Draft Revised Mayor's Transport Strategy Integrated Impact Assessment: Appendix B: Supporting Data for Baseline

Report for Transport for London

MVA in Association With ERM and Future Inclusion

October 2009

ERM

future inclusion

mvaconsultancy

Appendix B - Supporting Data for Baseline

Introduction

This Appendix provides supporting information to Chapter 4 on the baseline data. The baseline situation refers to the conditions prevailing in the absence of the Draft Revised MTS. In examining the prevailing conditions, account has been taken of the current situation and how the baseline may develop in the future in the absence of the Draft Revised MTS up to 2031. The baseline situation forms the foundation for analysing the possible effects of implementing the Strategy.

The baseline information in this appendix is set out in relation to the six headings contained within the Assessment Framework (see Chapter 5). The appendix also includes the baseline data for the HRA screening exercise – the Natura 2000 sites.

In order to provide the reader with relevant background information about London's transport system, a brief overview of the system has been provided below as well as details of the modelling carried out by TfL to develop the Draft Revised MTS.

Subsequently under each of the headings, information is provided on:

- Relevant baseline characteristics;
- Expected trend in the absence of the Draft Revised MTS; and
- Issues and opportunities.

This Appendix and the Report draws upon data available from a wide range of sources, as shown in Box B.1.

Box B.1 Sources of Baseline Data

- Department for Food, Environment and Rural Affairs
- Department for Transport
- Department of Communities and Local Government
- English Heritage
- Environment Agency
- Greater London Authority
- London Climate Change Partnership
- London Health Observatory
- National Cancer Intelligence Network
- National Centre for Health Outcomes Development
- Natural England
- Office for National Statistics
- Transport for London
- United Nations Education Scientific and Cultural Organization (UNESCO)

Summary

London is a rapidly expanding city, with a population of 7.6m in 2007, predicted to grow to 8.9m by 2031. London is the driving force of the UK's economy, accounting for 18% of the nation's GDP and 15% of its employment. London is also the most ethnically diverse city in Europe, with a population that encompasses 300 languages, over 150 countries represented and at least 14 faiths practiced. London has a rich and diverse built heritage, with many locations and areas that are especially important due to their historic, architectural and cultural heritage.

London's transport system has developed to meet the needs of the Capital's population and its economic development with an extensive public transport system. However, due to the high volumes of people commuting to London, the Underground and rail networks are often over-crowded in the peak periods, and there are high levels of congestion on London's road network.

Despite the high levels of employment and higher levels of income in London, there are high levels of deprivation, with four of the eight most deprived authorities in England being in London. In addition, the rate of recorded crime is nearly 30% higher in London than in the rest of England and Wales.

CO_2 emissions in London associated with transport have remained at the same level over recent years despite population and employment growth. However, in the absence of policies to deal with emissions, CO_2 emissions could well increase over the coming years. The effects of climate change are likely to affect London's transport system, with London's road and rail networks being faced with more flooding and other extreme weather events.

TfL Estimates

The future year baseline has been developed through data from transport modelling and analysis which has been undertaken to support the preparation of the Draft Revised MTS. TfL's transport models have provided one of the inputs to the assessment, providing a basis for estimating changes between current day and the forecast year. The modelling data is based on TfL's London Transportation Studies (LTS) model. This model uses population and employment data and projections, as well as a representation of the future year public transport and highway networks to predict travel demand and transport usage in the forecast year, 2031. The outputs from the LTS model have also been fed into Railplan, TfL's public transport model, ATOS, TfL's accessibility model and TfL's CO_2 emissions model to provide more detailed baseline data.

The analysis has been carried out by TfL for each of the assessment Options. Population and employment numbers and projections have been provided by the Greater London Authority to ensure consistency with the draft London Plan and EDS. (The 3 strategies are also supported by a common Economic Evidence Base.) Note that all estimates are subject to some uncertainty, the key consideration here is the broad shape of the analysis: the conclusions in the assessment are robust to small changes to the specific numbers.

During the evolution of the Preferred Option, population and employment forecasts were updated. As a result, two sets of data for the baseline have been used in the Assessment:

- Option 1 which uses assumptions underpinning the current London Plan (Consolidation with Alterations since 2004), published in February 2008, such as population (8.3m) and employment (5.5m) in 2026; and

- TfL Reference Case Forecast which uses updated GLA estimates of population and employment for 2031. GLA latest estimates for these are 8.9m and 5.5m respectively.

The Option 1 data was used as the baseline for comparing Option 2 and Option 3, and the TfL Reference Case Forecast was used as the baseline for comparing the Preferred Option. The TfL Reference Case is a projection of outcomes in 2031 on the basis of committed, funded investment and GLA projections of employment and population. Both of these baseline scenarios included the TfL Business Plan 2009/10 to 2017/18 and the DfT's High Level Output Specification (HLOS) 2009 – 2014. Option 1 included the Western Extension Zone (WEZ) of the Central London Congestion Charging Scheme, as the exclusion of this scheme forms part of the Draft Revised MTS, but the TfL Reference Case Forecast did not include this scheme. The TfL Reference Case was used as the baseline for the Preferred Option rather than Option 1 because it included more up-to-date (and therefore more reliable) projections of population and employment – the Reference Case also did not include the WEZ; Appendix E is devoted to the assessment of the impact of removing the WEZ.

The schemes that are included in Option 1 and the TfL Reference Forecast, compared to the schemes in 2006, are shown in the following table.

Table B.1 Schemes included in TfL Modelling of Option 1 / TfL Reference Case Forecast

Changes to the 2006 Network:
National Rail
London Overground improvements, including:
New services Dalston to New Cross, West Croydon and Crystal Palace
Connection between East London line and North London line at Dalston
Surrey Quays to Clapham Junction
Crossrail core scheme including services to Maidenhead, Heathrow, Shenfield and Abbey Wood (replaces existing Heathrow Connect services)
HLOS Commitments:
South West (10-car Windsor lines and inner suburban capability)
South Central London (10-car inner capability)
West Anglia (12-car capability Stansted and Cambridge)
South East London (12-car inner suburban trains)
Chiltern Railways (frequency improvements)
Great Eastern Main Line (high-capacity new trains, additional services)
London, Tilbury and Southend (12-car capability on all routes)
West Coast Main Line (train lengthening and frequency increase)
Great Western Main Line (train lengthening)
Thameslink (12-car maximum capability, 24-train through core
London Underground
Full PPP Upgrades including new trains, more capacity, quicker journeys:
Northern Line
Sub-surface railway
Bakerloo line
Victoria line
Piccadilly line
Jubilee line

Bus Services
Option 1 and Reference Case assumed increases in capacity from 2006.
Docklands Light Railway
Three-car trains across the network
Canning Town to Stratford International extension
Transits
East London Transit

The effect of the planned schemes is that there will be an increase in public transport planning guideline capacity (PGC) of over 30% capacity in 2031 compared to 2006.

The modelling work shows that with the increase in population, there is expected to be over 15% more trips per day in 2031 compared to 2006. However, the mode share of trips will change, with a decrease in mode share of car, and an increase in public transport mode share. The mode share of walking and cycling trips are also expected to increase.

The increase in public transport provision is expected to reduce public transport crowding by 10% from current levels. However, without the public transport investment, crowding would increase from the current level of 55% to 67%, and so the effect of increased public transport provision reduces public transport crowding by about 25% in 2031. Despite the decrease in mode share of cars, there is expected to be a reduction in average speed of 6% in the morning peak. Due to work being carried out to reduce carbon emissions, there is expected to be a reduction of 16% in CO_2 between 2006 and 2031.

The detailed results of the modelling work for the TfL Reference Case Forecast are shown in the following table.

Table B.2 Summary of Modelling Data in the Absence of the Strategy (TfL Reference Case Forecast)

	2006	2031 (TfL Reference Case Forecast)	% Change
Highway Delay Rate (mins/km) morning peak	0.98	1.14	17%
Public Transport Overcrowding morning peak	55%	50%	-10%
CO_2 (Million Tonnes Per Annum)	9.8	8.2	-16%
Vehicle Speed in morning peak period (km/h)	24.2	22.9	-6%
Trips by Car/Taxi/Motorcycle (millions / day)	10.1	10.4	3%
Trips by Rail/Underground/DLR/Bus (millions / day)	7.2	9.1	26%
Trips by Cycling (millions / day)	0.4	0.9	115%
Trips by Walking (millions / day)	5.7	7.1	25%

Notes: Public Transport Overcrowding is calculated as the proportion of Tube/Rail passenger kilometres which are in excess of Planning Guideline Capacity of 1.0
Public transport crowding would increase to 67% without public transport investment in the TfL Reference Case Forecast
CO_2 figures are for ground based transport emissions including ground based aviation
Trips values represent 24 hour trips
All figures are best estimates given the available evidence

Additional details on the baseline conditions are provided in the remainder of this appendix.

Subject: London's Transport System

Baseline characteristics:

Modal Share:

- The mode share for average daily trips in London during 2007 was: 40% by car, 1% by taxi, 1% by motorcycle, 14% by bus or tram, 9% by Underground and DLR, 9% by rail, 2% by cycle and 24% by foot. (This compares to 63% of journeys across Great Britain being made by car) (TfL 2009).
- 40% of London households do not have a car, compared with less than a quarter in the rest of Great Britain (TfL 2009).
- In 2007, 23.8 million trips were made in, to or from London on an average day (TfL 2009).
- London residents spend an average of 74 minutes travelling each day, 20% of Londoners travel for more than 2 hours on a week day (TfL 2009).
- In 2007, motor vehicles travelled 31.8 billion vehicle kilometres in Greater London (TfL 2009).
- Between 2000 and 2007 the proportion of journey stages made by public transport rose from 33% to 40%, while the proportion made by private motorised transport has fallen from 44% to 38% (TfL 2009).
- Since 2000/01 bus passenger kilometres have increased by 59% (TfL 2009).
- Since 2000/01 underground passenger kilometres have increased by 9%, the highest level ever (TfL 2009).
- Passengers travelled 3.5 billion more kilometres on bus, Underground, DLR and London Tramlink in 2007/08 than in 2000/01 (TfL 2009).
- While Great Britain's total road traffic increased by 10% between 2000 and 2007, it fell by an estimated 2% in Greater London (TfL 2009).
- Traffic in central London fell by 21% during congestion charging hours between 2002 and 2007, which is equivalent to an estimated 15% over the whole week since 2000 (TfL 2009).
- Bus passenger kilometres have increased by almost 60% since 2000/01 (TfL 2009).
- Underground passenger kilometres have increased by 9% since 2000/01 to its highest ever level (TfL 2009).
- 90% of people entering central London in the morning peak in 2007 did so using public transport and only 10% by private transport (TfL 2009).
- Between 2000 and 2006 there was a 70% increase in the average daily cycling flows on major roads (TfL 2009). However, this still only accounts for 2% of all travel in London (TfL 2009).
- Trips made entirely on foot account for around 30% of all trips made by Londoners (TfL 2009).
- Mode share varies by ethnic group. Pakistanis, Indians and Whites had the largest share of trips by car, while Black Africans and Chinese had the highest share of trips by public transport (TfL 2009).
- Indians and Pakistanis have comparatively higher car use (TfL 2009).
- Bike use is lowest amongst non-White groups (TfL 2009).
- Around 40% of households in London do not have access to a car (TfL 2009).
- The number of passengers using London's airports has increased by 34% since 1998 (GLA 2009).

Journey Purpose:

- 31% of trips in London are for shopping and personal business, 16% for commuting, and 26% for leisure (TfL 2009).

Service Provision:

- Between 2000/01 and 2007/08 Underground train-kilometres operated have increased by 10% and bus vehicle-kilometres by 31% (TfL 2009).
- The average age of the bus fleet is 5 years (GLA 2008).
- The number of night bus routes has increased from 57 in 2000 to over 100 in 2006/2007 (GLA 2008).
- The London Underground network consists of 402 kilometres of track and 270 stations (TfL 2009).
- Over 580,000 passengers use taxis or private hire vehicles every day in London. There are currently 25,000 taxi drivers, 48,000 private hire drivers and 2,300 private hire operators (TfL 2009).
- The number of taxis licensed is at historically high levels, with 47,000 registered private hire vehicles in 2008 (TfL 2009).
- In 2007/08 over 1.1 million Dial-a-Ride trips were made (TfL 2009).

Overcrowding:

- In 2005 it was reported that the 10 most overcrowded trains in the UK were operated to or within London (GLA 2008).

Freight:

- The amount of road freight lifted in London decreased by 11% between 2006 and 2007, though the overall trend since the mid-1990s has been upwards. In total, 139 million tonnes were lifted, with 56 million travelling inside Greater London, 47 million entering London from outside and 36 million originating in London for other destinations (TfL 2009).
- Internal water freight travel has varied little since 1990, with 2.1 million tonnes lifted in 2007 (TfL 2009).
- Less than 2 million tonnes of air freight is lifted through London each year, with 75% going through Heathrow (TfL 2009).
- Small vans crossing the Greater London boundary in either direction increased by 25% between 1999 and 2007 (TfL 2009).

Variation Between Outer, Inner and Central London:

- 46% of trips by London residents both start and finish in Outer London (TfL 2009).
- In 2007/08 50% of trips wholly within Outer London were by car (driver or passenger), while 15% were by public transport, predominantly bus (TfL 2009).
- In 2007/08 25% of trips in Inner London were made by car, while 25% were made by public transport, the rest were made by foot, cycle and taxis (TfL 2009).
- In 2007/08 40% of journeys between central and Outer London were made by Underground or DLR, 36% by rail, 5% by bus and 16% by car (TfL 2009).

- In 2001, 56% of journeys to work were made by car in Outer London, similar to other large UK cities, while only 21% of journeys to work were made by car in Inner London (TfL 2009).

Safety:

- There has been a 35% reduction in the number of road casualties since 2000. In 2006 33% of those killed or injured in road casualties were pedestrians (GLA 2008).
- On the Underground there were 0 people accidentally killed (first time for 15 years) and 125 injured in 2007/2008 compared to 7 people killed and 95 injured in 1996/1997 (TfL 2009). While the number of injuries is a significant increase, it is in part due to the fact that the LU system is now bigger and carries more passengers than it did a decade ago.

