

**Greener London**  
The Mayor's State of Environment Report for London



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## Foreword by Ken Livingstone, Mayor of London

London's irresistible dynamism, culture and diversity make it one of the foremost cities to live and work in the world today.

The Capital's stunning cityscape is enjoyed by over seven million Londoners, approximately 26 million per year overnight visitors and a further 150 million people on day trips to London, drawn by a unique blend of parks, squares, distinctive buildings and river views. There is a feeling of vitality in the city and a sense of expectation as it plans for the challenges and opportunities ahead: addressing the impacts of climate change; accommodating the predicted population growth in London in a sustainable manner and preparing London for the Olympic and Paralympic Games of 2012.

London's environment is an essential part of its character. But from the balance between mobility and congestion to the variety of wildlife and the cleanliness of the River Thames, this environment cannot be taken for granted. It needs constant evaluation. It needs care and consideration. It needs the awareness and, increasingly, the active engagement of every Londoner.

This is my second State of the Environment Report. In my initial assessment in 2003, I set out a baseline from which to monitor the many aspects of London's environment. The indicators have been updated throughout the Report as far as possible, reflecting the developments of the past four years and highlighting challenges for the future.

Overall there has been a significant improvement in the various indicators, notably in public transport, renewable energy, recycling, water and air quality. London is world renowned for the protection and enhancement of its green spaces and water, as well as for reducing our reliance on the car and achieving a shift to more sustainable forms of transport.

This report does show, however, that much work remains to be done on key issues such as the reduction of waste going to landfill, reducing our water consumption and leakage, continued improvement of air quality, street cleanliness and prevention of litter, if London is to achieve my goal of becoming a first class sustainable world city.

Since that first environmental audit concern for the environment has risen to the very top of the political agenda. There is now an international consensus on the urgent need to tackle climate change and the need to reconsider long-held practices that impact upon the environment from the



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efficient use of resources and transportation, to the thoughtful disposal of waste. Each chapter in this report can and should be seen in both a local and an international context as London seeks to address its everyday needs and obligations - and acts as a pathfinder for cities across the globe.

All those who live, work or visit London can and should make a difference to improving the environment. Eighty two per cent of Londoners think that climate change will be a problem facing future generations if no action is taken now. In February 2007, I launched my Climate Change Action Plan, Action Today to Protect Tomorrow, which sets out a programme of decisive action, which we are now aggressively implementing, and a strategy for the next 20 years.

My next State of the Environment report will be published in 2011, on the threshold of the Olympic and Paralympic Games. I am certain that the regeneration associated with the event will act as an example of sustainable development every bit as deserving of global attention as the sporting excellence that will undoubtedly be on display in the Olympic and Paralympic Games in 2012.



**Ken Livingstone**  
Mayor of London



## Introduction

Tackling climate change is the Mayor's top priority. The last four years have seen strenuous efforts to monitor and enhance the many aspects of London's environment. From air quality to energy consumption and from recycling to river restoration, there has been a dramatic increase in both awareness, action and performance.

The Mayor has published five environmental strategies, setting out his proposals, priorities and targets for making London a cleaner, greener and more sustainable city. These cover air quality, biodiversity, energy, waste management and ambient noise. In addition to these, he has published his Animal Welfare and Tree & Woodland Frameworks and the draft Water Strategy was published for consultation earlier this year.

The Mayor's Climate Change Action Plan was launched in February 2007, setting out a comprehensive analysis of London's carbon emissions and route-map for achieving the necessary reductions. Its core message is that Londoners do not have to reduce their standard of living but we do all have to change the way we live to tackle climate change. Everyone has a part to play in moving from a high energy-use, wasteful economic model to one that conserves energy and minimizes waste. Statutory strategies for tackling climate change mitigation and adaptation are in development. This State of Environment Report demonstrates the pervasive impact of climate change across the full range of environmental issues and the way Londoners live their lives.

### State of London's Environment

The Mayor of London is required by law to publish this report every four years. Under the GLA Act 1999, several categories of compulsory information are required, but the Mayor may include other information which he considers appropriate.

The Act states that the Mayor's State of the Environment Report must include information on the following:

- a air quality and emissions to air, including in particular emissions from road traffic
- b road traffic levels
- c water quality and emissions to water
- d groundwater levels
- e energy consumption and the emission of substances which contribute to climate change
- f land quality
- g biodiversity
- h the production, minimisation, recycling and disposal of waste



- i noise
- j natural resources
- k litter.

