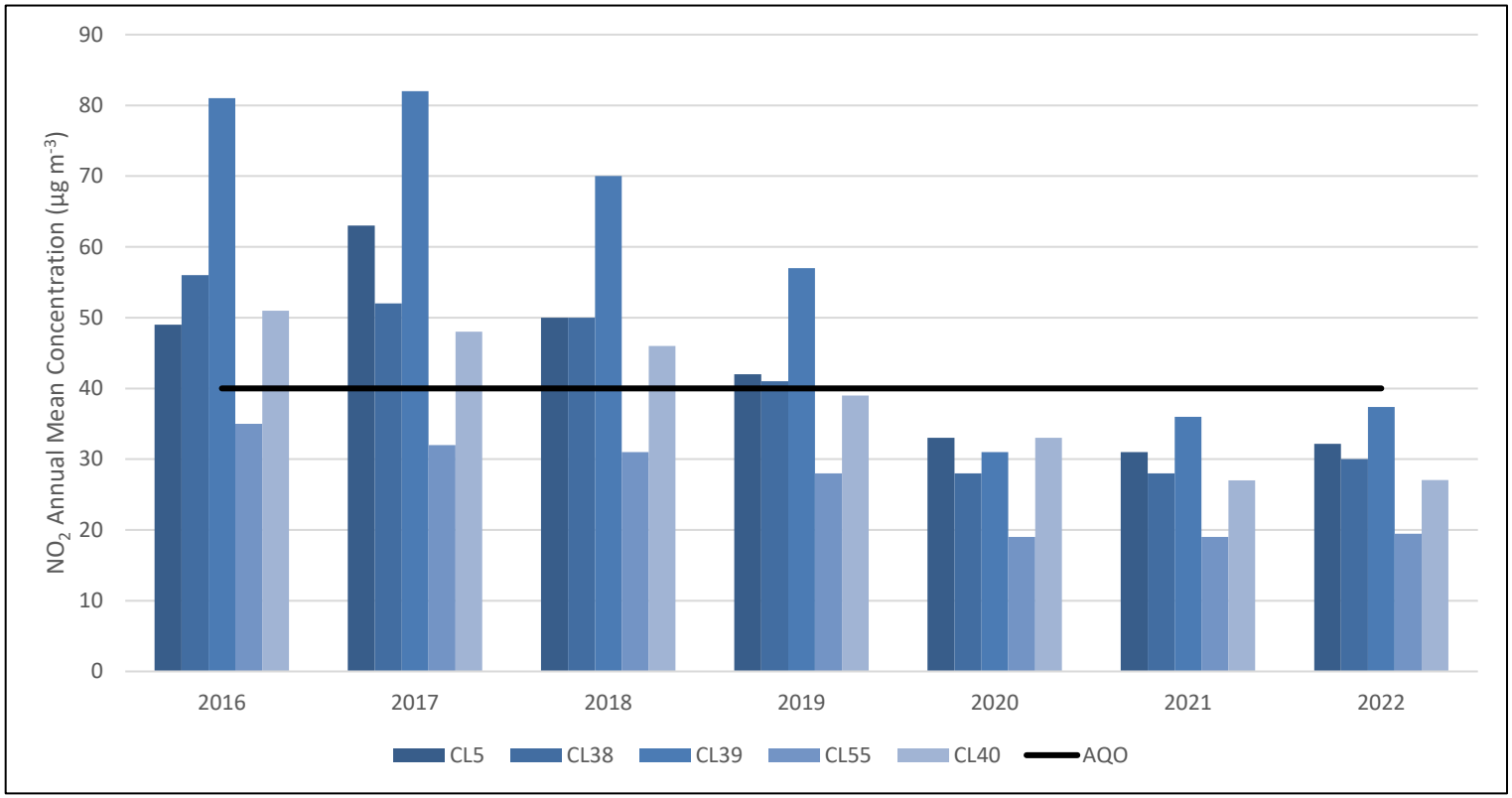
(b) Data capture for the full calendar year (e.g., if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Figure C. Annual Mean NO_2 Automatic Monitoring Results: Automatic Monitoring Sites



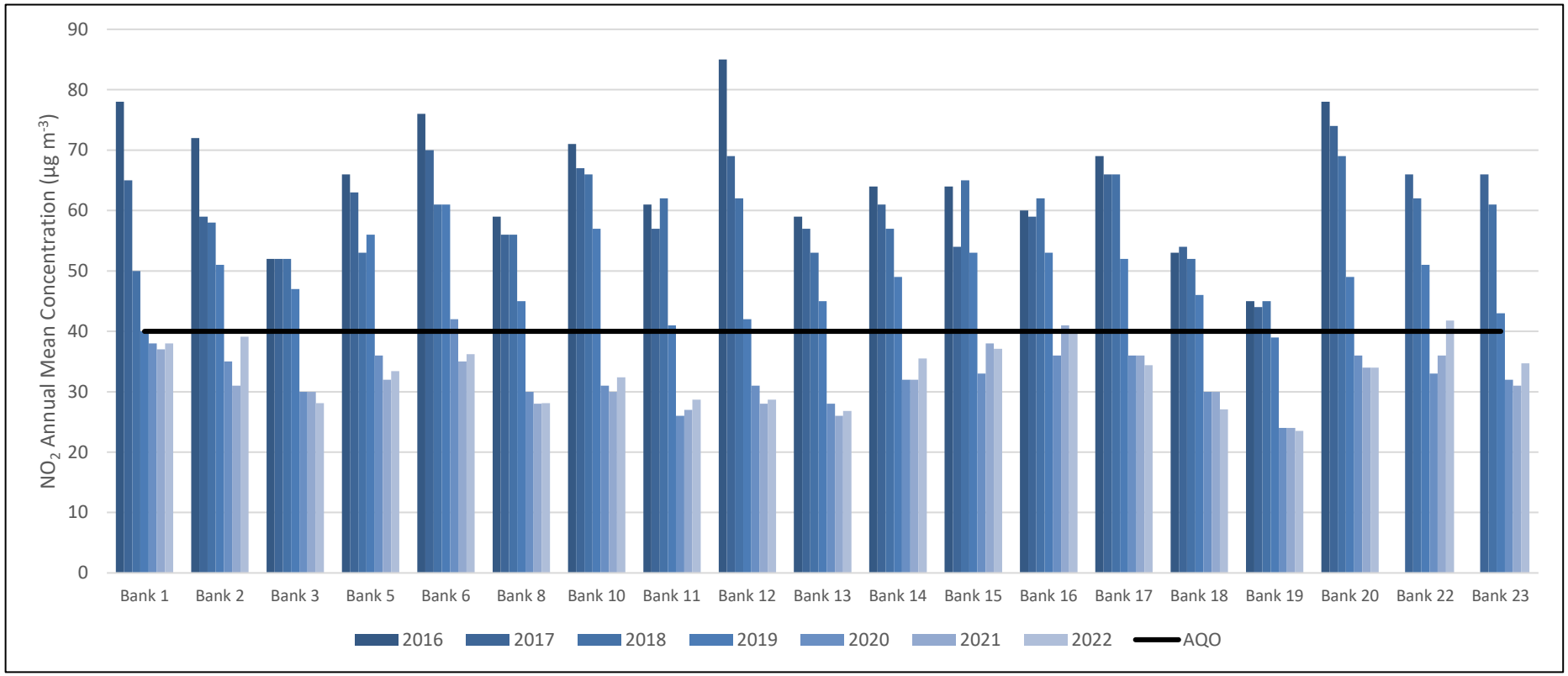
An overall decreasing trend in annual mean NO_2 concentrations is apparent across the seven-year period at the automatic monitoring stations within the CoL. The urban background CT3 has been compliant with the annual mean AQO since 2017 and between 2020 and 2022 has had a range of 1 µg m^{-3}, this shows consistency in the concentrations. The two roadside locations saw a significant reduction between 2019 and 2022 due to Covid-19 restrictions. Since 2020 there has been a bounce-back in annual mean concentration with both sites increasing in both 2021 and 2022.

Figure D. Annual Mean NO_2 Automatic Monitoring Results: Long Term Diffusion Tube Sites



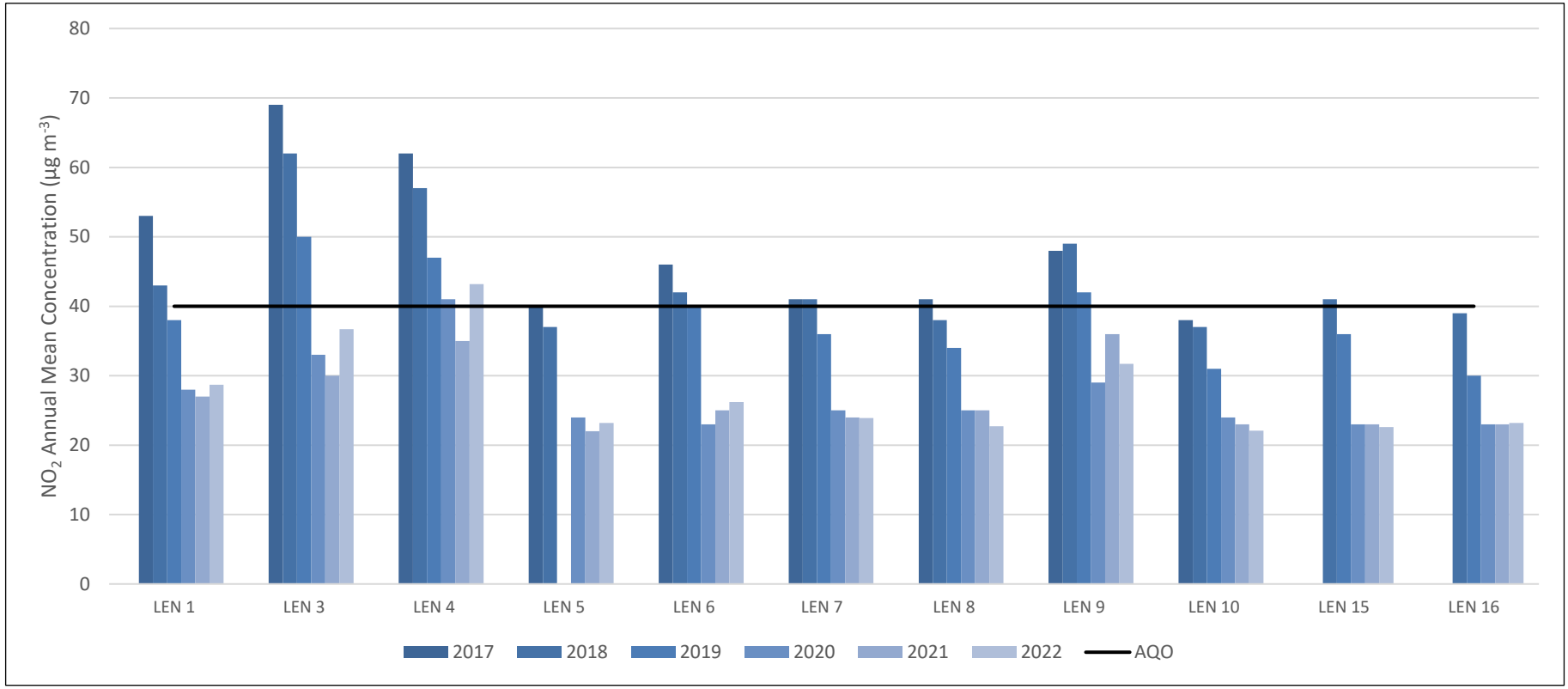
There has been a significant reduction in annual mean NO_2 concentrations across the seven-year period at the Long Term diffusion tube monitoring sites within the CoL. Within this period reductions range between 16.5 – 43.6 µg m^{-3}, with all sites achieving compliance with the annual mean AQO from 2020. There has been less of an increase post Covid-19 restrictions when compared with the automatic monitoring results. CL39 has experienced the greatest increase between 2020 and 2022, 6.4 µg m^{-3}, but the site remains compliant.