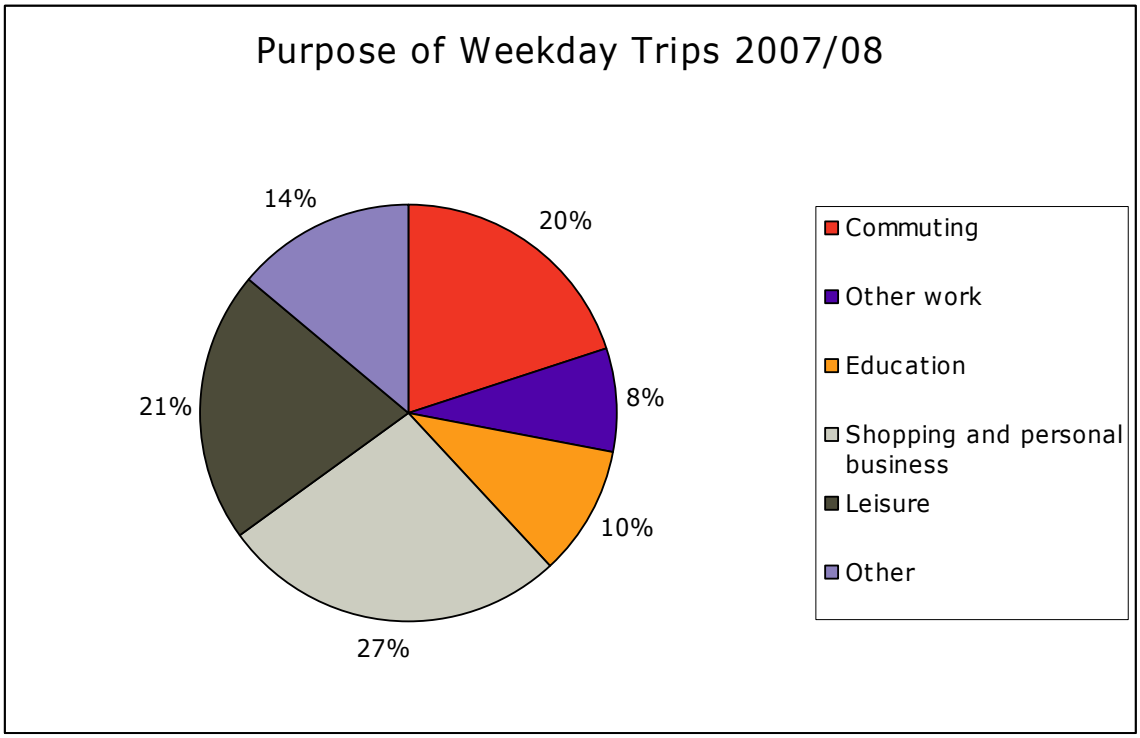
Air Quality:

- Levels of harmful local atmospheric pollutants have fallen in recent years, partly reflecting the introduction of newer, cleaner road vehicles. However, London's air quality (particularly in inner London) is the worst in the UK, and continues to breach National and European Union health-based air quality objectives (TfL 2009).

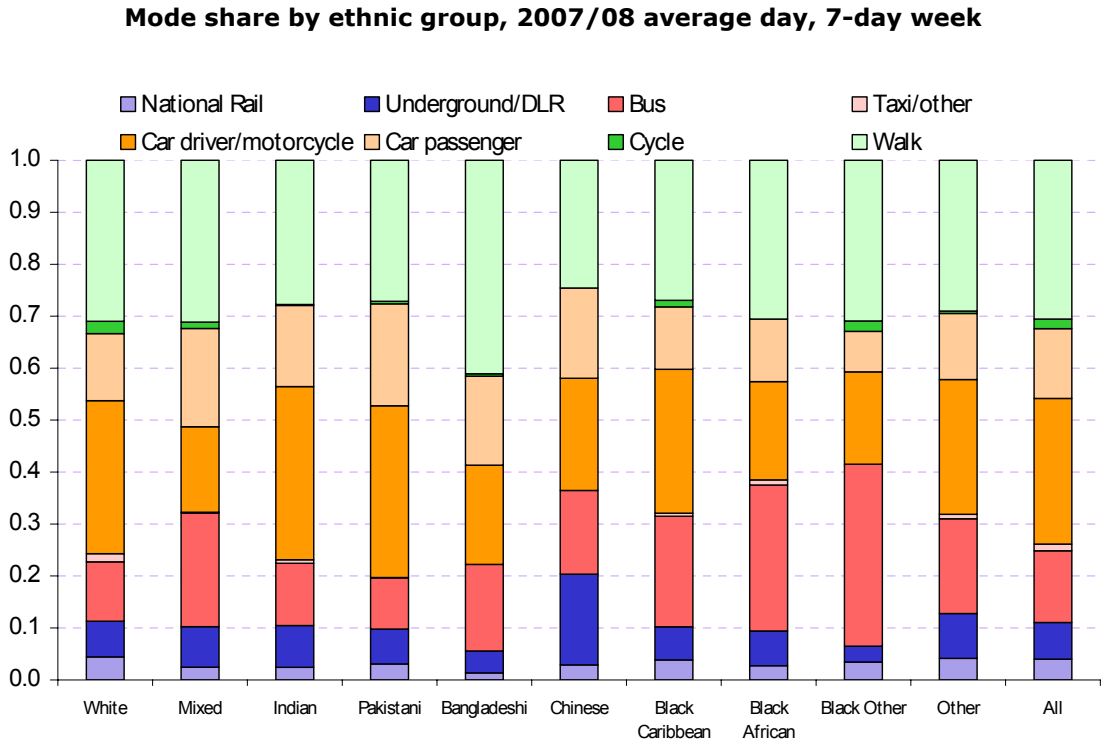
Ticketing:

- Between 2000 and 2008 the average fare for the Underground adjusted for inflation rose from £1.41 to £1.43, while fares for buses fell from 58p to 53p (GLA 2008).
- The Oyster electronic ticketing system has been in place since 2003 and in 2006/2007 73% of journeys were made using an Oyster card (GLA 2008).
- The Freedom Pass and veterans pass allows free off-peak travel on nearly all modes for Londoners aged over 60 or with a disability (GLA 2008).
- Bus fares have been abolished for all young people aged 18 or under in full-time education, assisting 350,000 young people, while children under the age of 11 can travel for free on the LU, DLR, Overground and trams if accompanied by an adult. (GLA 2008) Additionally, 16-19 year olds in full-time education or on a work-based learning scheme and who live in a London borough can travel free on buses and trams with a 16+ Oyster photocard (TfL 2008).
- In 2007 the 250,000 Londoners on income support were eligible to travel for half-price on buses and trams. (GLA 2008).

Figures / Tables



Adapted from TfL Travel in London 2009



Adapted from TfL Travel in London (2009)

Expected trend in absence of strategy:

- Increase in road congestion
- Increase in public transport provision resulting in a reduction in public transport crowding
- Increase in walking and cycling trips
- Increase in road freight
- Reduction in CO_2 emissions
- Increase in people eligible for free travel on public transport

Source: TfL modelling data

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Sustainable and Efficient Economy

Subject: Sustainable and Efficient Economy

Baseline Characteristics:

Productivity and jobs:

- London has the highest productivity in the UK with its GDP valued at £160 billion a year – its productivity is 27% higher than the rest of the rest of the country (GLA 2008).
- Around a fifth of London's 4.6 million jobs are filled by people who live outside the capital (ONS 2007).
- 1.44 million jobs are located in central London (GLA 2009).

There were 400,000 businesses in London in 2007 (GLA 2009).

Employment:

- London has a resident labour force of 3.8 million people (ONS 2007).
- The unemployment rate at the end of the second quarter in 2006 was 7.7% - 2.2% higher than the rest of the country (ONS 2007).
- In 2007 the number of Londoners who were economically inactive was 24.6% - over 2% higher than the national average (Defra 2008c).
- In 2007 15.5% of working-age people and 24.6% of children in London lived in workless households – nearly 8% more children in workless households than the rest of England (Defra 2008b).
- The percentage of 16-24 year-olds in employment is 12% lower in London (18% lower in inner London) than in the rest of the UK (GLA 2008).
- Disabled Londoners comprise 15% of the working-age population (GLA 2009).
- 40.6% of disabled women and 45.6% of disabled men are in employment – far below the national average of 69.1% (GLA 2008).
- In 2005 the economic activity rate for white people in London was 78.9% compared to 65.6% for ethnic minorities (ONS 2007).
- In 2007 63% of working-age women were employed compared to 70% of men (GLA 2009).In the past 20 years 546,000 jobs have been created in the financial and business services while 292,000 jobs have been lost from manufacturing (Mayor of London 2008).

Income:

- The median gross weekly earnings in 2008 in London was £503 – 30% higher than the national average (GLA 2009).
- The average weekly household income was £834 in London in 2006/07 - £184 higher than the UK average (GLA 2009).
- A quarter of households in London received income-related benefit in 2006/07 (GLA 2009).

Training & Qualifications:

- More than 50% of Londoners do not have the literacy skills expected of an 11 year-old (GLA 2008).
- More than 600,000 Londoners have no qualifications, leaving them unable to compete in the employment market (GLA 2008).

Tourism:

- There were 10.2 million domestic overnight visitors to London in 2007, with an additional 15.3 million overseas visitors (TfL 2009).
- Almost 140 million non-transit passengers passed through London's airports in 2007 (TfL 2009).
- Domestic and international tourists spent £10.3 billion in London in 2007 (GLA 2009).

Transport:

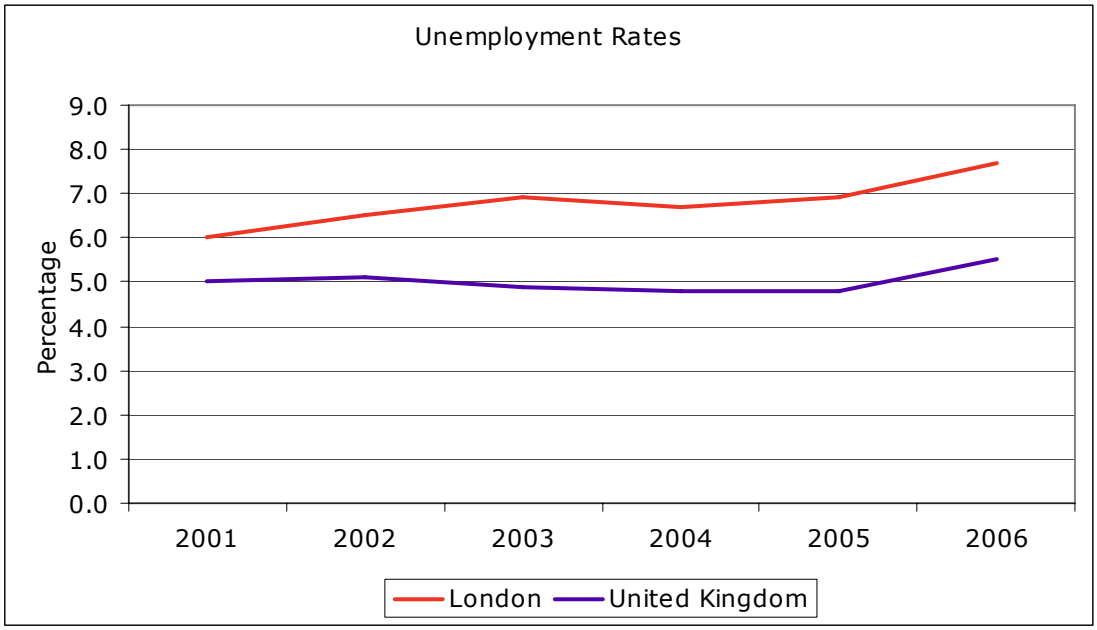
- In total, taking account of visitors and commuters, about 1 million people who do not live in London travelled within, to or from London each day in 2007 (TfL 2009).
- Travel to work by car is much higher in the rest of Great Britain compared to London. On average 70% of people travel to work by car in GB, however, the average in London is 36% (DfT 2008a).
- In 2006 the average time taken to travel to work in London was 43 minutes – substantially higher than 26 minutes for the national average (DfT 2007).
- In 2007/2008 the average time (in minutes and seconds) taken to travel one mile on London's roads was 4:09 – lower than Greater Manchester at 4:57 (DfT 2008b).
- In 2007/2008 2% of scheduled bus kilometres were not operated due to traffic congestion, leading to a reduction in service reliability (TfL 2009).

Future Trends:

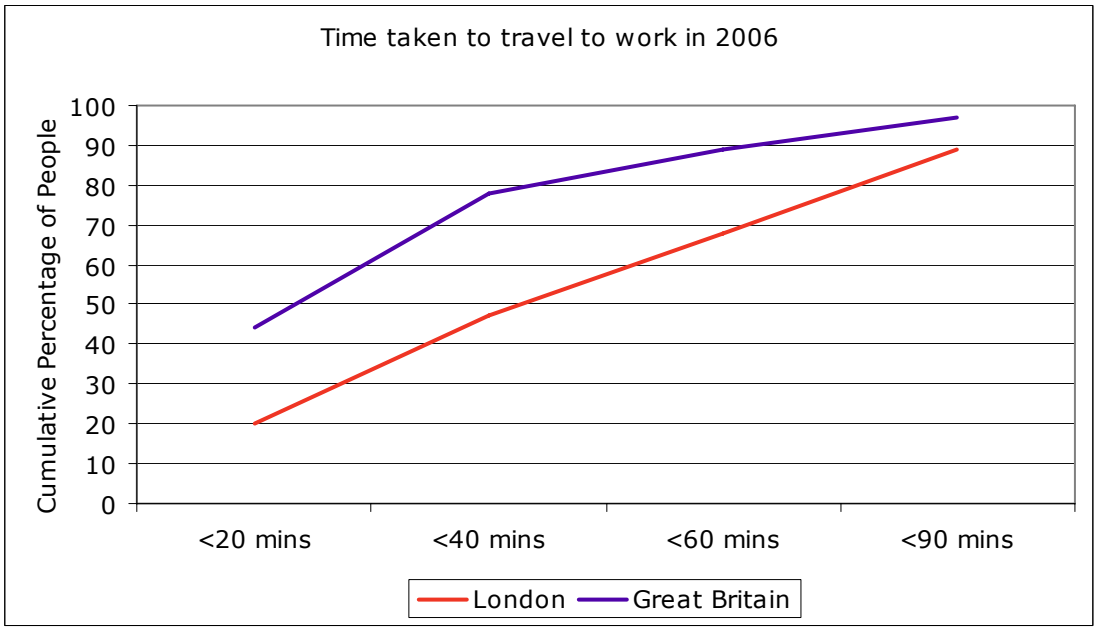
- There are 500,000 more jobs expected to be created in the business sector by 2026 – over 50% requiring level 4 (first degree) level qualifications (GLA 2008).
- There are expected to be an increase of 20% jobs between 2006 and 2026 (TfL modelling data).

