

**Transport for London**

# London Atmospheric Emissions Inventory (LAEI) 2010

## User Guide

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**MAYOR OF LONDON**

Transport for London



## User Guide

This document outlines the LAEI files as available for download on the GLA datastore<sup>1</sup>.

The full download includes three LAEI folders and two supporting information folders.

### 0. Documentation

- User guide
- Methodology
- Explanation of inventory functionality and key changes to the inventory

### 0. Supporting data

- Supporting GIS files
- Traffic data

### 1. Summary

- Summaries of source totals by geographical area (borough; central , inner, outer)
- Summaries by grid square

### 2. Emissions

- Full emissions outputs by grid for all sources and years
- Emissions by link for road and rail
- GIS files of the outputs
- Full emissions outputs by site for Part A and B processes
- Input data like specific locations of point sources

### 3. Concentration Maps

- Maps of modelled pollutant concentrations for
  - i. NO<sub>2</sub> annual mean concentrations
  - ii. PM<sub>10</sub> annual mean concentrations
  - iii. PM<sub>2.5</sub> annual mean concentrations
  - iv. PM<sub>10</sub> number of exceedence days

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<sup>1</sup> <http://data.london.gov.uk/datastore/package/london-atmospheric-emissions-inventory-2010>

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## 0. Supporting Data

### GIS files

- LAEI 2008 grids: 1 km grid squares with unique reference number
- LAEI 2010 'exact-cut' grids: The 1 km squares have been cut at borough and central London boundaries in order for more precise borough totals to be calculated.
- Passenger Shipping Network: New to the LAEI 2010. The link network that passenger shipping emissions have been assigned too
- Rail Network: The diesel rail network

Due to licensing restrictions it has not been possible to provide the selection of major road links from the OS MasterMap Integrated Transport Network (ITN) that forms the LAEI road network. All link level traffic flows and emissions have been assigned to a unique TOID from the ITN. The metadata that accompanied the version of the ITN used to create the new LAEI network is as follows:

Filename: 15492003-MM-itn.gml.gz

Extent: 474987.0, 117345.0 - 588782.0, 223718.0

Date Ordered: 20 March 2012 at 15:49:43

Date of Database: 22 June 2011 at 18:30:00

Layer: OS MasterMap ITN Layer

### Road Traffic files

- Major road Annual Average Daily Traffic (AADT) flows: an MS Access database of the road traffic flows by vehicle type and link speeds for each ITN link in the LAEI road network
- Minor road annual kms: Grid square vehicle kms and speed by vehicle type
- Major Road Vehicle kms: csv files of each ITN links vehicle kms by vehicle type
- Major Road Network Attribute Data: the length and multiplier of each ITN link in the LAEI road network.
- RT\_Fleet\_Composition: The euro standard breakdown of vehicle kms by vehicle type used in the LAEI 2010

## 1. Summary Emissions

There are two types of summary tables.

### Group A

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Emissions summarised at central, inner and outer and borough level, split across different workbooks /worksheets for different sources

### Group B

Grid level emissions are categorised by central, inner and outer London; borough and source. Individual mobile, area and point **sources** have been grouped by an overarching **source type** for ease of analysis

## 2. Emissions

The main pollutants in the inventory are:

- Carbon Dioxide (CO<sub>2</sub>)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Oxides of Nitrogen (NO<sub>x</sub>)
- Total Particulate Matter (PM)
- PM<sub>10</sub>
- PM<sub>2.5</sub>
- Methane (CH<sub>4</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Non-Methane Volatile Organic Compounds (HMVOC)
- Carbon Monoxide (CO)
- Benzene (C<sub>6</sub>H<sub>6</sub>)
- Butadiene (C<sub>4</sub>H<sub>6</sub>)
- Nitrous Oxide (N<sub>2</sub>O)
- Lead (Pb)
- Hydrocarbons (HC)

Appendix A details exactly which pollutants are calculated for which sector,

Folders are structured based on the class of emissions (Area, Point or Mobile) with a README file in each explaining the data structure. Each sector then has a folder of excel files with grid or link level emissions and a folder of GIS files.

