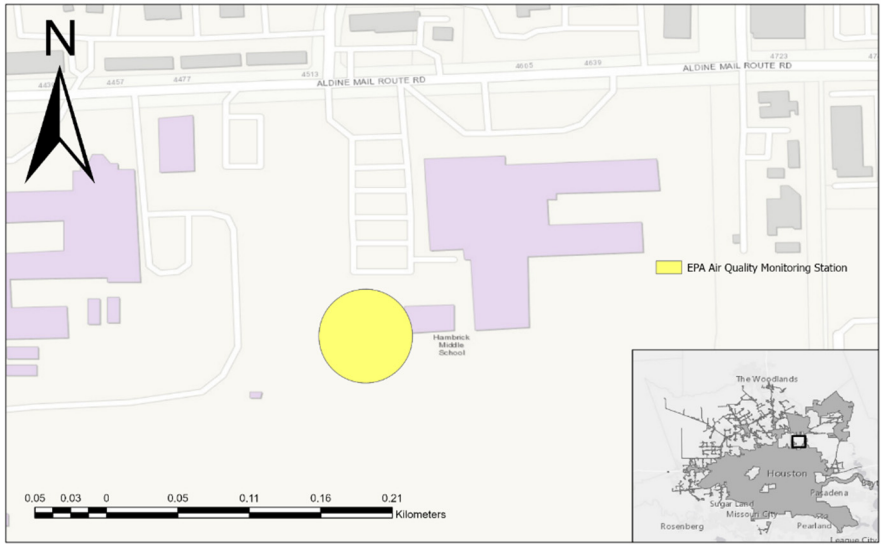
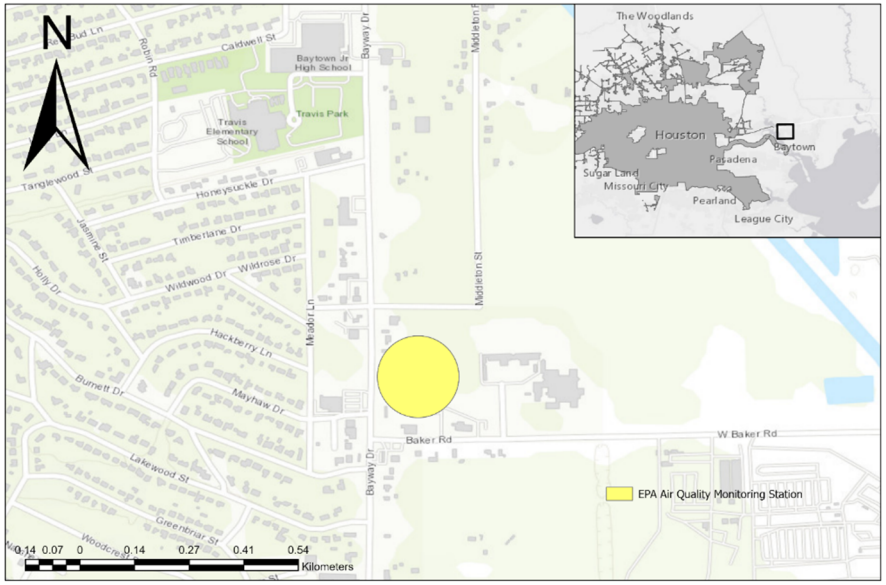
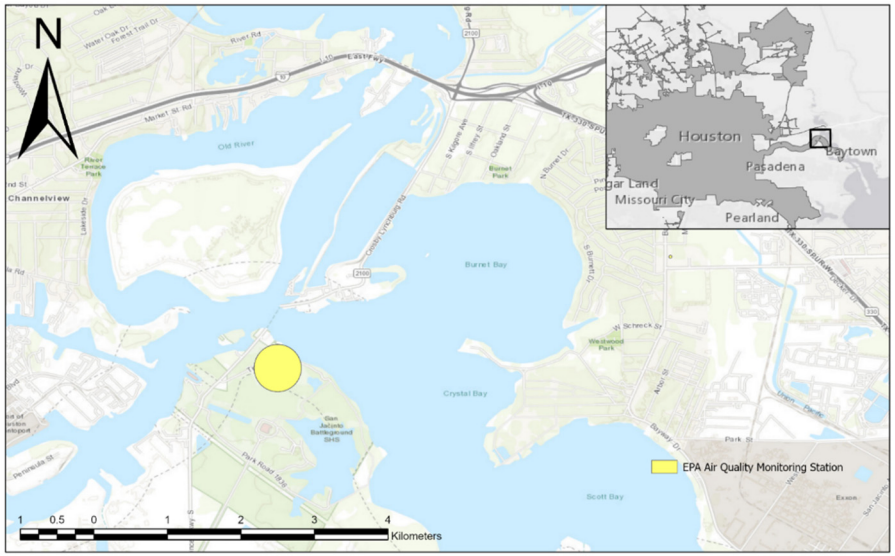
Supplementary Materials:



(**a**)

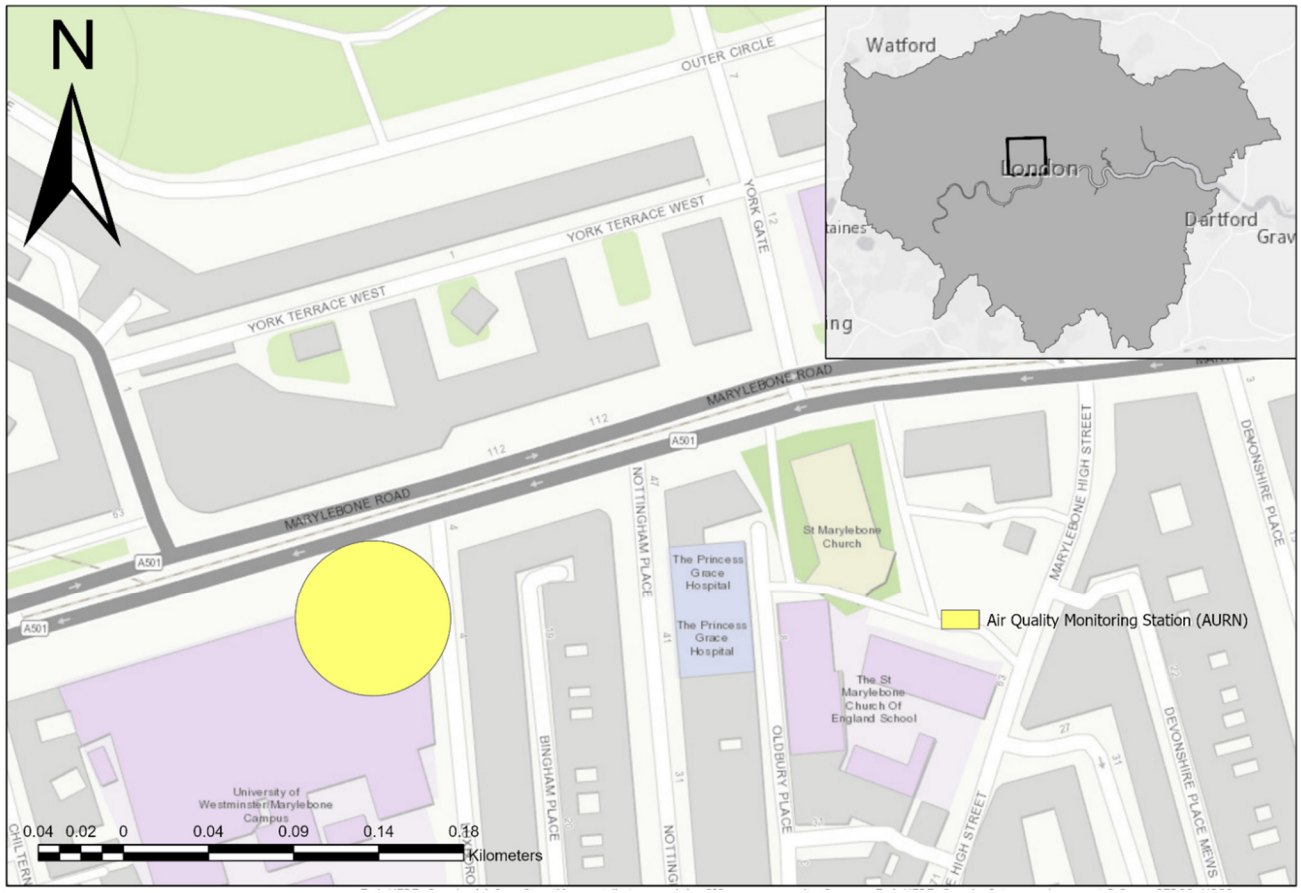


(b)