*Green Capital*, the first Mayor's State of the Environment report for London, was published in May 2003. It set out a range of indicators as baselines against which future changes could be measured and to help assess progress towards the Mayor's vision of London as an exemplary sustainable world city.

This second report collates a vast amount of data and analysis. Some of the statutory categories this report covers relate directly to the Greater London Authority's strategic responsibilities in planning, transport and environment. In these areas we are able to provide the relevant information ourselves. The Act also specifies some topics for which the Greater London Authority has no direct statutory responsibility. The Environment Agency has particular responsibility for water quality of rivers and waterways and for emissions to water, and we are grateful to the Agency for data in this field. In other areas - street cleanliness, water quality and emissions to water, groundwater levels, energy consumption and the emission of substances that contribute to climate change - information is patchy and so it has not always been possible to discern a trend.

The indicators within the 2007 State of the Environment Report build on those within the first report. An additional indicator measuring Areas of Deficiency in Access to Open Space has been included and further suggestions for new indicators have been made, such as an alternative measurement for groundwater levels, which now covers the whole of the capital. A summary table of indicators is provided for an 'at a glance' review of progress. Where directly comparable updates have not been possible, an indication of progress since the last report has been given.

In considering the scope of the State of the Environment Report, the Mayor is required to consult the Environment Agency and each London Borough. This exercise was undertaken in 2006 - with no major comments received - and we are grateful for their input.



# Executive Summary

## Chapter 1: Climate Change

Chapter 1 examines Climate Change, both *mitigation*, which means limiting further climate change by reducing greenhouse gas emissions as well as *adaptation*, which means preparing for the challenges that are now inevitable and may increase if we do not reduce our emissions.

### *Mitigation: Energy Use and Greenhouse Gas Emissions; Renewable Energy and Fuel Poverty*

Since 1990, London's overall CO<sub>2</sub> emissions have gone down by 1.5 per cent despite a population growth of 0.7 million people; this change is largely due to a reduction in industrial activity in London. For 2006 it is estimated that CO<sub>2</sub> emissions per resident are 5.8 tonnes, 40 per cent lower than average UK emissions per capita. Overall energy use has, however, seen an increase since the first State of the Environment Report, as London's economy and population have expanded. To help prevent catastrophic climate change the Mayor has proposed an ambitious new target for London to stabilise its emissions at 60 per cent below 1990 levels by 2025; this is considerably more ambitious than the UK Government's target of 60 per cent below 1990 levels by 2050.

Energy use in existing homes is the largest single source of CO<sub>2</sub> emissions in London at 38 per cent, and as such, the energy efficiency of London's homes must be dramatically improved. The commercial and industrial sectors combined account for some 40 per cent of London's CO<sub>2</sub> emissions. Transport emissions in London (22 per cent) have stayed stable since 1990 due to high long-term levels of public transport availability, use and, since 2000, unprecedented investment in the public transport network. Through the programmes set out in the Climate Change Action Plan, a reduction of 33 million tonnes of CO<sub>2</sub> in the time period could be achieved, although some change in government policy would be required. A cut of around 20 million tonnes is possible under the existing regulatory environment, providing the vigorous action advocated by the Mayor is implemented.

Planning applications referable to the Mayor are required to incorporate renewable energy technologies and renewable generation capacity has started to become significant as the impact of London Plan policies start to feed through. Other greenhouse gases show a slight reduction, due to the reduction in methane, which is likely to have been achieved because landfill emissions have declined after the implementation of methane recovery systems. Fuel poverty saw a dramatic decrease both nationally and in London due to the fall in energy prices, although this is now expected to rise again as fuel price rises in the period from 2004 onwards start to bite.



### *Adaptation: Impacts; The Thames Barrier and Flooding; Water Supply and Consumption; Groundwater Levels*

The possible consequences for London of climate change will be warmer, wetter winters and hotter, drier summers with an increase in the intensity and frequency of extreme weather events, such as heatwaves, tidal surges and torrential rain. Through the urban heat island effect, London's microclimate may intensify the impacts of heatwaves, affecting the health of vulnerable and older people. Unless steps are taken to prepare London, the effects will increasingly impact upon the health, comfort and safety of Londoners as well as on London's economy.

