



# Policies to improve air quality in London

*Frank Kelly*

*Achieving Sustainable Air Quality for London,*

*King's College London*

*23<sup>th</sup> January 2008*





Air pollution is the environmental factor with the greatest impact on health in Europe and is responsible for the largest burden of environment-related disease

**European Environment Agency, 2005**





## London – one of the world's mega-cities

*1 in 7 people in the UK live in London*

*28 million journeys are made each day*

*1.1 million people enter central London each day (80% by public transport)*

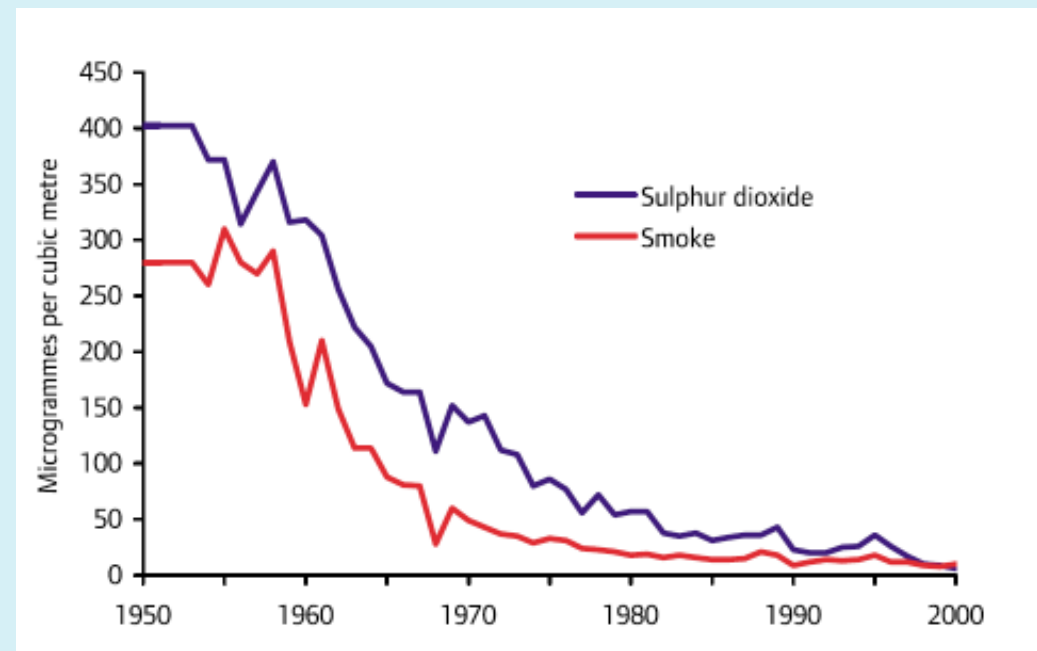
*London is served by several major airports including the world busiest airport Heathrow*