Figure E. Annual Mean NO_2 Automatic Monitoring Results: Bank Area Diffusion Tubes



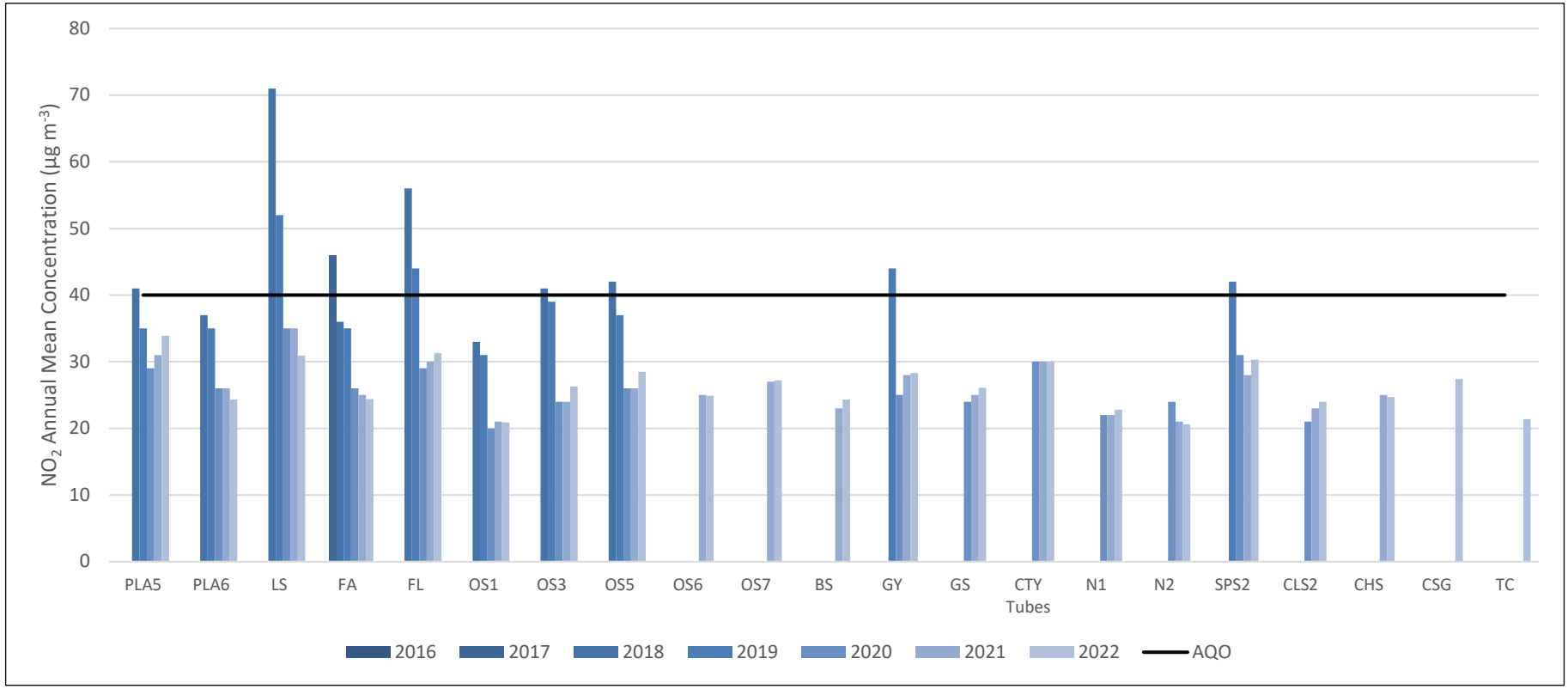
NO_2 diffusion tube monitoring began in the Bank area in 2016 to establish a baseline prior to the planned traffic changes to Bank Junction through the 'Bank on Safety' scheme. Traffic restrictions have been in place since 22nd May 2017. Since 2016 all monitoring sites have a seen a reduction in NO_2 concentrations within the range of 20.1 – 56.3 µg m^{-3}. From 2020 to 2022 there has been one site per year that has exceeded the AQO, and this has been a different site each year; 2020 – Bank 6, 2021 – Bank 16, 2022 – Bank 22. Bank 22 saw an increase of 5.8 µg m^{-3} between 2021 and 2022.

Figure F. Annual Mean NO_2 Automatic Monitoring Results: LEN Area Diffusion Tube Sites



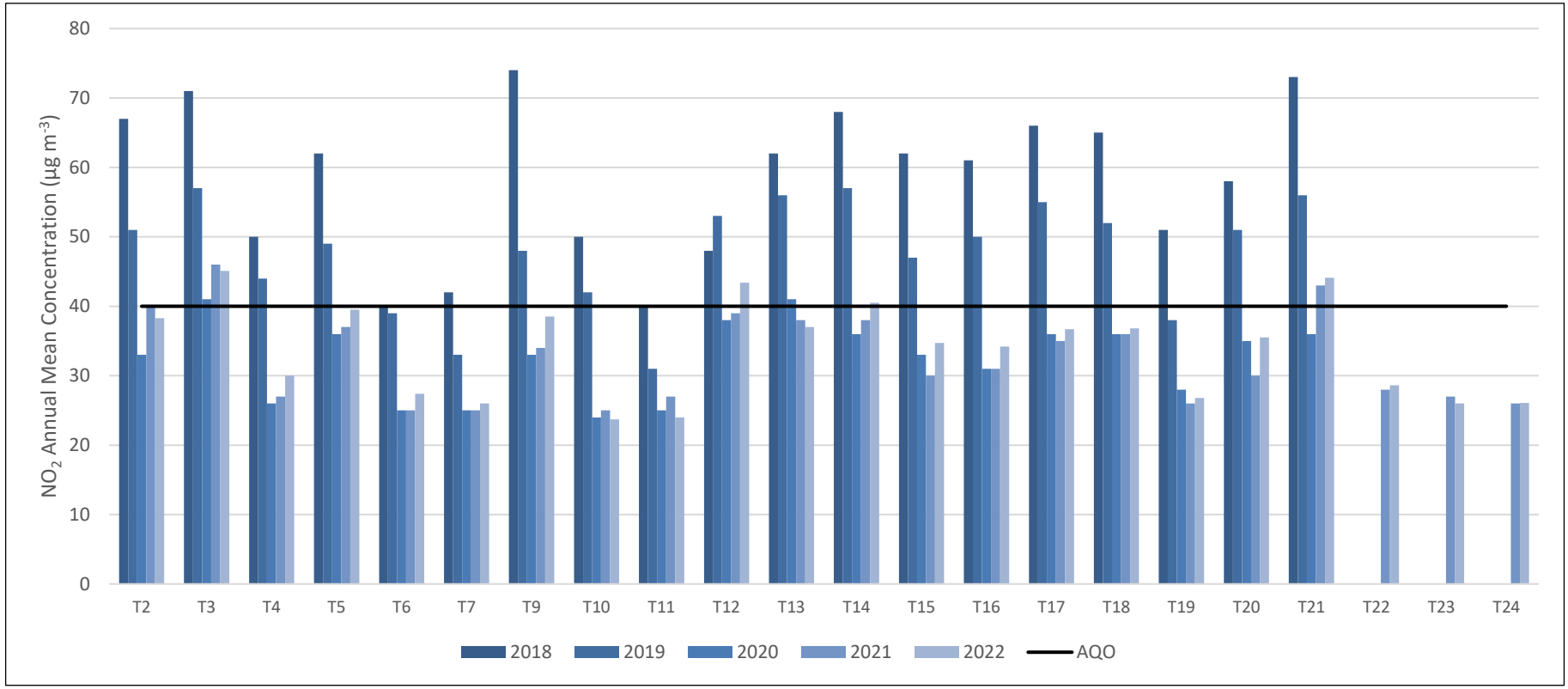
Monitoring commenced in the CoL Low Emission Neighbourhood (LEN) area around the Barbican at the end of 2017 to measure the impact of the project during its delivery and in the years after its completion in 2019. NO_2 concentrations in the area vary, however all sites in the LEN area have recorded a reduction in NO_2 concentrations since their inception. The range of reduction is between 15.8 – 32.3 µg m^{-3}. In 2022 there was one site that exceeded the annual mean AQO: LEN 4. This site has reported an exceedance in all years since its inception except for 2021.

Figure G. Annual Mean NO_2 Automatic Monitoring Results: City Area Diffusion Tube Sites



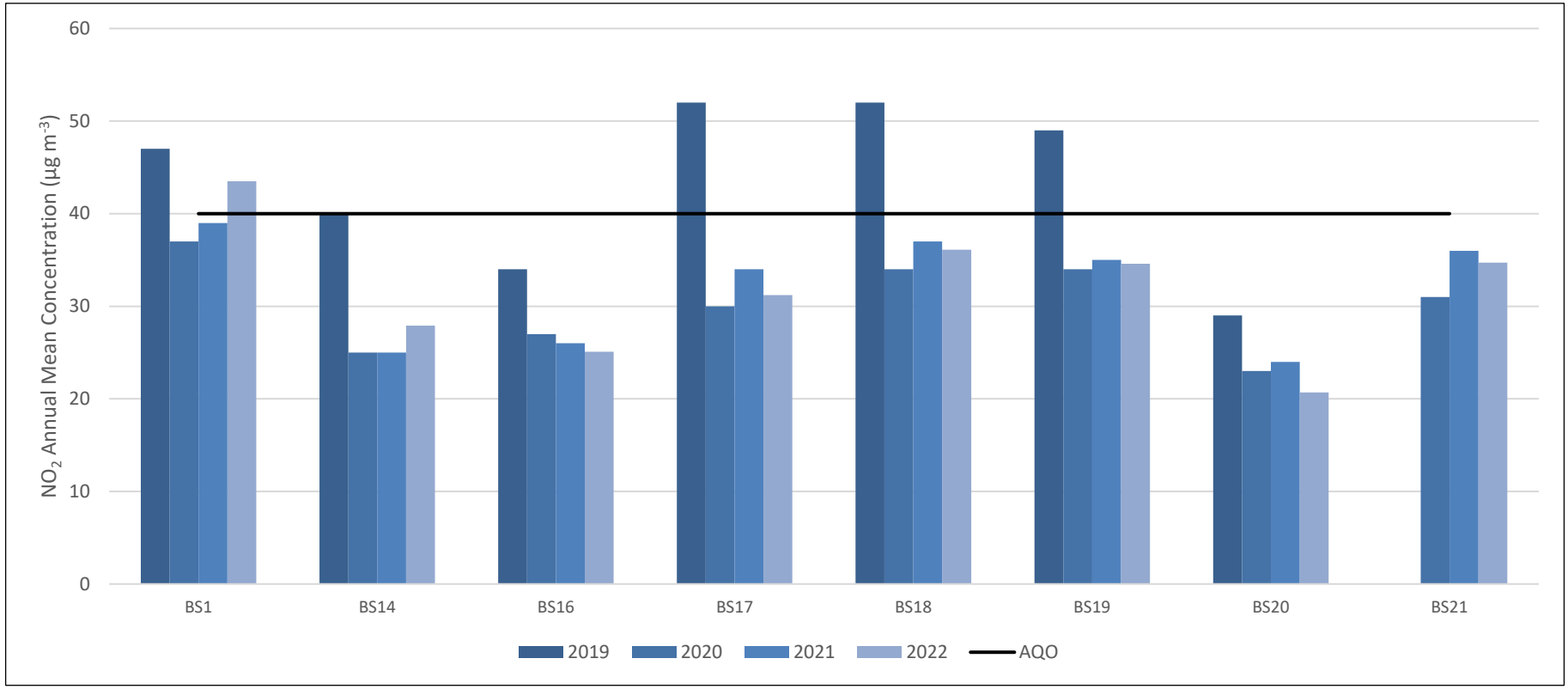
Since 2017, diffusion tubes have continuously been deployed to monitor annual mean NO_2 concentrations across the CoL. Data has been plotted in accordance with how many years a site has been operational. Exceedances of the annual mean AQO have not been recorded at any site since 2019. For sites with at least five years of data the range of reduction is between 7.1 and 40.1 µg m^{-3}. It should be noted that the triplicate sites of SJC and WW have not been presented in Table F due to being co-located with automatic analysers which are a more accurate method of monitoring.

Figure H. Annual Mean NO_2 Automatic Monitoring Results: Transport Strategy Diffusion Tube Sites



NO_2 diffusion tubes were deployed in 2018 to measure the impacts of the CoL Transport Strategy, which was adopted in May 2019. All the sites are roadside locations, and of the 19 sites that have five years of data all, except T12, have experienced a reduction in annual mean concentration of greater than 10 µg m^{-3}. Site T12 has remained relatively consistent in annual mean concentration with a range of 4.6 µg m^{-3} across five years of monitoring. Four sites exceeded the annual mean AQO in 2022, but it should be taken into account that as these are roadside sites they are not representative of annual mean exposure as per LLAQM.TG(19).

Figure I. Annual Mean NO_2 Automatic Monitoring Results: Beech Street Project Diffusion Tube Sites



Diffusion tubes were installed on Beech Street and the surrounding CoL and neighbouring Borough of Islington roads in to establish NO_2 pollution concentrations prior to and during an experimental 18-month closure of Beech Street to all but tailpipe ZEV capable traffic. The scheme began in March 2020 and ended in September 2021, therefore will have been impacted from changing traffic numbers during periods of Covid-19 restrictions. When compared to 2019, all sites have experienced a reduction in annual mean concentration, with the range of reduction between 3.5 and 20.8 µg m^{-3}. Conversely, when compared to 2020 two out of the eight

sites have seen an increase of between 2.9 and 4.5 µg m^{-3}. Site BS1 exceeded the AQO in 2022, this is the first exceedance since 2019. It should be noted that BS1 had a data capture of 50.0% within 2022 therefore the annual mean has been annualised.

Table P. NO_2 Automatic Monitoring Results: Comparison with 1-hr Mean AQO, 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
CT3	98.7	98.7	0	0	0	0	0	0	0
CT4	98.1	98.1	**144**	**67**	**27**	7	0	0	0
CT6	96.9	96.9	**145**	**126**	**37**	15	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.

