

Appendix 1

Air Quality Annual Status Summary Report for 2020

1. Air Quality Monitoring

Nitrogen Dioxide (NO₂)

Nitrogen dioxide is measured at three locations using continuous analysers: The Aldgate School, Beech Street and Walbrook Wharf, Upper Thames Street. In 2020, nitrogen dioxide was also measured at numerous locations using low-cost diffusion tubes. Data from diffusion tubes is less accurate than the continuous analysers but the data is useful to show long term trends.

In 2020 there was a significant drop in annual average concentrations of nitrogen dioxide at roadside when compared to 2019. This was principally due to the impact of the COVID 19 pandemic. In 2020 nearly all locations met the annual objective of 40 µg/m³, many of which did so for the first time. Some sites had a reduction of NO₂ levels of over 45% when compared to 2019 levels.

Data taken from Beech Street and Walbrook Wharf show that large reductions in NO₂ were seen in March and April 2020 when the first national lockdown was implemented. The low levels remained all summer, gradually increasing later in the year when traffic volumes started to increase. There were no recordings of 1-hour periods experiencing concentrations of greater than 200µg/m³ during 2020. Levels above this are considered to be hazardous to health. This compared to 7 hours at Beech Street and 15 hours at Walbrook Wharf during 2019.

The annual NO₂ concentration at Beech Street reduced by 53% from 2019 to 2020 and levels fell below the annual mean objective of 40 µg/m³ for the first time. This is due to the combined impact of the COVID-19 pandemic and the introduction of the Zero Emissions Street pilot.

Background concentrations of nitrogen dioxide also reduced dramatically, with the analyser at the Aldgate School measuring an annual average of 22µg/m³. This was down from 33µg/m³ in 2019. This reflected a reduction in activity across the whole of London during 2020.

Small particles PM₁₀

The response to the COVID-19 pandemic did not have the same impact on PM₁₀ as was seen with NO₂. This is because particulate matter is made up of many sources, some of which travel very long distances and stay in the air for a long time. Levels of particulate matter in the air at any given time are also strongly influenced by weather conditions.

All three continuously monitored sites did see a reduction in annual mean PM₁₀ concentrations in 2020. The reduction in levels from 2019 was at 3µg/m³ at the Aldgate School, 4µg/m³ at Beech Street and 3µg/m³ at Walbrook Wharf. All sites now meet the annual average air quality objective (40µg/m³) and the short-term objective of not exceeding 50µg/m³ on more than 35 days in the year. Levels of PM₁₀ at Walbrook Wharf breach the current annual average World Health Organisation Guidelines.

Fine particles PM_{2.5}

PM_{2.5} is measured using continuous analysers at two locations, Farringdon Street and the Aldgate School. Concentrations are similar at both sites as it is a regional pollutant and strongly influenced by weather conditions. In 2020 there was a slight decrease in concentration at the roadside site (Farringdon) and levels stayed the same at the background site (The Aldgate School). Both sites are below the annual and daily EU limit value but above World Health Organisation Guidelines.

2. Nitrogen Dioxide (NO₂)

The EU Limit Value and current World Health Organisation Guideline is an annual mean of 40µg/m³.

The data from all monitoring locations is presented in tabular form below. This is followed by graphs for sites that have data for a least 3 years to demonstrate the trend over time.

Long term continuous analysers

Site	Site type	Annual Mean (µg/m ³)						
		2014	2015	2016	2017	2018	2019	2020
The Aldgate School	Urban Background	45	42	42	38	32	33	22
Beech St	Roadside	80	89	85	80	69	62	29
Walbrook Wharf	Roadside	122	98	92	92	87	73	45

Long term diffusion tube sites

Site	Site type	Annual Mean (µg/m ³)						
		2014	2015	2016	2017	2018	2019	2020
St Bartholomews Hospital Courtyard	Urban Background	43	38	49	63	50	42	33
St. Andrew's Church, Queen Victoria St	Roadside	59	53	56	52	50	41	28
St Dunstan's Church, Fleet Street	Roadside	80	87	81	82	70	57	31
Speed House, Barbican Estate	Urban Background	34	33	35	32	31	28	19
Guinness Trust Estate, Mansell St	Roadside	59	56	51	48	46	39	35