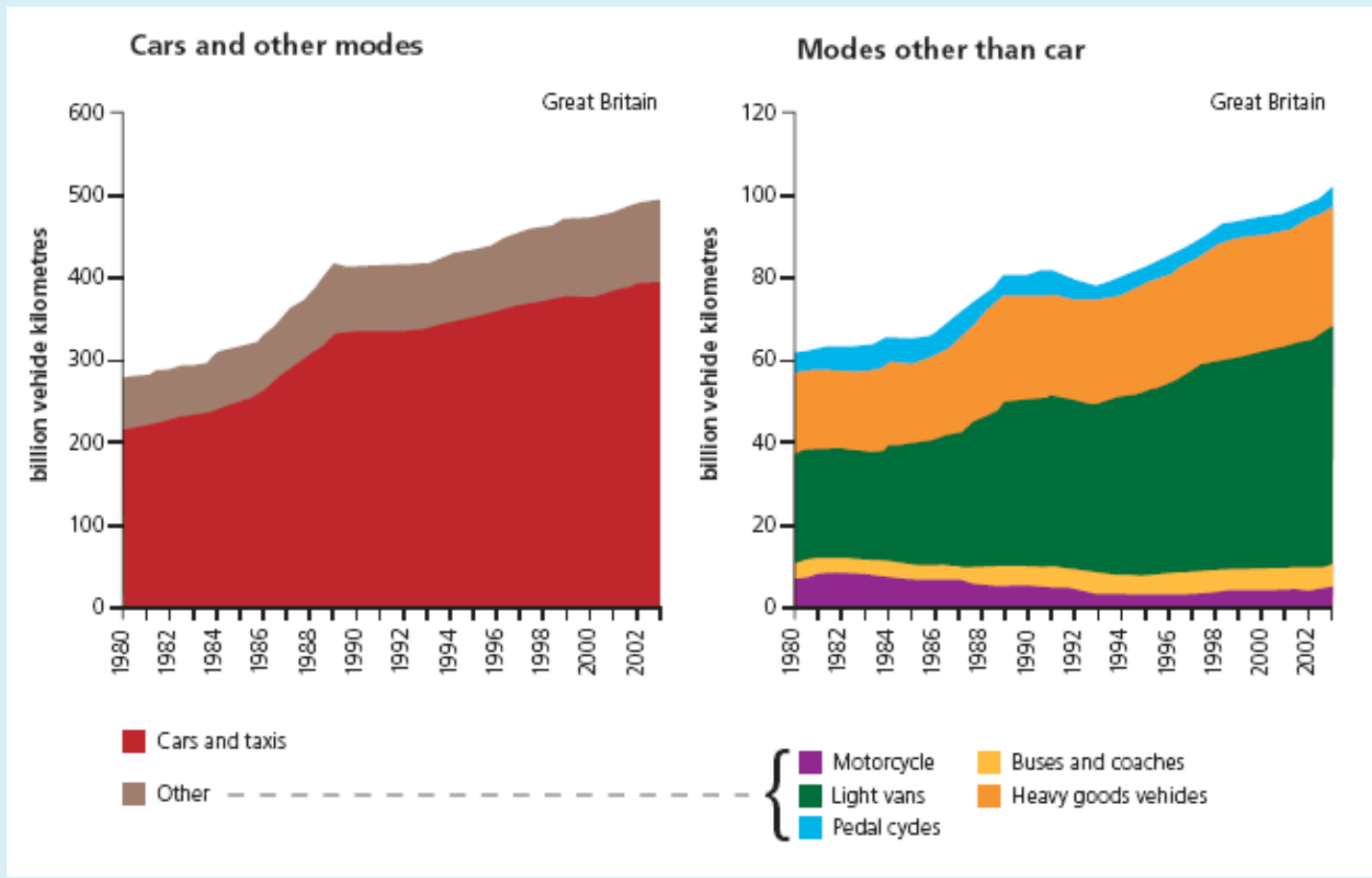


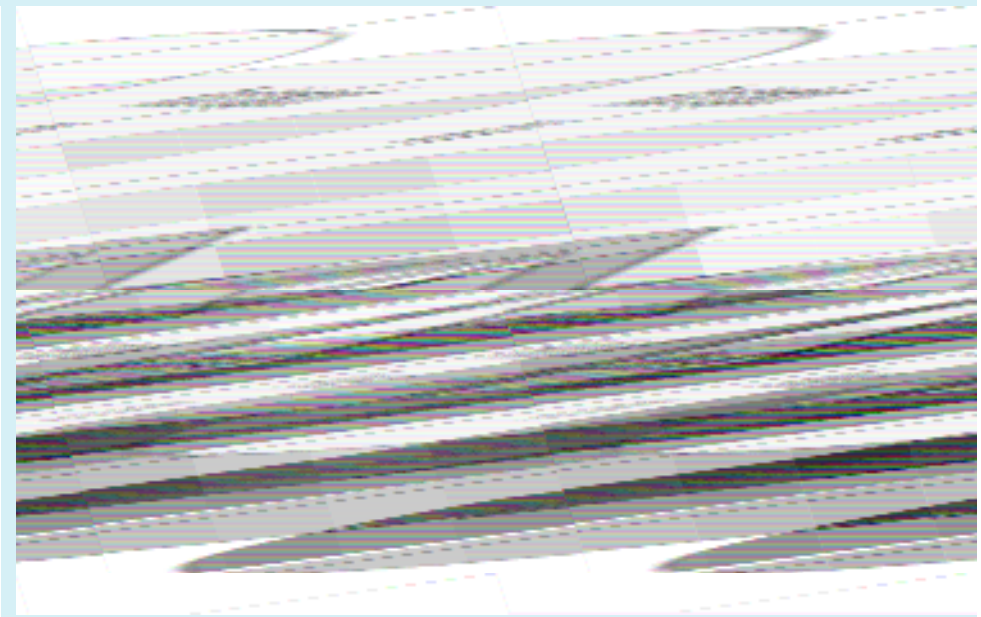
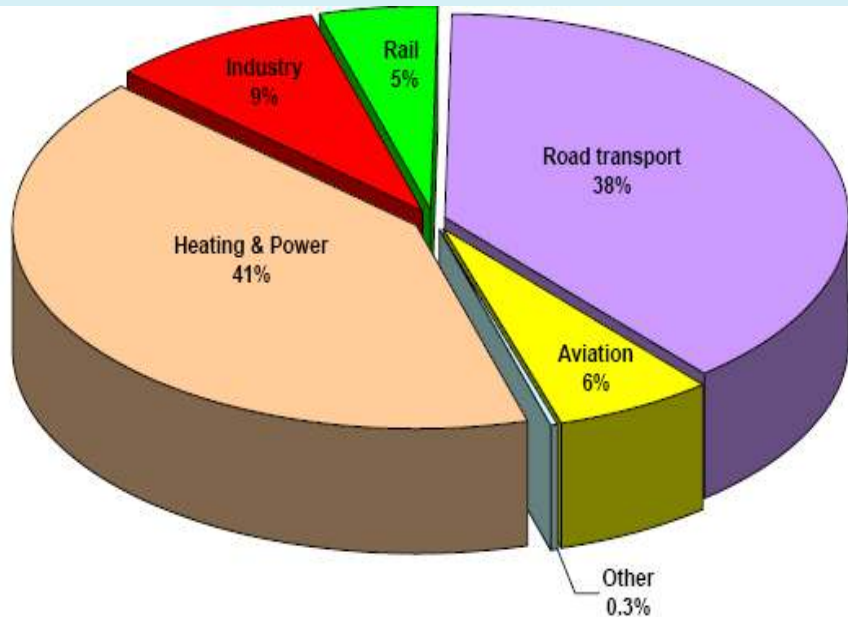
## Legislation can help – 1956 Clean Air Act





# Traffic growth 1980 -2003





Estimated contributions of road transport to NOx emissions in London. Source: GLA, 2006

Estimated contributions of road transport to PM<sub>10</sub> emissions in London. Source: GLA, 2006





## Health impact of poor Air Quality in London

Air pollution in London has caused the UK to breach European health based standards.

1,000 premature deaths are thought to occur annually in London from particulate (PM<sub>10</sub>) pollution.

Poor air quality reduces our life-expectancy by 8 months (European average – London probably worse).

Air pollution worsens respiratory and cardiovascular conditions, including asthma.