- Area
  - Coal
  - Gas
  - NRM, Agriculture & Other
  - Oil (Domestic)
- Point
  - Boiler (Non-Domestic Oil)
  - Part A
  - Part B

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- Waste Transfer Station
- Mobile
  - Aviation
  - Rail
  - Road Transport
  - Shipping

### 3. Concentrations

Images and ASCII files of air quality modelling have been provided for

- NO<sub>2</sub> annual mean concentrations
- PM<sub>10</sub> annual mean concentrations
- PM<sub>2.5</sub> annual mean concentrations
- PM<sub>10</sub> number of exceedence days

2008 and 2010 have been validated against modelling data in those years. 2012, 2015 and 2020 use meteorological data from 2010.

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## Appendix A: summary of pollutants, sources and years within the inventory

Class	Source	Sector	Energy Consumption	CO2	Methane	SO2	NOx	NO2	NMVOC	CO	HC	Benzene	Butadiene	PM	PM10	PM2.5	N2O	Lead	Years
Point	Boilers			1	1	1	1		1	1		1		1	1	1			2008
Point	Part A			1	1	1	1		1	1		1		1	1			1	2008
Point	Part B			1		1	1		1	1		1		1	1			1	2008, 2010
Area	Coal	Domestic		1	1	1	1		1	1		1			1		1		2008
Area	Coal	Non-Domestic		1	1	1	1		1	1		1			1		1		2008
Area	Oil	Domestic		1	1	1	1		1	1		1			1		1		2008
Area	Gas	Domestic	1	1	1				1	1		1			1				2008, 2010, 2012, 2015, 2020
Area	Gas	Non-Domestic	1	1	1			1	1	1		1			1				2008, 2010, 2012, 2015, 2020
Area	Gas	Leakage	1	1	1				1			1							2008, 2010, 2012, 2015, 2020
Area	Natural-Other	All sources		1		1	1	1	1	1		1	1	1	1	1	1	1	2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Household and Garden		1				1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Agriculture (Stationary and Machinery)		1				1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Agriculture (Animals and General)													1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Waste						1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Fires						1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Natural (Forests)																	2008, 2010, 2012, 2015, 2020
Area	Natural-Other	NRMM Construction		1				1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	NRMM Industry		1				1							1	1	1		2008, 2010, 2012, 2015, 2020
Area	Natural-Other	Construction and Demolition													1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Shipping	Passenger Shipping		1	1	1	1	1	1	1	1	1			1	1	1	1	2008, 2010, 2012, 2015, 2020
Mobile	Shipping	Commercial Shipping		1			1	1	1	1						1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	OffRoad		1	1	1	1	1	1	1		1	1		1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	Road		1	1	1	1	1	1	1		1	1		1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	Approach		1	1	1	1	1	1	1	1	1	1	1	1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	ApproachHelicopter		1	1	1	1	1	1	1	1	1	1	1	1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	ClimbOut		1	1	1	1	1	1	1	1	1	1	1	1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	ClimbOutHelicopter		1	1	1	1	1	1	1	1	1	1	1	1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	InitialClimb		1	1	1	1	1	1	1	1	1	1	1	1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Aviation	APU		1	1	1	1	1	1	1	1	1	1	1		1	1		2008, 2010, 2012, 2015, 2020
Mobile	Diesel Rail	Passenger		1			1	1		1	1				1				2008, 2010, 2012, 2015, 2020
Mobile	Diesel Rail	Freight		1			1	1			1	1			1				2008, 2010, 2012, 2015, 2020
Mobile	Road Transport	Major Road		1	1	1	1	1	1	1		1	1		1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Road Transport	Minor Roads		1	1	1	1	1	1	1		1	1		1	1	1		2008, 2010, 2012, 2015, 2020
Mobile	Road Transport	Evaporatives							1			1							2008, 2010, 2012, 2015, 2020
Mobile	Road Transport	Cold Starts						1		1	1					1	1		2008, 2010, 2012, 2015, 2020