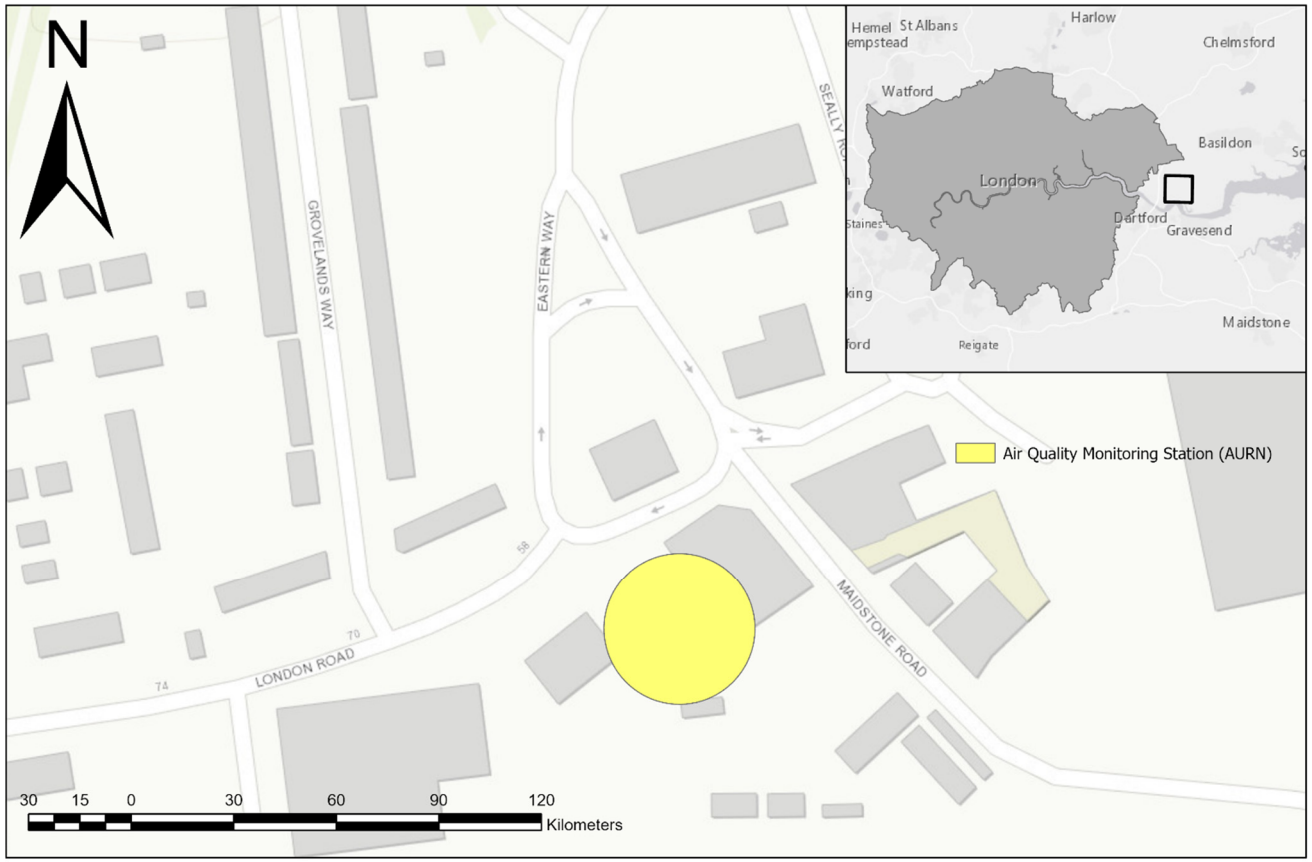


(c)

Figure S1. United States Environmental Protection Agency (EPA) air quality monitoring stations in: (a) Houston Aldine (b) Houston Baytown and (c) Lynchburg Ferry.

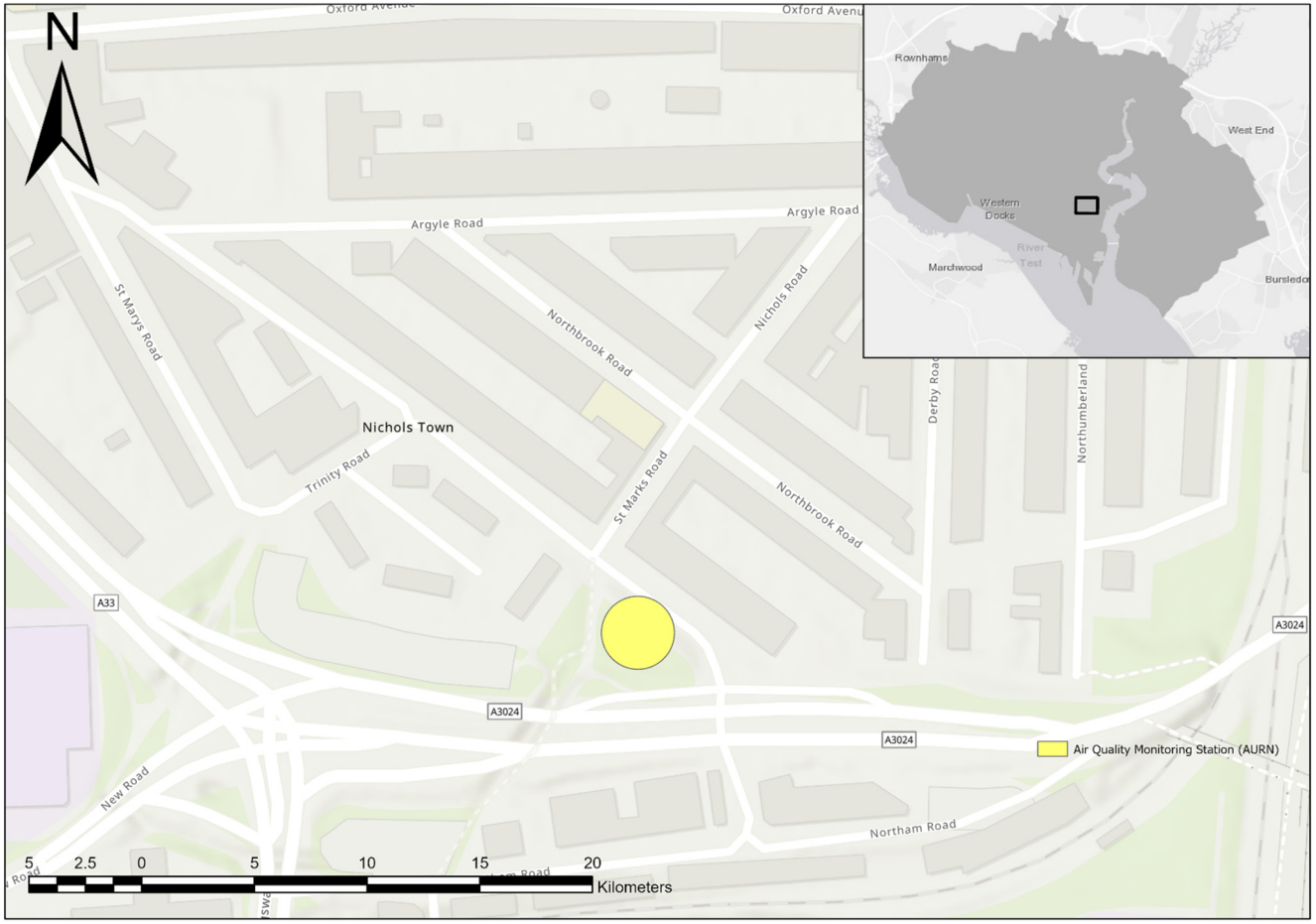

N
Watford
London
Dartford
OUTER CIRCLE
YORK TERRACE WEST
YORK TERRACE WEST
YORK GATE
MARYLEBONE ROAD
MARYLEBONE ROAD
A501
A501
A501
NOTTINGHAM PLACE
The Princess Grace Hospital
The Princess Grace Hospital
St Marylebone Church
MARYLEBONE HIGH STREET
DEVONSHIRE PLACE
Air Quality Monitoring Station (AURN)
The St Marylebone Church Of England School
BINGHAM PLACE
OLDBURY PLACE
DEVONSHIRE PLACE MEWS
University of Westminster Marylebone Campus
0.04 0.02 0 0.04 0.09 0.14 0.18
Kilometers

(**a**)