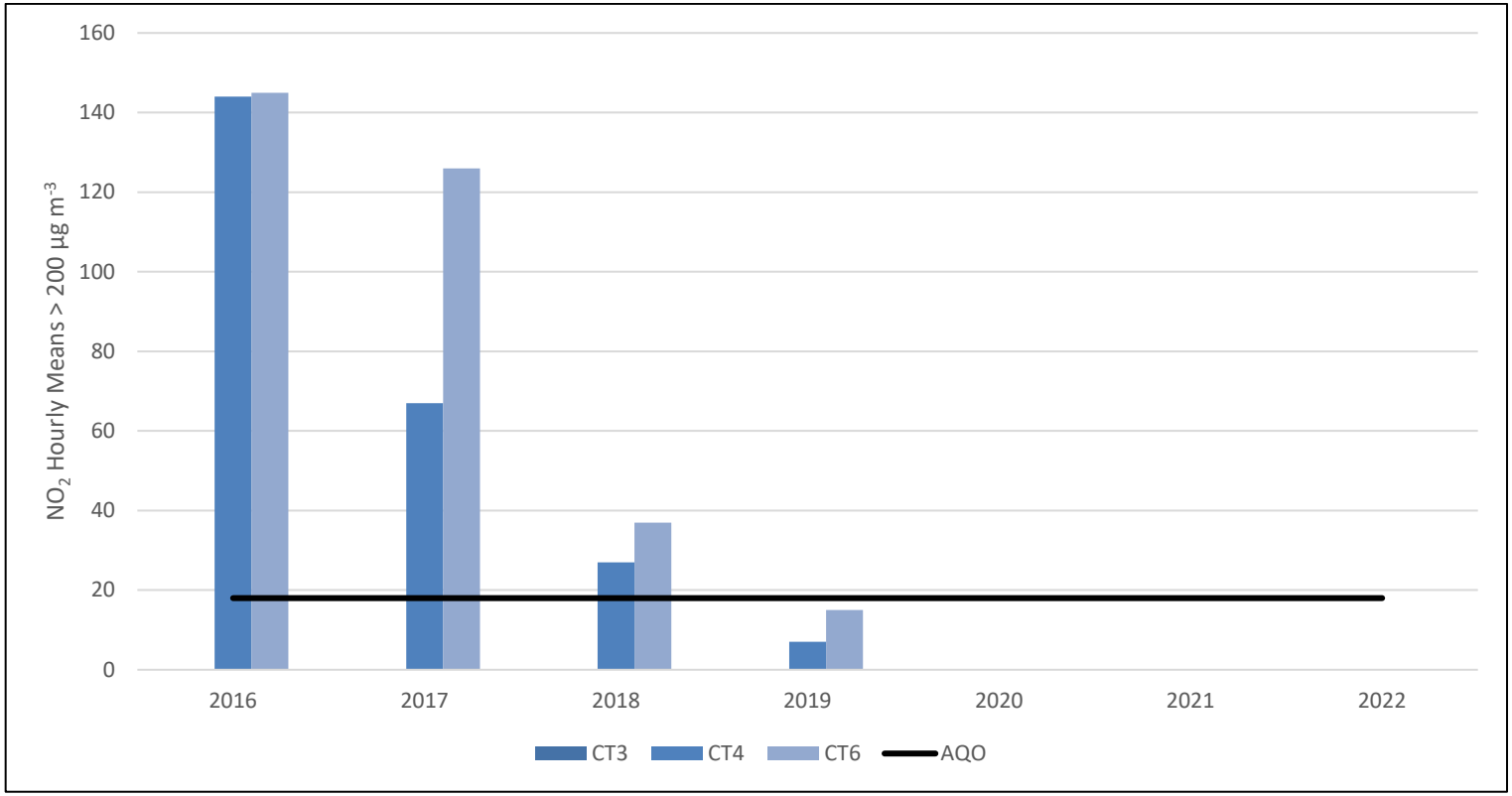
Exceedance of the NO_2 short term AQO of 200 µg m^{-3} over the permitted 18 hours per year are shown in **bold**.

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%)

Figure J. NO_2 Automatic Monitoring Results: Comparison with 1-hr Mean AQO, Number of 1-Hour Means > 200 µg m^{-3}



2022 was the third consecutive year where no hourly NO_2 concentrations greater than 200 µg m^{-3} were recorded within the CoL. The urban background site CT3 has not had recorded an hourly mean greater than 200 µg m^{-3} in over seven years but the roadside sites CT4 and CT6, prior to 2019, had continually exceeded the 1-hour AQO. Although the annual mean concentrations at these two sites have remained close to, or exceeded, the annual mean AQO for the past three years, short-term peak concentrations have been greatly reduced. The exposure at these two locations is relevant to the 1-hour AQO rather than the annual mean AQO therefore these reductions are a significant step to reducing short-term NO_2 exposure within CoL.

Table Q. 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
CT3	80.7	80.7	24	23	21	19	16	16	16.8
CT4	91.6	91.6	25	23	24	22	18	15	17.3
CTA	73.2	46.8	-	-	-	-	-	-	19.5
CT8 [c]	-	-	35	32	32	27	24	19	-

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**.

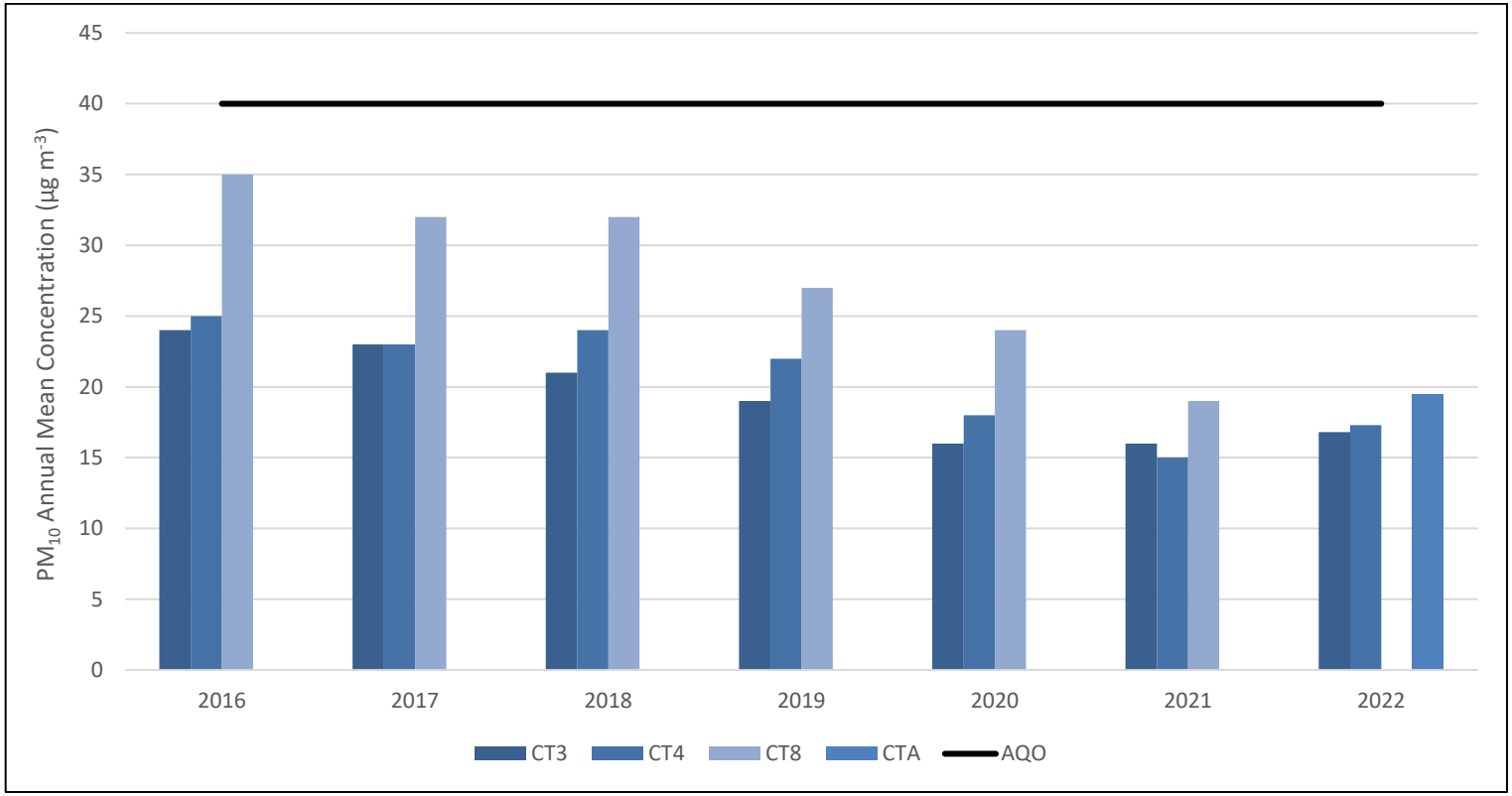
All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture is less than 75% and more than 25%.

(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%).

(c) PM_{10} monitoring ceased at CT8 in September 2021. The BAM was installed at CTA and monitoring commenced in May 2022.

Figure K. Annual Mean PM_{10} Automatic Monitoring Results



There has been an overall reduction in PM_{10} annual mean concentrations at all relevant monitoring sites within the CoL since 2016, with reductions ranging from 7.2 – 16 µg m^{-3}. Annual mean concentrations at the three operating sites in 2021 were the lowest recorded since their inception. Monitoring of PM_{10} ceased in 2021 at CT8 and commenced at CTA in 2022, with an annualised concentration of 19.5 µg m^{-3} recorded. The concentrations in 2022 increased slightly at both CT3 (0.8 µg m^{-3}) and CT4 (2.3 µg m^{-3}).

Table R. PM_{10} Automatic Monitoring Results: Comparison with 24-hr Mean AQO, Number of PM_{10} 24-hr 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
CT3	80.7	80.7	11	8	3	7	1	1	3 (25.7)
CT4	91.6	91.6	16	8	9	6	2	0	3
CTA	73.2	46.8	-	-	-	-	-	-	0 (27.8)
CT8 [c]	-	-	**45**	30	25	14	9	6	-

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.**

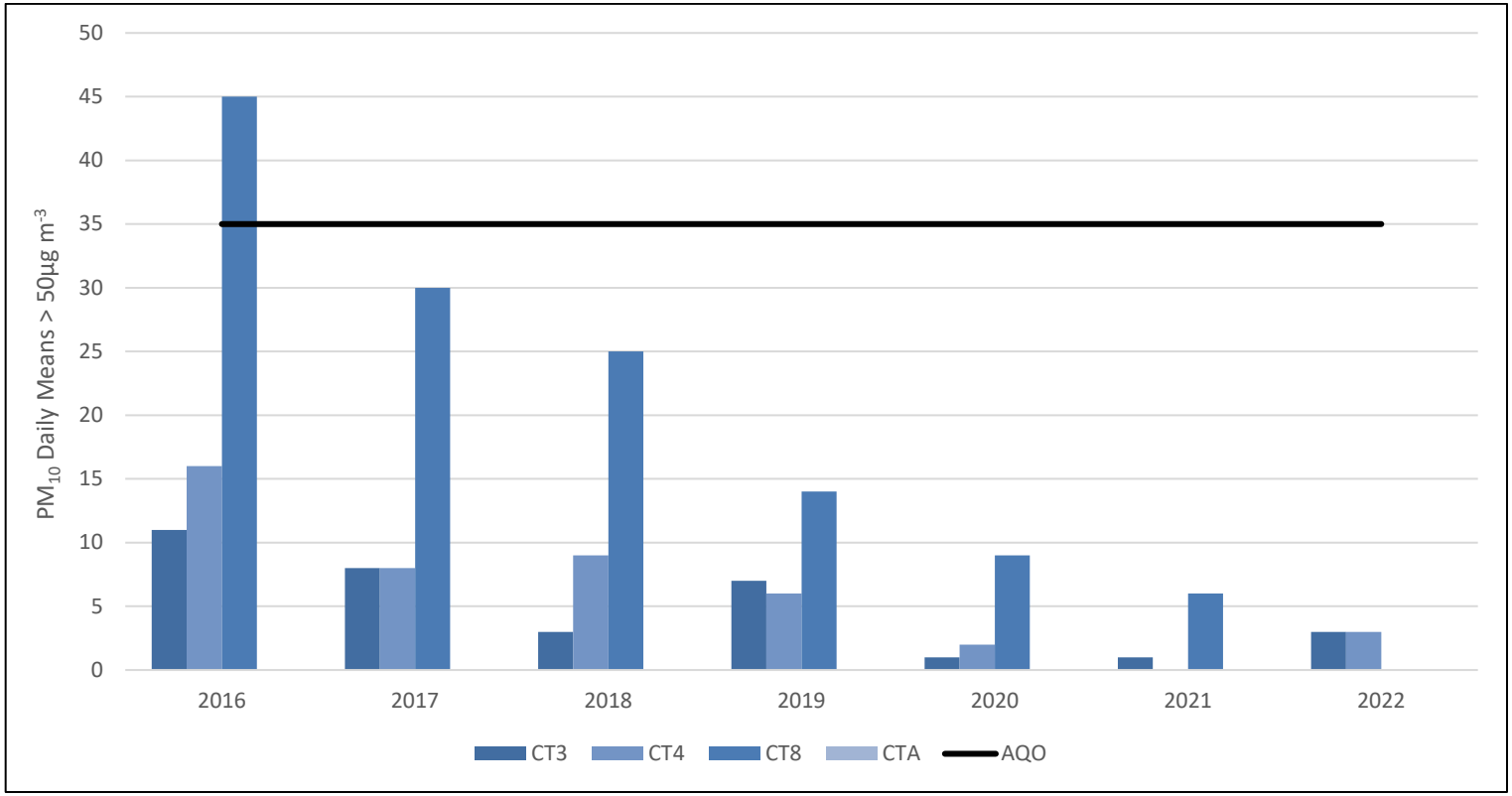
Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.

(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%).

(c) PM_{10} monitoring ceased at CT8 in September 2021. The BAM was installed at CTA and monitoring commenced in May 2022.

Figure L. PM_{10} Automatic Monitoring Results: Comparison with 24-hr Mean AQO, Number of PM_{10} 24-hr Means > 50 µg m^{-3}



Within the last seven years there has been one exceedance of the 24-hour PM_{10} AQO: site CT8 in 2016. Since 2016 there has been a significant reduction in the number of daily means greater than 50 µg m^{-3} at all monitoring sites. The most significant reduction has been experienced at CT8. The number of daily means greater than 50 µg m^{-3} were at their lowest totals within the seven-year period for the three operational sites in 2021. Like the annual mean concentration, within 2022, both CT3 and CT4 experienced slight increases when compared to 2021. Monitoring of PM_{10} ceased in 2021 at CT8 and commenced at CTA in 2022, with no daily means greater than 50 µg m^{-3} recorded and a 90.4^{th} percentile of 27.8 µg m^{-3}.