Diffusion tube sites measuring the impact of the Bank on Safety traffic scheme

Site	Annual Mean (µg/m ³)				
	2016	2017	2018	2019	2020
Bank 1 - Cannon Street	78	65	50	40	38
Bank 2 - Queen Victoria Street	72	59	58	51	35
Bank 3 - King Street	52	52	52	47	30
Bank 4 - Corner of Poultry and QVS	71	60	63	55	35
Bank 5 - Magistrates Court	66	63	53	56	36
Bank 6 - King William Street	76	70	61	61	42
Bank 7 - Lombard and KWS	57	58	56	54	30

Bank 8 - Lombard Street	59	56	56	45	30
Bank 9 - Lombard Street and Cornhill	68	62	60	46	32
Bank 10 - Cornhill Bank Junction	71	67	66	57	31
Bank 11 - Cornhill-Royal Exchange	61	57	62	41	26
Bank 12 - Threadneedle Street	85	69	62	42	31
Bank 13 - 31 Old Broad Street	59	57	53	45	29
Bank 14 - Wormwood Street	64	61	57	49	33
Bank 15 - 3 London Wall	64	54	65	53	35
Bank 16 - 81 London Wall	60	59	62	53	38
Bank 17 - 55 Moorgate	69	66	66	52	36
Bank 18 - 85 Gresham Street	53	54	52	46	30
Bank 19 - Lothbury	45	44	45	39	24
Bank 20 - Princes Street	78	74	69	49	36
Bank 22 - Gracechurch Street /Leadenhall	-	66	62	51	34
Bank 23 - Fish Street Hill	-	66	61	43	32

Diffusion tube sites measuring the impact of the Low Emission Neighbourhood

Site	Annual Mean ($\mu\text{g}/\text{m}^3$)			
	2017	2018	2019	2020
Len 1 - Giltspur Street	53	43	38	28
Len 3 - Beech Street- Near Barbican Station	69	62	50	33
Len 4 - Aldersgate	62	57	47	41
Len 5 - Viscount Street	40	37	-	24
Len 6 - Corner of Whitecross Street / Beech Street	46	42	40	23
Len 7 - Silk Street	41	41	36	26
Len 8 - Fore Street	41	38	34	25
Len 9 - London Wall/ Brewers Hall Gardens	48	49	42	30
Len 10 - Aldermanbury	38	37	31	24
Len 15 - Fann Street	-	41	36	23
Len 16 - Moor Lane	-	39	30	25

Diffusion tube sites – other, including some schools and nurseries

Site	Annual Mean ($\mu\text{g}/\text{m}^3$)		
	2018	2019	2020
Southwark Bridge	41	35	29
London Bridge	37	35	26
Liverpool Street	71	52	38
Fenchurch Avenue	36	35	26
Fetter Lane	56	44	29

St Mary at Hill's Churchyard	33	31	21
St Pauls Cathedral	41	39	24
Whittington Gardens	42	37	26
Goodmans Yard	-	44	25
Goldman Sachs			24
Citigen			30
Hatching Dragons Nursery			22
Bright Horizons Nursery			24
St Pauls Choir School front railings			31
CoL Boys School access ramp			21

Diffusion tube sites to support the Transport Strategy

Site	Annual Mean ($\mu\text{g}/\text{m}^3$)		
	2018	2019	2020
T2 - Byward Street	67	51	35
T3 - Seething Lane	71	57	44
T4 - Crosswall	50	44	26
T5 - Minories	62	49	36
T6 - Stoney Lane	40	39	25
T7 - Heneage Lane	42	33	27
T9 - 150 Bishopsgate	74	48	36
T10 - St Mary Axe	50	42	26
T11 - Old Broad Street	40	31	26
T12 - Upper Thames Street	48	53	40
T13 - Blackfriars Bridge	62	56	41
T14 - Victoria Embankment	68	57	38
T15 - Fleet Street	62	47	36
T16 - Ludgate Hill	61	50	31
T17 - Museum of London	66	55	36
T18 - London Wall	65	52	39
T19 - West Poultry Ave	51	38	30
T20 - The Fable	58	51	38
T21 - North Old Baily	73	56	36