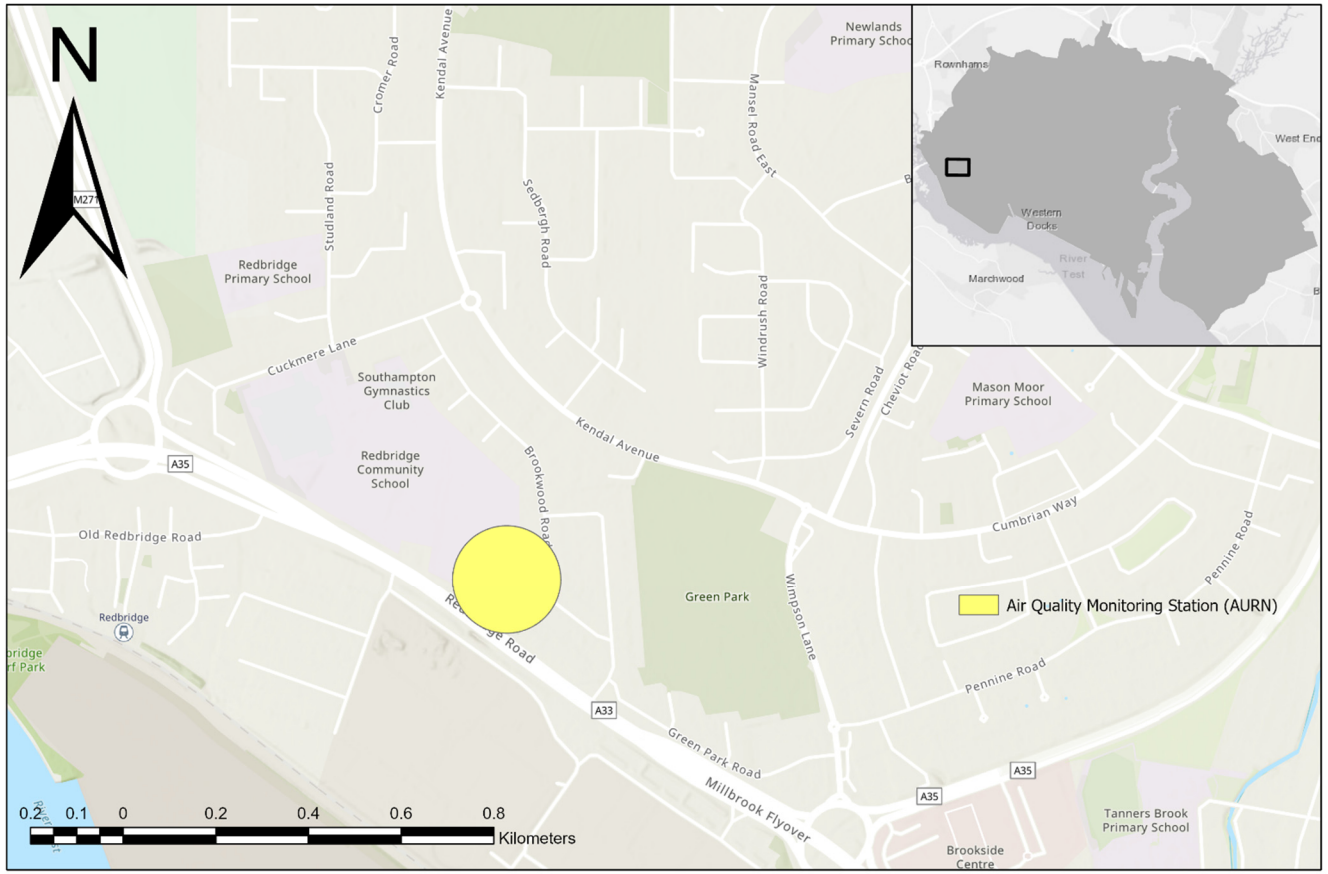


(b)

Figure S2. Automatic Urban and Monitoring Network (AURN) air quality monitoring stations at (a) London Marylebone road and (b) Thurrock.


N
Oxford Avenue
Argyle Road
Argyle Road
St Marys Road
Northbrook Road
Nichols Road
Nichols Town
Trinity Road
St Marks Road
Northbrook Road
Derby Road
Northumberland
A33
A3024
A3024
A3024
New Road
Northam Road
Air Quality Monitoring Station (AURN)
5 2.5 0 5 10 15 20
Kilometers
Rownhams
West End
Western Docks
Marchwood
River Test

(**a**)



(b)

Figure S3. Map of Automatic Urban and Monitoring Network (AURN) air quality monitoring stations at a) Southampton Centre and b) Southampton A33.

Table S1. Descriptive statistics of daily maximum NO_2 and daily mean PM_{10} concentration for each year from air quality monitoring stations at Houston sites.

	Houston Aldine						Houston Baytown			Houston Lynchburg Ferry		
	NO_2			$PM_{2.5}$			$PM_{2.5}$			NO_2		
Year	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD
2000	315	17.3 – 308.2	69.0 ± 39.5	135	1.7 – 43.6	13.8 ± 6.1	81	4.0 – 37.7	12.9 ± 5.8	-	-	-

2001	343	18.0 – 299.0	67.6 ± 35.3	137	0.3 – 44.0	12.4 ± 6.5	118	2.0 – 53.7	12.7 ± 7.6	-	-	-
2002	345	13.0 – 114.0	56.4 ± 22.7	119	0.0 – 30.9	12.1 ± 5.5	122	2.7 – 53.5	11.2 ± 6.5	-	-	-
2003	360	0.0 – 173.0	54.5 ± 21.4	102	0.1 – 31.0	13.7 ± 5.7	127	2.9 – 27.3	12.9 ± 5.7	-	-	-
2004	362	11.0 – 109.0	51.5 ± 19.7	118	0.5 – 31.2	13.5 ± 6.1	121	2.3 – 34.3	11.7 ± 5.4	339	8 – 281	50.9 ± 28.7
2005	335	6.0 – 158.0	56.5 ± 21.7	307	2.1 – 30.9	13.1 ± 5.4	97	2.8 – 40.0	12.9 ± 6.0	325	11 – 153	54.7 ± 25.3
2006	320	15.0 – 112.0	54.1 ± 21.7	329	2.5 – 31.8	11.8 ± 5.2	113	2.7 – 25.7	10.2 ± 4.7	314	11 – 154	54.9 ± 25.2
2007	348	10.0 – 116.0	48.0 ± 20.4	359	2.8 – 39.1	14.7 ± 6.6	116	1.9 – 34.1	11.0 ± 5.6	354	11 – 126	52.1 ± 24.2
2008	349	6.0 – 112.0	45.9 ± 21.4	348	3.3 – 31.0	12.2 ± 5.1	56	3.0 – 30.2	10.6 ± 4.9	246	0 – 248	42.3 ± 29.0
2009	360	6.0 – 103.0	38.3 ± 19.2	356	1.8 – 27.2	11.2 ± 4.5	61	3.6 – 21.0	10.9 ± 4.2	361	10 – 194	47.4 ± 24.8
2010	357	8.0 – 114.0	40.2 ± 19.3	359	2.8 – 26.5	11.2 ± 4.3	59	2.2 – 27.6	10.8 ± 4.4	338	0 – 146	42.3 ± 28.7
2011	354	4.0 – 104.0	37.3 ± 20.5	336	2.7 – 44.7	11.9 ± 5.5	58	1.7 – 3.2	11.9 ± 4.9	277	9 – 129	42.2 ± 22.9
2012	355	6.0 – 99.0	40.7 ± 18.1	343	3.1 – 29.1	11.1 ± 4.2	114	2.4 – 28.6	10.7 ± 4.3	336	8 – 257	46.2 ± 27.7
2013	362	4.0 – 108.0	38.1 ± 20.6	336	3.3 – 45.5	11.0 ± 5.2	222	2.1 – 31.9	9.6 ± 4.2	351	6 – 115	41.1 ± 23.2
2014	346	4.0 – 93.0	35.6 ± 19.6	341	2.0 – 31.3	10.1 ± 4.6	303	2.2 – 32.4	9.6 ± 4.4	362	3 – 113	40.3 ± 22.5

2015	360	2.0 – 114.0	35.5 ± 20.9	351	0.8 – 26.9	9.5 ± 4.6	325	0.3 – 26.6	8.6 ± 4.2	356	6 – 146	44.7 ± 24.9
2016	358	-1.4 – 100.0	32.6 ± 17.6	334	2.8 – 25.7	8.4 ± 3.6	350	1.8 – 27.4	7.6 ± 3.4	364	5 – 149	42.8 ± 22.8
2017	297	4.0 – 95.0	34.9 ± 17.9	324	1.8 – 32.1	8.5 ± 4.4	267	2.1 – 33.2	9.7 ± 4.5	139	10 – 137	53.5 ± 23.8
2018	354	5.0 – 98.0	32.3 ± 18.2	326	1.8 – 32.1	9.0 ± 4.7	344	-0.1 – 33.8	9.2 ± 5.2	362	6 – 135	40.4 ± 24.0
2019	362	1.0 – 99.0	34.6 ± 19.4	333	1.7 – 45.7	9.4 ± 4.9	353	0.7 – 41.0	8.8 ± 4.4	361	8 – 155	39.4 ± 20.6

Table S2. Descriptive statistics of the hourly atmospheric pollutant concentrations for each year from air quality monitoring stations at London Marylebone Road and Thurrock.