Table S. 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
CT2	91.0	91.0	16	16	16	14	12	12	11.9
CT3	71.4	71.4	15	14	12	12	12	11	13.2

Notes

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

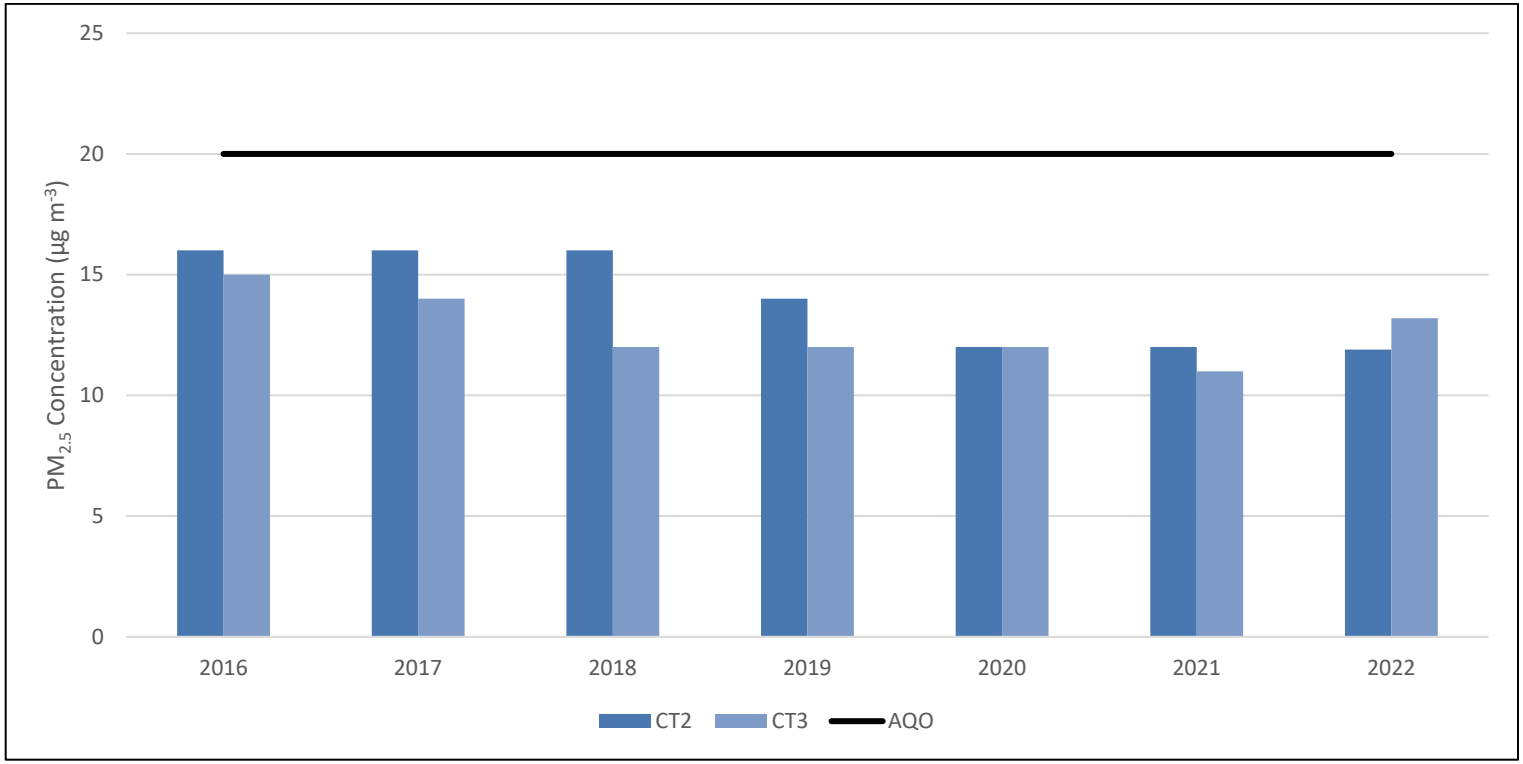
Exceedances of the $PM_{2.5}$ annual mean AQO of 20 µg m^{-3} are shown in **bold**.

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%).

Figure M. Annual Mean $PM_{2.5}$ Automatic Monitoring Results



The two $PM_{2.5}$ monitoring sites within the CoL have complied with the annual mean AQO (20 µg m^{-3}, to be achieved by the 1st January 2020) for the past seven years. Both sites present an overall decline between 2016 and 2022; 4.1 µg m^{-3} at CT2 and 1.8 µg m^{-3} at CT3. The roadside site CT2 has seen a continual reduction, year on year, since 2016. A continual reduction has been experienced at the urban background site CT3 between 2016 and 2021, but in 2022 the concentration increased to the highest annual mean since 2017. It should be noted that the 2022 annual mean for CT3 was annualised due to data capture being less than 75%.

Table T. O_3 Automatic Monitoring Results

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2022 %[(b)]	2022 Annual Mean (µg m-3)	2022 Number of 8-hr Means > 100 µg m^{-3}
CT9	99.0	76.2	54.1	**22**

Notes

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

Exceedances of the O_3 8-hour mean objective (100 µg m^{-3} over the permitted 10 instances per year) are shown in **bold.**

(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%).

Although the monitoring and reporting of O_3 is not a requirement under LLAQM the CoL procured and installed an O_3 analyser during 2022. The analyser is located within the Guildhall on the 6th floor and has been operational since the 26th of March 2022 with the aim to compare concentrations of O_3 within the CoL as NO_2 concentrations have reduced across CoL and Greater London.

2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table U provides a summary of City of London's progress against the Air Quality Action Plan, showing progress made this year.

Table U. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress
Ensure that adequate and appropriate monitoring is undertaken across the City of London to fulfil statutory obligations and make good quality data available to the public.	NO_2, PM_{10} and $PM_{2.5}$ monitoring will continue using continuous analysers at 4 locations as a minimum. NO_2 diffusion tube monitoring will take place at 50 locations as a minimum. Support monitoring by our collaborators	We have two $PM_{2.5}$, three PM_{10}, one ozone and three NOx continuous analysers. All sites are serviced and audited in line with national guidance. The data is ratified by Imperial College London and made available to the public at www.londonair.org.uk. During 2022, we measured nitrogen dioxide at 110 locations using diffusion tubes.
Use air quality data to generate pollution alerts and messages using a range of media such as the free CityAir Smart Phone App.	Monitoring data will be used effectively to generate alerts for the smart phone app and tailored alerts for vulnerable people.	The air quality monitoring data is used to provide current information on air quality through the City Corporation CityAir App. It is also used to support the AirTEXT service.

Publish an annual report of air quality data on the City Corporation web site.	Annual reports will be produced for compliance with statutory obligations, demonstrating how air pollution compares to health-based Limit Values and WHO Guidelines and demonstrating how pollution has changed over time.	The 2021 Annual Status Report is available on the City Corporation website: www.cityoflondon.gov.uk/air This report will also be made available on the web site.
Continue to make live data from continuous air quality monitors available to the public on the London Air Quality Network web site.	Kings College London will be commissioned to undertake independent checks of air quality data and make the data freely available to the public, consultants, and academics as part of a London wide resource.	Data from all continuous analysers is available on the London Air Quality Network web site www.londonair.org.uk. This is managed by Imperial College London.
Support the testing of new air quality sensors to establish their degree of accuracy.	Support the testing of one new sensor per year. Work with partners on a standardised framework to improve comparability of results.	The AirNode sensor being trialled at Aldgate School was replaced in 2021. It is a low-cost, low-power, compact ambient air monitoring device. It measures temperature, humidity, CO_2, NO_2, O_3, PM_1, $PM_{2.5}$, PM_4 and PM_{10}. This sensor was removed in 2022, and the results are being evaluated.
Undertake an annual assessment of air quality to ensure levels of nitrogen	Source funding to undertake annual air quality forecasts to ensure Limit	An area compliance assessment was undertaken for the year 2021, which was the latest year with a completed set of ratified data.

dioxide in 90% of the Square Mile meet health-based Limit Values and World Health Organisation Guidelines by 2025	Values and WHO Guidelines will be met by 2025. If it looks like limits won't be met, develop additional action plan for approval.	The area of the Square Mile to comply with the nitrogen dioxide limit value and WHO guideline in 2020 was 94%, this is a significant increase from 2019 when it was 67%. This figure was calculated using air quality modelling, calibrated with all of the monitoring data collected across the Square Mile. The resolution of the output is $1m^2$.
Continue to place air quality as an important political priority and support the outcomes of the City Corporate Plan and local and London-wide action.	Host at least one London wide event per year for relevant air quality organisations. Arrange meetings with relevant policy and research bodies.	An early evening lecture was held in December 2022 to mark the 70^{th} anniversary of the Great Smog. The event was attended by around 100 people and provided a networking opportunity for the London air quality community.
Provide information on reducing emissions from buildings for City Corporation facilities managers and investment property managers.	Develop on-line resource. Deliver annual lunchtime workshops for at least 80% of Facilities Managers.	A guidance document 'Combustion plant: Recommendations for best practice' is available on the City's Air Quality webpages. When first produced, a webinar was held to explain the Combustion plant guidance for facility managers. The recording of this webinar has been converted to an educational video, available to view on YouTube via a requested link. An online Facilities Managers drop-in session was held in September 2022.
Reduce emissions of air pollutants from buildings owned by the City Corporation.	Undertake energy audits of City Corporation buildings.	Energy Audits were completed in 16 buildings.

	Reduce emissions of NOx from large buildings by at least 3% per year.	Gas usage decreased by 15.7% from the previous year. 100% of the electricity used by the City Corporation is from renewable sources. 50% of this is from a new solar farm in Dorset. The site has over 91,000 panels and has a capacity of 49.9 MW. Citigen CHP plant provides heating and cooling via a network to the Guildhall, Barbican, Guildhall school of Music and drama, Museum of London, and Bastian House. 4MW ground source heat pumps have been installed which provide 9GWh of heating and 4GWh cooling. Studies have been undertaken to explore southern expansion. A draft Local Area Energy Plan has been produced.
Review the provision of electric vehicle charging across City Corporation sites including residential estates.	Assess the requirement for electric vehicle charge points. Make recommendations for the installation and use of charge points to meet residents' requirements. Source funding for additional charging infrastructure.	In March 2020, an electric vehicle charging infrastructure action plan was developed. The recommendations are being delivered. Work continues to progress to provide more residential charge points in residents car parks - Barbican car parks installed new EV charge points in 2021 and new charge points in further DCCS estates are planned, subject to funding. Electric vehicle charge points have been installed in Baynard House car park and were opened for use end of 2022.

Ensure that, subject to operational requirements, 100% of vehicles owned or leased by the City Corporation are electric or hybrid by 2025.	Use the Responsible Procurement Strategy and Transport Coordination Group to ensure this target is met subject to suitable vehicle availability.	The following vehicle purchasing hierarchy is implemented: fully electric; plug in hybrid; petrol hybrid, Euro VI petrol; Euro VI diesel. We continue to reduce the size of our fleet and expand the number of electric vehicles. We currently have 19 fully electric and 8 hybrid vehicles. Five fully electric refuse collection vehicles are now used in our refuse collection contract. 100% of the electricity used by the City Corporation is from renewable sources, so electricity used to charge corporate vehicles isn't contributing to air pollution outside the City of London boundary.
Continue to trial low and zero emission technology.	Take all opportunities to trial and evaluate at least one new low and zero emission vehicle per annum.	The trial of the all-electric refuse collection vehicles led to the purchase of 5 all electric RCVs for the refuse collection contract.
Continue to encourage zero emission vehicles through the supply chain.	Apply the menu of options in the Responsible Procurement Strategy to assist in reducing air pollution to major contracts. Review the menu of options biannually.	The Corporate refuse contract has: 5 Electric RCV's 5 Electric Sweepers 4 Electric Goupil small cages 7 Mitsubishi Canter Hybrid Cages.

Require electric or hybrid vehicles as a default for the Corporate taxi contract, together with annual emission reduction targets	When the Corporate taxi contract is renewed, stipulate a requirement for low and zero emission vehicles as default, with emission reduction targets applied.	The City Corporation supplier of the taxi contract has a roadmap to electrification with a commitment for all taxis to be fully electric by the end of 2023
Require zero emission and electric or hybrid vehicles as a default for courier contracts, together with annual emission reduction targets	When the courier contracts are renewed, stipulate a requirement for zero and low emission vehicles as default, with emission reduction targets applied.	For deliveries within 5 miles, the Courier Contract requires the use of zero emission transport e.g. cargo bikes. The contract for national and international parcels requires the use of safe, low-emission and zero emission modes of transport wherever possible.
Continue to ensure that all relevant Corporate strategies and policies reflect the importance of improving local air quality and reducing exposure.	All existing strategies will be assessed for actions to assist in improving air quality and reducing exposure. Further measures will be included in Corporate strategies when they are reviewed.	The air quality team works very closely other teams, so air quality is considered in decision making. This includes Planning, Transportation, Public Realm, Highways, Recycling and Waste, Open Spaces, Procurement, Remembrancers, Public Health, Climate Action, and Fleet Management. The team is part of a Corporate Strategy Forum which has been set up to share best practice.
Work with London Councils and other stakeholders to develop proposals for legislation to help improve air quality across London.	Agree proposals for a Private Members Bill with London Councils.	The Emission Reduction (Local Authorities in London) Private Members Bill was introduced to the House of Lords by Lord Tope in October 2019, and again in January 2020.

