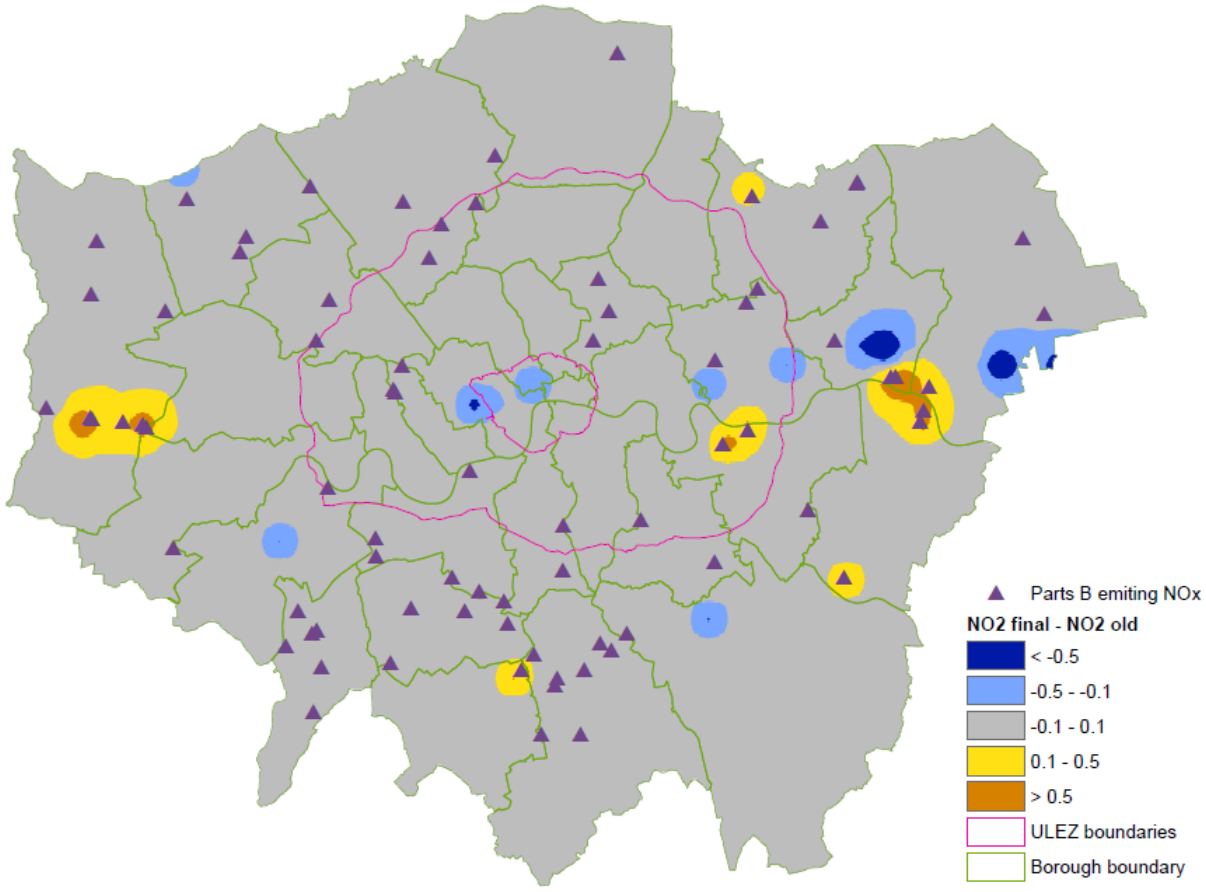
Updated LAEI 2016 Concentration Maps and Associated Data

A recent review of emission sources used in the dispersion modelling work supporting results published as part of the LAEI 2016 showed that, unfortunately, industrial “Part B” sources were wrongly located in the model. As a result, the model was run again with the correct coordinates for Part B sites, leading to slight changes in modelled ground level concentrations for NO_x, NO_2, PM_{10} and $PM_{2.5}$.

Note that the emission summary files have not been updated, as the location of Part Bs in these files is correct. The changes only affect modelled ground level concentrations, published in concentration maps and associated datasets (see further below for a list of all affected files published on the LAEI website).

The changes are however not significant, as can be seen in a comparison of the previous vs. new sets of concentration maps below. The changes in ground level NO_2 annual mean concentrations are mostly negligible (within ± 0.1 µg/m^3), and most visible changes are in areas where Part B sites have been relocated (from blue areas, showing a reduction in concentration, to yellow areas, showing an increase in concentration – changes in these areas are within ± 0.5 µg/m^3)

Changes in NO_2 Annual Mean Ground Level Concentrations



Blue areas show a reduction in NO_2 (areas around wrongly located industrial Part B sites in the original dispersion modelling) whilst orange/yellow areas show an increase in NO_2 concentrations (around the correct Part B locations). Grey area means changes are negligible (within ± 0.1 µg/m^3)

Changes in PM_{10} and $PM_{2.5}$ annual mean concentrations are similar to those shown above for NO_2, with the vast majority of areas showing negligible changes (± 0.1 µg/m^3) and areas around Part B sites (old vs. new location) showing changes within ± 0.5 µg/m^3.