	London Marylebone Road												Thurrock								
	NO_2			SO_2			$PM_{2.5}$			PM_{10}			NO_2			SO_2			PM_{10}		
Year	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD
2000	8455	4.0 – 298.0	92.5 ± 39.8	8421	0.0 – 114.0	14.8 ± 9.8	8698	-2.0 – 330.0	25.6 ± 14.2	8659	-1.0 – 901.0	48.2 ± 27.0	8162	0.0 – 160.0	33.7 ± 19.0	8508	0.0 – 242.0	8.6 ± 13.1	8225	-5.0 – 335.0	23.2 ± 16.3
2001	8221	8.0 – 273	93.8 ± 36.0	7416	0.0 – 136.0	12.3 ± 9.0	8252	0.0 – 398.0	24.8 ± 16.7	7804	1.0 – 707.0	43.7 ± 28.0	8401	0.0 – 124.0	36.1 ± 19.1	8420	0.0 – 184.0	8.2 ± 11.0	6648	-5.0 – 441.0	25.0 ± 19.3
2002	8625	8.0 – 237.0	98.5 ± 31.8	8453	0.0 – 93.0	10.3 ± 7.6	8448	1.0 – 112.0	21.5 ± 9.8	8597	1.0 – 664.0	44.6 ± 22.6	8251	0.0 – 122.0	35.6 ± 18.6	8521	0.0 – 194.0	5.3 ± 8.3	7183	-4.0 – 319.0	27.2 ± 20.7
2003	8211	6 – 393.0	107.1 ± 51.8	8422	0.0 – 117.0	12.0 ± 8.5	8170	2.0 – 83.0	19.1 ± 10.4	8650	5.0 – 306.0	48.3 ± 23.8	8188	0.0 – 267.0	38.3 ± 20.9	7984	0.0 – 460.0	7.3 ± 12.1	8591	-5.0 – 720.0	29.9 ± 27.0
2004	8634	8.0 – 361.0	109.6 ± 51.9	8077	0.0 – 128.0	8.3 ± 7.0	8426	-1.0 – 87.0	19.3 ± 9.4	8608	3.0 – 270	43.3 ± 19.9	7892	0.0 – 134.0	35.5 ± 19.4	8587	0.0 – 197.0	5.4 ± 7.0	8367	-3.0 – 489.0	25.0 ± 15.7
2005	8558	6.0 – 363.0	112.3 ± 60.8	8569	0.0 – 128.0	7.9 ± 6.9	8542	0.0 – 148.0	19.2 ± 10.2	8424	1.0 – 250.0	43.4 ± 21.9	7420	2.0 – 139.0	34.8 ± 19.6	8236	0.0 – 154.0	5.0 ± 7.3	8284	-4.0 – 191.0	23.7 ± 13.8
2006	8519	2.0 – 403.0	110.6 ± 56.6	7997	0.0 – 122.0	7.6 ± 6.8	8571	1.0 – 220.0	20.7 ± 10.7	8509	4.0 – 312.0	46.9 ± 22.1	8119	0.0 – 141.0	32.9 ± 19.5	8602	0.0 – 207.0	4.9 ± 7.6	8602	-4.0 – 329.0	23.2 ± 14.0
2007	8585	4.0 – 329.0	102.5 ± 53.1	8645	0.0 – 101.0	6.4 ± 5.5	8380	2.0 – 118.0	21.8 ± 10.8	8569	-3.0 – 183.0	44.7 ± 21.3	7647	0.0 – 264.0	34.0 ± 22.4	8555	0.0 - 72.0	4.1 ± 5.3	8691	-4.0 – 215.0	22.6 ± 14.4
2008	8694	6.0 – 378.0	115.3 ± 59.8	8201	0.0 – 67.0	6.9 ± 5.8	8250	-1.0 – 211.0	20.4 ± 9.5	8356	0.0 – 255.0	39.1 ± 18.3	8502	0.0 – 164.0	32.0 ± 19.5	8383	0.0 – 106.0	3.5 ± 4.4	8590	-5.0 – 115.0	18.9 ± 11.8
2009	8684	8.0 – 332.0	106.9 ± 51.5	8631	0.0 – 64.0	6.8 ± 5.5	7348	-4.0 – 136.0	21.0 ± 11.3	8317	-3.0 – 161.0	34.0 ± 17.0	8539	0.0 – 113.0	31.2 ± 18.7	8448	0.0 – 186.0	3.1 ± 4.6	8465	-6.0 – 117.0	21.3 ± 12.2
2010	8524	4.0 – 332.0	98.3 ± 55.9	8086	0.0 – 43.0	6.6 ± 5.5	5101	-2.0 – 125.0	22.6 ± 13.8	8123	2.0 – 195.0	31.6 ± 16.5	7418	0.0 – 138.0	29.2 ± 18.1	8541	0.0 – 122.0	3.2 ± 3.6	6933	-2.0 – 330.0	24.2 ± 14.0
2011	8512	10.0 – 304.0	97.2 ± 46.2	7612	0.0 – 40.0	6.9 ± 6.0	8347	-3.0 – 107.0	24.5 ± 14.5	8202	4.0 – 149.0	38.4 ± 18.1	7857	0.0 – 134.0	28.2 ± 18.0	8562	0.0 – 59.0	2.6 ± 3.0	7346	-1.0 – 492.0	24.7 ± 19.2
2012	8286	8.0 – 281.0	94.0 ± 43.6	8623	0.0 – 48.0	8.1 ± 6.6	8090	-2.0 – 115.0	21.5 ± 13.5	7488	-1.0 – 133.0	30.8 ± 16.7	8634	0.0 – 143.0	28.7 ± 19.2	8632	0.0 – 146.0	1.8 ± 3.7	8646	-2.0 – 112.0	17.7 ± 12.6

2013	8640	7.2 – 280.7	84.7 ± 40.4	6987	-0.5 – 33.6	6.0 ± 5.2	8484	-3.3 – 96.1	20.1 ± 12.6	8269	-0.3 – 121.1	29.1 ± 15.3	8484	-0.5 – 142.9	27.2 ± 17.3	8524	-1.2 – 26.7	1.7 ± 1.6	8344	-2.7 – 126.7	19.2 ± 12.2
2014	8648	8.3 – 246.0	93.6 ± 39.7	8460	-0.1 – 31.3	9.0 ± 4.8	8485	-3.5 – 97.1	18.2 ± 11.8	8155	-0.7 – 118.5	26.3 ± 14.7	8604	0.0 – 129.5	26.5 ± 17.1	7932	-0.9 – 67.0	1.6 ± 2.6	8390	-2.7 – 97.8	19.3 ± 12.8
2015	8640	10.1 – 290.4	88.3 ± 40.6	8656	0.7 – 32.4	8.9 ± 4.1	8498	-0.5 – 85.0	15.8 ± 9.8	8502	0.0 - 117.1	24.1 ± 13.0	8520	0.9 – 107.8	25.6 ± 16.2	8540	-0.8 – 15.0	1.2 ± 0.9	8610	-1.7 – 89.4	17.1 ± 9.5
2016	8663	8.1 – 321.9	89.1 ± 42.2	8682	0.0 – 36.7	7.7 ± 4.3	8435	-1.0 – 86.7	15.9 ± 10.9	8380	0.2 – 115.9	26.0 ± 14.5	8678	1.1 – 148.3	27.9 ± 18.1	8550	0.0 – 20.9	1.5 ± 1.5	8464	-0.7 – 96.9	17.3 ± 10.6
2017	8671	7.2 – 291.2	83.7 ± 37.5	8691	0.1 – 27.9	6.7 ± 3.9	8429	-2.6 – 128.0	15.4 ± 11.2	8445	0.1 – 142.0	23.8 ± 13.3	8557	0.9 – 130.7	28.2 ± 17.7	8461	-0.1 – 24.7	1.4 ± 1.5	8318	-0.2 – 126.0	18.1 ± 12.2
2018	8620	10.3 – 258.7	84.7 ± 36.5	8041	-0.1 – 21.7	5.3 ± 3.5	7847	-0.5 – 101.0	15.8 ± 9.3	8460	0.0 – 113.2	23.9 ± 11.6	8492	1.1 – 103.2	24.8 ± 15.7	8400	-0.7 – 16.9	0.9 ± 1.1	8211	-2.9 – 102.4	18.9 ± 11.6
2019	8287	4.1 – 197.9	62.7 ± 28.0	8610	-0.7 – 26.1	4.0 ± 3.1	7949	-3.3 – 93.0	14.3 ± 11.0	8447	0.3 - 187.9	22.2 ± 12.6	8658	0.5 – 113.0	23.4 ± 14.4	8470	-0.8 – 27.6	1.0 ± 1.2	8542	0.0 – 171.0	20.5 ± 14.0

Table S3. Descriptive statistics of the hourly atmospheric pollutant concentrations for each year from air quality monitoring stations at Southampton Centre and Southampton A33.