Diffusion tube sites to support the Beech Street Zero Emissions Street Project

Site	Annual Mean ($\mu\text{g}/\text{m}^3$)	
	2019	2020
Aldersgate Street	47	39
Bunhill Row/Chiswell Street	40	26
Moore Lane/Ropemaker Street	34	29
Moorgate	52	32
London Wall/ Moorgate	52	36
London Wall	49	34
Wood Street	29	24

PM₁₀ Data

The annual average EU limit value is 40µg/m³. The current World Health Organisation Guideline is 20µg/m³

Site	Annual Mean (µg/m ³)						
	2014	2015	2016	2017	2018	2019	2020
The Aldgate School	20	23	24	23	21	19	16
Beech St	25	28	25	23	24	22	18*
Upper Thames St	34	41	35	32	32	27	24

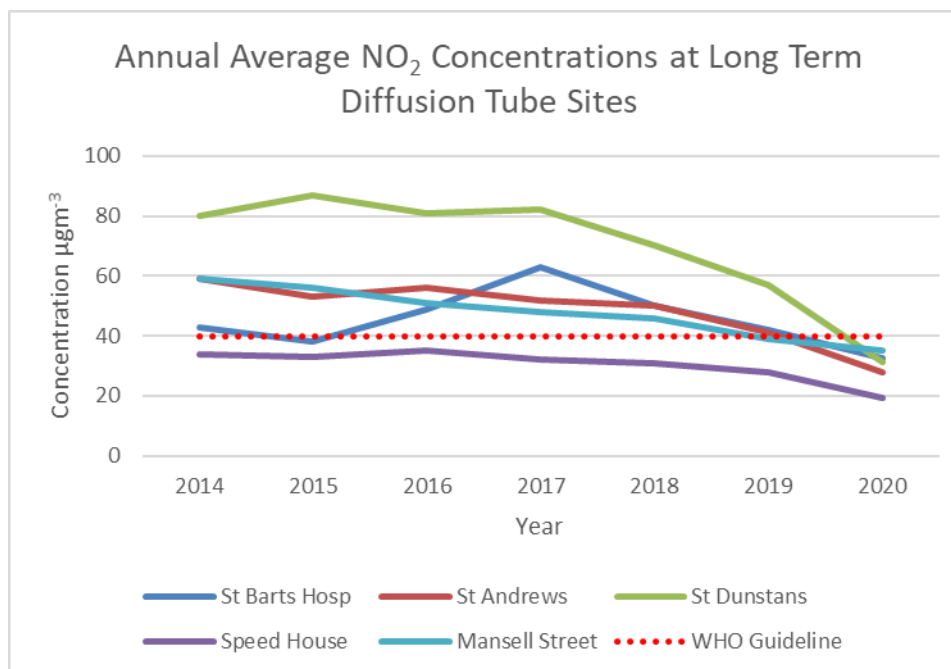
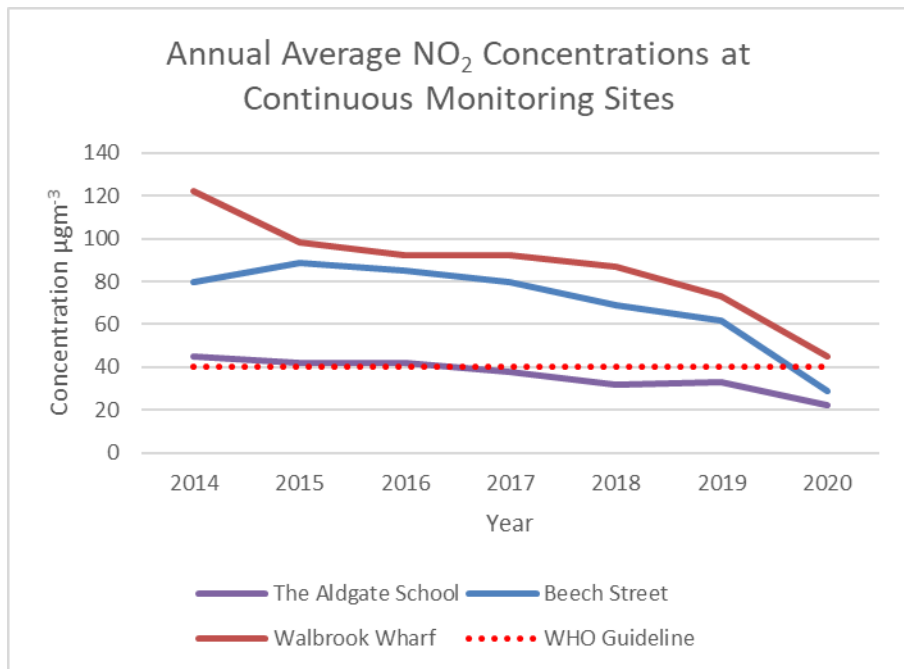
PM_{2.5} Data