Figures / Tables

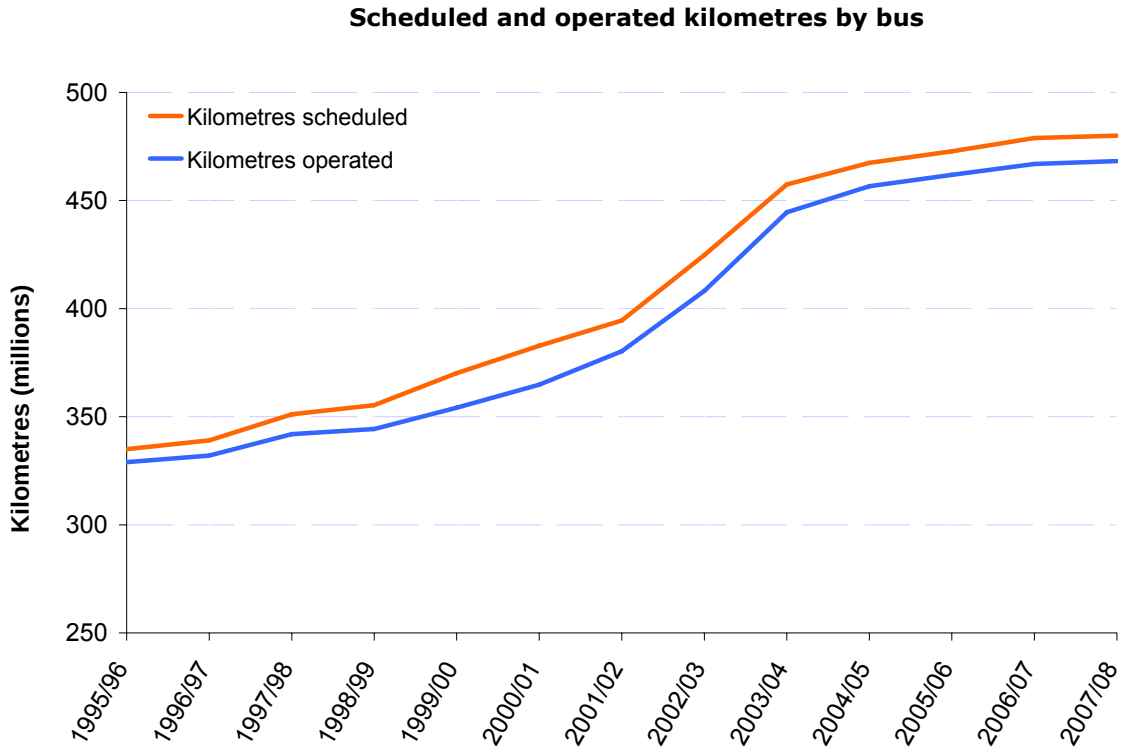
These charts have been chosen to highlight some of the most significant differences in economic efficiency and sustainability between London and the rest of the UK. The bus reliability chart shows also shows how congestion is increasingly affecting service reliability after improvements in recent years.



Adapted from Focus on London (ONS, 2007)



Adapted from DfT Regional Transport Statistics (2007)



Adapted from Travel in London (TfL 2009)

Expected trend in absence of strategy:

- Increase in unemployment
- Increased road congestion
- Decrease in bus service reliability

Issues:

- Capacity and connectivity: integrated transport and land use planning including facilitating physical and economic regeneration
- Employers' access to labour markets and individuals' access to employment
- Facilitating economic growth and higher productivity
- Reducing dependence on welfare benefits
- Tackling congestion (including improving journey time reliability and smoothing the flow of traffic)
- Tackling public transport crowding
- Efficient freight distribution (including potential for mode shift and consolidation)
- Service reliability and network resilience
- Disruption to transport services caused by major scheme construction
- Staff with correct training to deliver Draft Revised MTS projects (e.g. Mayor/TfL tunnelling academy proposal)

Opportunities:

- The positive impact which planning and transport investment projects can have on accessibility to employment, education and training opportunities
- The creation of more jobs, aggregation and densification, and enlarging access to job market for population; noting also the potential for increased appeal for investors and the development/enhancement that this can facilitate
- Promoting regeneration and targeting areas of deprivation, reducing welfare dependence
- TfL spending is a significant economic influence and hence responsible and sustainable procurement practice, for example engaging more Small and Medium size Enterprises (SMEs) within and across London and boosting local employment
- Supporting, directly or indirectly, the development of green technologies and innovation

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Equality

Subject: Equality

Baseline Characteristics:

Population

- London's population, which was estimated to be 7.6 million in 2007, is expected to increase to 8.2 million by 2016 and could reach 8.5 million by 2026 (GLA 2009, Mayor of London 2008a) (see figure *Population Projection 000s*).
- London's population is an ethnically diverse population, with 42 per cent belonging to ethnic minorities. Approximately 18 per cent of the population of London is under the age of 18 and 22 per cent are aged over 60 years old (Mayor of London 2008b).
- 162,000 international migrants came to London in 2007 (GLA 2009).

Race:

- London is the most ethnically diverse city in Europe, and arguably, the world, with a population that encompasses 300 languages, over 150 countries represented and at least 14 faiths practised (GLA 2007).
- London is home to 42.7% of England's non-white population (GLA 2008).
- 41.6% of London's population is non-white British (GLA 2008).

Religion or faith:

- In terms of faith, 58% of Londoners profess being Christian, 8% Muslim, 4% Hindu, 2% Jewish, 1% Sikh and 16% no religion (GLA 2008).

Deprivation:

- More than one in five people live below the poverty line in London (GLA 2009).
- In August 2008, 27.5% of children aged 0-18 lived in families claiming at least one key benefit - the highest rate of any region (GLA 2009).
- More than one in five households in London claimed Housing Benefit – the highest rate of any region (GLA 2009).
- Between 2001 and 2006 69.2% of the most deprived people in London were affected by adverse environmental conditions compared to 1% of least deprived people – a huge contrast to the national average where 21.5% of the least deprived were affected (Defra 2008e).
- Between 2003/2004 and 2005/2006 41% of children in London lived in households below 60% of the median, after housing costs – huge contrast to the national average of 29% (Defra 2008c).
- Between 2003/2004 and 2005/2006 21% of pensioners in London lived in households below 60% of the median, after housing costs – compared to the national average of 18% (Defra 2008d).
- In 2006 13% of 16-18 year-olds were not in education, employment or training – 2% higher than

the national average (Defra 2008f).

- Out of 498 rough sleepers recorded in the UK during 2007, 248 were in London (Defra 2008a).

Accessibility and Inclusion:

- There are currently 56 stations on the London Underground network with step-free access, with an additional 8 that are step-free in once direction (TfL 2009). This is expected to rise to 68 by the end of 2010 (TfL 2009).
- There will be 37 London Overground stations (47% of the total) with step-free access by 2017 (TfL unpublished information).
- Currently all LU ticket offices have an induction loop and all stations are equipped with PA systems. Approximately 131 underground stations (out of 253) have priority seating, which will rise to 154 by September 2010 (TfL unpublished information).
- In 2006/2007 9% of Londoners found it very or fairly difficult to get to a corner shop or supermarket – 2% lower than the national average (Defra 2008b).
- In 2006/2007 10% of Londoners found it very or fairly difficult to get to a post office – in line with the national average (Defra 2008b).
- In 2006/2007 22% of Londoners found it very or fairly difficult to get to a doctor or hospital - 6% lower than the national average (Defra 2008b).
- More than half of older people travelling to hospitals and dentists in London experience some difficulties in getting there, as do a third of those attending GPs or health centres (SEU 2003).

Age:

- There are almost 250,000 people aged 80 or over living in London – the population aged 60 and over is expected to increase by 9% between 2001 and 2021 (GLA 2006).
- The number of older people from BAME communities in London will increase from 12% to 23% by 2021 (GLA 2006).
- Over a third of people aged 60 or over in London live alone - 42 per cent in inner London and 33 per cent in Outer London, compared with just over 30 per cent in England and Wales overall (GLA 2006).

Health:

- Around 578,000, or 19%, of households in London contain at least one person with a limiting long-term illness, health problem or disability (GLA 2007).
- 10% of Londoners report experiencing transport-related barriers (rising to 30% for those aged over 60) (TfL 2009)

Gender:

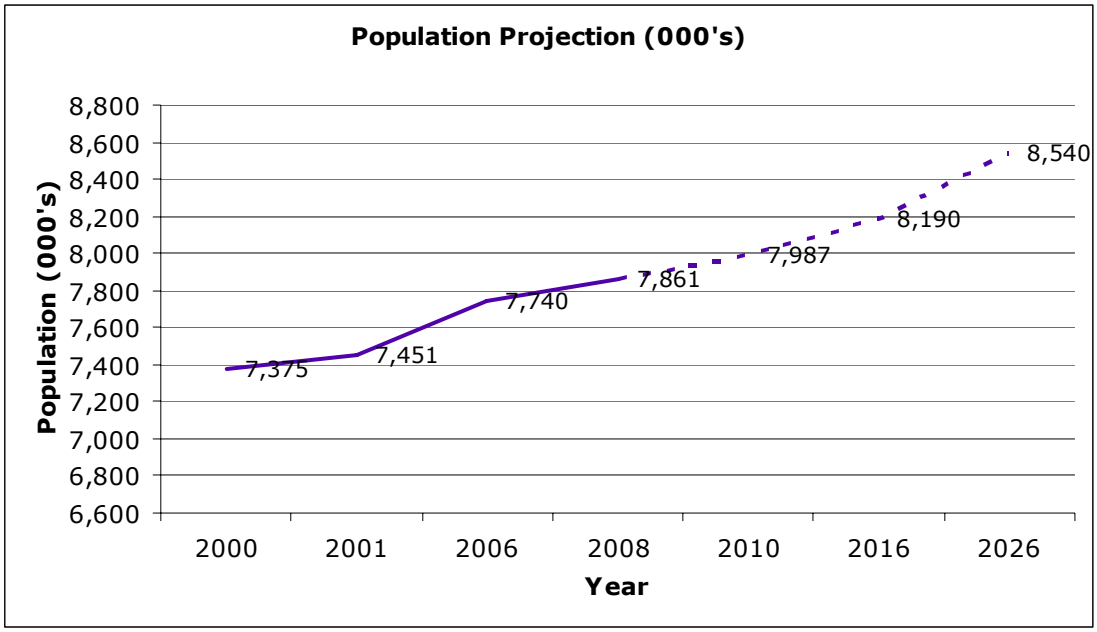
- 50.5% of the population are female (ONS 2007).

Sexual Orientation:

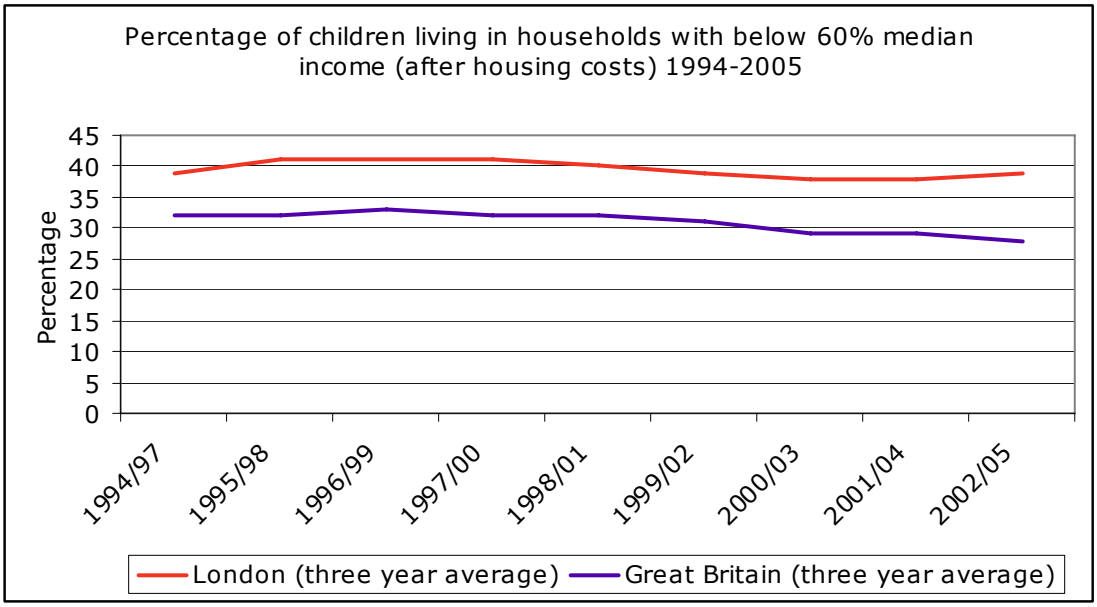
- Sexual orientation is the only equality group that is omitted from the Office for National Statistics national Census. However, it has been estimated that 6% of the country is likely to be lesbian, gay or bisexual. This is thought to be an underestimate. Also it has been found that gay couples were

more likely to live in London than the rest of the country. Consequently 10% is thought to be a more accurate estimate for London (GLA 2007).