	Southampton Centre												Southampton A33					
	NO_2			SO_2			$PM_{2.5}$			PM_{10}			NO_2			PM_{10}		
Year	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD	N	Range (min – max)	Mean ± SD
2000	8373	2.0 – 147.0	39.9 ± 18.4	8213	0.0 – 67.0	8.3 ± 5.8	-	-	-	8477	-4.0 – 265.0	23.5 ± 14.7	-	-	-	-	-	-
2001	8528	2.0 – 130.0	37.5 ± 18.7	8374	0.0 – 133.0	8.0 ± 5.9	-	-	-	8610	-4.0 – 437.0	26.2 ± 17.2	-	-	-	-	-	-
2002	7911	2.0 – 120.0	33.3 ± 15.7	5752	0.0 – 67.0	5.7 ± 4.6	-	-	-	7741	-3.0 – 291.0	25.7 ± 14.2	-	-	-	-	-	-
2003	8323	0.0 – 126.0	35.8 ± 18.2	8405	0.0 – 120	6.1 ± 6.4	-	-	-	8002	-4.0 – 244.0	27.7 ± 15.8	-	-	-	-	-	-
2004	8364	0.0 – 130.0	32.8 ± 17.4	8471	0.0 – 85.0	5.7 ± 5.9	-	-	-	8498	-3.0 – 242.0	25.3 ± 13.4	-	-	-	-	-	-
2005	7637	0.0 – 113.0	30.7 ± 15.9	7874	0.0 – 239.0	4.4 ± 6.8	-	-	-	7974	-3.0 – 122.0	25.4 ± 13.0	-	-	-	-	-	-
2006	7885	0.0 – 143.0	28.3 ± 17.3	6484	0.0 – 45.0	2.9 ± 3.7	-	-	-	7811	-1.0 – 389.0	26.1 ± 15.1	-	-	-	-	-	-
2007	6901	2.0 – 160.0	34.3 ± 18.7	8595	0.0 – 56.0	3.1 ± 3.8	-	-	-	8608	-2.0 – 173.0	23.0 ± 15.3	-	-	-	-	-	-
2008	8280	2.0 – 220.0	35.8 ± 21.4	8426	0.0 – 72.0	2.6 ± 3.0	-	-	-	8330	-1.0 – 180.0	20.4 ± 14.2	-	-	-	-	-	-
2009	8430	2.0 – 141.0	34.8 ± 18.8	8466	0.0 – 67.0	2.4 ± 3.0	8504	-3.0 – 189.0	13.4 ± 10.8	8479	-4.0 – 361.0	18.5 ± 11.8	-	-	-	-	-	-
2010	6917	4.0 – 162.0	36.0 ± 18.8	7455	0.0 – 35.0	3.6 ± 3.2	6595	-4.0 – 133.0	13.3 ± 9.8	7076	-1.0 – 148.0	17.8 ± 10.7	-	-	-	-	-	-

2011	8504	2.0 – 147.0	35.3 ± 19.0	8626	0.0 – 69.0	2.4 ± 3.1	8044	-1.0 – 100.0	15.8 ± 13.0	8632	0.0 – 104.0	20.9 ± 13.4	-	-	-	-	-	-
2012	8670	2.0 – 163.0	32.5 ± 18.0	8485	0.0 - 48.0	2.2 ± 2.8	8468	-1.0 – 135.0	14.5 ± 12.4	8720	-1.0 – 146.0	19.7 ± 13.4	-	-	-	-	-	-
2013	8586	2.6 – 105.2	31.3 ± 16.4	8534	-1.2 – 35.9	1.8 ± 1.7	8485	-3.2 – 81.7	15.0 ± 10.3	8404	0.6 – 125.5	21.0 ± 11.2	-	-	-	-	-	-
2014	8428	3.1 – 119.9	31.6 ± 16.7	8439	-1.3 – 34.5	2.1 ± 2.1	8448	-1.5 – 147.2	14.7 ± 11.0	8540	1.8 – 151.4	20.9 ± 11.8	-	-	-	-	-	-
2015	8140	2.0 – 143.8	29.5 ± 15.3	8627	0.0 – 24.1	1.5 ± 1.3	7803	-3.7 – 74.1	10.0 ± 8.9	7899	-2.6 – 95.3	16.5 ± 10.4	-	-	-	-	-	-
2016	3681	3.5 – 123.8	34.4 ± 19.3	3676	0.1 – 16.2	2.2 ± 1.6	3416	-2.3 – 289.2	10.7 ± 11.9	2686	-2.1 – 344.1	16.9 ± 12.4	8566	182.5 – 0.80	43.0 ± 29.1	5983	-1.0 – 111.2	21.6 ± 11.4
2017	8110	2.4 – 116.0	29.6 ± 16.4	7960	0.0 – 50.5	1.4 ± 1.7	7797	-3.8 – 87.0	11.1 ± 8.5	7541	-3.5 – 119.1	16.8 ± 12.3	8708	155.1 – 1.0	39.9 ± 25.8	7878	-3.2 – 122.3	19.4 ± 13.6
2018	8282	3.0 – 130.1	28.9 ± 16.0	7894	-1.1 – 49.6	1.6 ± 1.7	7603	-4.9 – 74.2	11.9 ± 8.8	6351	-4.7 – 95.1	17.7 ± 10.6	8670	145.4 – 0.0	35.0 ± 23.0	6324	-1.9 – 102.5	16.7 ± 10.3
2019	8679	1.9 – 143.7	27.8 ± 17.0	8638	-1.8 – 25.9	1.6 ± 1.4	8512	-4.9 – 235.9	9.6 ± 9.9	8498	-5.0 – 252.0	17.0 ± 11.4	8474	158.3 - 0.4	32.5 ± 22.4	7891	-2.4 – 85.9	15.6 ± 10.9

Table S4. Spearman's Rank Correlation analysis for hourly mean pollutant concentration vs hourly traffic counts between 7:00hrs and 18:00hrs on a weekday in March, April, May, July, September and, October over several different years in Southampton Centre, Southampton A33, London Marylebone Road and Thurrock, n = 12 for traffic counts and n = 12 for hourly pollutant concentration. * Signifies a significant correlation ($p < 0.05$).