The annual average EU limit value is 25µg/m³. The current World Health Organisation Guideline is 10µg/m³

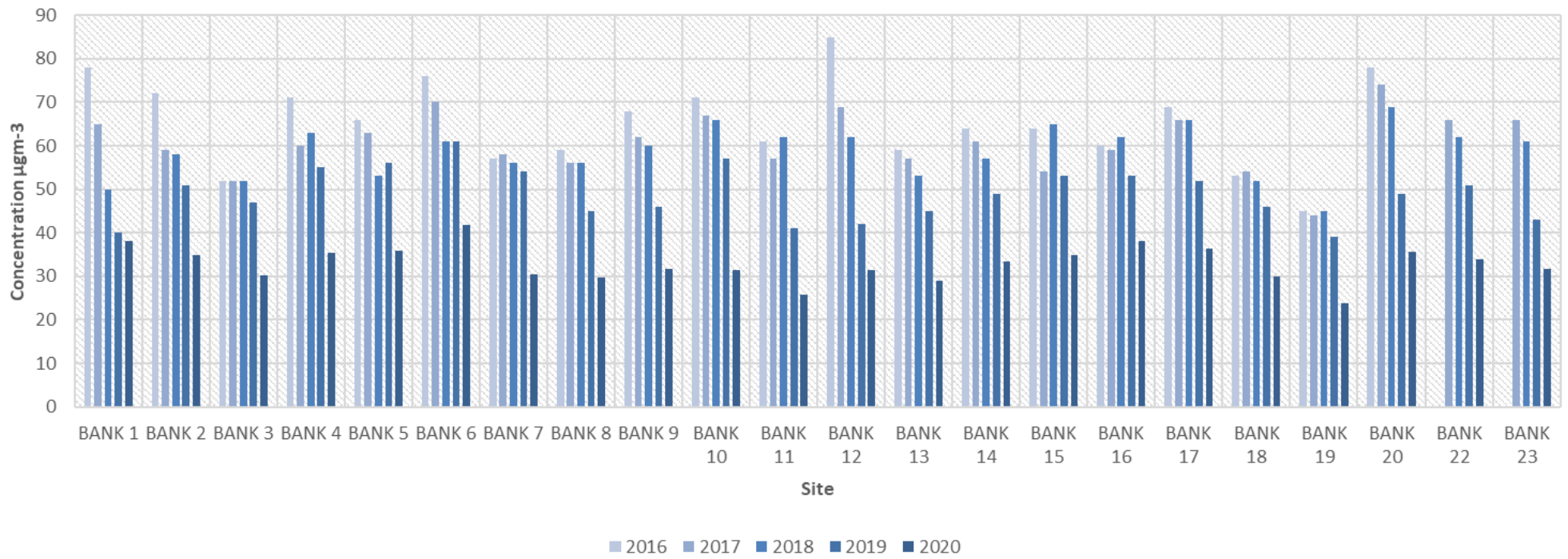
Site	Annual Mean (µg/m ³)				
	2016	2017	2018	2019	2020
Farringdon Street	16	16	16	14	12*
The Aldgate School	15	14	12	12	12