# Air Quality Strategy for London

Congestion Charging Scheme

Bus Improvement Programme

Taxi Emission Strategy

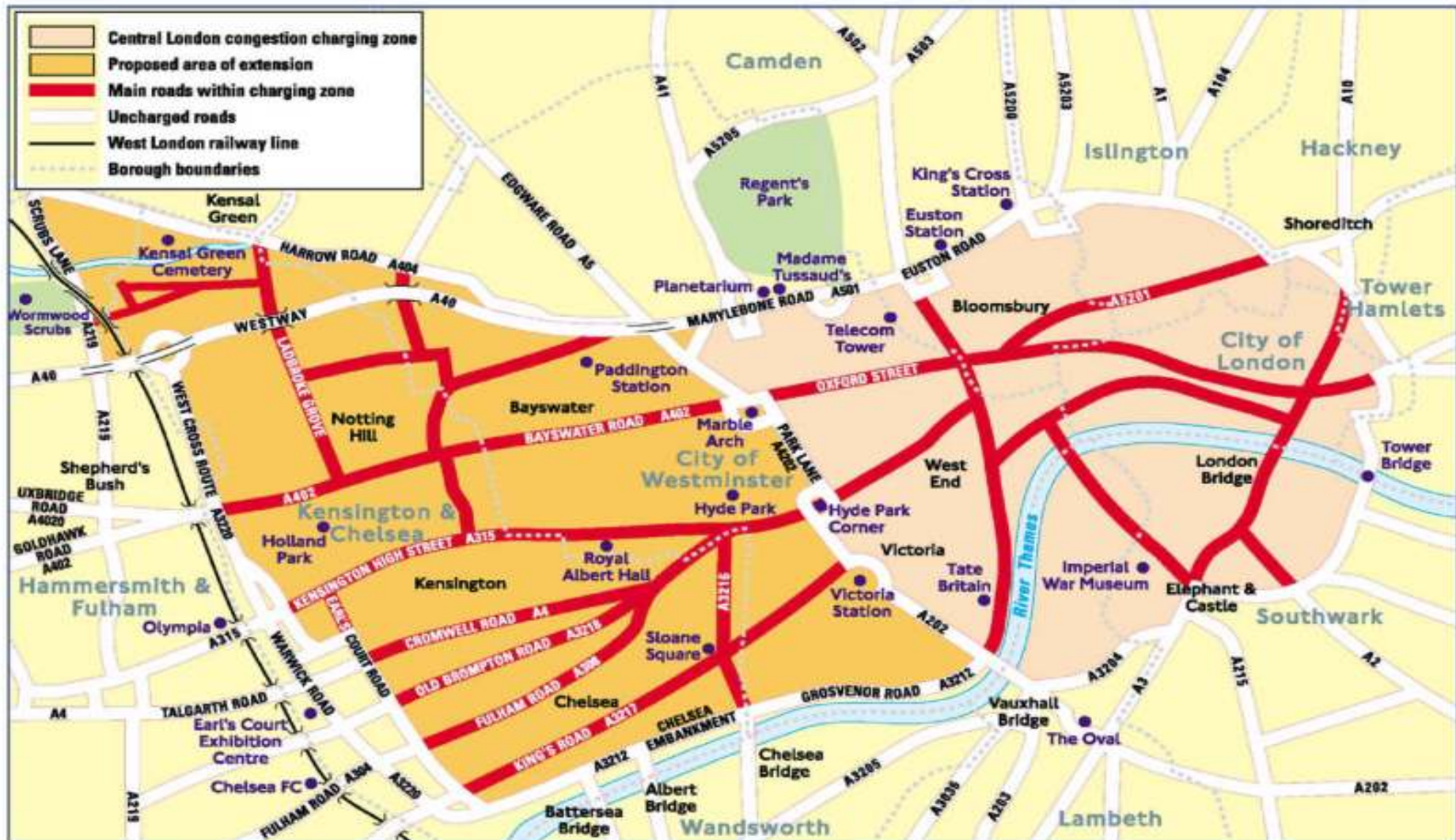
Better integrated transport

Best Practice Guidance (BPG)

Low Emission Zone



# London's Congestion Charging Scheme





## Changes in traffic levels due to CCS

### *In/outbound:*

- 60,000 fewer car movements per day
- Cars -30%, LGV & HGV -10%
- Taxis +20%, Buses +15%, Motorcycles +20%

*Within zone: overall -10% to -15%*

*Ring Road: overall +5%*

*Outside zone: variable -7% to +3%*





# Commuters entering central London in morning peak

Thousands

Year	All modes	Rail only	Rail with transfer to LUL/DLR	All rail	LUL or DLR only	Bus	Coach/minibus	Car	Taxi <sup>1</sup>	Two wheeled motor vehicles	Cycle
1991	1,042	258	168	426	347	74	20	155	••	12	9
1992	992	245	156	401	337	61	24	150	••	11	9
1993	977	214	168	382	340	64	20	150	••	11	9
1994	989	221	171	392	346	63	23	145	••	11	9
1995	993	221	174	395	348	63	21	145	••	11	10
1996	992	223	176	399	333	68	20	143	9	11	10
1997	1,035	240	195	435	341	68	20	142	9	11	10
1998	1,063	252	196	448	360	68	17	140	8	13	10
1999	1,074	259	201	460	363	68	15	135	8	15	12
2000	1,108	269	196	465	383	73	15	137	8	17	12
2001	1,093	263	204	468	377	81	10	122	7	16	12
2002	1,068	245	206	451	380	88	10	105	7	15	12
2003	1,029	265	191	455	339	104	10	86	7	16	12
2004	1,043	256	196	452	344	116	9	86	7	16	14
2005	1,065	273	200	473	344	115	9	84	8	16	17
2006	1,114	280	211	491	380	116	8	78	7	15	18