Figures / Tables

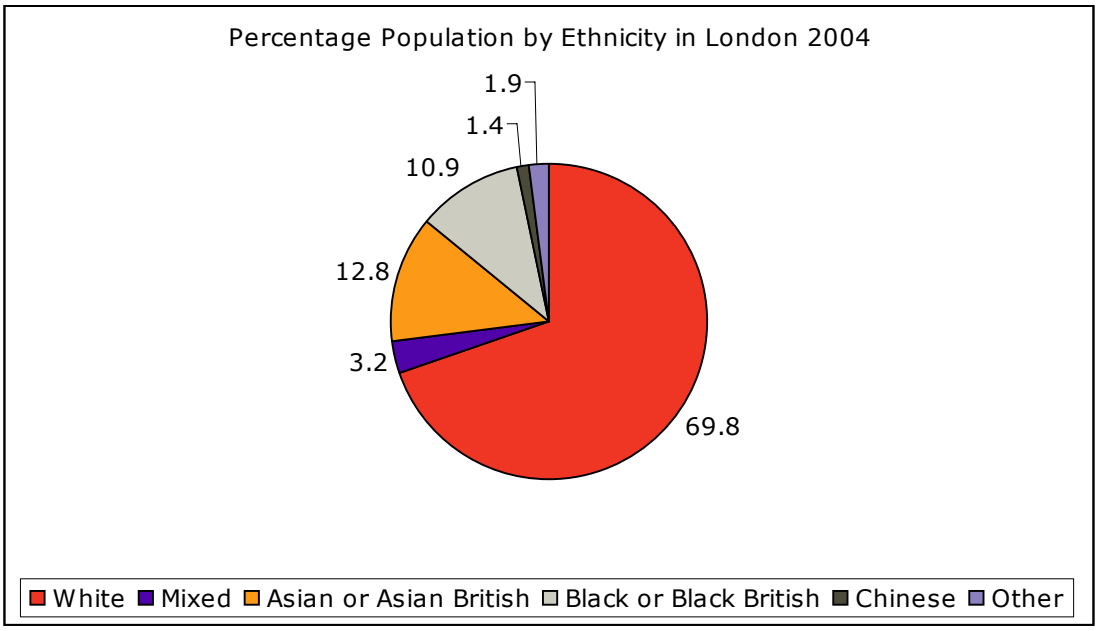


Adapted from Office of National Statistics, Subnational Population Projections [www.statistics.gov.uk/STATBASE/xsdataset.asp] accessed 12/12/08, also GLA 2009 and Mayor of London 2008e



Adapted from Focus on London (ONS, 2007)

Adapted from Defra Sustainable Communities



Adapted from Focus on London (ONS, 2007)

Expected trend in absence of strategy:

- The number of children living in poverty may increase
- The number of people from an ethnic minority background may increase
- The number of older people living in London may increase
- The number of people without qualifications may increase
- More deprived communities may be significantly affected by adverse environmental problems
- Accessibility to transport for these groups may deteriorate

Issues:

- Addressing physical barriers to access: proximity and inclusive design of vehicles and infrastructure
- Addressing social barriers to access: exclusion, affordability etc
- Community severance
- Communication and information provision for all
- Statutory responsibility to demonstrate how GLA engage with communities to deliver strategies
- Addressing the wider issue of how decision-making is made, noting the scope for inclusion of stakeholders and the public generally, in an inclusive approach

Opportunities:

- Investment in infrastructure and vehicles can build in accessibility improvements
- Investment in softer infrastructure (communication in different formats etc) could bring large benefits
- The positive role of transport in tackling social exclusion and wider disadvantage
- Tackling negative attitudes to disabled people, which can be a barrier to travel
- Improved communication and customer care, in particular for target groups
- Deliver targeted fare concessions to reduce inequalities in income e.g. through use of Freedom Pass or Oyster card
- The benefits which responsible procurement can bring to target groups
- Creation of an inclusive network (not just physical, but how people engage with the network)
- Adopting a 'whole journey' approach to maximising accessibility

References:

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Defra (2008b) Sustainable Development – Regional indicator data and resources (accessibility) http://www.defra.gov.uk/sustainable/government/progress/data-resources/documents/sustainable-communities.xls#Accessibility!A1

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Defra (2008e) Sustainable Development – Regional indicator data and resources (environmental equality) http://www.defra.gov.uk/sustainable/government/progress/data-resources/documents/sustainable-communities.xls#'Environmental equality'!A1

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GLA (2006) Mayor's Valuing Older People Strategy http://www.london.gov.uk/mayor/strategies/older_people/index.jsp

GLA (2007) State of Equality in London http://www.london.gov.uk/mayor/equalities_commission/sel-report.jsp

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TfL (2009) Travel in London

Health and Well-being

Subject: Health and Well-being

Baseline Characteristics:

Accessibility to Healthcare:

- In 2006/2007 22% of Londoners found it very or fairly difficult to get to a doctor or hospital - 6% lower than the national average (Defra).
- In 2007 the average number of GPs per 100,000 population in a London PCT was 65.7 compared to 65.3 in England as a whole (LHO).

Illness and Disability:

Note that definitions vary between sources and that terms like "long-term limiting illness" do not necessarily reflect disability.

- In 2007, 60 per cent of men in London were classified as being either overweight or obese. This was, however, the lowest percentage of any English region. The proportion of women in London who were overweight or obese was 54 per cent, slightly lower than the England average (GLA 2009).
- In London in 2007/08, almost a quarter of children in Reception (23%), and over a third of children in Year 6 (36%), were at risk of being either obese or overweight (GLA 2009).
- In 2001 71% of Londoners rate their health as 'good' while 8% rate their health as 'not good' (ONS Census).

- In 2001 15.5% of Londoners have a limiting long term illness (ONS Census).
- Around 578,000, or 19%, of households in London contain at least one person with a limiting long-term illness, health problem or disability (Defra).
- In 2001 the standard mortality rate in London was 98 (ONS Census).
- Deaths from cancer account for around one third of deaths in London. The rate of mortality from all cancers in London is 180.3 while the incidence is 357.1 in the years 2003-2005 (Cancer e atlas).
- Cardiovascular disease (also called circulatory disease) is one of the most highest causes of premature death in London. Coronary heart disease (CHD) mortality per 100,000 population is 116.5 for the years 2004-2006. Cerebrovascular disease (stroke) was responsible for 5,765 deaths in 2001 in London (NCHOD)

Safety:

- There were 24,577 slight casualties and 3,784 serious casualties on London's roads in 2007 (TfL 2009).
- 331 children were killed or seriously injured on London's roads in 2007 (TfL 2009).
- 1,292 pedestrians were killed or seriously injured in London in 2007 (TfL 2009).
- 461 cyclists were killed or seriously injured in London in 2007 (TfL 2009).
- 819 powered two wheel users were killed or seriously injured in London in 2007 (TfL 2009).
- In 2007/2008 there were 125 casualties on the London Underground (no fatal accidents) (TfL 2009).

Life Expectancy and Average Age:

- Life Expectancy at Birth (Jan04-Dec06) for males is 77.4 and 82 for females and has been increasing (ONS).
- The mean age of the population in 2001 was 35.95 (ONS Census).

Deprivation

- There are many inequalities in health across Greater London as a whole based on the indices of multiple deprivation with the boroughs of Tower Hamlets and Newham being amongst the most deprived (IMD).
- Four of the eight most deprived authorities in England are in London: Hackney, Tower Hamlets, Newham and Islington (IMD).

Noise

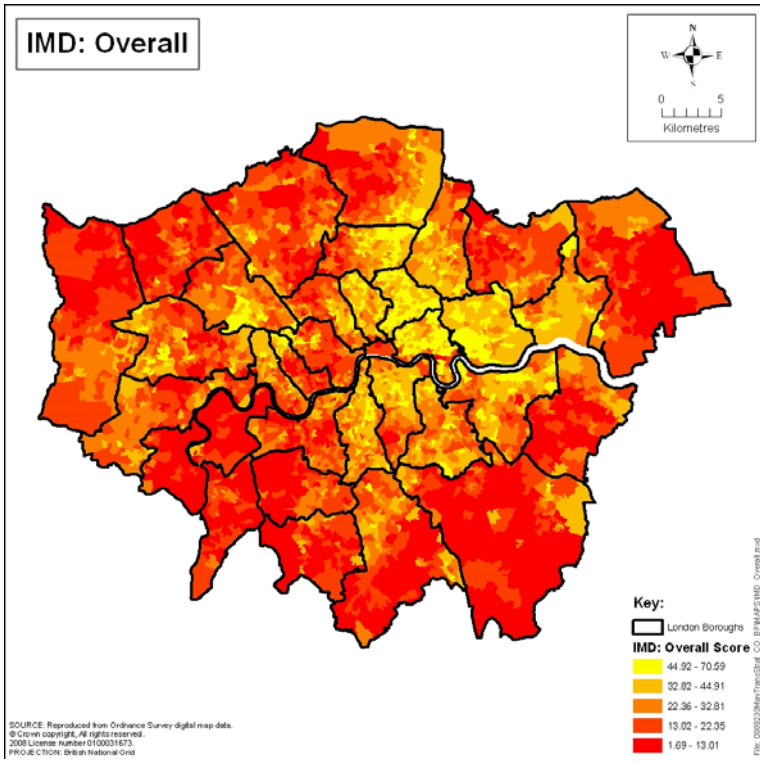
- The GLA London Household Survey 2003 found that road traffic noise was of more concern to the population than any other noise source, 13 per cent indicated that noise from road traffic in their locality was a 'serious problem' (Mayor of London 2004).
- In the majority of cases, the main sources of transport-related noise perceived by respondents as being annoying are cars and motorcycles. Approximately 21% of respondents indicated that they are bothered by noise from cars and motorcycles (Ipsos MORI 2007).

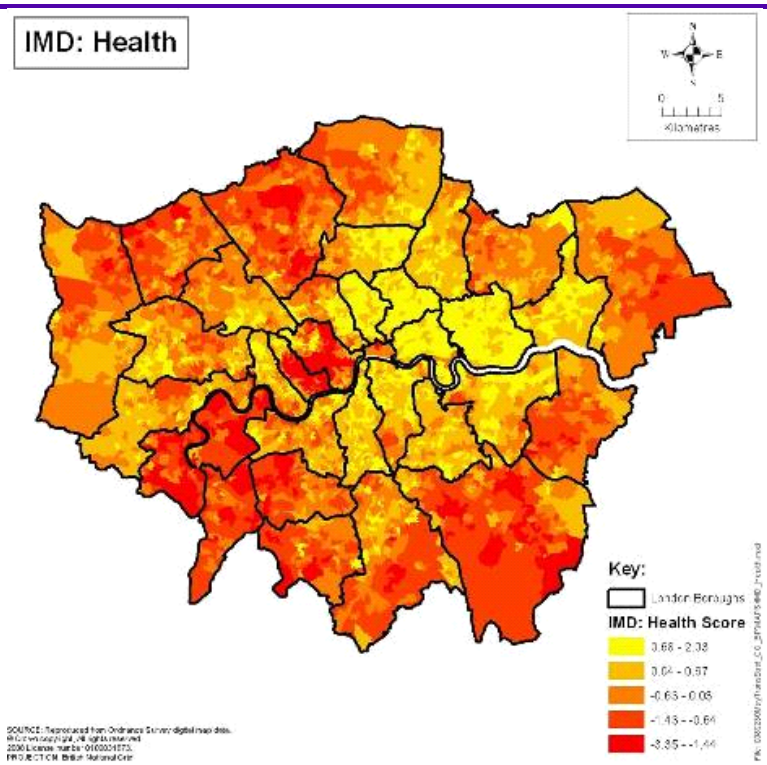
Figures / Tables

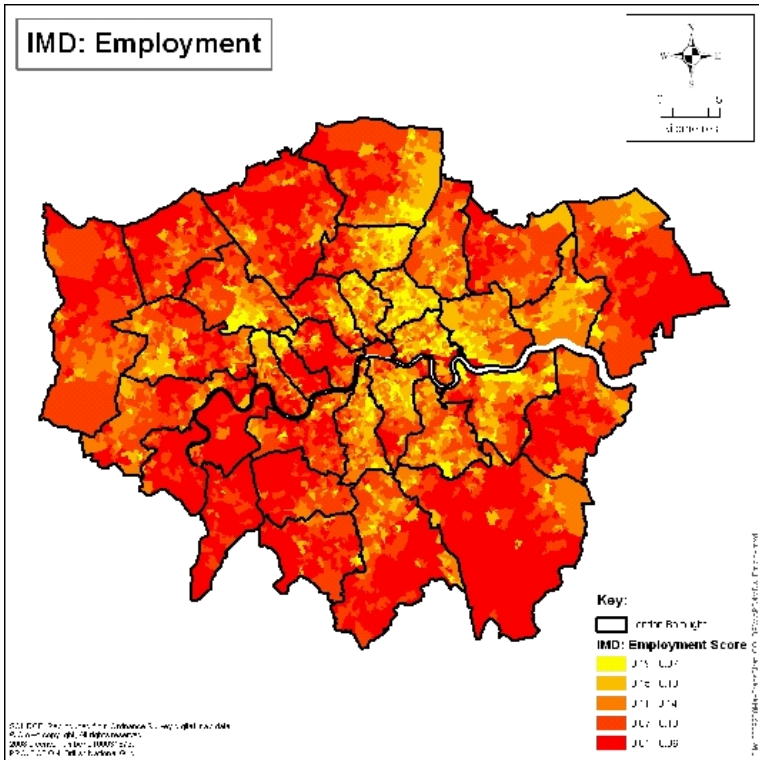
Index of Multiple Deprivation(IMD) maps of :

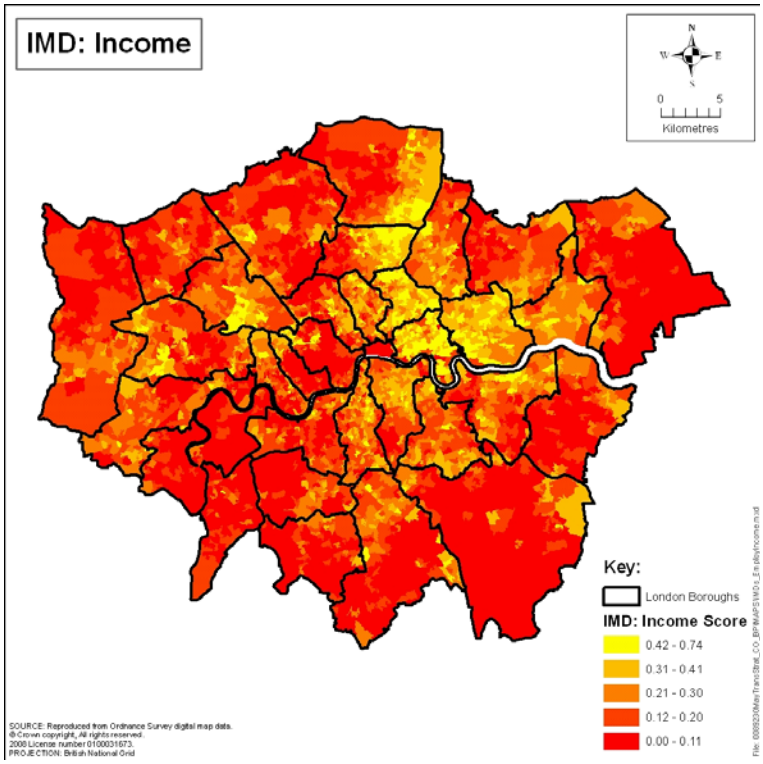
- Level of multiple deprivation
- Level of health deprivation
- Level of employment deprivation
- Level of income deprivation
- Barriers to housing and services

The diagrams represent the level of deprivation for each domain with red indicating the least deprived areas and yellow representing the most deprived areas.