	Coordinate proposals with the Greater London Authority and other bodies. Support the passage of the Bill through the House of Lords.	The Bill, which is supported by London Councils, has not been selected for a second reading to date, but has been used to influence discussions with Defra officials about the provision of new powers to assist London local authorities with obligations under the Environment Act 2021. The provisions have also been promoted in responses to government consultations and to inform parliamentary debates such as the Environmental Targets (Fine Particulate Matter) (England) Regulations 2022. They were also promoted in the development of the Parliamentary POST research briefing on urban air quality Urban outdoor air quality - POST (parliament.uk)
Continue to work closely with the Greater London Authority and Transport for London on policies to improve air quality and ensure that all actions support the aims and objectives of the Mayor's Environment Strategy.	Ensure actions within this Strategy support the Mayor of London's activities and the requirements of LLAQM. Undertake air quality improvement projects with the support of the Mayor's Air Quality Fund. Support the activities of the Mayor of London Air Quality Department.	We continue to be part of the Mayor of London Non-Road Mobile Machinery enforcement project and is working with London Borough of Camden on a legacy for the pan London idling engine project.

Continue to collaborate with London Boroughs and London Councils on action to improve air quality.	Provide air quality advice to London Councils. Chair four meetings per annum of the London Air Quality Steering Group. Host four meetings per annum of the central London Air Quality Cluster group.	We hosted and chaired four virtual meetings of the London Air Quality Steering Group (LAQSG). These were attended by representatives from the Greater London Authority, Environment Agency, London Councils, UK Health Security Agency and Lead Air Quality Cluster co-ordinators. We also represent London local authorities on behalf of the LAQSG at the London Air Quality and Health Delivery Group a forum, set up to maximise the health and care system's action on air pollution and health. We have attended, and chaired in turn, quarterly Central London Cluster group meetings throughout 2022.
Support Universities with research into the health impacts of air pollution, to increase understanding of the sources of pollution and the effectiveness of interventions to reduce pollution.	Support research on impact of building form on wind patterns and pollution concentrations. Support an air quality dissertation through Dissertations for Good. Support other research projects as and when required.	We are a member of the Clean Air Futures Research Group which is mapping out the future research and evidence requirements of air pollution. It was convened by the UK Clean Air Champions to help to shape the future research agenda and supports the joint UK Research and Innovation and Met Office Strategic Priorities Fund Clean Air Programme. Meetings have been held on: • the research required to understand and track inequalities and vulnerabilities in air pollution exposure. • What research is needed to understand and manage air pollution exposure in indoor public spaces and transport environments?

	Source funding to support London Universities with research for dealing with air pollution in urban areas.	
Continue to support the Third Sector to deliver air quality improvement projects and raise awareness amongst London's communities.	Judge the Sustainable Transport Category of the Sustainable City Awards. Support the work of Environmental Protection UK with events, meeting space and administrative support.	We provided a representative for the judging panel for the 2023 Sustainable City Awards. We supported the development of Environmental Protection UK Guidance for local authorities on Air Quality and Climate Change.
Support the Port of London Air Quality Strategy through air quality monitoring and in taking wider action to reduce emissions from vessels on the river Thames.	Monitor air pollution along the river. Source funding to support the PLA to pilot measures to reduce emissions from vessels using the river.	Nitrogen dioxide monitoring continued at two locations adjacent to the river – Southwark Bridge and London Bridge. We have completed a three-year programme with the Port of London Authority on a Clean Air Thames project to trial engine emission retrofit on river vessels. The project was led on our behalf by Cross River Partnership.
Continue to support the Cross-River Partnership in its delivery of air quality projects in central London.	Provide the co-chair for CRP and take part in joint projects.	The City Corporation provides the co-chair for Cross River Partnership and has worked in partnership with the organisation on the Clean Air Thames Project and Healthy Streets Everyday Defra funded project.

		For the Clean Air Thames project, 2 operators installed SCR systems onto their vessels. Preparations are in hand to enable post-retrofit monitoring, and to demonstrate the air quality benefits accruing from this programme of works. Clean Air Thames featured in the Cross River Partnership webinar series, Lunchtime Launch, The Future of Sustainable Shipping and Trade in London.
Continue to support the Environment Agency with action to improve air quality, including the implementation of the Medium Combustion Plant Directive.	Source funding to undertake a survey of combustion plant in the City of London. Support the implementation of the Medium Combustion Plant Directive through the provision of information where available and review of permits where required.	We have collated data from a range of sources to compile a list of combustion plant in the Square Mile. This data was updated in 2022 and used to inform research into the sources of $PM_{2.5}$ in the Square Mile. We will continue to update this resource. We liaised with the Environment Agency with regards to the potential risk of increased emissions due to the use of generators to provide electricity to the GRID during power outages.
Continue to engage with and support the Business Community to become Air Quality Champions and reduce their impact on local air pollution.	One on one business engagement through the CityAir scheme. Run at least one Air Quality Business event per year.	We continued to promote a Clean Air pledge amongst City businesses, to raise awareness about air quality amongst employees and highlight their strategy commitments and current/future planned projects to reduce emissions. For the third year running we assisted with the delivery and judging of the 'Air Quality and Climate Change' award for the Clean City awards Scheme. We also provided the key talk at one of the CCAS business lunch talks. Through this partnership we continued to share our air quality resources for businesses with a wider network.

	Engage with intermediary groups who work with small businesses to raise the profile of air quality. Work with the Cheapside Business Alliance (CBA) to raise the profile of air quality and obtain support for action to reduce emissions associated with the CBA member activities.	We continue to support Cheapside Business Alliance, and have an air quality representative on their Environment, Signage and Wayfinding Steering Group. We also now work with Eastern Cluster BID. Through both these partnerships we have presented to businesses and partnered together to do an air quality stall in the footprint.
Support the Mayor of London with the effective implementation of the Ultra-Low Emission Zone.	Publicise the ULEZ amongst local businesses, City Corporation departments and markets. Ensure City Corporation fleet of vehicles meet the ULEZ criteria.	We are continuing to strive towards 100% ULEZ compliance, operating a 'Transition to Zero Emission Fleet policy', a decision-making hierarchy which applies to all purchased, leased, and hired vehicles operated by the City Corporation.
Work with the taxi industry to reduce empty running of taxis within the Square Mile.	Explore what practical action can be taken to reduce empty taxi running.	No progress
Urge Transport for London to prioritise Zero Emission Capable buses on routes through the City of London.	Work with TfL on their programme of upgrades to cleaner buses and review of routes.	All buses that run through the City of London are either zero emission, hybrid and meet Euro VI emission criteria.

Ensure that Healthy Street Plans have air quality improvement targets and that the air quality impact of major transport and public realm schemes are measured.	Healthy Streets plans will have air quality KPIs. Road schemes will be assessed for local air quality impact when there are proposed changes.	All major road schemes are assessed for air quality impacts. Air quality is factored in as a key objective to all Healthy Street Plans Wide scale air quality monitoring is continuing to assess the impacts of Bank on Safety/ All Change at Bank, the Beech Street zero emission street consultation, proposed changes around St Martins Le Grand, the Pedestrian Priority Streets programme and the wider Transport Strategy.
Introduce Local Zero Emission Zones by 2022.	Introduce local ZEZs covering the Barbican and Golden Lane and Eastern Cluster.	A consultation for a permanent zero emission zone scheme at Beech Street was planned for early 2023. Emission restrictions recommendations for the Barbican and Golden Lane area will now be dealt with as part of the Bunhill, Barbican and Golden Lane Healthy Streets Neighbourhood, joint with Islington Council.
Implement a wide range of action through the City Corporation Transport Strategy to reduce the exposure of pedestrians to transport generated air pollution in the Square Mile.	Increase in the number of pedestrianised, or pedestrian priority streets. Widen pavements.	The City's Transport Strategy contains its Pedestrian Priority Programme: a series of street improvements to manage pedestrian priority, including traffic access restrictions and pavement widening. Plans were made to make three of the current pedestrian priority streets permanent from February 2023, namely King Street, King William Street and Old Jewry. In summer 2020, as part of our COVID-19 response to give more space and priority to people, we restricted through traffic on Chancery Lane between 7am-

		7pm, Monday- Friday. The restrictions were lifted in autumn 2021. Plans were put in place and approved to commence a new Chancery Lane traffic experiment (ETO) commenced on 20th January 2023 for 6 months. This is a change to the previous experiment, and now permits taxis through the restriction point.
	Reduce the amount of time people wait for a green signal to cross the road.	'All Change at Bank' walking and public realm improvements have progressed throughout 2022. The Traffic Management Orders were approved following consideration of formal objections at the end of May 2022. Construction work to deliver the All Change at Bank project started in September 2022. Work is progressing well and remains on programme. Areas of improved and increased pavements are starting to be made available although a significant traffic management exercise remains in place to facilitate construction. The project is due to complete in Spring 2024.
	Improve specific walkways such as the riverside walkway and Barbican High-Walk.	
	Improve awareness of traffic free walking routes.	Street level and Barbican 'highwalks' installation have been largely completed.
	Timed and temporary street closures	Improvements to the Globe View section of the riverside walkways have been completed and opened. Highway works for Puddle Dock Pedestrian Route to the riverside are complete.
	Car free days. Lunchtime Streets – at least 5 to be in operation by 2025.	No lunchtime streets or car free day activities took place throughout 2022 due to post-COVID-19 return.

Pilot an ultra-low emission vehicle street.	Assess the feasibility of piloting an ULEV access restriction to inform the development of Zero Emission Zones as part of the City Corporation Transport Strategy. Subject to the outcome of the feasibility study, pilot an ULEV street.	Beech Street zero emission street was piloted from March 2020 to September 2021. A consultation has taken place to consider whether to implement the scheme permanently.
Assess the suitability of rolling out LEN pilot projects at other locations across the Square Mile.	Commission a legacy report to establish the most cost-effective interventions. Source funding to roll out cost effective interventions.	The Low Emission Neighbourhood Legacy report was completed and effective measures that were identified have been incorporated into a range of operations.
Implement a wide range of action, through the City Local Plan and the City Corporation Transport Strategy, and Freight and Servicing SPD to reduce emissions from freight vehicles in the Square Mile.	Introducing a freight consolidation service for the City. Delivering two last mile logistics hubs	We have stimulated the marketplace for consolidation services through the planning process, with 13 s106 agreements for use of a physical consolidation centre agreed by developers to date. London Wall car park has now been discounted as a potential location for a last mile delivery hub due to access issues and timescales of the London Wall West development.

		The City Corporation is still committed to identifying potential locations for last mile delivery hubs. Discussions continue with City Surveyors to identify potential City Corporation assets. Work also in progress to consider suitability for other interested delivery providers.
	Producing a Servicing Action Plan	On hold.
	Identifying opportunities to increase the use of the river for freight including exploring the use of Blackfriars and Tower Piers and a reinstated Swan Lane Pier.	No progress to date.
	Require all development in the City to consider the use of the river for the movement of construction material and waste	No progress to date.
Implement a range of actions through the City Corporation Transport Strategy and City Local Plan to support and encourage cycling.	Conduct a City-wide cycle parking review and publish a Cycle Parking Delivery Plan that will detail our ambitions for increasing the amount of cycle parking in the City.	City Cycle Network Phase 1: Route 1: CS1 to Monument via Bank & Route 2: Aldgate to Blackfriars via Bank: Both sections of this are on hold pending the outcome of the TfL's experimental scheme on Bishopsgate and Gracechurch Street. Route 1 has had some early feasibility work.

	Ensure new developments provide secure cycle parking facilities including for non-standard cycles, cargo bikes, hand carts and visitor cycle bays. Promote cycling through improving awareness, support London-wide and national campaigns and explore the potential for an annual City Corporation cycling festival. Work with TFL and cycle providers to improved cycle hire provision. Apply a minimum cycling level of service to all streets initially by reducing motor traffic volumes to below 150 vehicles per hour or Protected cycle lanes that are a minimum of 1.5m wide per	Route 2: agreement on detailed design has progressed with TfL. Covid-19 Response Cycle Lanes (Bevis Marks, Queen Victoria Street and Moorgate) - protected cycle lane provision. Bevis Marks experimental cycle lanes – following feedback from the public consultation minor modifications to the scheme made and if successful the scheme will be made permanent. Cycle Parking: Identification of new sites for dockless bays has been completed and 9 new bays (provision for ~100 dockless cycle spaces) are planned for implementation in spring / summer 2023. 5 Mobility Corrals have been installed as a trial for E-scooter and dockless cycles. Each corral has a capacity of 10 dockless bikes. M-profile cycle racks have been delivered as a trial in Silk Street.

	direction of travel along a core cycling network.	
Install additional publicly accessible electric vehicle (EV) rapid charge points by 2025.	An EV Charging Action Plan will be published by December 2019. This will identify how many charge points, including charging hubs, are required up to 2022, as well as longer-term forecasts. Locations to be identified through engagement with the Transport for London Electric Vehicle Infrastructure Taskforce. Install a rapid charging hub for taxis in Baynard House car park. Install a taxi only rapid charge point in Noble Street rest rank.	50 standard electric charge points are available to the public in our car parks. Electric charge points are being upgraded a Walbrook Wharf to support the refuse collection vehicles. 20 charge points have been installed to support City Corporation owned electric vehicles. Feasibility assessments on CoL housing estates to install further charge points for residents. 6 rapid charge points installed in Baynard House Car park There is a rapid charge point for taxis is in operation on Noble Street.
Through the City Local Plan require the installation of rapid charge points in new developments.	Apply the requirements of planning policy and the Freight and Servicing Supplementary Planning Document.	We ensure that electric vehicle charging facilities are installed in accordance with our parking and servicing standards.