We have also updated population and school exposure files, although the impact is negligible, as can be seen below (only a fraction of percentage difference in results for a limited number of cases):

Borough	All Age Groups - NO_2 Annual Mean Limit Value (of 40 µg/m^3)					
	Population Exceeding			% Population Exceeding		
	LAEI 2016 Old	LAEI 2016 New	Difference	LAEI 2016 Old	LAEI 2016 New	Difference
Barking & Dagenham	3,500	3,500	-	1.7%	1.7%	-
Barnet	37,600	38,000	400	9.7%	9.8%	0.1%
Bexley	1,100	1,100	-	0.4%	0.4%	-
Brent	68,600	68,600	-	20.8%	20.8%	-
Bromley	300	300	-	0.1%	0.1%	-
Camden	200,100	200,100	-	81.3%	81.3%	-
City of London	7,400	7,400	-	100.0%	100.0%	-
Croydon	1,400	1,400	-	0.4%	0.4%	-
Ealing	44,200	44,200	-	12.9%	12.9%	-
Enfield	11,600	11,600	-	3.5%	3.5%	-
Greenwich	21,600	22,900	1,300	7.7%	8.2%	0.5%
Hackney	160,100	160,000	-100	58.5%	58.4%	-0.0%
Hammersmith & Fulham	85,200	85,400	200	47.3%	47.4%	0.1%
Haringey	42,100	41,800	-300	15.1%	15.0%	-0.1%
Harrow	-	-	-	-	-	-
Havering	-	-	-	-	-	-
Hillingdon	3,600	3,600	-	1.2%	1.2%	-
Hounslow	26,200	26,200	-	9.7%	9.7%	-
Islington	178,100	177,200	-900	76.4%	76.0%	-0.4%
Kensington & Chelsea	150,200	150,200	-	95.6%	95.6%	-
Kingston upon Thames	3,800	3,800	-	2.2%	2.2%	-
Lambeth	151,900	152,200	300	46.3%	46.4%	0.1%
Lewisham	35,600	35,600	-	11.8%	11.8%	-
Merton	4,000	4,000	-	1.9%	1.9%	-
Newham	46,800	46,400	-400	13.7%	13.6%	-0.1%
Redbridge	14,300	14,300	-	4.8%	4.8%	-
Richmond upon Thames	6,400	5,800	-600	3.3%	3.0%	-0.3%
Southwark	197,300	197,300	-	62.9%	62.9%	-
Sutton	-	-	-	-	-	-
Tower Hamlets	235,700	235,700	-	77.2%	77.2%	-
Waltham Forest	23,700	23,700	-	8.6%	8.6%	-
Wandsworth	81,600	80,900	-700	25.8%	25.5%	-0.2%
Westminster	241,000	241,000	-	97.3%	97.3%	-
Greater London	**2,085,100**	**2,084,000**	**-1,100**	**23.7%**	**23.7%**	**-0.0%**

Borough	Population Weighted Average $PM_{2.5}$ Annual Mean Concentration (µg/m^3)			
	LAEI 2016 Old	LAEI 2016 New	Difference	Difference (%)
Barking and Dagenham	12.9	12.8	-0.07	-0.5%
Barnet	13.0	13.0	0.02	0.2%
Bexley	12.5	12.6	0.02	0.1%
Brent	13.3	13.4	0.05	0.4%
Bromley	12.4	12.4	-0.02	-0.2%
Camden	14.5	14.5	-0.08	-0.5%
City Of London	15.7	15.7	-0.07	-0.4%
Croydon	12.7	12.7	0.05	0.4%
Ealing	13.2	13.2	0.02	0.2%
Enfield	12.7	12.8	0.03	0.2%
Greenwich	13.1	13.2	0.07	0.5%
Hackney	14.0	14.0	-0.03	-0.2%
Hammersmith and Fulham	13.9	13.9	-0.01	-0.1%
Haringey	13.4	13.4	-0.01	-0.0%
Harrow	12.6	12.6	-0.01	-0.1%
Havering	12.1	12.1	-0.04	-0.3%
Hillingdon	12.4	12.5	0.01	0.1%
Hounslow	12.9	12.9	0.02	0.2%
Islington	14.3	14.2	-0.04	-0.3%
Kensington and Chelsea	14.5	14.5	-0.03	-0.2%
Kingston Upon Thames	12.7	12.7	0.02	0.2%
Lambeth	13.9	13.9	0.03	0.2%
Lewisham	13.3	13.3	0.02	0.1%
Merton	13.0	13.1	0.06	0.4%
Newham	13.5	13.5	0.00	0.0%
Redbridge	12.9	12.9	-0.03	-0.3%
Richmond Upon Thames	12.8	12.8	0.01	0.1%
Southwark	14.0	14.0	0.01	0.1%
Sutton	12.6	12.7	0.05	0.4%
Tower Hamlets	14.3	14.2	-0.01	-0.1%
Waltham Forest	13.2	13.2	0.02	0.2%
Wandsworth	13.5	13.6	0.05	0.4%
Westminster	15.1	15.0	-0.08	-0.6%

Although average concentrations near schools have also been updated, these do not result in any changes in relation to the number of primary / secondary schools that were exceeding the NO_2 annual mean Limit Value of 40µg/m^3 in 2016.

The list below includes all files updated on the LAEI website (given that these are small changes and to avoid confusion, old files have been superseded):

- Concentrations – Data – ASCII Files
- Concentrations – Data – Excel files
- Concentrations – Maps – PDF Files
- Concentrations – Data - GIS Files
- NO_2 Population Exposure (Excel file)
- NO_2 and $PM_{2.5}$ School Exposure (Excel file)