* Unratified data which may be subject to slight change

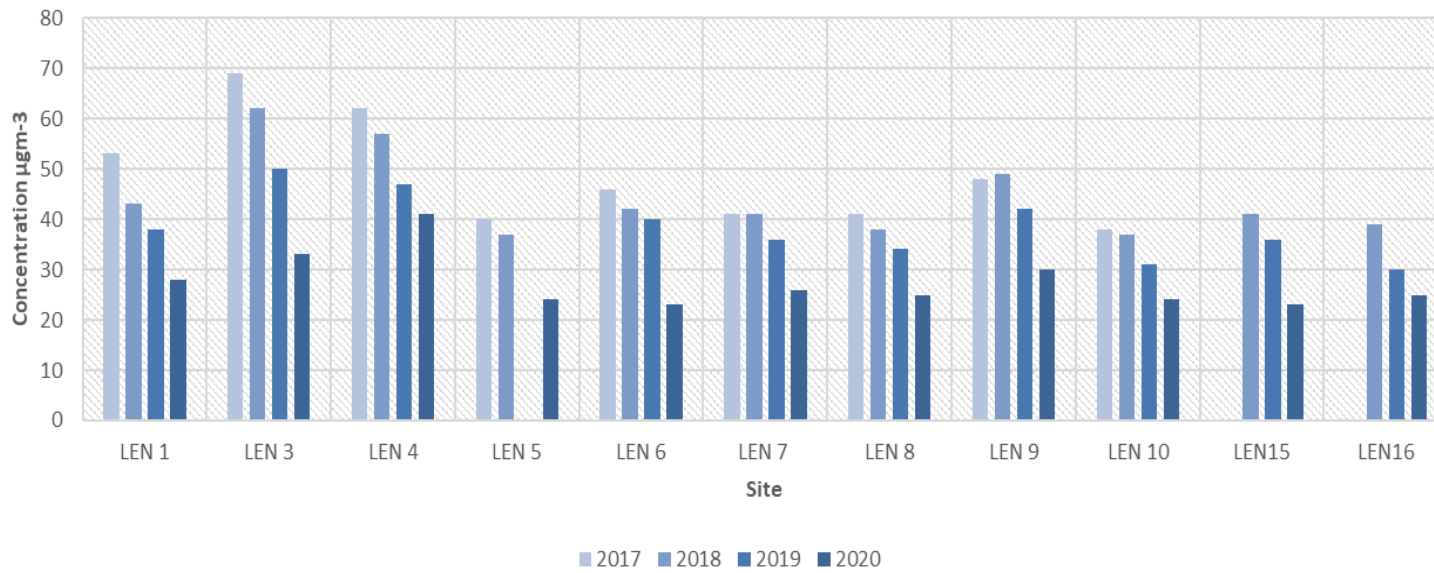
Graphs



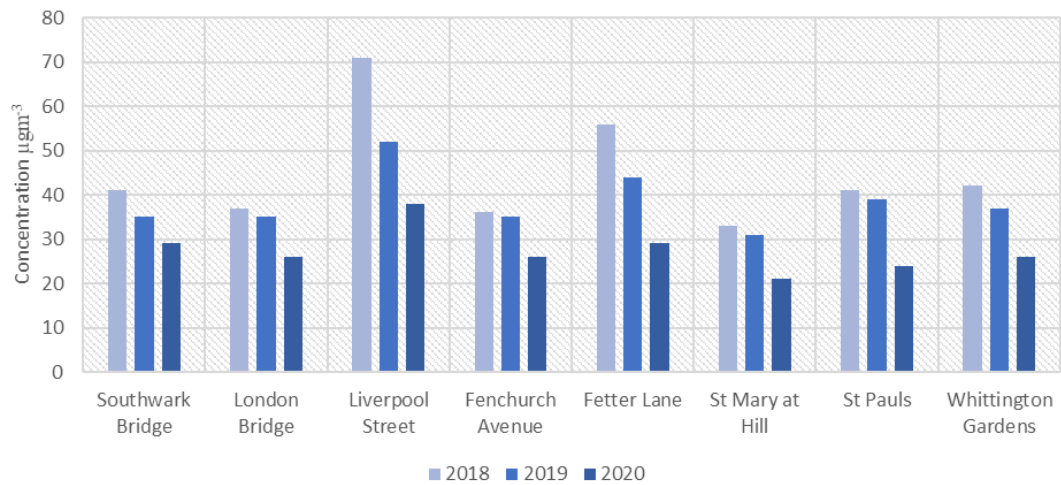
Annual Average NO₂ Concentrations at Bank Diffusion Tube Sites