Source: CAPC, TfL

Enquiries: 020 7126 4286

1. Data for taxis was not recorded before 1996.





## Emission-Influenced Congestion Charging

Proposals are under development, aimed at encouraging lower emission cars

Incentives for lower emission cars could be introduced from 2008

Higher charges for high polluters could be introduced from 2008/9.





# Bus Improvement Programme

*Approx 8000 buses on  
700 different bus routes*

*To date - has resulted in  
90% reduction in  $PM_{10}$*

*Hydrogen Programme*





## Taxi Emission Strategy

- All 20,000 London taxis's to meet Euro III for NOx and PM by mid- 2008





Health effects of transport-related air pollution

Health effects of transport-related air pollution







# London Low Emission Zone

*Aim: “to encourage operators to clean up their vehicle fleets by... replacing or modifying older diesel-engine vehicles that do not meet the proposed... emissions standards”*

*Staged implementation, with progressive tightening of controls*

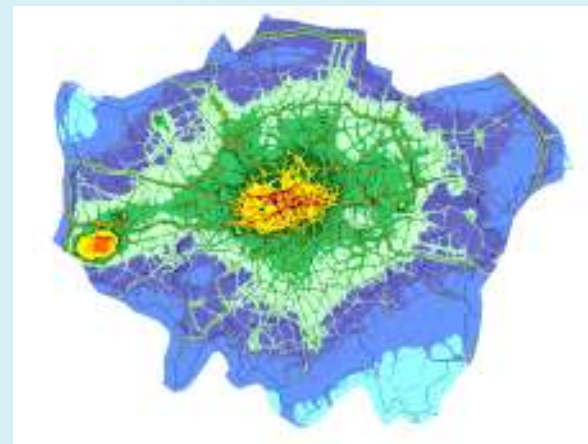
2008

*targeting of the most polluting diesel-engine HGVs, buses and coaches*

2010

*broadened to include heavier vans and minibuses.*

***Health impacts of air pollution an important rationale***





## Health benefit of achieving sustainable air quality in London

*Improved quality of life*

*Improved longevity*

*Fewer GP consultations*

*Decreased need for medication*

*Fewer hospital admissions*





## Summary - London's air quality strategy

**Congestion charging** has reduced traffic by about 10%.

**Bus Improvement Programme** has resulted in 90% reduction in  $PM_{10}$  and further improvements are being made.

**Taxi Emission Strategy** will ensure all 20,000 black cabs meet stringent emission limits by mid 2008.

**Better integrated transport policies** have led to a 5% shift from car use to public transport.

**Best Practice Guidance (BPG)** to prevent measurable increase in dust concentrations past site boundary and reduce exhaust emissions of  $PM_{10}$  at high risk sites by 85% minimum.