IMD: Health
Key:
London Boroughs
IMD: Health Score


IMD: Employment
Key:
IMD: Employment Score


IMD: Income
N
W
E
S
0
5
Kilometres
Key:
London Boroughs
IMD: Income Score
0.42 - 0.74
0.31 - 0.41
0.21 - 0.30
0.12 - 0.20
0.00 - 0.11
SOURCE: Reproduced from Ordnance Survey digital map data.
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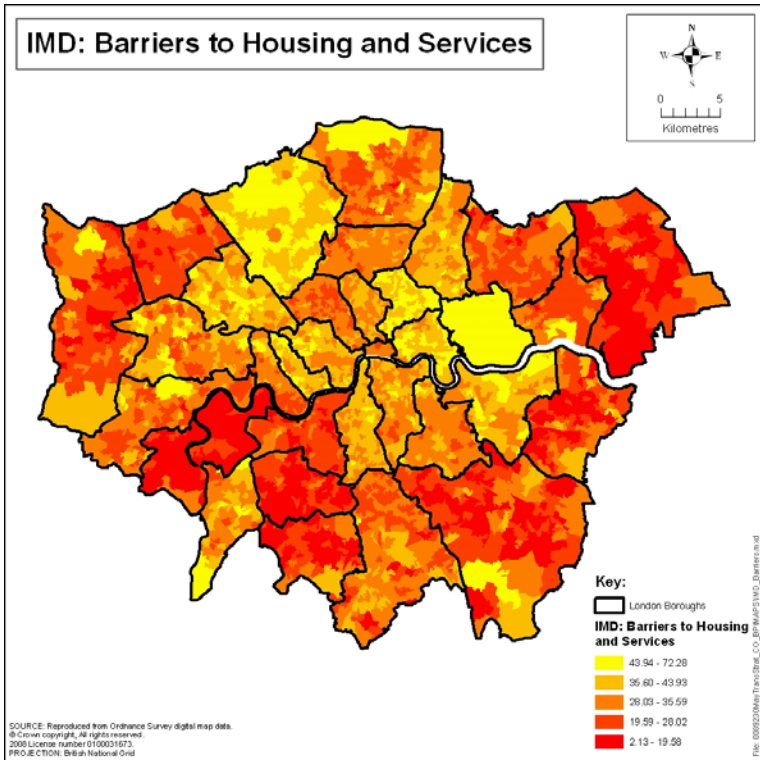
2008 License number 0100031673.
PROJECTION: British National Grid


IMD: Barriers to Housing and Services
N
W
E
S
0
5
Kilometres
Key:
London Boroughs
IMD: Barriers to Housing and Services
43.94 - 72.28
35.60 - 43.93
28.03 - 35.59
19.59 - 28.02
2.13 - 19.58
SOURCE: Reproduced from Ordnance Survey digital map data.
© Crown copyright, All rights reserved.
2008 License number 0100031673.
PROJECTION: British National Grid

Expected trend in absence of strategy:

- Increased life expectancy at birth.
- Increased incidence of respiratory diseases.
- Increased percentage of people being obese.
- Increase incidence in diseases such as obesity, diabetes etc.

Issues:

- Quality of life – enhancing public realm and quality of experience
- Social capital and community severance (also related to accessibility)
- Health inequalities and factors exacerbating these
- Physical access to health care facilities (Note that the NHS reconfiguration programme is in progress which could cause some journey times to shorten and some to lengthen)
- Use of walking and cycling
- Social and physical health inequalities
- Issues of environmental 'pollution' such as noise pollution, caused by construction and operation
- Ill health from stress induced by traffic noise
- Ill health from air pollutant emissions from traffic, congestion
- Quality of travelling (and working) experience
- Adapting to climate change
- Impact of traffic congestion on emergency service responses

Opportunities:

- Enhanced health and wellbeing for travellers, staff etc
- Integrated transport land use planning of NHS facilities
- Increasing levels of physical activity through walking and cycling (flip side is that there is a potential for increasing exposure to pedestrian and cyclist accidents)
- Use of transport system including pavements to access leisure / green spaces / public realm etc
- Information on transport (whole journey experience)
- Strengthening partnership delivery approach
- Health promotion and education/awareness
- See Economic Progress and accessibility
- Improving physical environment e.g. improved air quality

References:

Defra (2008) http://www.defra.gov.uk/sustainable/government/progress/data-resources/documents/sustainable-communities.xls

Department for Transport DfT (2006)

http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtieslatables/roadcasualtieslocal06#.

GLA (2009) Focus on London 2009

LHO http://www.lho.org.uk/Download/Public/9319/1/Indicator_8.1.xls#'Table 5 - Sep 2007'!A1

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National Centre for Health Outcomes Development http://www.nchod.nhs.uk/

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IMD Data (2007) http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/

TfL (2009) Travel in London

Safety and Security

Subject: Safety and Security

Baseline Characteristics:

Recorded crime statistics provide a measure of criminal activity, but it is individual perception of the risk of encountering crime or other anti-social behaviour than affects travel choices.

Crime:

- In 2007/08 the rate of recorded crime in London accounted for 18% of the total for England and Wales (GLA 2009).
- The total number of crimes recorded in London in 2007/08 was 869,604, the highest of the regions in England and Wales (GLA 2009).
- In London in 2007/08 there were (GLA 2009):
  - 218,509 violent crimes
  - 59,837 burglaries
  - 37,000 robberies
  - 119,460 motor vehicle crimes

- 1,919 rapes
- 160 homicides

- There are 13 crimes on the Underground and DLR for every million passenger journeys, with the equivalent rate of 12 on buses in London (Community Safety Plan, TfL 2009).

Perception of Crime:

- In 2005/2006 the following percentage of Londoners felt insecure about (ONS 2007):
  - Burglary – 16%
  - Mugging – 14%
  - Theft of car – 17%
  - Theft from car – 16%
  - Rape – 7%
  - Those aged 16-59 walking alone at night – 4%
  - Those aged over 60 walking alone at night – 12%

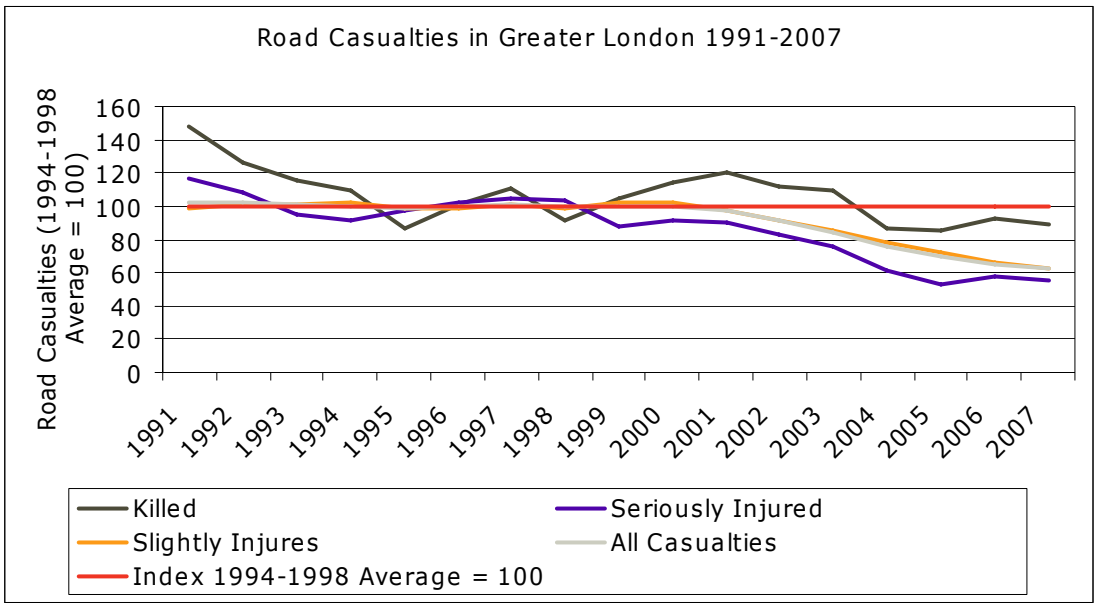
Policing:

- TfL funds over 700 uniformed staff on the London Underground and Docklands Light Railway, and over 100 uniformed staff on the Overground network (GLA 2008). These include Passenger Service Agents and Travel Safe Officers (TSOs) who travel on trains and patrol stations at night.

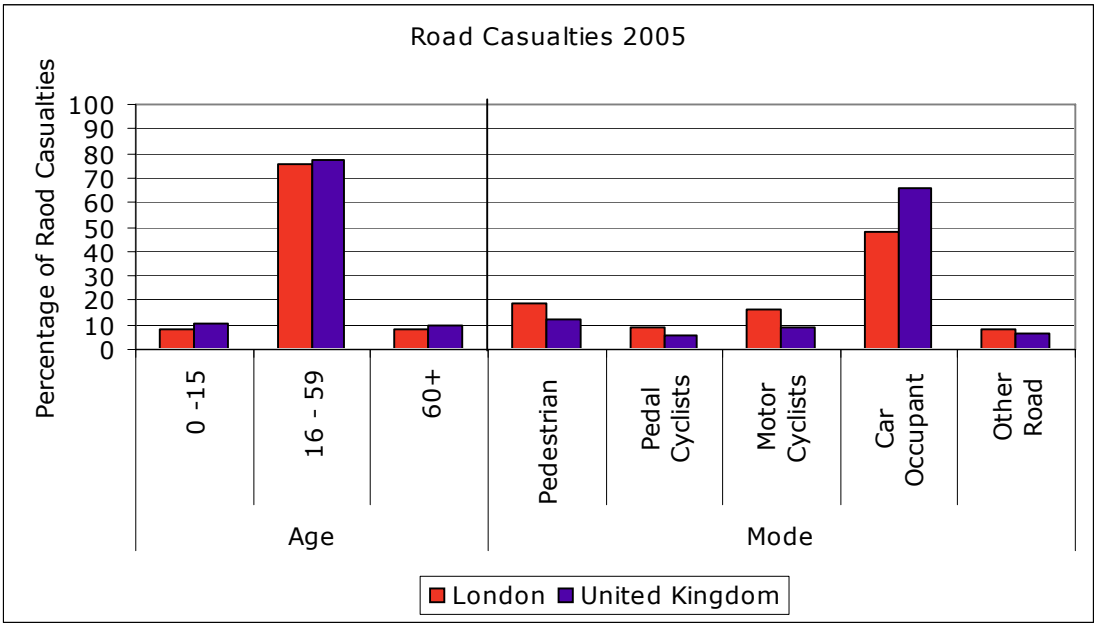
Safety:

- There were 24,577 slight casualties and 3,784 serious casualties on London's roads in 2007 (TfL 2009).
- 331 children were killed or seriously injured on London's roads in 2007 (TfL 2009).
- 1,292 pedestrians were killed or seriously injured in London in 2007 (TfL 2009).
- 461 cyclists were killed or seriously injured in London in 2007 (TfL 2009).
- 819 powered two wheel users were killed or seriously injured in London in 2007 (TfL 2009).
- In 2007/2008 there were 125 casualties on the London Underground (no fatal accidents) (TfL 2009).

Figures / Tables



Modified from Travel in London (TfL 2009)



Modified from Focus on London (ONS, 2007)

Expected trend in absence of strategy:

- Continued increase in LU casualties due to the increase in numbers of passengers travelling and no anticipated change in current rate of casualties
- Increase in road casualties
- Increase in crime on public transport

Issues:

- Accidents and casualties on all transport modes including road safety (users, non-users and staff)
- Tackling crime and fear of crime, signal crime (vandalism) and anti-social behaviour
- Perceptions of personal security (i.e. perception is worse than reality?), in particular, for target groups such as women, LGBT and BAME groups?
- Contingency planning and preparedness for major incidents

Opportunities:

- Investment in existing and new infrastructure, and vehicles, can build in accident prevention designs and crime prevention measures
- Improved co-operation with stakeholders such as emergency stakeholders and boroughs can help develop shared responsibility for safety and security
- Addressing the whole journey, noting 'door to door' perspective where walk to and from front door may be perceived as the most insecure
- Designing out crime – public realm and infrastructure, addressing door-to-door journeys

References

DfT (2007) – Regional Transport Statistics 2007 http://www.dft.gov.uk/pgr/statistics/datatablespublications/regionaldata/rts/regtranstats2007

GLA (2008) - Information London http://www.london.gov.uk/gla/publications/transport.jsp

ONS (2007) – Focus on London http://www.statistics.gov.uk/focuson/london/

TfL (2007) London Travel Report 2007 http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx

TfL (2009) Travel in London http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx

TfL (2009) Community Safety Plan for transport and travelling in London 2009/2010 http://www.tfl.gov.uk/assets/downloads/corporate/Community-Safety-Plan.pdf

Climate Change

Subject: Climate Change

Baseline Characteristics:

Greenhouse gas (GHG) emissions affect global warming and climate change. Carbon Dioxide (CO_2) is the most abundant and most important component of GHG emissions with respect to climate change, being highly dependant on human use of fossil fuels.

CO_2 Emissions:

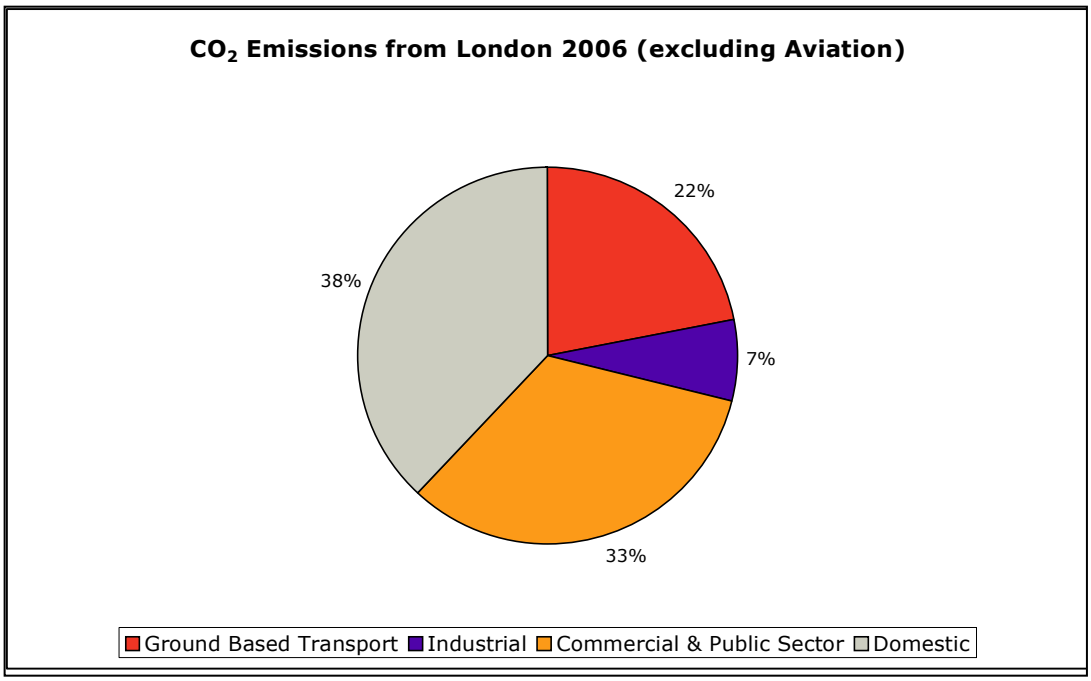
- London produces 8 per cent of the UK's total CO_2 emissions (Mayor of London 2007).