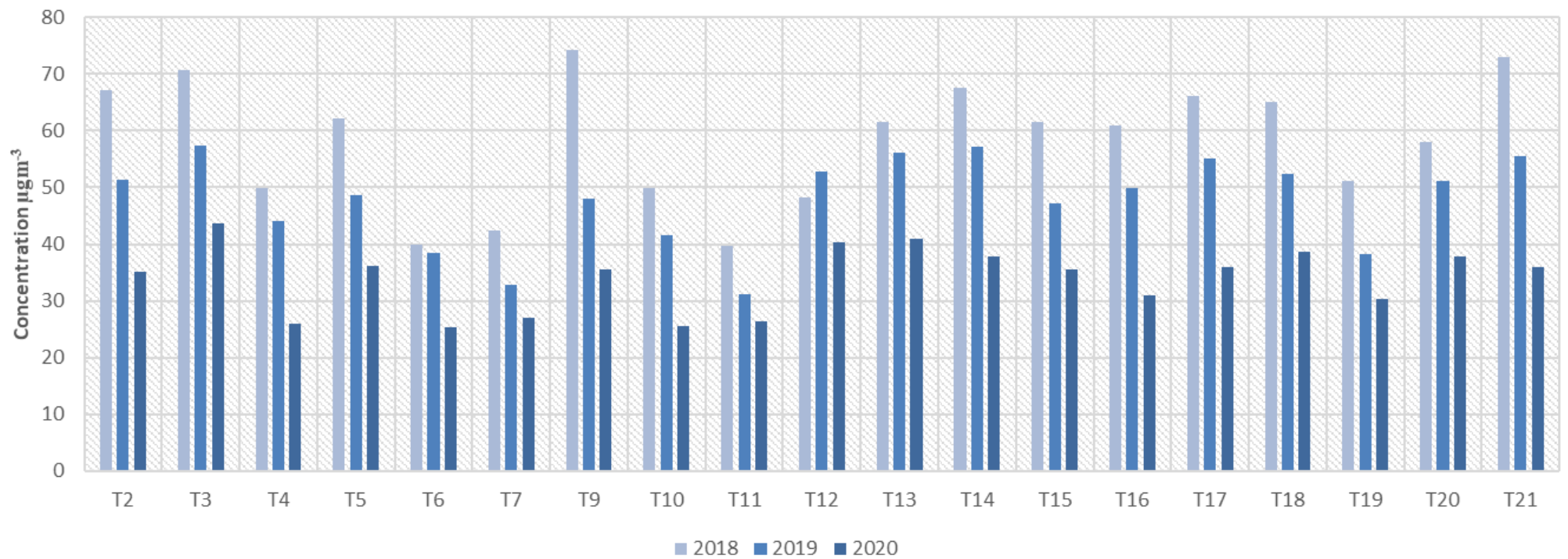
Annual Average NO₂ Concentrations at LEN Diffusion Tube Sites