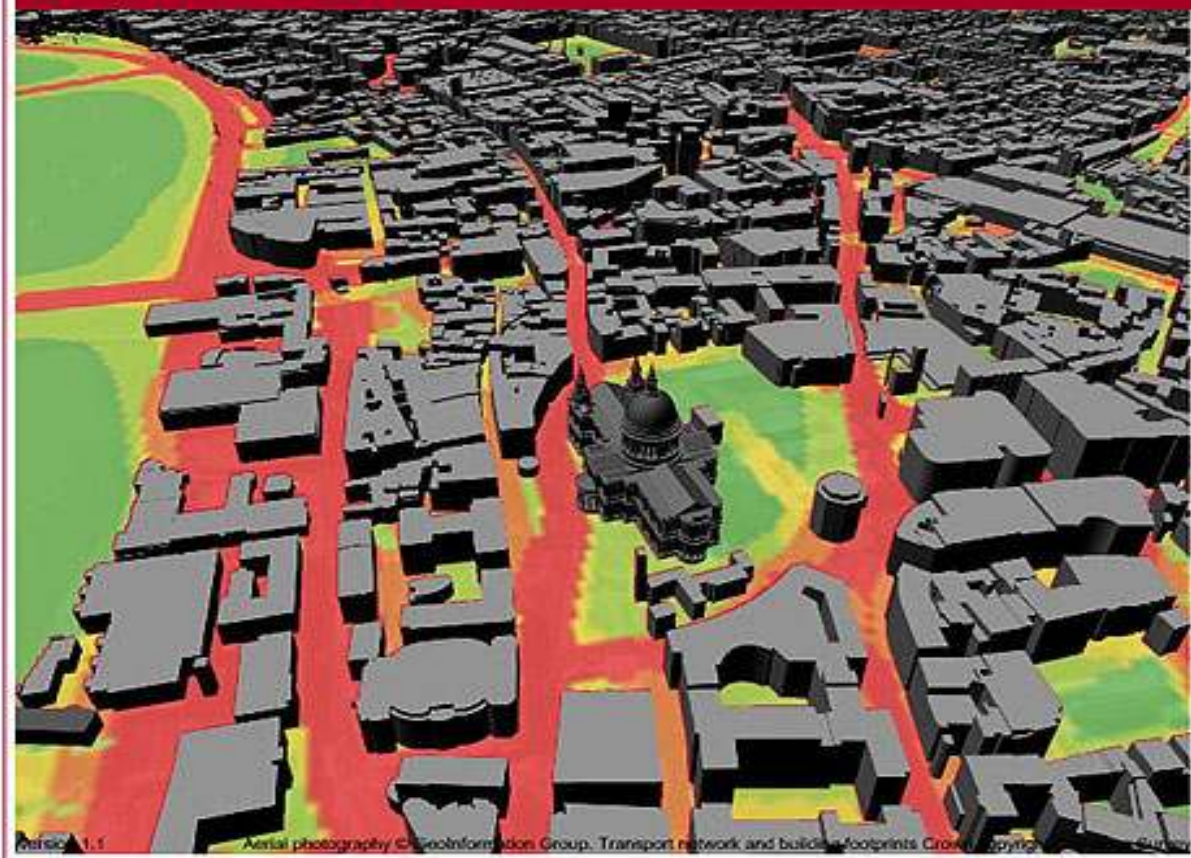
**Low Emission Zone** should reduce area of London that exceeds the air quality objectives.



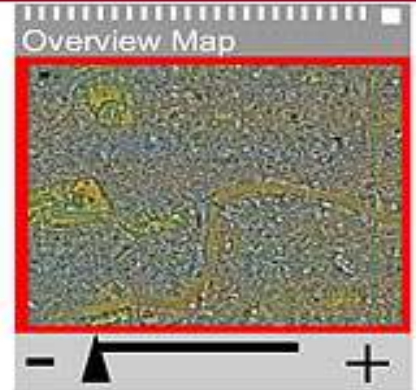
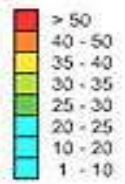


You are on this page: 3-D Map of Air Pollution in London

## 3-D Map of Air Pollution in London



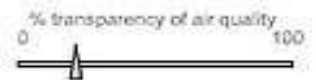
days



100 %

**Help...**

- Air Quality Monitoring sites
- 3-D zones
- Road + Rail
- River Thames
- Parks / Greenspaces
- Congestion Charge Zone
- London Boroughs
- Aerial photo



Select air quality  
PM10 exceedences



[Back to Map](#)

[Back to introduction page](#)



## New challenges/issues

*Quick technological fixes/untested innovations – increased direct NO<sub>2</sub> emissions?*

*Primary particles – why are the concentrations not falling?*

*Increased (proportional) contribution of non exhaust emissions to ambient PM – toxicological consequences?*

*Air quality versus climate change initiatives - increased local emissions from biomass use*





Thank you for your attention – questions?