Southampton Centre			Southampton A33			London Marylebone Road			Thurrock		
Date	Correlation Coefficient (rho)	P	Date	Correlation Coefficient (rho)	P	Date	Correlation Coefficient (rho)	P	Date	Correlation Coefficient (rho)	P
NO_2 and Total Traffic Count on 19/06/2001	0.203	0.527	NO_2 and Total Traffic Count on 24/06/2017	0.427	0.190	NO_2 and Total Traffic Count on 27/05/2004	-0.656	0.020*	NO_2 and Total Traffic Count on 18/05/2001	0.401	0.196
SO_2 and Total Traffic Count on 19/06/2001	-0.512	0.089	NO_2 and Total Traffic Count on 24/05/2019	-0.657	0.020*	SO_2 and Total Traffic Count on 27/05/2004	0.787	0.002*	SO_2 and Total Traffic Count on 18/05/2001	-0.307	0.331
PM_{10} and Total Traffic Count on 19/06/2001	-0.319	0.312	PM_{10} and Total Traffic Count on 24/05/2019	-0.559	0.059	$PM_{2.5}$ and Total Traffic Count on 27/05/2004	-0.223	0.487	PM_{10} and Total Traffic Count on 18/05/2001	-0.687	0.014*
NO_2 and Total Traffic Count on 11/04/2003	-0.549	0.064	-	-	-	PM_{10} and Total Traffic Count on 27/05/2004	-0.379	0.224	NO_2 and Total Traffic Count on 20/04/2009	-0.130	0.688
SO_2 and Total Traffic Count on 11/04/2003	-0.036	0.911	-	-	-	NO_2 and Total Traffic Count on 11/06/2007	-0.449	0.143	SO_2 and Total Traffic Count on 20/04/2009	-0.307	0.331
PM_{10} and Total Traffic Count on 11/04/2003	-0.314	0.320	-	-	-	SO_2 and Total Traffic Count on 11/06/2007	-0.511	0.090	PM_{10} and Total Traffic Count on 20/04/2009	-0.035	0.914
NO_2 and Total Traffic Count on 08/07/2005	0.432	0.161	-	-	-	$PM_{2.5}$ and Total Traffic Count on 11/06/2007	0.007	0.983	NO_2 and Total Traffic Count on 27/03/2017	0.140	0.665
SO_2 and Total Traffic Count on 08/07/2005	0.416	0.179	-	-	-	PM_{10} and Total Traffic Count on 11/06/2007	0.068	0.841	SO_2 and Total Traffic Count on 27/03/2017	0.155	0.631
PM_{10} and Total Traffic Count on 08/07/2005	0.400	0.198	-	-	-	NO_2 and Total Traffic Count on 28/09/2009	0.708	0.010*	PM_{10} and Total Traffic Count on 27/03/2017	0.300	0.342
NO_2 and Total Traffic Count on 08/06/2007	0.083	0.800	-	-	-	SO_2 and Total Traffic Count on 28/09/2009	0.801	0.001*	-	-	-
SO_2 and Total Traffic Count on 08/06/2007	0.459	0.133	-	-	-	$PM_{2.5}$ and Total Traffic Count on 28/09/2009	0.725	0.008*	-	-	-
PM_{10} and Total Traffic Count on 08/06/2007	0.539	0.071	-	-	-	PM_{10} and Total Traffic Count on 28/09/2009	0.782	0.003*	-	-	-

NO_2 and Total Traffic Count on 25/05/2011	-0.385	0.216	-	-	-	NO_2 and Total Traffic Count on 24/09/2010	0.449	0.143	-	-	-
SO_2 and Total Traffic Count on 25/05/2011	-0.474	0.120	-	-	-	SO_2 and Total Traffic Count on 24/09/2010	0.533	0.074	-	-	-
$PM_{2.5}$ and Total Traffic Count on 25/05/2011	0.064	0.844	-	-	-	PM_{10} and Total Traffic Count on 24/09/2010	0.232	0.468	-	-	-
PM_{10} and Total Traffic Count on 25/05/2011	0.255	0.424	-	-	-	NO_2 and Total Traffic Count on 13/09/2011	-0.147	0.648	-	-	-
NO_2 and Total Traffic Count on 04/10/2011	-0.414	0.181	-	-	-	$PM_{2.5}$ and Total Traffic Count on 13/09/2011	-0.206	0.521	-	-	-
SO_2 and Total Traffic Count on 04/10/2011	-0.324	0.304	-	-	-	PM_{10} and Total Traffic Count on 13/09/2011	0.466	0.127	-	-	-
$PM_{2.5}$ and Total Traffic Count on 04/10/2011	0.032	0.921	-	-	-	NO_2 and Total Traffic Count on 29/03/2012	0.284	0.371	-	-	-
PM_{10} and Total Traffic Count on 04/10/2011	0.168	0.602	-	-	-	SO_2 and Total Traffic Count 29/03/2012	-0.151	0.638	-	-	-
NO_2 and Total Traffic Count on 30/06/2017	-0.182	0.572	-	-	-	$PM_{2.5}$ and Total Traffic Count on 29/03/2012	0.112	0.728	-	-	-
SO_2 and Total Traffic Count on 30/06/2017	-0.553	0.062	-	-	-	PM_{10} and Total Traffic Count on 29/03/2012	0.126	0.697	-	-	-
$PM_{2.5}$ and Total Traffic Count in 30/06/2017	0	1	-	-	-	NO_2 and Total Traffic Count on 09/05/2013	-0.336	0.287	-	-	-
PM_{10} and Total Traffic Count on 30/06/2017	0.476	0.118	-	-	-	SO_2 and Total Traffic Count on 09/05/2013	-0.529	0.080	-	-	-
-	-	-	-	-	-	$PM_{2.5}$ and Total Traffic Count on 09/05/2013	-0.168	0.602	-	-	-
-	-	-	-	-	-	PM_{10} and Total Traffic Count on 09/05/2013	-0.392	0.208	-	-	-
-	-	-	-	-	-	NO_2 and Total Traffic Count on 10/06/2014	-0.147	0.649	-	-	-
-	-	-	-	-	-	SO_2 and Total Traffic Count 10/06/2014	-0.238	0.457	-	-	-
-	-	-	-	-	-	$PM_{2.5}$ and Total Traffic Count on 10/06/2014	-0.218	0.497	-	-	-
-	-	-	-	-	-	NO_2 and Total Traffic Count on 29/06/2015	0.193	0.5486	-	-	-

-	-	-	-	-	-	SO_2 and Total Traffic Count on 29/06/2015	0.585	0.046*	-	-	-
-	-	-	-	-	-	$PM_{2.5}$ and Total Traffic Count on 29/06/2015	-0.074	0.820	-	-	-
-	-	-	-	-	-	PM_{10} and Total Traffic Count on 29/06/2015	-0.151	0.639	-	-	-
-	-	-	-	-	-	NO_2 and Total Traffic Count on 20/09/2019	0.105	0.746	-	-	-
-	-	-	-	-	-	SO_2 and Total Traffic Count on 20/09/2019	0.077	0.812	-	-	-
-	-	-	-	-	-	$PM_{2.5}$ and Total Traffic Count on 20/09/2019	0.413	0.183	-	-	-
-	-	-	-	-	-	PM_{10} and Total Traffic Count on 20/09/2019	0.007	0.983	-	-	-

Table S5. Descriptive statistics of daily wind speed and direction, temperature, and humidity at Houston sites from 01/07/2008 to 31/12/2019, n = 365, except for 2008 n = 184.