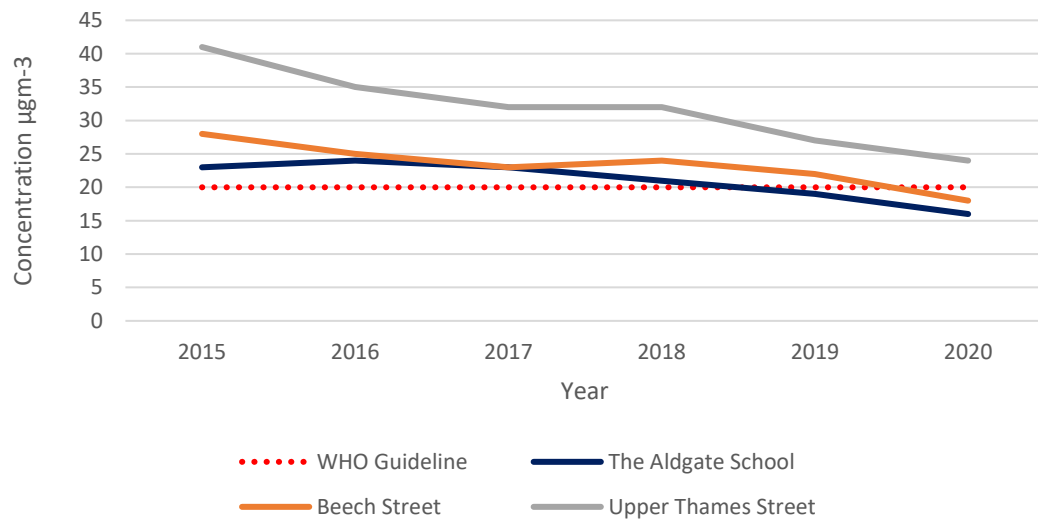
Annual Average NO₂ Concentrations at Other Sites



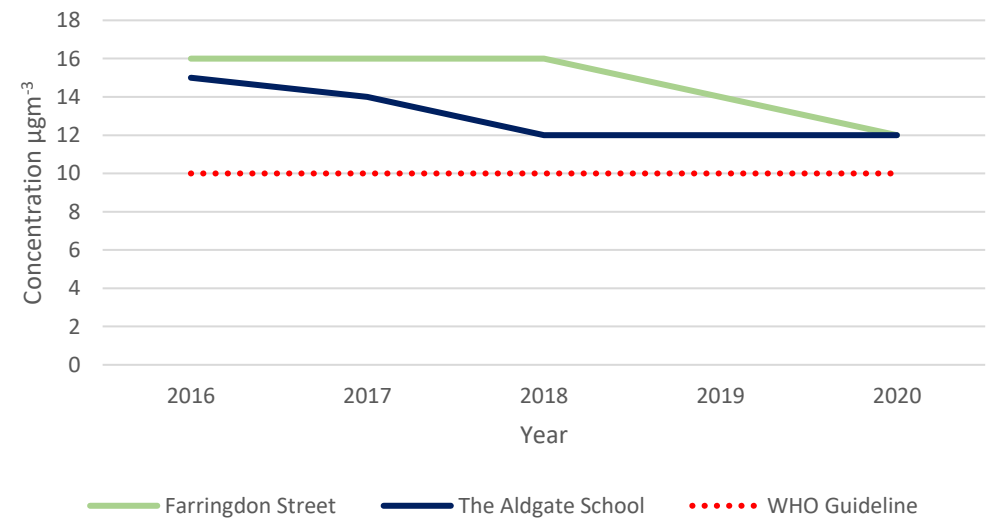
Annual Average NO₂ Concentrations at Transport Strategy Diffusion Tube Sites



Annual Average PM₁₀ Concentrations at Continuous Monitoring Sites



Annual Average PM_{2.5} Concentrations at Continuous Monitoring Sites



Air quality monitoring locations, 2020

Air quality monitoring locations are reviewed annually. Some core monitoring sites are maintained, and other sites are added and removed according to the needs of research projects, planned programmes and local investigations or concerns. Locations where monitoring took place during 2020 are shown below. Nitrogen dioxide was measured on some roads in the London Borough of Islington to measure the impact of the zero-emission street pilot. This data isn't included in the Annual Status Report as the report is designed to represent the status of air quality in the Square Mile.