Ensure that improving air quality and reducing exposure is an integral part of all major transport and public realm schemes and that all schemes incorporate greening where possible.	Air pollution will be modelled and measured as part of all major transport and public realm schemes. Incorporating greenery and planting when making changes to streets and the public realm.	All major transport and public realm schemes are reviewed for air quality impacts and air quality monitoring and modelling is carried out were necessary.
Continue to take a wide range of action to discourage unnecessary vehicle engine idling in the Square Mile.	Run at least 3 Cleaner Air Action Days throughout the year. Review options for enforcement. Jointly lead the Pan London Idling Action project. Respond to complaints and erect signs in hot spot areas.	The City Corporation has the provision to issue Fixed Penalty Notices or penalty Charge Notices for unnecessary vehicle engine idling. No FPNs/PCNs were issued for idling in 2022. We continued to jointly lead the Pan London Idling Action Project with the London Borough of Camden until April 2022. The funding for this work has come to an end but idling action campaigning continues through a legacy group. Action is taken following complaints of vehicle engine idling, and signs erected, and letters sent where necessary. The number of complaints in 2022 was very low.

Ensure City Corporation parking charges favour low and zero emission vehicles in the City of London.	Differential parking charges applied with the lowest level of charges being applied to zero and low emission vehicles such as electric, hydrogen and hybrid.	The previous 2020 review set tariffs for three years in line with both the Transport Strategy and Air Quality Strategy aims, in particular discouraging unnecessary car usage in general, and supporting the use of zero emission vehicles, where other modes of transport are not possible. On-street parking charges are based on vehicle emissions. Older, more polluting vehicles pay a higher charge to park on street in the City of London. Electric or hydrogen or hybrid pay the lowest tariff. The charge in 2022 for vehicles which are Electric, or hydrogen or hybrid was £5 per hour. Petrol vehicles that meet Euro 4 emission criteria and diesel vehicles that meet Euro 6/VI are charged £7.20 per hour. Older vehicles are charged £10.00 per hour. The charging framework supports the Mayor of London Ultra Low Emission Zone scheme. An assessment of the emission-based charges for on street Tariffs will be undertaken in 2023, it is proposed that the same charges will also be applied to the car parks.
Continue to assess all planning applications for air quality impact.	Review all planning applications and make recommendations for conditions as required.	All planning applications are reviewed for air quality impacts, with conditions recommended where necessary.

	Require air quality assessments for major developments. This includes all fixed plant, boiler and emergency generators, and transportation sources including delivery and servicing.	All major developments require an air quality assessment. This has been incorporated into the draft new Local Plan and will be included in the Air Quality Supplementary Planning Document update. The pre app guidance for air quality was updated and standard conditions for planning applications reviewed and updated to reflect the latest version of the London Plan
Encourage the use of non-combustion technology during construction and in the operation of new developments.	Developers required to identify suitable non-combustion/zero emission technologies such as heat pumps. BREEAM maximum pollution credits for local air quality to be obtained from non-combustion systems where possible.	The new Local Plan, City Plan 2040 (previously City Plan 2036) aligns with the commitment in the City Corporation's Climate Action Strategy to support the achievement of net zero for the Square Mile by 2040. It reflects the London Plan in prioritising non combustion and zero emissions heating and energy systems. Once the City Plan 2040 is finalised, we will produce an updated Air Quality Supplementary Planning Document. The update will prioritise zero emissions heating and will include BREEAM maximum pollution credits for local air quality to be obtained from non-combustion systems where possible. All planning applications are reviewed by air quality officers to ensure planning policies are being adhered to and if diesel generators are proposed the developers are asked to reconsider their plans.

Apply stringent emission standards for combustion plant where non-combustion plant is not feasible in new developments.	Where non-combustion technologies are not feasible and combustion plant is installed the NOx emissions from Combined Heat and Power (CHP) plant will be required to meet the following emission limits: 50mg/Nm3 (and 25mg/Nm3 for turbocharged CHP) at reference O_2. All gas boilers will be required to have a NOx rating of <40mgNOx/kWh at 0% O_2 as a minimum. Options for tightening these limits by 2020 will be kept under review. The use of oil, biomass, biofuels, and wood pellets will be discouraged.	Most planning applications for commercial developments received in 2022 proposed zero emissions heating solutions, most commonly heat pumps, instead of combustion plant. If combustion plant is installed, conditions are applied requiring plant to meet specified NOx emissions standards.
Ensure that where possible chimney stacks terminate above the height of the nearest building.	Where combustion plant is installed good dispersion of emissions will be required by ensuring adequate	The City Corporation Air Quality Supplementary Planning Document (SPD) requires a consideration of combustion flue location and emission discharge velocity at the planning stage to ensure appropriate provision has been made.

	dispersion. Chimneys should terminate a minimum of 2m above roof height where possible Stack discharge velocity should be at least 10 m/sec. Appliances 1MW or greater will be required to achieve a stack discharge velocity of 15 m/sec.	The Air Quality SPD will be reviewed once the new City Plan has been approved and we will look to strengthen our requirements. We respond to applications for chimney height approval as they arise. There were 2 applications in 2022.
Require all new developments to be air quality neutral as a minimum and developments subject to an Environmental Impact Assessment to be Air Quality Positive in line with the requirements of the emerging London Plan.	Evaluate all air quality neutral assessments. Mitigation may be considered but offsetting is not acceptable. Ensure air quality positive assessments are carried out for developments that require an Environmental Impact Assessment.	All major developments must submit an Air Quality Neutral Assessment. All Air Quality Neutral Assessments are reviewed by the air quality officer to ensure the benchmarks are met or relevant mitigation is provided. The requirement for Air Quality Positive Assessments for Environmental Impact Assessment developments has been included in our draft new Local Plan and will be reflected in the Air Quality Supplementary Planning Document update. In addition, we will encourage all development to use an air quality positive approach, where possible, in line with London Plan policy and the Central Activity Zone. We have updated our pre-application advice to include air quality positive.

Update the City Corporation Supplementary Planning Document for Air Quality to reflect new policies and requirements of the City Local Plan and London Plan.	Update the Supplementary Planning Document for Air Quality to reflect the latest guidance.	Due to more evidence gathering, informal stakeholder engagement and drafting of a revised version of the City Plan 2040 with further consultation proposed in December 2022 to 2023 the adoption of the plan has been delayed. Once the draft Local Plan has been finalised an updated Supplementary Planning Document will be produced.
Ensure emissions from construction sites are minimised through close management and control.	Regularly inspect sites and respond to complaints. Investigate options for powering tower cranes by mains electricity rather than a diesel generator.	Construction sites are required to follow the City of London Code of Practice for Deconstruction and Construction Sites. We work with construction companies during the development of the proposals for construction practice proposals in order to minimise emissions to atmosphere and respond promptly to complaints. Site audits of Non-Road Mobile Machinery (NRMM) are undertaken through the pan London project, funded by the Mayor of London. In 2022, 17 site audits were completed. Our Code of Practice for Deconstruction and Construction Sites encourages sites to secure an electrical supply for sites well in advance of works. Membership of the NRMM Project ensures that where alternative fuels and power sources are not available, sites use the least-polluting diesel equipment possible.

	Encourage the use of electric excavators and diggers.	Our guide to low emission and alternative technology and fuels is available on our webpages to support the uptake of lower emission NRMM for use during construction and street works, filming, and other events.
Regularly update the City Corporation best practice guidance on minimising emissions from construction and demolition in order to reflect best practice.	Work with demolition and construction companies to update the best practice guide. Look for further opportunities to reduce emissions with key companies.	The Air Quality Chapter of the best practice guide has been updated and the aim is to publish the document in 2023.
Enforce the Mayor of London NRMM requirements on construction sites as a minimum.	Carry out an inspection programme. Continue with membership of the London Low Emission Construction Partnership (LLECP)	Although funding for the LLECP has stopped, we continue to liaise with the Centre for Low Emission Construction and look for opportunities to trial low emission equipment. We continue to be a member of the pan London Non-Road Mobile Machinery project. Our sites are audited regularly for compliance with NRMM requirements. A range of sources are used to identify active demolition and construction sites. During 2022, 17 site audits were undertaken. 11 sites were compliant, 2 sites achieved ‘Self-Compliant’ status, 4 sites had no NRMM on site.

Introduce a Stage V emission limit for NRMM on construction sites by 2025 where available.	Incorporate this requirement in the City Corporation Code of Practice.	An updated Code of Practice for Deconstruction and Construction Sites will be available in 2023. Additional requirements for emissions from plant and equipment have been incorporated into the draft revised edition including the introduction of stage V limit by 2025. Significant progress in being made with the deployment of Stage V machinery on construction sites within the Square Mile. In 2022 62% of NRMM over 37KW was EU Emission Stage V compared to 23% in 2021 and none in 2019. The current CoP is compatible with existing London wide standards. It also encourages the use of the lowest emission options and recommends that an electrical supply for the site is secured for the works.
Investigate options for reducing emissions from NRMM used in street works, filming, and other events.	Source funding to undertake a trial of charging facility for street/film events.	A CoL guide to low emission alternative technology and fuels is available on our webpages to support the uptake of lower emission NRMM for use during street works, filming, and other events. In 2022, two presentations were included in the Considerate Contractors Street works Scheme (CCSS) Workshops for utilities and contractors working in the square Mile. The CCSS rewards good practice through the Innovation award. An innovative all electric street-works trial was recently carried out in the Square Mile by CA Telecom on behalf of COLT. The work was carried out with battery

		powered equipment including a mini excavator, dumpster, breaker, and cut-off saw. This case study for the works on New Change will be submitted for consideration for the Innovation Award. We also encourage film companies to use the Generator Project app which is designed to be used by filming teams to log their current generator locations and usage including the number of Stage V generators.
Examine options for reducing emissions from existing combustion plant in the Square Mile.	Source funding for trials. Work with the construction industry and equipment suppliers to support and pilot low and zero emission equipment. Work with business to support trials to reduce emissions from combustion plant in buildings.	A range of innovative technologies are being trialled on construction sites. However much of the electric plant that is employed is mostly in the 3-19kW size range. The use of emission Stage V now accounts for 62% of NRMM used in construction sites in the Square Mile. Retrofitted emission reduction systems, electrification, and hybrid power solutions and alternatively powered plant is increasingly being trialled on construction sites. Battery Packs on generators are now commonly employed effectively turning a normal generator into a hybrid generator i.e., storing energy throughout the day so the engine can be switched off overnight and the battery used to run the security & welfare units.

		An innovative all electric street works trial was carried out close to St Paul's Cathedral. This demonstrated reduced noise levels as well as no diesel emissions from the project. The city's Low Emission NRMM Guide is available here Non road mobile machinery guide 2021 (cityoflondon.gov.uk) We continue to disseminate best practice advice for facilities managers, operators, and others to reduce emissions from buildings. The guidance document, Combustion plant: Recommendations for best practice is available here: Combustion Plant: Recommendations for best practice (cityoflondon.gov.uk) A video recording of a webinar covering the guidance is available to view on request.
Improve the understanding of the use of emergency generators in City of London buildings being used for Demand Side Response and Short-Term Operating Reserve.	Source funding to investigate the use of emergency generators in buildings. Work with building owners to investigate alternative means of providing emergency back-up power.	We continue to promote the guidance 'Combustion plant: Recommendations for best practice' produced in 2020. A recording of a webinar previously held in conjunction with the guidance has been converted to an educational video, available to view on YouTube via a requested link. A combustion plant drop-in session was held in September 2022 for the facilities managers following an invitation to view the webinar.

	Support the Mayor of London to seek reductions in emissions from large scale generators producing power for commercial buildings.	We have engaged with the Environment Agency to understand the implications of the use of stand-by generators particularly in response to potential power outages.
Continue to ensure that emissions from chimneys are dispersed as far as possible using the provisions of the Clean Air Act 1993.	Issue authorisations for Chimney Heights for new appliances.	Two Chimney Height approvals were issued during 2022.
Ensure compliance with emission control requirements for the City Corporation's prescribed processes.	Carry out regular risk-based inspections of prescribed processes in the Square Mile.	All permitted processes premises are inspected in line with their risk rating and the recommended inspection schedule. There are two dry cleaning operations and Barts energy centre has also been permitted. In 2022, Barts energy centre was inspected, and was scored as LOW risk. Two dry cleaners were also inspected. They both scored LOW risk.
Promote and enforce smoke control provisions detailed in the City of London Various Powers Act 1954 and 1973 and the Clean Air Act 1993.	Continue to enforce the smoke control provisions and raise awareness in the City of London. Engage with food premises to ensure the correct appliances and fuels are used and reach out to	The City's air quality webpages include information on the Domestic Solid Fuels Standards regulations which came into force in May 2021 in addition to responsibilities within a smoke control area.

	employees through the business engagement program.	Our factsheet 'Smoke Control from Food Premises', which provides information on smoke provisions and advice to food premises on exempt appliances and authorised fuels, is also available on our air quality webpages. We inspected all City shops likely to sell manufactured solid fuels (MSF) and wood to check that the correct labelling was displayed.
Make greater use of Public Health Networks to disseminate information about air quality.	Use Public Health Networks to disseminate information and improve awareness of air pollution and its impact on health. Promote exposure reduction techniques and greater uptake of exposure reduction apps, such as CityAir phone app especially amongst vulnerable people and groups.	We support the Mayor of London's air pollution alerts to schools and GP practice, amplifying this message through Twitter alerts. The City Corporation CityAir App is promoted both on our website, through our e-newsletter and at every event we attend. We have created a factsheet for health professionals summarising the health impacts of air pollution and providing tools and guidance for how to minimize exposure to air pollution. It is available to download from the City Corporation web site. We attend the Air Quality and Health Delivery Group as representatives of London local authorities on behalf of the LAQSG.
Assess options to improve and further develop the free CityAir Smart Phone	Source funding for improvements to the CityAir Smart Phone App.	We continue to support and promote AirTEXT.