	Houston Aldine								Houston Baytown								Lynchburg Ferry							
	Wind Speed ($m\ s^{-1}$)		Wind direction (degrees)		Temperature (°C)		Humidity (%)		Wind Speed ($m\ s^{-1}$)		Wind direction (degrees)		Temperature (°C)		Humidity (%)		Wind Speed ($m\ s^{-1}$)		Wind direction (degrees)		Temperature (°C)		Humidity (%)	
Year	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD
2008	1 – 8	2.6 ± 1.0	14 – 338	156.8 ± 70.9	1 – 32	22.3 ± 6.8	42 – 97	72.0 ± 13.0	1 – 10	3.3 ± 1.3	17 – 333	153.2 4 ± 69.8	3 – 30	22.0 ± 6.4	43 – 95	73.4 ± 11.5	1 – 9	3.0 ± 1.2	20 – 343	154.7 ± 70.2	2 - 31	22.3 ± 6.5	42 – 95	73.0 ± 11.8
2009	1 – 6	2.9 ± 1.0	18 – 349	176.0 ± 69.2	3 – 33	20.8 ± 7.5	42 – 98	75.7 ± 12.5	1 – 8	3.5 ± 1.1	16 – 340	171.1 ± 69.7	3 – 31	20.8 ± 7.0	44 – 96	76.9 ± 10.7	1 – 7	3.3 ± 1.1	16 – 351	172.3 ± 70.2	3 – 32	20.8 ± 7.2	44 – 97	76.5 ± 11.1
2010	1 – 6	2.8 ± 1.0	15 – 350	174.2 ± 69.3	-2 – 32	20.3 ± 8.3	39 – 98	74.4 ± 12.8	1 – 7	3.4 ± 1.1	16 – 345	171.5 ± 70.3	-1 – 31	20.2 ± 7.9	44 – 96	75.3 ± 11.2	1 – 7	3.2 ± 1.1	16 – 344	171.7 ± 62.1	-1 – 31	20.4 ± 8.0	42 -97	75.1 ± 11.6
2011	1 – 6	3.2 ± 0.9	29 – 349	176.0 ± 60.0	-2 – 33	20.8 ± 7.8	36 – 98	73.4 ± 12.3	2 – 7	3.8 ± 1.1	17 – 350	172.3 ± 62.6	-1 – 31	20.8 ± 7.3	44 – 97	75.4 ± 11.2	1 – 7	3.6 ± 1.0	16 – 349	172.2 ± 62.1	-1 – 32	20.8 ± 7.5	39 – 97	74.8 ± 11.4
2012	1 – 7	3.0 ± 0.9	15 – 348	169.2 ± 60.0	3 – 33	21.5 ± 6.3	40 – 96	76.4 ± 11.3	1 – 8	3.6 ± 1.1	16 – 345	165.8 ± 59.1	5 – 31	21.7 ± 5.8	42 – 95	77.1 ± 10.6	1 – 7	3.4 ± 1.1	16 – 344	165.9 ± 59.2	4 – 32	21.6 ± 6.0	41 – 95	77.0 ± 10.7
2013	1 – 6	3.1 ± 1.0	15 – 342	160.1 ± 65.7	1 – 32	20.4 ± 7.6	40 – 97	74.3 ± 10.8	1 – 7	3.7 ± 1.2	15 – 339	155.5 ± 66.7	3 – 31	20.5 ± 7.1	47 – 97	75.7 ± 10.1	1 – 6	3.5 ± 1.1	17 – 339	156.6 ± 66.3	2 – 31	20.5 ± 7.3	45 – 97	75.3 ± 10.2
2014	1 – 6	3.2 ± 1.0	9 – 353	165.8 ± 65.7	-1 – 31	20.1 ± 7.7	35 – 98	75.4 ± 11.5	1 – 7	3.7 ± 1.1	13 – 350	160.5 ± 66.5	0 – 30	20.2 ± 7.2	43 – 97	76.8 ± 10.5	1 – 6	3.5 ± 1.0	13 – 349	161.3 ± 65.3	0 – 30	20.2 ± 7.3	40 – 97	76.4 ± 10.7
2015	1 – 7	3.0 ± 1.0	20 – 349	159.5 ± 63.8	3 – 33	21.2 ± 7.5	31 – 98	76.0 ± 12.6	1 – 9	3.7 ± 1.2	15 – 344	158.5 ± 62.1	3 – 30	21.3 ± 7.1	35 – 98	76.2 ± 11.3	1 – 8	3.5 ± 1.2	14 – 345	159.5 ± 64.0	3 – 32	21.3 ± 7.2	34 – 98	76.1 ± 11.6

2016	1 – 7	2.9 ± 1.0	14 – 345	154.2 ± 61.1	2 – 31	21.7 ± 6.5	44 – 95	76.3 ± 10.8	1 – 8	3.6 ± 1.3	16 – 329	153.3 ± 60.6	2 – 32	21.9 ± 6.4	44 – 96	75.7 ± 10.3	1 – 8	3.4 ± 1.2	15 – 329	153.0 ± 60.2	3 – 31	21.9 ± 6.4	44 – 95	76.0 ± 10.4
2017	1 – 9	3.2 ± 1.0	14 – 334	159.6 ± 68.1	-1 – 32	22.3 ± 6.3	31 – 95	72.4 ± 12.8	1 – 11	3.9 ± 1.4	13 – 334	156.5 ± 67.2	4 – 31	22.0 ± 5.9	38 – 95	75.3 ± 11.1	1 – 10	3.7 ± 1.3	13 – 334	157.8 ± 67.9	-1 – 31	22.0 ± 6.0	36 – 95	74.9 ± 11.4
2018	1 – 6	3.2 ± 1.0	12 – 344	164.5 ± 71.3	-1 – 32	22.0 ± 7.6	34 – 96	68.2 ± 12.2	1 – 8	3.8 ± 1.3	12 – 345	159.1 ± 68.9	-2 – 31	21.43 ± 7.1	43 – 96	74.3 ± 11.0	1 – 7	3.6 ± 1.2	12 – 344	159.5 ± 68.6	-1 - 31	21.5 ± 7.2	41 – 96	73.3 ± 11.3
2019	1 – 7	3.5 ± 1.2	14 – 333	153.3 ± 67.4	3 – 33	22.3 ± 7.5	35 – 95	66.7 ± 12.2	1 – 8	3.8 ± 1.3	9 – 348	149.3 ± 66.3	4 – 30	21.1 ± 6.9	43 – 96	74.8 ± 10.5	1 – 8	3.6 ± 1.3	13 – 348	149.5 ± 66.3	4 - 31	21.5 ± 7.0	42 – 96	73.4 ± 10.8

Table S6. Spearman Correlation for daily max NO_2 concentration in Houston Aldine and Lynchburg Ferry vs meteorological variables, and for daily mean $PM_{2.5}$ concentration in Houston Aldine and Houston Baytown from 01/07/2008 to 31/12/2019. For Houston Aldine n = 4036, for Baytown n = 4197, for Lynchburg Ferry n = 4197. Meteorological variables are wind speed and direction, temperature, and humidity.

	Houston Aldine		Houston Baytown		Lynchburg Ferry	
	Correlation Coefficient (rho)	P	Correlation Coefficient (rho)	P	Correlation Coefficient (rho)	P
NO_2 and Wind Speed	-0.300	<0.001	-	-	-0.311	<0.001
NO_2 and Wind Direction	-0.034	0.031	-	-	0.091	<0.001
NO_2 and Temperature	-0.410	<0.001	-	-	-0.406	<0.001
NO_2 and Humidity	-0.244	<0.001	-	-	-0.227	<0.001
$PM_{2.5}$ and Wind Speed	-0.296	<0.001	-0.170	<0.001	-	-
$PM_{2.5}$ and Wind Direction	-0.002	0.884	0.047	0.020	-	-
$PM_{2.5}$ and Temperature	0.251	<0.001	0.265	<0.001	-	-
$PM_{2.5}$ and Humidity	-0.137	<0.001	-0.070	<0.001	-	-

Table S7. Descriptive statistics of hourly wind speed and direction, temperature and humidity at London and Southampton sites from 00:00hrs 01/07/2008 to 23:00hrs 31/12/2019, n = 8760, except for 2008 n = 4416.

	London Marylebone Road								Thurrock								Southampton Centre								Southampton A33							
	Wind Speed (m s^{-1})		Wind direction (degrees)		Temperature (°C)		Humidity (%)		Wind Speed (m s^{-1})		Wind direction (degrees)		Temperature (°C)		Humidity (%)		Wind Speed (m s^{-1})		Wind direction (degrees)		Temperature (°C)		Humidity (%)		Wind Speed (m s^{-1})		Wind direction (degrees)		Temperature (°C)		Humidity (%)	
Year	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD	Range (min – max)	Mean ± SD
2008	0 - 13	3.9 ± 1.8	0 - 360	205.2 ± 85.7	-2 – 38	11.7 ± 5.9	41 – 100	84.2 ± 12.7	0 – 13	4.2 ± 1.9	0 – 360	204.4 ± 84.8	-3 – 27	11.7 ± 5.8	44 – 99	83.5 ± 11.9	0 – 14	4.8 ± 2.1	0 – 360	208.8 ± 91.3	-1 – 26	12.1 ± 5.2	45 – 98	82.9 ± 10.5	-	-	-	-	-	-	-	-
2009	0 - 14	3.8 ± 2.0	0 - 360	194.7 ± 88.4	-5 – 31	10. 9 ± 6.2	40 – 100	82.0 ± 14.0	0 – 15	4.1 ± 2.1	0 – 360	194.9 ± 88.1	-5 – 29	10.8 ± 6.0	42 – 100	81.6 ± 13.0	0 – 15	4.5 ± 2.2	0 – 360	199.7 ± 89.4	-4 – 27	11.1 ± 5.5	43 – 99	81.6 ± 11.9	-	-	-	-	-	-	-	-
2010	0 - 11	3.6 ± 1.6	0 - 360	189.7 ± 102.5	-9 – 30	9.4 ± 7.2	30 – 100	84.3 ± 15.3	0 – 11	3.8 ± 1.7	0 – 360	188.9 ± 102.2	-10 – 29	9.2 ± 6.9	36 – 100	84.3 ± 14.0	0 – 12	4.2 ± 1.8	0 – 360	185.2 ±104. 8	-6 – 28	9.7 ± 6.5	38 -99	83.5 ± 13.3	-	-	-	-	-	-	-	-
2011	0 - 11	3.9 ± 1.7	0 - 360	196.4 ± 83.1	-4 – 28	10.9 ± 5.6	31 – 100	85.5 ± 13.2	0 – 11	4.0 ± 1.7	0 – 360	196.4 ± 82.8	-4 – 27	10.8 ± 5.5	35 – 100	85.2 ± 12.4	0 – 13	4.4 ± 1.9	0 – 360	197.5 ± 87.0	-3 – 24	11.3 ± 4.9	41 – 99	84.8 ± 11.4	-	-	-	-	-	-	-	-
2012	0 - 14	3.8 ± 1.8	0 - 360	201.3 ± 88.0	-7 – 29	10.0 ± 5.9	28 – 100	86.5 ± 12.0	0 – 14	3.9 ± 1.8	0 – 360	202.7 ± 86.8	-7 – 29	9.9 ± 5.8	32 – 100	86.3 ± 11.4	0 – 14	4.4 ± 2.0	0 – 360	204.0 ± 90.9	-5 – 30	10.5 ± 5.1	42 – 100	85.5 ± 10.5	-	-	-	-	-	-	-	-
2013	0 - 14	3.9 ± 1.9	0 - 360	186.4 ± 98.6	-6 – 32	9.9 ± 6.9	29 – 100	83.1± 15.0	0 – 15	4.0 ± 1.9	0 – 360	188.0 ± 98.0	-6 – 31	9.7 ± 6.7	32 – 100	83.2 ± 14.0	0 – 15	4.4 ± 2.1	0 – 360	189.2 ± 100.5	-7 – 31	10.3 ± 6.2	35 – 99	82.8 ± 13.1	-	-	-	-	-	-	-	-
2014	0 - 13	3.8 ± 1.9	0 - 360	190.2 ± 87.4	-1 – 30	11.4 ± 5.7	39 – 100	83.7 ± 14.0	0 – 13	3.9 ± 1.9	0 – 360	190.0 ± 86.2	-1 – 29	11.4 ± 5.5	40 – 100	83.6 ± 13.0	0 – 16	4.4 ± 2.3	0 – 360	197.3 ± 88.8	0 – 28	11.8 ± 5.0	43 – 99	82.8 ± 12.1	-	-	-	-	-	-	-	-
2015	0 - 18	5.3 ± 2.5	0 - 360	201.2 ± 84.0	-3 – 32	11.1 ± 5.4	31 – 100	78.7 ± 12.7	0 – 18	5.5 ± 2.5	1 – 360	201.8 ± 83.4	-2 -33	11.1 ± 5.4	31 – 100	78.3 ± 12.4	0 – 15	5.2 ± 2.1	0 – 360	196.9 ± 87.3	-1 – 26	11.3 ± 4.8	38 – 99	79.9 ± 11.9	-	-	-	-	-	-	-	-