- In 2006 London had the lowest domestic carbon dioxide emissions per person, at 2.26 tonnes, of any region in the UK (GLA 2009)
- Ground-based transport is responsible for 22 percent of London's total CO_2 emissions (excluding aviation) (see figure *CO_2 Emissions from London 2006 (excluding Aviation))* (Mayor of London 2007*)*.
- Transport emissions of CO_2 in London (excluding aviation) increased by 3.5% between 1990 and 2006, from 8.6 million tonnes to 8.9 million tonnes (TfL 2009).
- Ground-based aviation is responsible for an additional 1.1 million tonnes of CO_2, an increase from 0.9 million tonnes in 1990 (TfL 2009).
- Based on 2006 figures of ground-based transport emissions in London, car and motorcycles trips are responsible for 49 per cent, road freight 23 per cent, National Rail 4 per cent, Underground 4 per cent, Taxi and Private Hire Vehicles 4 per cent, Buses 5 per cent , and landing, taking off and taxiing aircraft 11 per cent (see figure *CO_2 Emissions from Transport in London during 2006 by Mode*) (Mayor of London 2007).
- The principal TfL sources of CO_2 are the London bus and London Underground networks – in roughly equal measure and each emitting over 0.6 million tonnes of CO_2 per year. The next most significant sources are taxis and private hire vehicles – each responsible for about 0.3 million tonnes of CO_2 per year (see figure Carbon dioxide emissions (tonnes) from transport-related sources under direct TfL control, 2007/08) (TfL, 2009)
- Car-based modes typically emit half as much again CO_2 per passenger kilometre as the public transport modes. Particularly notable are the values for domestic aviation – higher per passenger kilometre than those from cars (see Figure Comparative emissions of carbon dioxide by mode of transport, 2007/08) (TfL, 2009)
- Per capita, CO_2 emissions associated with transport in London are 45 per cent lower than the UK average (Mayor of London 2008).
- In 2006 the road transport emission rate per person of 1.38 tonnes was the joint lowest of all UK regions and the industrial and commercial output of 2.87 tonnes ranked third lowest (GLA 2009).
- The Central London Congestion Charge has been in place since 2003. When the charge was introduced it led to a reduction of carbon emissions by 16 per cent within this zone, compared to pre-charging levels (Mayor of London 2007).
- A total of 27 million individual trips are made within London each day, leading to emissions of approximately 9.6 million tonnes of CO_2 per year (Mayor of London 2007).
- In London, the average car emits 178g of CO_2 per kilometre (Mayor of London 2007).

<u>Future Trends:</u>

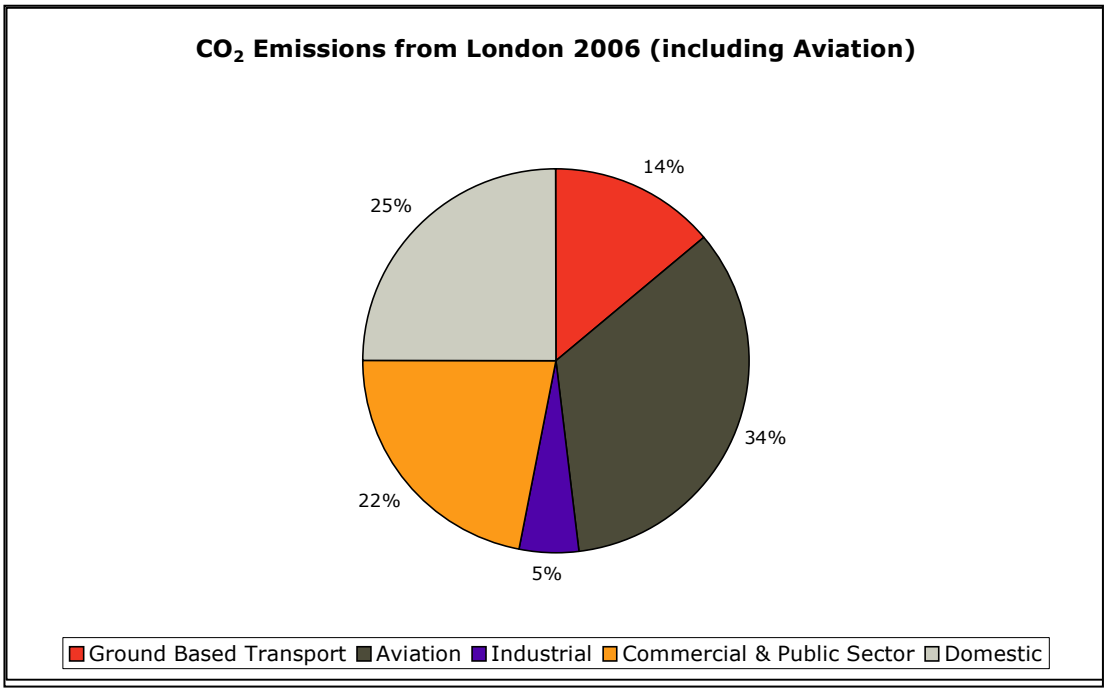
- In order for London to limit its CO_2 emissions to 600 million tonnes between 2007 and 2025 London must reduce all CO_2 emissions by 4 per cent per annum (Mayor of London 2007).
- The projected economic and population growth forecasted for London will increase all of London's emissions by 15 percent, from 44 million tonnes of CO_2 to 51 million tonnes per year by 2025 (excluding aviation emissions) (Mayor of London 2007).
- By 2050, ambient air temperatures in London are expected to increase by 1.0 to 2.0°C in winter and 2.0 to 3.5°C in summer (London Climate Change Partnership 2005).

Figures / Tables



Adapted from Climate Change Action Plan (Mayor of London) sourced from London Energy and CO_2 Emissions Inventory (LECI) (GLA)

Note: 2006 figures are based on latest available LECI data (for 2003) projected to 2006 based on projections for each sector.



Adapted from Climate Change Action Plan (Mayor of London) sourced from London Energy and CO_2 Emissions Inventory (LECI) (GLA)

Note: 2006 figures are based on latest available LECI data (for 2003) projected to 2006 based on projections for each sector.

Expected trend in absence of strategy:

- Without intervention, car kilometres could increase by 8 per cent and freight traffic will increase by 30 per cent by 2025, and without significant reductions in the CO_2 emissions from new vehicles, annual CO_2 emissions from ground-based transport could increase by 25 per cent (Mayor of London 2007). However, TfL modelling of the reference case suggests that there is the potential for CO_2 emissions to reduce by 16% between 2006 and 2031
- Climate change will result in various impacts (increase the probability of flooding, increase the frequency of heatwaves, and reduce water availability), which could significantly affect transport in London
- Future growth of London will increase the pressure on the public transport network and could result in an increase in emissions if CO_2 reduction measures are not implemented

Issues:

- GHG emissions: CO_2 and Nitrous Oxide
- Making better use of resources and facilities; stock management
- Car dependency
- Freight transport (including management of buildings, staff, fleets)
- Energy sources and efficiency
- Security of supply of energy
- Tackling congestion
- Adaptation measures to mitigate impacts from climate change (e.g. flood risk, hotter temperatures etc) on transport network and services

Opportunities:

- Reduce carbon emissions from travel
- Promote more sustainable patterns of travel and increase modal share of 'greener' transport options
- Sustainable transport planning and changing people's travel patterns to reduce their sustainability footprint
- Use of communication to produce more sustainable outcomes (e.g. smarter travel)
- Efficiency of transport provision
- Adapted service facilitating greater access
- 'Making better use of' what we have
- Use of renewable energy in existing and new transport infrastructure and facilities; expansion of Environmental Technology Sector
- Low carbon fuel and technology
- Smarter driving, better planning, technological advancements e.g. low-emission vehicles

- Transport providers' buildings, staff and fleet management
- Procurement
- A public transport service that can still run under different climatic conditions
- Reduce the need to travel / travel shorter distances

References:

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Physical, Historic, Archaeological and Socio- cultural environment and Public Realm

Subject: Physical, Historic, Archaeological and Socio-cultural environment and Public Realm

Baseline Characteristics:

- See also 2 Sustainable and Efficient Economy and 3 Equality

Health and Well-being

- See 4 Health and Well-being

Flora & Fauna

- Within or partially within the Greater London Area are the Epping Forest Special Area of Conservation (SAC), LEE Valley Special Protection Area (SPA)/Ramsar site, Richmond Park SAC, South West London Waterbodies SPA/Ramsar and Wimbledon Common SAC (Natural England 2008).
- Just outside the Greater London Area are the Burnham Beeches SAC, Mole Gap to Reigate Escarpment SAC, North Down Woodland SAC, Thames Basin Heaths SPA, Thames Estuary and Marshes SPA/Ramsar, Windsor Forest and Great Park SAC and Wormley-Hoddesdonpark Woods SAC (Natural England 2008).
- Throughout the Greater London Area there over 1,400 wildlife sites that have been classified as Sites of Importance for Nature Conservation, including Hampstead Heath, the Thames, Richmond Park as well as other small parks, commons and churchyards. Approximately 140 of these sites have been designated as Sites of Metropolitan Importance, about 780 have been designated as Sites of Borough Importance and roughly 460 sites have been designated as Sites of Local

Importance (Mayor of London – Wildweb [http://wildweb.london.gov.uk/wildweb/ About.do] accessed 17/12/2008).

- London contains approximately 7,000 hectares of woodland, covering approximately 4.6 per cent of the total land area, a third of which is classified as 'ancient forest' i.e. has been continuously forested since at least 1600AD (Mayor of London 2002).

Soil

- Within London approximately 14,000 hectares are dedicated to agriculture, with the Lea Valley including the largest area of horticulture and allotments cover approximately 830 hectares (DEFRA 2005).
- In London, previously developed land (brownfield land) forms 3.0 per cent of the developed area (Department of Communities and Local Government 2008).

Water

- Transport networks and their use can lead to polluted run-off entering water courses. The potential for this is greatly reduced with appropriate drainage arrangements in place (e.g. oil interceptors and sustainable urban drainage systems)
- Between 2002 and 2007 the percentage length of surface water within the Thames region that has been rated as being of good or better chemical quality has decreased from 80.5 per cent to 76.2 per cent (Environment Agency 2007) (see figure Percentage length of surface water courses that have been rated as Good or Better within the Thames Region)
- Between 2002 and 2007 the percentage length of surface water within the Thames region that has been rated as being of good or better biological quality has decreased from 75.7 per cent to 64.5 per cent (Environment Agency 2007) (see figure Percentage length of surface water courses that have been rated as Good or Better within the Thames Region)

Air

- Levels of harmful local atmospheric pollutants have fallen in recent years, partly reflecting the introduction of newer, cleaner road vehicles. However, London's air quality (particularly in inner London) is the worst in the UK, and continues to breach National and European Union health-based air quality objectives (TfL 2009)
- The National Air Quality Strategy has a health-based objective for PM_{10} of 50µgm-3, measured as a daily mean not to be exceeded on more than 35 days per year, applicable from the end of 2005. This is also the European Union limit value. Some locations, particularly in central and inner London in close proximity to major roads, still exceed this objective, and the trend since year 2000 has been somewhat variable (TfL 2009)
- The National Air Quality Strategy stipulates an annual mean NO_2 objective of 40µgm-3. The annual mean NO_2 objective has been exceeded consistently at both inner London background and roadside sites, while at Outer London background sites the annual mean NO_2 objective has been achieved since 1998. Whilst it is possible to discern a slow long run trend towards reduced NO_2 concentrations, these have not reduced as far or as fast as would have been expected, given substantial reductions to emissions of nitrogen oxide (NO_X) over the same period. This is thought to be primarily due to increased 'direct' emissions of NO_2 from diesel engined vehicles, whereas most NO_2 arises from chemical conversion of NO_X in the atmosphere. As with PM_{10}, continued

exceedences of air quality objectives for NO_2 remain an area of some concern (TfL, 2009).

- In 2006, approximately 73 per cent of PM_{10} emissions and 46 per cent of NO_x emissions within Greater London were from road transport (London Atmospheric Emissions Inventory for 2006, Greater London Authority)
- Ozone is another pollutant for which concentrations are still too high, though as formation can take place over several hours or days and may have arisen from emissions many hundreds, or even thousands of kilometres away (National Air Quality Strategy, Defra, 2007), ozone is not considered to be a 'local' pollutant. The UK Air Quality Strategy (AQS) has an Objective of 100 μgm^{-3} for O_3, measured as a rolling 8 hour mean, which should not be exceeded on more than 10 days per year. During the year ended June 2006 11 sites exceeded the Objective (all with the exception of City of London 1). The majority of Outer London sites measured over 20 days rolling 8 hour mean O_3 greater than 100 μgm^{-3} (London Air Quality Network, Air Quality In London 2005 and mid 2006). It should be noted that O_3 concentrations are suppressed locally by NO 'scavenging' emitted by road vehicles, particularly in urban areas. A consequence of this is that the reduction in NO_x emissions from road vehicles (since 1992) has led to increased O_3 concentrations within London. This has probably been counterbalanced, however, by a reduction in O_3 concentrations downwind of London through reduced emissions of NO_x and photochemically active Volatile Organic Compounds (VOCs). In this respect, a transport strategy that aims to reduce emissions from road vehicles has some contribution to reducing O_3 concentrations at the regional level.
- Air pollution is currently estimated to reduce the life expectancy of every person in the UK by an average of 7-8 months (Defra, 2007)

Climate Change Factors

- London produces 8 per cent of the UK's total CO_2 emissions (Mayor of London 2007).
- Ground-based transport is responsible for 22 per cent of London's total CO_2 emissions (excluding aviation) (Mayor of London 2007).