App and continue to support and promote the AirText service.	Work with Kings College London to upgrade the App. Continue to support and promote AirText	Over 35,000 people use our free CityAir app which has been updated to incorporate road closures.
Disseminate information about air quality through various channels such as social media, the City Corporation web site, and an e-newsletter.	Use and continue to develop a range of communication methods to reach businesses, workers, and residents, including social media, digital and website media, newsletters, and events. Specifically: • Daily tweets • Bimonthly e newsletter • At least 2 x hard copy articles per year • Update the City Corporation web pages at least every fortnight. Attend at least 4 events per year to promote air quality	We continue to promote air quality messaging through our Twitter account, monthly e-newsletters, and our website pages. We use our Twitter account to alert 3000+ followers to days of moderate, high, and very high air pollution. The content on the Air Quality pages of the City Corporation website is reviewed monthly. We have a CityAir Linkedin page to promote event invites, air quality news and our monthly e-newsletters. We regularly submit short articles for inclusion in other e-newsletters including Clean City Award Scheme and Cheapside Business Alliance.

Develop an action plan, in support of the Mayor of London's air pollution forecasting service, to reduce exposure on days of high and very high levels of air pollution.	An action plan focussed on raising awareness on days of high and very high air pollution.	We support the dissemination of the Mayor of London air pollution forecasting system and take opportunities as they arise to raise the profile of air quality.
Increase awareness of air pollution amongst the City of London residential community.	Attend events with an information stall. Provide information for newsletters. Attend residents' meetings. Support residents who wish to measure air pollution where they live.	Throughout the year we provided information where relevant for e-newsletters for a variety of partners, including Clean City Award Scheme and Cheapside Business Alliance. Air quality superhero lanterns created as part of the Aldgate in Winter Festival were displayed in the Square Mile during December 2022. To encourage engagement from City of London residents, a year-long Citizen Science project was run from March 2021 to March 2022 on the Barbican and Golden Lane Estates. Around 50 participants used diffusion tubes to measure monthly Nitrogen dioxide levels on their balconies and at public locations across the Estates. This project was a repeat of the Science in the City project held in 2014, and data has shown an almost 50% improvement in NO_2 concentrations across the Estates compared to 2014.
Run events in support of National Clean Air Day.	Run up to 3 events each year on and around National Clean Air Day.	For Clean Air Day 2022 we ran two information stalls from mid-morning to mid-afternoon at Fenchurch Station entrance and in Aldgate Square. During the day we engaged with several school children and parents who used the Square, playing air quality themed games and promoting the City Air app. We regularly

		posted on social media during the week of Clean Air Day, promoting resources from GAP and our CityAir app. We also, for the first year, supported International Clean Air Day on the 7th of September. We assisted in the development of an event hosted by WCRAQ: Air Pollution has no borders – international initiatives/cooperation to improve air quality worldwide. We spoke to an international audience alongside presenters from New York Police Department, Global Action Plan and WCRAQ.
Develop plans for improving air quality and reducing the exposure to pollution of children who attend schools and nurseries in the City of London	An action plan for all City of London schools and nurseries	All action plans have been reviewed for all five City schools and four nurseries. Monitoring reports have been produced based on monitoring data from the sites or at nearby comparable locations in 2022. These reports have been provided to the respective schools and nurseries. Data from the permanent background monitoring site at the Aldgate School continues to be used to produce six monthly reports for the School Governors. In July 2022, 16 A-level students visited the City to learn about air pollution. The day consisted of the air quality team delivering presentations, a tour of the square mile, introduction to field work and completion of work sheets
Continue to support Barts Health NHS and other health care facilities to reduce their own impact on local air pollution and assist vulnerable patients in reducing their exposure to pollution.	Support hospital events. Liaise with staff to reduce emissions and improve the understanding of air quality.	We obtained joint funding with the London Boroughs of Hackney, Tower Hamlets, and Newham to improve messaging around air quality for ‘hard to reach’ communities. This will include training healthcare professionals and creating patient resources. The project this year has been centred around creating a community-based app, and going forward having Air Quality Champions, and providing training to Health Practitioners on air pollution.

	Assess air quality around health care facilities	Barts Hospital was inspected for compliance with its environmental permit for its energy centre
Continue to work with businesses to raise awareness of air pollution amongst workers.	Engage with business through CityAir business engagement programme. Working with Heart of the City and Business Healthy on business engagement.	We continue to engage with the City Business community through our CityAir programme (see above). We continue to support Heart of the City and Business Healthy through retweets and inclusion of relevant items in our newsletter. Heart of the City also promotes our air quality resources for businesses.

3. Planning Update and Other New Sources of Emissions

Table V. Planning requirements met by planning applications in City of London in 2022

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	17
Number of planning applications required to monitor for construction dust	4
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	0
Number of developments where an AQ Neutral building and/or transport assessments undertaken	20
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
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 and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. 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 IIIB of the Directive and/or exemptions to the policy.	All planning approvals require the use of LEZ compliant NRMM as standard through compliance with our Construction code of practice 17 audits were undertaken 2 sites were self-compliant 11 compliant after inspection 0 were non-compliant 4 sites have no NRMM

All planning applications are reviewed for air quality impact. The Air Quality Officer recommends conditions for the Planning Officers to apply, should the development be approved.

3.1 New or significantly changed industrial or other sources

No new sources identified.

4. Additional Activities to Improve Air Quality

4.1 City of London Fleet

We use the following hierarchy for vehicle purchases: fully electric; plug in hybrid; petrol hybrid, Euro VI petrol; Euro VI diesel.

We currently have 19 fully electric and 8 hybrid vehicles. Additionally, five fully electric refuse collection vehicles are used in our refuse collection contract.

4.2 NRMM Enforcement Project

During 2022, 17 site audits were undertaken. 11 sites were compliant, 2 sites achieved ‘Self-Compliant’ status, 4 sites had no NRMM on site.

In addition to enforcing the Low Emission Zone requirements for NRMM, significant progress in being made with the deployment of Stage V machinery on construction sites within the Square Mile. In 2022 62% of NRMM over 37KW was EU Emission Stage V compared to 23% in 2021 and none in 2019.

4.2 Air Quality Alerts

We continue to support *air*TEXT (https://www.airtext.info/) and also issue air quality alerts through our own smartphone App CityAir.

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Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

Table A.1. QA/QC of Automatic Monitoring Sites

Site	Data Management	Site Servicing	Site Audited by:	City of London Calibration and Maintenance
CT2	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	BAM tape change every 60 days.
CT3	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	NO_x calibration and filter change every four weeks. BAM tape change every 60 days.
CT4	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	NO_x calibration and filter change biweekly. BAM tape change every 60 days.
CT6	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	Calibration and filter change biweekly.
CT9	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	Calibration and filter change every four weeks.
CTA	ERG, Imperial College	Matts Monitors (biannual)	National Physics Laboratory (biannual)	BAM tape change every 60 days.

PM_{10} Monitoring Adjustment

All BAM monitoring data has been corrected in line with guidance provided in LLAQM.TG(19). All data is corrected by the ERG at Imperial College London and accessible through the London Air Quality Network website.

A.2 Diffusion Tubes

- The diffusion tubes utilised by the CoL in 2022 were supplied and analysed by Gradko International Laboratory.
- The preparation method used was 50% Triethanolamine (TEA) in Acetone preparation method and analysis of diffusion tubes was completed using U.V. Spectrophotometry.
- Gradko International Ltd is a UKAS accredited laboratory and participates in the AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for NO_2 tube analysis and the Annual Field Inter-

Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance.

- Results of laboratory precision for 2022:
    - Gradko 50% TEA in acetone tube precision for 2022= 100% good precision, 14 studies.
    - Latest AIR NO_2 PT Scheme results: 100% for January – February and May - June. No further results are currently available for 2022.
- Bias adjustment factor from the National Bias Adjustment Spreadsheet available on the LAQM Support Website (Spreadsheet Version Number: 03/23); 0.82 based on 14 studies.
- Two co-location studies were undertaken during 2022: one roadside at CT6 and one urban background at CT3.

Factor from Local Co-location Studies

During 2022 two co-location studies were undertaken, with triplicate diffusion tubes at the CT3 and CT6 automatic monitoring sites. Local bias adjustment factors have been calculated for each site using the Precision & Accuracy spreadsheet tool provided by the LAQM Helpdesk.

The results of both studies have been submitted to the LAQM Helpdesk for inclusion within the National Diffusion Tube Bias Adjustment Factor Spreadsheet. It should be noted that the submission to LAQM Helpdesk was completed with provisional NO_2 for both automatic monitoring sites within 2022. The results presented in Table A.2 below are based upon fully ratified NO_2 data.

Table A.2. Local Bias Factor Results

Site ID	Triplicate Diffusion Tube Mean (µg m^{-3})	Automatic Monitoring Mean (µg m^{-3})	Bias A	Bias B
CT3	28.7	23.7	0.83	21%
CT6	60.6	52.6	0.87	15%

Following the procedure as detailed in LLAQM.TG(19) the average of the two local bias adjustment factors is 0.85.

Discussion of Choice of Factor to Use

The national bias adjustment factor has been used to adjust all 2022 diffusion tube annual mean concentrations. This is consistent with bias adjustment factors used within previous years. Due to the changing monitoring environment across the CoL, using a larger dataset (national) rather than the two local studies completed in 2022 provides a more robust structure for bias adjustment.

There is a small range across all possible options for bias adjustment (0.82 – 0.87), therefore any change to the bias adjustment factor will not significantly impact the 2022 annual mean concentrations considering the +/- 25% indicative accuracy currently stated for diffusion tube monitoring[2].

Table A.3. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.82
2021	National	03/22	0.83
2020	National	03/21	0.82
2019	National	03/20	0.87
2018	National	03/19	0.92
2017	National	03/18	0.97
2016	National	03/17	1.03
2015	LWEP	-	0.97

A.3 Adjustments to the Ratified Monitoring Data

Distance Adjustment

No distance adjustment has been carried out to the 2022 NO_2 annual mean concentrations. There are eight monitoring locations where the concentration is greater than 40 µg m^{-3}. These are either at locations of relevant exposure or in an environment that is not replicated within the NO_2 Fall off With Distance tool, i.e. the calculator can only be used where the influence of one road source is present.

[2] Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users (Defra, 2008)

Short-term to Long-term Data Adjustment

In accordance with LLAGM.TG(19) any monitoring sites that have a data capture of less than 75% have been annualised. Two automatic monitoring sites and 14 diffusion tube monitoring locations required annualisation in 2022. The data utilised within the calculations of the 16 monitoring sites are presented in Table A.4 and Table A.5.

Table A.4. Short-Term to Long-Term Monitoring Data Adjustment: Automatic Monitoring

Site ID	Annualisation Factor: London North Kensington	Annualisation Factor: London Honor Oak Park	Annualisation Factor: London Bloomsbury	Annualisation Factor: London Westminster	Average Annualisation Factor	Raw Data Annual Mean (µg m^{-3})	Annualised Annual Mean (µg m^{-3})	Comments
CT3	1.17	1.15	-	1.11	1.14	11.5	13.2	CT3 $PM_{2.5}$ data
CTA	1.10	1.09	1.09	-	1.09	17.8	19.5	CTA PM_{10} data

Table A.5. Short-Term to Long-Term Monitoring Data Adjustment: Diffusion Tubes

Site ID	Annualisation Factor: CT3	Annualisation Factor: London Bloomsbury	Annualisation Factor: London North Kensington	Annualisation Factor: London Westminster	Average Annualisation Factor	Raw Data Annual Mean (µg m^{-3})	Annualised Annual Mean (µg m^{-3})	Comments
Bank 2	1.10	1.06	1.15	1.13	1.11	42.9	47.6	
Bank 11	0.98	1.01	0.98	1.00	0.99	35.3	35.0	
Bank 12	1.01	1.06	1.06	1.09	1.06	33.1	34.9	
Bank 23	0.98	1.04	1.01	1.05	1.02	41.4	42.3	
PLA6	0.88	0.91	0.83	0.86	0.87	34.3	29.9	
FL	1.00	1.00	0.98	0.95	0.98	38.8	38.1	
OS6	0.93	0.96	0.90	0.94	0.93	32.5	30.4	
BS	1.10	1.10	1.12	1.06	1.09	27.1	29.7	
T9	1.17	1.21	1.22	1.20	1.20	39.1	46.9	
T11	0.79	0.83	0.72	0.77	0.78	37.5	29.2	
BS1	1.29	1.20	1.42	1.39	1.33	40.0	53.1	
BS14	1.03	1.14	1.08	1.06	1.08	31.6	34.1	
BS17	0.97	0.96	0.98	1.03	0.98	38.7	38.1	
BS21	1.11	1.03	1.11	1.08	1.08	39.1	42.4	