2016	0 - 18	4.6 ± 2.3	0 - 360	194.4 ± 90.5	-1 – 32	11.0 ± 5.7	37 – 98	81.2 ± 11.9	0 – 18	4.8 ± 2.4	0 – 360	195.6 ± 90.4	-1 – 32	11.0 ± 5.6	37 - 98	80.6 ± 11.7	0 – 16	4.6 ± 2.2	0 – 360	194.1 ± 93.3	0 – 29	11.2 ± 5.2	41 – 98	81.6 ± 11.2	0 – 16	4.6 ± 2.1	0 – 360	194.1 ± 93.3	0 – 29	11.2 ± 5.2	41 – 98	81.6 ± 11.2
2017	0 - 14	4.1 ± 1.9	0 - 360	216.6 ± 82.3	-2 -31	11.9 ± 5.9	31 – 98	78.2 ± 13.1	0 – 14	4.4 ± 2.0	0 – 360	217.4 ± 81.5	-2 – 29	11.6 ± 5.9	34 – 98	78.8 ± 12.1	0 – 15	4.6 ± 2.2	0 – 360	216.7 ± 86.5	-1 -28	11.5 ± 5.2	43 – 99	82.7 ± 10.2	0 – 15	4.6 ± 2.2	0 – 360	216.7 ± 86.5	-1 – 28	11.5 ± 5.2	43 – 99	82.7 ± 10.2
2018	0 - 11	3.6 ± 1.8	0 - 360	183.1 ± 94.2	-4 – 35	13.3 ± 6.9	25 – 99	68.6 ± 14.9	0 – 12	4.0 ± 1.9	0 – 360	181.6 ± 92.9	-4 – 33	12.5 ± 6.5	30 – 98	72.4 ± 13.4	0 – 15	4.7 ± 2.4	1 – 360	183.2 ± 97.5	-4 – 30	11.9 ± 5.9	36 – 98	80.0 ± 11.1	0 – 15	4.7 ± 2.4	1 – 360	183.2 ± 97.5	-4 – 30	11.9 ± 5.9	36 – 98	80.0 ± 11.1
2019	0 - 13	4.0 ± 2.0	0 - 360	201.6 ± 88.5	-2 -36	12.9 ± 5.8	20 – 98	69.8 ± 14.0	0 – 13	4.1 ± 2.0	0 – 359	200.4 ± 88.3	-2 – 35	12.1 ± 5.6	34 – 97	74.0 ± 12.3	0 – 17	4.7 ± 2.5	0 – 360	201.1 ± 92.0	-2 – 29	11.4 ± 5.0	39 – 98	81.9 ± 9.8	0 – 17	4.7 ± 2.5	0 – 360	201.2 ± 92.0	-2 - 29	11.4 ± 5.0	39 – 98	81.9 ± 9.8

Table S8. Spearman Correlation for hourly mean pollutants concentrations vs meteorological variables at London Marylebone Road, Thurrock, Southampton Centre, and Southampton A33 from 00:00hrs 01/07/2008 to 23:00hrs 31/12/2019, n = 100824. * signifies not a significant relationship ($p > 0.05$). Note: for Southampton A33 pollutant concentrations and meteorological variables are from 00:00hrs 01/01/2016 to 31/12/2019, with n = 35064.

	London Marylebone		Thurrock		Southampton Centre		Southampton A33	
	Correlation Coefficient (rho)	P	Correlation Coefficient (rho)	P	Correlation Coefficient (rho)	P	Correlation Coefficient (rho)	P
NO_2 and Wind Speed	-0.027	<0.001	-0.420	<0.001	-0.313	<0.001	-0.102	<0.001
NO_2 and Temperature	0.152	<0.001	-0.325	<0.001	-0.246	<0.001	-0.022	<0.001
NO_2 and Humidity	-0.144	<0.001	0.174	<0.001	0.055	<0.001	-0.040	<0.001
SO_2 and Wind Speed	0.022	<0.001	-0.157	<0.001	-0.054	<0.001	-	-
SO_2 and Temperature	0.068	<0.001	-0.075	<0.001	-0.067	<0.001	-	-
SO_2 and Humidity	-0.060	<0.001	0.019	<0.001	-0.013	<0.001	-	-
$PM_{2.5}$ and Wind Speed	-0.277	<0.001	-	-	-0.395	<0.001	-	-
$PM_{2.5}$ and Temperature	0.009	<0.001	-	-	-0.101	<0.001	-	-
$PM_{2.5}$ and Humidity	0.080	<0.001	-	-	0.081	<0.001	-	-
PM_{10} and Wind Speed	-0.191	<0.001	-0.370	<0.001	-0.244	<0.001	-0.064	<0.001
PM_{10} and Temperature	-0.039	<0.001	-0.121	<0.001	-0.116	<0.001	-0.008	0.144*

PM_{10} and Humidity	0.057	<0.001	0.054	<0.001	0.002	0.486*	-0.058	<0.001

Table S9. Summary of total hourly traffic counts between 7:00hrs and 18:00hrs on a weekday in March, April, May, July, September and, October over several different years in Southampton Centre, Southampton A33, London Marylebone Road and Thurrock (DFT, 2021). .

London Marylebone		Thurrock		Southampton A33		Southampton Centre	
Date	Total Traffic Counts	Date	Total Traffic Counts	Date	Total Traffic Counts	Date	Total Traffic Counts
27/05/2004	48951	18/05/2001	14036	22/06/2017	44700	19/06/2001	18356
11/06/2007	48613	20/04/2009	13426	24/05/2019	39019	11/04/2003	22208
28/09/2009	50360	27/03/2017	10296	-	-	08/07/2005	22836
24/09/2010	45341	-	-	-	-	26/05/2011	22056
13/09/2011	43447	-	-	-	-	04/10/2011	18139
29/03/2012	45763	-	-	-	-	30/06/2017	13196
09/05/2013	48928	-	-	-	-	-	-
10/06/2014	46529	-	-	-	-	-	-
29/06/2015	44688	-	-	-	-	-	-
20/09/2019	44068	-	-	-	-	-	-