Material Assets

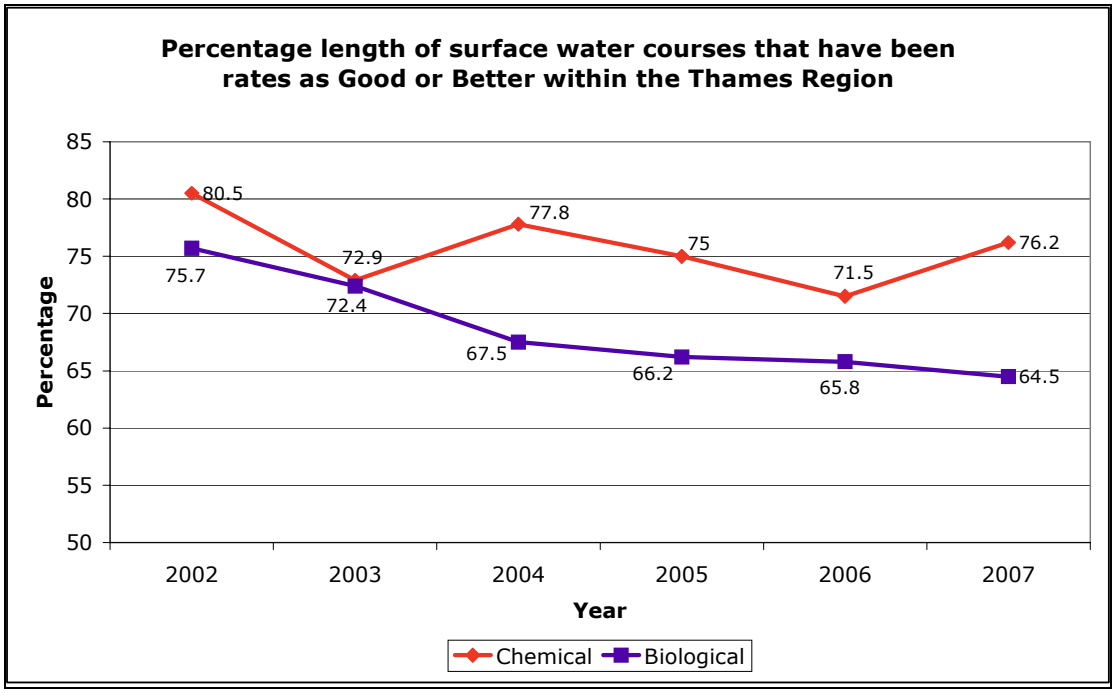
- Within the Greater London Area there are 13,600km of road infrastructure, 3,730km of bus routes, 329km of Tube lines, 28km of new tramways and 788km of national rail lines (Mayor of London [www.london.gov.uk/london-life/transport-and-travel] accessed 12/12/2008).
- See Efficient Economic Progress

Cultural Heritage, including architectural and archaeological heritage, and Landscape

- Within London there are four separate World Heritage sites; the Tower of London; the historic settlement of Greenwich; the Royal Botanic Gardens; and the site consisting of the Palace of Westminster, Westminster Abbey and St. Margaret's Church (UNESCO World Heritage List [whc.unesco.org/en/list] accessed 11/12/2008).
- Throughout London there are 18,106 individual Listed Buildings and 510 areas registered as containing Listed Buildings (English Heritage 2008).
- There are 165 Scheduled Ancient Monuments within the Greater London Area (English Heritage 2008).
- There are approximately 600 squares in London, of which 461 are protected under the London Squares Preservation Act 1931 (English Heritage 2000).

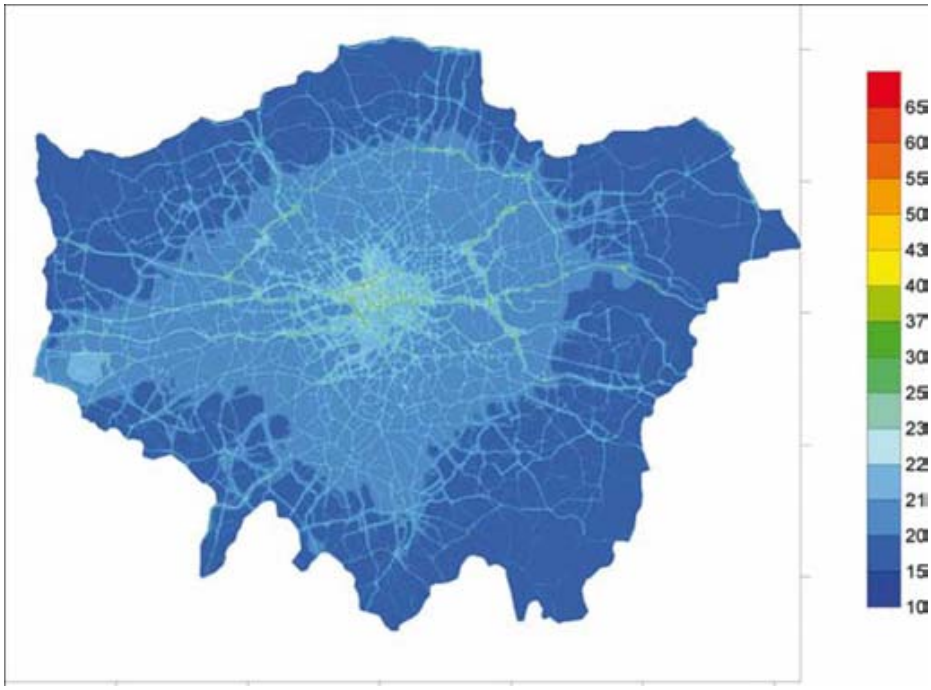
- There are 150 separate Registered Parks and Gardens of special interest (English Heritage 2008).
- London's heritage value is also reflected in the presence of numerous Conservation Areas, local authority Archaeological Protection Areas and locally listed buildings. It should be noted that there are many buildings and areas which are not designated which also make a major contribution to London's heritage.

Figures / Tables



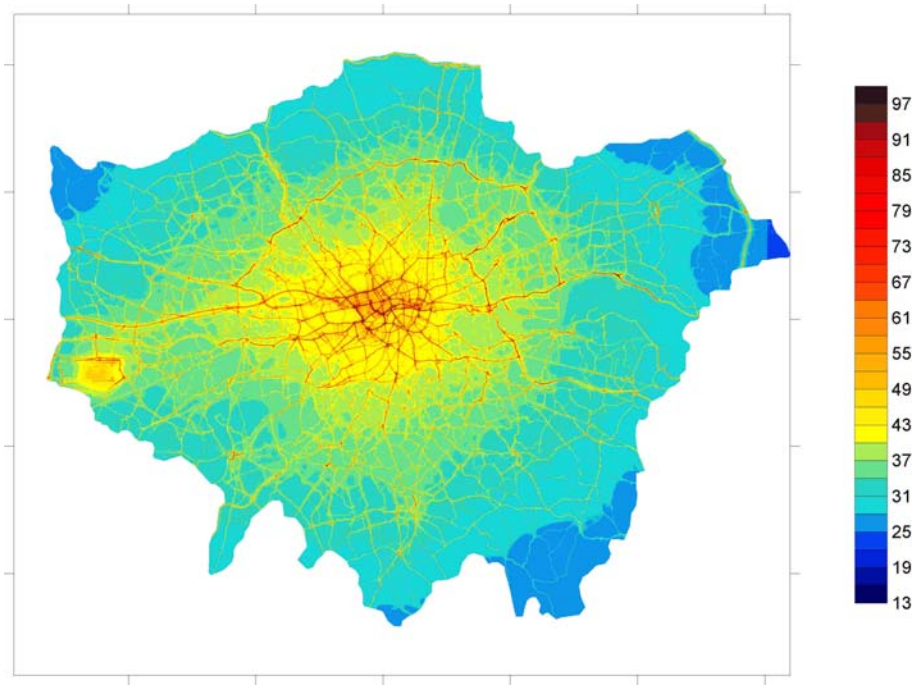
Adapted from Environment Agency (2007) General Quality Assessment

PM_{10} annual mean concentrations (µg/m3) for the year 2006



GLA (2009) Clearing the Air: The Mayor's draft Air Quality Strategy for consultation with the London Assembly and functional bodies

NO_2 annual mean concentrations (µg/m^3) for the year 2006



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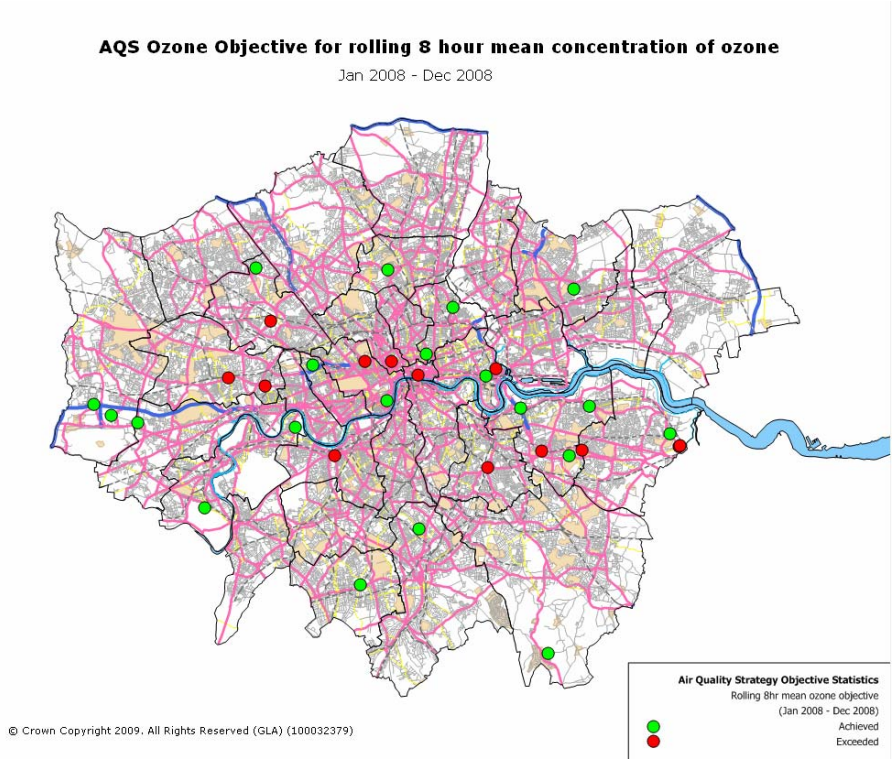

Data extracted from www.londonair.org.uk [accessed 16th April 2009]

Expected trend in absence of strategy:

- Increased traffic growth and congestion and environmental pressure from the physical presence of traffic and traffic noise and air pollutant emissions
- Increased traffic and congestion will result in lower levels of human health, biodiversity, air quality, water quality, soil quality
- There will be increased pressure on landscapes and the built heritage in order to accommodate higher levels of traffic
- There will be an increase in noise levels
- Reduced amenity of areas essential for their built heritage, green space and ecology, and cultural heritage
- Potential for improved public realm through committed schemes such as Crossrail
- Local air pollution levels may increase
- The Government and EU air quality targets are not currently being met in London.

Issues:

- The impact of physical planning and operation of transport services on physical environment, biodiversity, greenscape, trees etc
- The effect of traffic on streetscape. historic and cultural environment and public realm
- Transport facilities and role in design of built environment; noting issue of interchanges
- Annoyance and anxiety stemming from noise pollution/climate

- The impact of varied forms of transport on the street environment
- The impact of changes in working patterns (such as home working) and broadly the 'need to travel'

Opportunities:

- Noting inter-relationship with opportunities listed above under 'Climate Change' Smarter travel options including walkable developments / "grouping trip generators"
- In context of construction, design and operation: resource efficiency, reduce waste and improve recycling facilities
- The potential for reduced presence of traffic and the associated benefits which this can bring
- The potential for improved air quality and reduced traffic noise and the associated benefits which this can bring
- Enhancements to improved amenity, greenscapes, and more broadly, e.g. through tree planting and associated measures
- Improved interchanges and the opportunities this brings for enhanced communication and accessibility
- Incorporating 're-cycling on-the-go'
- Working with the Boroughs and wider stakeholders to develop the public realm

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Baseline Data for HRA Screening (Natura 2000 sites)

The HRA screening exercise identified all Natura 2000 and Ramsar sites within the GLA and within a wider area of 10 km, which takes account of Environment Agency (EA) guidance[1]. To define the search area, a circular zone was drawn around the GLA boundary which extended 10 km from the farthest reaching part of the GLA area. Therefore, the search extended for a minimum of 10 km and beyond this in some areas.

Twelve Natura 2000 and/ or Ramsar sites were identified, as detailed in Table B.3 below. Five of these sites fall within, or partially within, the GLA area, with the majority situated outside the county. Table B.3 details the baseline interest of each of these sites: their location, size, qualifying features, current site management, vulnerabilities and conservation objectives.

1 Work Instruction: (Appendix 7) – Stage 1 & 2 Assessment of New Integrated Pollution Control (IPC), Pollution Prevention and Control (PPC) Permissions under the Habitats Regulations, Version 6, October 2006, Environment Agency.

Table B.3 Baseline Interest of Natura 2000 Sites within, or within a minimum of 10 km of, the Greater London Authority boundary

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
Burnham Beeches SAC (382.76 ha)	Outside GLA boundary – approx 9 km to the west	*Annex I* habitats that are a primary reason for selection of this site: Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae* or *Ilici-Fagenion*)	The majority of the SAC is in sympathetic ownership and managed for the benefit of nature conservation. Measures are in place to reduce possible damaging influences from adjacent mineral workings, such as dust and hydrological changes. Ambient levels of sulphur and nitrogen oxides in the Burnham Beeches area may indicate that Environment Agency criteria levels for sensitive vegetation are being exceeded. This is under active investigation. The condition of the underlying SSSI's is currently[2] classed as: 63% favourable and 37% unfavourable but recovering.	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o lowland mixed broadleaf woodland with particular reference to the qualifying interests for which the land is designated (see left).