Appendix B Full Monthly Diffusion Tube Results for 2022

Table B.1. 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
CL5	100.0	100.0	49.6	42.7	34.1	32.2	38.6	41.0	34.2	26.4	29.9	45.7	45.8	50.4	39.2	32.2
CL38	100.0	100.0	43.2	35.6	54.7	34.8	30.5	34.2	31.8	32.9	34.8	36.5	28.0	42.1	36.6	30.0
CL39	100.0	100.0	54.3	40.6	52.0	43.7	42.3	42.8	47.1	43.9	46.1	41.8	42.9	49.7	45.6	37.4
CL55	75.0	75.0	37.1	24.2	28.8	18.8	16.2	16.0	-	-	19.2	-	25.3	29.5	23.7	19.5
CL40	91.7	91.7	47.3	31.6	37.9		27.5	27.9	26.8	25.4	30.7	35.1	36.6	35.8	33.0	27.0
Bank 1	83.3	83.3	-	48.1	59.1	37.9	43.1	49.8	47.9	42.3	42.6	-	48.7	44.2	46.4	38.0
Bank 2	50.0	50.0	-	38.3	-	-	38.5	-	-	40.6	45.9	46.4	47.7	-	42.9	39.1
Bank 3	91.7	91.7	47.2	37.7	43.0	-	27.2	24.8	26.5	28.9	30.7	35.9	39.5	36.3	34.3	28.1
Bank 5	91.7	91.7	-	45.9	44.0	36.5	34.7	31.0	37.2	39.3	40.3	47.5	43.9	45.3	40.7	33.4
Bank 6	91.7	91.7	53.4	-	55.1	44.1	40.5	31.5	43.5	50.7	52.9	26.5	46.5	46.4	44.2	36.2
Bank 8	91.7	91.7	51.6	-	40.4	34.8	25.6	23.9	26.5	30.8	34.7	37.4	37.4	37.3	34.3	28.1
Bank 10	91.7	91.7	-	35.8	49.1	31.1	32.6	29.2	32.9	39.5	40.6	51.8	45.5	46.1	39.5	32.4
Bank 11	66.7	66.7	51.2	35.4	42.1	-	26.8	26.4	28.4	33.8	-	-	-	41.6	35.3	28.7
Bank 12	58.3	58.3	49.2	30.0	41.3	-	28.1	27.0	29.4	31.1	-	-	-	-	33.1	28.7
Bank 13	75.0	75.0	46.9	25.5	46.3	28.6	21.8	21.0	24.7	-	-	-	36.0	47.5	32.7	26.8
Bank 14	75.0	75.0	55.5	33.0	60.2	38.2	-	28.4	37.8	-	63.9	42.3	-	37.8	43.3	35.5
Bank 15	75.0	75.0	64.2	42.9	43.9	33.0	-	38.2	-	48.1	43.7	43.7	-	48.9	45.2	37.1
Bank 16	100.0	100.0	57.8	46.7	52.9	42.7	47.7	43.3	49.2	43.8	50.7	49.5	47.7	51.9	48.7	39.9
Bank 17	100.0	100.0	53.0	40.5	50.1	38.1	38.0	30.7	35.9	37.7	39.0	46.7	45.9	47.2	41.9	34.4
Bank 18	100.0	100.0	45.6	32.7	42.3	28.2	20.0	28.5	30.4	29.9	33.5	36.0	36.4	37.8	33.1	27.1
Bank 19	75.0	75.0	40.6	29.7	-	-	21.5	20.8	23.1	24.0	-	29.9	32.6	35.7	28.7	23.5
Bank 20	75.0	75.0	53.6	39.0	50.7	37.0	-	30.6	-	38.7	39.9	47.6	-	36.6	41.5	34.0
Bank 22	83.3	83.3	68.4	46.6	62.4	-	-	50.3	45.5	47.9	56.8	36.9	51.4	50.9	51.0	**41.8**
Bank 23	66.7	66.7	48.4	33.4	49.4	45.1	33.6	36.2	43.0	-	-	-	42.3	-	41.4	34.7
SJC1	91.7	91.7	39.7	26.8	35.2	22.6	22.3	-	22.4	22.0	28.7	30.7	30.7	39.8	28.8	23.7
SJC6	91.7	91.7	44.2	25.7	35.2	23.1	-	18.8	22.0	23.1	25.8	28.9	32.2	33.6	28.3	23.2
SJC8	91.7	91.7	43.2	28.7	33.5	23.7	-	20.3	22.6	25.3	28.6	28.8	32.0	28.7	28.5	23.4

WW1	100.0	100.0	59.4	52.5	73.4	57.5	59.1	60.2	84.1	64.7	58.9	66.8	65.1	54.4	63.4	**52.0**
WW2	100.0	100.0	52.6	46.8	69.1	52.4	55.5	62.2	62.4	60.4	60.6	61.4	65.2	52.2	58.2	**47.7**
WW3	91.7	91.7	58.7	52.6	74.1	-	55.7	60.8	62.8	65.3	59.3	63.4	65.2	59.3	61.3	**50.3**
PLA5	75.0	75.0	55.6	43.5	51.2	-	-	-	29.8	30.3	34.2	38.0	42.7	47.3	41.4	33.9
PLA6	58.3	58.3	44.8	-	36.8	-	-	-	27.9	-	33.3	30.9	31.6	34.8	34.3	24.5
LS	91.7	91.7	51.4	38.1	39.6	45.8	34.8	28.9	36.9	-	44.1	32.1	24.5	39.8	37.7	30.9
FA	91.7	91.7	50.5	32.4	38.2	26.5	-	18.4	20.1	21.5	26.1	29.0	30.8	34.6	29.7	24.4
FL	66.7	66.7	-	37.0	50.9	35.1	34.3	-	-	32.2	-	37.7	40.8	42.7	38.8	31.3
OS1	100.0	100.0	41.2	26.7	29.0	24.2	21.6	17.3	17.7	20.5	23.4	26.0	27.8	30.0	25.4	20.9
OS3	83.3	83.3	45.9	33.5	27.9	26.2	30.3	32.2	25.9	22.7	-	-	38.0	37.9	32.1	26.3
OS5	91.7	91.7	48.4	30.7	41.6	29.2	-	29.1	31.3	29.7	33.5	35.3	35.6	38.3	34.8	28.5
OS6	58.3	58.3	45.3	31.3	43.7	29.7	-	19.8	22.7	-	-	-	-	35.1	32.5	24.9
OS7	100.0	100.0	39.2	32.2	35.0	31.3	23.8	30.6	31.3	29.8	37.1	33.2	34.6	40.3	33.2	27.2
BS	33.3	33.3	-	-	-	23.9	-	-	22.3	-	-	29.3	33.1	-	27.1	24.3
GY	83.3	83.3	47.7	36.1	39.1	-	28.7	29.8	27.3	27.0	32.0	-	40.1	37.6	34.5	28.3
SL	100.0	100.0	47.1	29.8	43.0	28.6	23.8	23.2	23.1	26.5	28.4	33.0	36.3	38.8	31.8	26.1
CT	83.3	83.3	49.1	42.7	34.1	31.8	-	28.5	-	30.3	32.9	38.7	41.4	35.8	36.5	30.0
N1	91.7	91.7	34.8	27.1	35.2	23.8	-	23.5	22.0	23.0	25.1	28.5	32.1	30.5	27.8	22.8
N2	91.7	91.7	45.5	-	28.4	20.6	22.4	17.9	16.2	16.6	20.8	26.2	30.5	30.9	25.2	20.6
SPS2	83.3	83.3	50.9	34.4	-	30.5	35.2	37.1	32.0	30.6	37.0	39.8	41.5	-	36.9	30.3
CLS2	100.0	100.0	42.9	24.7	35.0	24.8	21.6	20.4	23.2	22.0	23.3	27.5	53.2	32.5	29.3	24.0
CHS	91.7	91.7	44.0	29.6	36.1	26.5	28.5	24.1	24.3	23.5	27.0	28.8	38.8	-	30.1	24.7
CSG	91.7	91.7	-	35.7	42.5	29.0	29.9	30.6	26.7	28.0	33.9	34.3	37.1	39.4	33.4	27.4
TC	91.7	91.7	-	27.9	34.6	23.3	22.6	20.6	19.4	21.1	24.0	22.5	31.7	39.4	26.1	21.4
LEN 1	83.3	83.3	46.6	34.6	38.5	29.4	30.9	32.3	29.8	27.8	-	37.6	42.3	-	34.8	28.5
LEN 3	91.7	91.7	51.8	48.1	49.6	38.4	40.3	39.2	39.9		43.2	46.4	50.4	46.6	44.8	36.7
LEN 4	83.3	83.3	62.7	49.3	58.2	43.9	50.1	46.3	55.4	48.1	58.3	-	54.8	-	52.4	**43.0**
LEN 5	100.0	100.0	43.1	33.3	31.2	24.7	24.0	19.2	20.2	18.0	21.6	31.9	35.3	35.1	28.3	23.2
LEN 6	100.0	100.0	44.9	34.7	34.8	26.7	25.6	23.8	24.0	25.3	28.0	36.3	38.0	40.3	32.0	26.2
LEN 7	91.7	91.7	44.3	29.8	33.6	24.4	21.7	19.9	-	21.3	25.7	28.5	35.0	36.1	29.1	23.9
LEN 8	75.0	75.0	42.2	29.6	33.8	21.3	21.6	21.9	-	21.8	25.3	31.3	-	-	27.4	22.5
LEN 9	100.0	100.0	-	44.4	48.7	32.7	33.9	36.1	35.3	33.4	31.7	41.9	45.6	42.0	38.7	31.7
LEN 10	100.0	100.0	41.5	28.1	36.4	22.6	21.7	20.5	19.8	19.0	23.5	28.9	29.7	31.4	26.9	22.1
LEN 15	83.3	83.3	49.3	33.3	30.6	22.0	24.9	20.0	-	21.0	23.9	32.2	34.8	37.2	30.0	24.6
LEN 16	75.0	75.0	-	30.1	36.5	25.8	22.7	23.6	25.7	-	26.9	-	31.6	32.3	28.3	23.2
T2	100.0	100.0	63.0	40.8	49.4	43.7	44.4	40.4	47.9	41.9	52.0	46.7	49.3	40.4	46.7	38.3
T3	91.7	91.7	71.5	48.0	53.8	49.7	57.8	-	54.4	50.0	57.2	52.4	55.8	54.6	55.0	**45.1**

T4	83.3	83.3	46.9	35.7	46.0	-	29.8	32.5	32.0	30.7	35.8	37.0	-	39.4	36.6	30.0
T5	100.0	100.0	61.9	50.5	51.9	39.1	43.8	44.6	43.2	41.8	47.8	52.2	52.0	49.1	48.1	39.5
T6	75.0	75.0	50.6	33.8	-	25.9	-	23.9	24.0	-	32.0	35.8	39.1	38.7	33.4	27.4
T7	91.7	91.7	49.2	31.8	41.2	26.3	26.3	25.7	24.1	25.4	31.6	33.4	-	37.2	31.7	26.0
T9	33.3	33.3	-	-	-	-	36.2	35.0	41.0	-	-	-	-	43.8	39.1	38.5
T10	91.7	91.7	47.0	25.3	34.9	23.6	23.0	20.9	22.0	24.1	29.6	-	32.3	39.8	29.0	23.7
T11	33.3	33.3	49.4	-	-	-	-	-	-	-	-	32.5	35.0	36.8	37.5	24.0
T12	100.0	100.0	61.4	50.0	56.4	45.3	52.2	55.4	55.8	33.5	50.6	62.0	59.7	54.1	53.0	**43.5**
T13	83.3	83.3	-	48.7	42.0	46.3	49.1	43.8	46.8	44.7	49.5	-	35.3	49.0	45.5	37.3
T14	75.0	75.0	59.4	50.1	61.8	44.8	-	46.4	-	45.0	37.0	-	50.6	42.9	48.7	39.9
T15	83.3	83.3	45.1	-	49.2	39.0	35.7	39.9	41.4	-	37.9	46.8	46.0	47.6	42.9	35.1
T16	83.3	83.3	52.6	36.8	51.3	-	34.0	35.3	38.7	43.8	-	41.4	41.9	41.1	41.7	34.2
T17	91.7	91.7	-	46.9	55.1	41.6	37.4	42.0	40.5	38.8	43.0	46.5	60.3	43.3	44.8	36.7
T18	75.0	75.0	-	42.5	56.1	38.5	47.2	43.5	46.0	41.5	-	-	48.8	42.3	44.9	36.8
T19	91.7	91.7	46.7	32.3	39.3	28.8	27.1	27.4	29.3	27.3	30.3	-	38.4	38.3	33.2	27.2
T20	100.0	100.0	54.7	45.3	55.4	37.3	37.4	40.0	42.2	36.0	37.0	44.2	47.0	45.8	43.5	35.7
T21	91.7	91.7	66.4	54.0	50.0	50.9	48.3	47.9	54.9	50.1	-	56.6	58.8	57.3	54.1	**44.4**
T22	91.7	91.7	47.4	33.8	40.2	31.5	31.1	31.0	30.5	29.6	35.6	-	36.8	38.9	34.8	28.6
T23	83.3	83.3	53.2	29.5	41.4	26.9	25.6	20.6	-	22.8	30.4	-	31.7	40.2	31.7	26.0
T24	91.7	91.7	47.5	30.1	39.7	27.1	26.5	21.3	-	25.4	30.6	28.3	29.8	46.4	31.8	26.1
BS1	58.3	58.3	-	-	-	38.1	38.1	38.2	43.9	38.7	43.4	-	-	-	40.0	**43.5**
BS14	50.0	50.0	-	30.4	35.4	-	26.4	-	28.7	-	-	32.8	36.6	-	31.6	27.9
BS16	91.7	91.7	38.1	26.1	41.9	21.9	-	23.0	23.9	24.3	28.0	32.9	33.9	38.9	30.6	25.1
BS17	50.0	50.0	50.2	50.2	44.8	34.4	38.8	-	-	-	22.7	-	-	-	38.7	31.2
BS18	91.7	91.7	53.0	43.8	46.8	-	39.9	35.9	40.1	40.2	46.2	43.9	43.4	48.1	44.0	36.1
BS19	100.0	100.0	47.3	35.5	55.1	34.3	36.3	34.6	36.8	39.4	47.1	45.2	42.3	49.1	42.2	34.6
BS20	91.7	91.7	34.6	22.0	-	23.4	18.6	20.1	19.9	21.3	25.3	27.4	27.7	33.1	25.2	20.7
BS21	58.3	58.3	-	-	-	36.8	28.6	34.8	-	39.6	44.3	-	47.6	43.1	39.1	34.7

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%.

If the monitoring periods varied from the LAQM NO_2 Diffusion Tube Monitoring Calendar a time weighted average has been calculated.

(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%).