2 Data compiled from Natural England website, summary of condition assessments as of November 2008. http://www.english-nature.org.uk

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
Epping Forest SAC (1604.95 ha)	Partially within GLA boundary	*Annex I* habitats that are a primary reason for selection of this site: Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae* or *Ilici-Fagenion*) *Annex I* habitats present as a qualifying feature, but not a primary reason for selection of this site: Northern Atlantic wet heaths with *Erica tetralix* European dry heaths *Annex II* species that are a primary reason for selection of this site: *Lucanus cervus* (stag beetle)	Pollarding of ancient beech trees was reintroduced in the early 1990s to help counteract and reverse declines in the forest's epiphytic bryophyte population. Atmospheric pollutants have also historically contributed to epiphytic bryophyte loss (pollution from acid rain), with some recovery since the passing of the 1956 Clean Air Act and subsequent reduction in atmospheric pollutants. The forest is managed (e.g. leaving felled timber on ground) to increase habitat for stag beetle and other saproxylic insects. The condition of the underlying SSSI's is currently classed as: 30% favourable, 34% unfavourable but recovering, 28% unfavourable with no change and 8% unfavourable and declining.	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Lowland wood pastures and parkland o Broadleaved, mixed and yew woodland o Dwarf shrub heath o Acid grassland o Neutral grassland o Standing open water and canals o Fen, marsh and swamp with particular reference to the qualifying interests for which the land is designated (see left).

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
Lee Valley SPA / Ramsar (447.87 ha)	Partially within GLA boundary	SPA: This site qualifies under *Article 4.1* of the Directive *(79/409/EEC*) by supporting populations of European importance of the following species listed on *Annex I* of the Directive: Over winter: *Botaurus stellaris* (bittern) This site also qualifies under *Article 4.2* of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species: Over winter: *Anas strepera* (gadwall) *Anas clypeata* (shoveler) Ramsar: The site also qualifies as a Ramsar Wetland of International Importance under the following criteria: <u>Criterion 2:</u> The site supports the nationally scarce plant species	Lee Valley is affected by eutrophic water quality, which is being addressed via AMP3 funding under the Urban Waste Water Treatment Directive. The other main threat is that of human recreational pressure, which is regulated through zoning of water bodies within the Lee Valley Regional Park. Over-extraction of surface waters for public supply is a potential problem, particularly during periods of drought. The condition of the underlying SSSI's is currently classed as: 100% unfavourable but recovering for Walthamstow Reservoirs (which is within the GLA boundary) and 100% favourable for Amwell Quarry, Rye Meads and Turnford and Cheshunt Pits which are outside Greater London.	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Standing open water and canals (includes marginal habitats) o Fen, marsh and swamp o Lowland neutral grassland with particular reference to the qualifying interests for which the land is designated (see left).

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		*Myriophyllum verticillatum (*whorled water-milfoil) and the rare or vulnerable invertebrate *Micronecta minutissima* (a water-boatman). Criterion 6: The site supports species/populations occurring at levels of international importance: *Anas clypeata* (shoveler) *Anas strepera* (gadwall)		
Mole Gap to Reigate Escarpment SAC (887.68 ha)	Outside GLA boundary – approx 6 km to the south	*Annex I* habitats that are a primary reason for selection of this site: Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.) Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites)	High recreational pressure requires management and monitoring. The majority of the site is owned by local authorities and conservation trusts. Where parts of the sites are in private ownership, they suffer from neglect and a lack of appropriate grazing. Bechstein's bats use the site throughout the year, as a winter hibernacula, autumn 'swarming' site, and as feeding habitat. Natural England is working with local bat surveyors to locate maternity roosts, and to gain a better understanding of the movements and requirements of bats on	The draft COs for this site are, subject to natural change, to maintain the following habitats and geological sites in favourable condition: o Broadleaved, mixed and yew woodlands o Calcareous grassland o Dwarf scrub heath o Static (fossil) geomorphological features with particular reference

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		Taxus baccata woods of the British Isles *Annex I* habitats present as a qualifying feature, but not a primary reason for selection of this site: European dry heaths *Asperulo-Fagetum* beech forests *Annex II* species present as a qualifying feature, but not a primary reason for site selection: *Triturus cristatus* (great crested newt) *Myotis bechsteinii* (Bechstein`s bat)	this site. The condition of the underlying SSSI's is currently classed as: 41% favourable, 58% unfavourable but recovering and 1% unfavourable with no change.	to the qualifying interests for which the land is designated (see left).
North Down Woodlands SAC (287.58 ha)	Outside GLA boundary – approx 17 km to the southeast	*Annex I* habitats that are a primary reason for selection of this site: *Asperulo-Fagetum* beech forests *Taxus baccata* (yew) woods of the British Isles *Annex I* habitats present as a qualifying feature, but not a primary reason for selection of this site: Semi-natural dry grasslands and scrubland facies: on calcareous	The yew woodland is managed using minimum intervention. Beech woodland on site is managed as high forest with active encouragement of beech regeneration. The areas of chalk grassland on site require continuous grazing, which is not achieved over parts of the site. The condition of the underlying SSSI's is currently classed as: Halling to Trottiscliffe Escarpment SSSI:	The draft COs for this site are, subject to natural change, to maintain the following habitats and geological sites in favourable condition: o Broadleaved, mixed and yew woodland o Lowland calcareous grassland o Disused quarries, pits and cuttings with particular reference

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		substrates (*Festuco-Brometalia*)	77% favourable, 14% unfavourable but recovering, 6% unfavourable with no change and 3% unfavourable and declining. For Wouldham to Detling Escarpment: 55% favourable and 45% unfavourable but recovering.	to the qualifying interests for which the land is designated (see left).
Richmond Park SAC (846.68 ha)	Within GLA boundary	*Annex II* species that are a primary reason for selection of this site: *Lucanus cervus* (stag beetle)	Richmond Park is surrounded by an urban area and therefore experiences high levels of recreational pressure. The whole site has been declared a National Nature Reserve (NNR). The condition of the underlying SSSI's is currently classed as: 6% favourable, 8% unfavourable but recovering and 86% unfavourable with no change.	The COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Acid grassland - lowland o Lowland parkland and wood pasture with particular reference to the qualifying species for which the land has European importance: o Lucanus cervus (stag beetle)

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
South West London Waterbodies SPA / Ramsar (828.14 ha)	Partially within GLA boundary	SPA: This site qualifies under *Article 4.2* of the Directive (*79/409/EEC*) by supporting populations of European importance of the following migratory species: Over winter: *Anas strepera* (gadwall) *Anas clypeata* (shoveler) Ramsar: The site also qualifies as a Ramsar Wetland of International Importance under the following criteria: <u>Criterion 6:</u> The site supports species/populations occurring at levels of international importance: *Anas clypeata* (shoveler) *Anas strepera* (gadwall)	As the SPA comprises a series of water supply reservoirs and former gravel pits, the potential future decommissioning of reservoirs once they are no longer required is an issue, along with the potential impacts of maintenance works. Management plans that cover maintenance and decommissioning are required for the larger reservoirs in order to maintain the site's interest. Some threat from potential development pressure as the surrounding area is urbanised and urban-fringe, but this should be controlled by the relevant provisions of the Conservation Regulations (1994). Vegetation succession is a known problem which will be addressed using management plans to arrest or locally reverse succession. Recreational pressure may be an issue on one part of the site. Monitoring will determine the effects of recreational activities on the interest of the site. This site consists of 7 underlying SSSIs.	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Standing open water o Open water and surrounding marginal habitats o Open standing water and canals with particular reference to the qualifying interests for which the land is designated (see left).

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
			The condition of 4 of these is currently classed as 100% favourable. Staines Moor is classed as 73% favourable, 25% unfavourable but recovering and 2% unfavourable and declining. Wraysbury and Hythe End Gravel Pits are 85% favourable and 15% unfavourable but recovering. Notably, Wraysbury No. 1 Gravel Pit is classed as 100% unfavourable and declining.	
Thames Basin Heaths SPA (8274.72 ha)	Outside GLA boundary – approx 8 km to southwest	This site qualifies under *Article 4.1* of the Directive *(79/409/EEC)* by supporting populations of European importance of the following species listed on *Annex I* of the Directive: During the breeding season: *Sylvia undata* (Dartford warbler) *Caprimulgus europaeus* (nightjar) *Lullula arborea* (woodlark)	Heathland management is essential for the maintenance of the internationally important lowland heathland at this site, which supports the qualifying species. Lack of grazing and other traditional management practices are therefore a threat. Development pressure on neighbouring land, along with the cumulative and indirect effects of such development, is an issue which poses a potential long-term problem. Housing developments are a particular issue in this part of south-east England. Disturbance from recreational activities is	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Dwarf shrub heath o Fen, marsh and swamp o Lowland heathland o Standing open water & canals o Broadleaved, mixed and yew woodland with particular reference to the qualifying interests

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
			also a problem which may impact on the sensitive heathlands, especially on parts of the site which are owned by local authority and designated as Public Open Space. This site covers a large area and consists of 13 component SSSIs with a range of current conditions. The condition of 2 of the nearest SSSIs to Greater London is as follows: Ockham and Wisley Commons is 98% unfavourable but recovering and 2% unfavourable and declining. Chobham Common is 3% favourable, 21% unfavourable but recovering, 35% unfavourable no change and 41% unfavourable and declining.	for which the land is designated (see left).
Thames Estuary and Marshes SPA/ Ramsar (4838.94/5589 ha)	Outside GLA boundary - approx 14 km to east	SPA: This site qualifies under *Article 4.1* of the Directive (*79/409/EEC*) by supporting populations of European importance of the following species listed on *Annex I* of the Directive: Over winter: *Recurvirostra avosetta* (avocet)	Coastal squeeze and erosion of intertidal habitat has been recorded within the site. Port dredging may also be influential in intertidal habitat loss. The intertidal area is vulnerable to disturbance from water-related recreational activities. The terrestrial habitats of the site are dependent on appropriate grazing and	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Intertidal mudflats o Intertidal saltmarsh o Intertidal shingle o Grazing marsh

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		Circus cyaneus (hen harrier) This site also qualifies under *Article 4.2* of the Directive (*79/409/EEC*) by supporting populations of European importance of the following migratory species: On passage and over winter: *Charadrius hiaticula* (ringed plover) Assemblage qualification: A wetland of international importance. The area also qualifies under *Article 4.2* of the Directive (*79/409/EEC*) by regularly supporting at least 20,000 waterfowl. Ramsar: The site also qualifies as a Ramsar Wetland of International Importance under the following criteria: <u>Criterion 2</u>: The site supports more than 20 British Red Data Book invertebrates and populations of the GB Red Book endangered least lettuce (*Lactuca saligna*), as well as the	management of water. Evidence suggests that the water supply to grazing marsh has decreased and a water level management plan will be used to address this issue. Development pressure has become a problem in recent years. Current implications of development include both direct landtake from the site and indirect disturbance and hydrological effects from nearby developments. The condition of the underlying SSSI's is currently classed as: 87% favourable, 10% unfavourable but recovering, 1% unfavourable with no change and 2% unfavourable and declining.	o Saline lagoons o Flooded chalk pits with particular reference to the qualifying interests for which the land is designated (see left).

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		vulnerable slender hare's-ear (*Bupleurum tenuissimum*), divided sedge (*Carex divisa*), sea barley (*Hordeum marinum*), Borrer's saltmarsh-grass (*Puccinellia fasciculata*), and dwarf eelgrass (*Zostera noltei*). Criterion 5: The site supports assemblages of international significance: 45,118 waterfowl at peak counts in winter Criterion 6: The site supports species/populations occurring at levels of international importance: Spring/autumn: *Limosa limosa islandica* (black-tailed godwit) Winter: *Calidris alpina alpina* (dunlin) *Calidris canutus islandica* (red knot)		

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
Wimbledon Common SAC (348.31 ha)	Within GLA boundary	*Annex I* habitats present as a qualifying feature, but not a primary reason for selection of this site: Northern Atlantic wet heaths with *Erica tetralix* European dry heaths *Annex II* species that are a primary reason for selection of this site: *Lucanus cervus* (stag beetle)	As this SAC is located in an urban area, it is subject to heavy recreational disturbance. The condition of the underlying SSSI's is currently classed as: 40% favourable and 60% unfavourable but recovering.	The COs for this site are, subject to natural change: To maintain the following habitats in favourable condition: o European dry heath o Northern Atlantic wet heath with Erica tetralix To maintain, in favourable condition, the habitats for the population of: o *Lucanus cervus* (stag beetle) (COs to be revised in 2009)
Windsor Forest and Great Park SAC (1687.26 ha)	Outside GLA boundary – approx 6 km to west	*Annex I* habitats that are a primary reason for selection of this site: Old acidophilous oak woods with *Quercus robur* on sandy plains *Annex I* habitats present as a qualifying	The oak woodland and invertebrate interest of this SAC are vulnerable to changes in management practices. The violet click beetle is heavily dependent on a continuous supply of very old and decaying trees. Sympathetic	The COs for this site are, subject to natural change: To maintain the following habitats in favourable

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
		feature, but not a primary reason for selection of this site: Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) *Annex II* species that are a primary reason for selection of this site: *Limoniscus violaceus* (violet click beetle)	management is being undertaken through a Declaration of Intent signed between Natural England and the site owner, the Crown Estate. The violet click beetle is severely restricted on this site and is only present in two decaying trees. Ongoing research is underway in order to gain a better understanding of the species' habitat requirements. Current management to enhance the conservation value of the wooded areas includes: the removal of competing trees around veteran trees; bracken control; clearance of *Rhododendron*; and identification of trees for retention as future veterans to ensure continuity of supply of dead wood habitats. The condition of the underlying SSSI's is currently classed as: 48% favourable and 52% unfavourable but recovering.	condition: o Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer o Old acidophilous oak woods with Quercus robur on sandy plains To maintain, in favourable condition, the habitats for the population of: o Limoniscus violaceus (violet click beetle)

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
Wormley-Hoddesdonpark Woods SAC (335.53 ha)	Outside GLA boundary – approx 4 km north	*Annex I* habitats that are a primary reason for selection of this site: Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*	The majority of the woods in this SAC are being managed sympathetically, with no direct threat. Approximately 70% of the site is also designated as a National Nature Reserve. There is some pressure from informal recreation but this is concentrated on well-established paths. Present management ranges from benign neglect to active forestry, including management for nature conservation. Most of the complex is covered by a High Forest Zone Plan, which sets out a framework for woodland management, including the restoration of a varied age structure and natural stand types through sustainable forestry, where non-native planting is gradually replace by appropriate species from local stock. This site is split into 2 overarching SSSI's: Wormley-Hoddesdonpark Wood North & South. The condition of the underlying SSSI's is currently classed as: 98.7% favourable and 1% unfavourable in the north. In the south, the SSSI is	The draft COs for this site are, subject to natural change, to maintain the following habitats in favourable condition: o Broadleaved, mixed and yew woodland - lowland with particular reference to the qualifying interests for which the land is designated (see left).

Natura 2000 Site	Location	Qualifying Interest	Site Management and Vulnerabilities	Conservation Objectives (COs)
			75% favourable, 22% unfavourable but recovering and 3% unfavourable with no change.	