Since adapting to climate change is a relatively new challenge, no baseline was set in 2003 against which to compare interventions that will help climate-proof London or act as a climate change signal. However there are some indicators in areas where London is vulnerable and where the impacts on London may be seen.

#### Flooding

London is vulnerable to flooding from the tidal Thames, its tributaries, surface water flooding from heavy rainstorms and overflowing sewers. The number of properties flooded from both overloaded sewers and other causes has decreased over the period.

A significant part of London lies within the tidal floodplain but the likelihood of a flood is extremely low, less than once in every 1000 years. There have been over 100 closures of the Thames Barrier since 1982, 67 of which have been due to high tides and tidal surges from the North Sea. There has been an upward trend in such tidal closures in recent years but there has been a reduction in the number of fluvial closures (because of heavy rainfall coming downstream from the upper Thames).

London has a good quality water supply but the effects of a changing climate are likely to reduce the amount of water available. There are four water companies that serve London and 80 per cent of London's public water supply comes from the rivers Thames and Lee. Since 1990, water consumption per capita in London has remained stable at an average 156





litres of water a day per Londoner (2004/05). This is slightly higher than the national average (150 litres per day) and also more than most other north European cities (circa 120 litres per day). Metered households use 23-39 per cent less water than unmetered households. However, for similar households in similar properties, the average reduction is between five and 10 per cent.

Water supply lost through leakage has increased, with Thames Water having the highest level of leakage in England and Wales. The company is implementing an extensive mains replacement programme to renew much of the Victorian network over the next three years. Progress will be kept under review by the GLA.

Suggestions have been made for possible future indicators to show London's level of adaptation to inevitable climate change, for example, the number of times Level 3 in the Heat Health Watch system is reached in the Health Protection Agency's Heatwave Plan, could act as a useful measure of extreme summer temperatures.



## Chapter 2: Resource Management: Waste and Recycling

Household recycling has increased significantly, by 126 per cent from 2000 – 2005, however, 22 of London's 37 waste authorities failed to achieve their statutory household recycling targets. The introduction of improved and extended services has contributed to the increase in recycling, as well as awareness raising campaigns, such as the Mayor's London *Let's Recycle More* campaign. The provision of an extended and consistent recycling service across London is a key part of creating a more equal and inclusive capital. Now over 90 per cent of London households either receive a recycling collection from home or have suitable access to near-entry facilities.



The way in which London's waste is managed and Londoners use resources has a huge impact on London's contribution to climate change because of the emission of greenhouse gases from landfill, incineration and from the transportation of waste and recycled materials. Whilst waste being sent to landfill has decreased slightly by eight per cent since 2000/01, still well over half of London's waste is being sent to landfill, and about 20 per cent is being incinerated. A change in culture, with greater emphasis being placed on preventing and reusing waste is required. Where waste cannot be reduced, reused, composted or recycled, waste should be used to power London's vehicles and buildings and the Mayor is taking a leading role in developing new, clean, energy from waste technologies.

### Chapter 3: The Local Environment, Litter and Environmental Crime

A third of Londoners now think London is a clean city compared with just 19 per cent five years ago and the numbers of Londoners who think that litter is a problem has almost halved from 43 per cent in 2002 to 23 per cent in 2006. These changes coincide with the Mayor's Capital Standards campaign, launched in 2002 to improve London's street environment by working with the member boroughs. A number of successful training and awareness raising programmes have been run such as the *Litter Fairy* campaign in 2004, which was estimated to have reached 1.7 million Londoners. Another influencing factor is likely to be the increase in the number of enforcement officers boroughs employ in the issuing of Fixed Penalty Notices for littering.

Street cleanliness in London has improved with 26 of the 33 London Boroughs showing an improved Best Value score over the last three years. London is now less than one per cent over the government target of 25 per cent, compared to eight per cent over in 2003/04. Capital Standards has set itself the challenging target of achieving an average score of 12 per cent by the Olympics in 2012. The canal network has also seen an increase in reported cleanliness.

A key contributor to an area feeling dirty and crime ridden is the removal of abandoned vehicles and graffiti. Despite various campaigns and crackdowns the number of incidents of graffiti remains high. Street scene enforcement activities have increased over the last four years and the successful removal of over 50,000 vehicles in 2004/05 as part of *Operation Scrap-It* has not only improved London's environment but also significantly reduced the number of non-accidental vehicle fires.



## Chapter 4: Pollution

*Air Quality* In many of today's modern cities, the main environmental health hazard to the population is the exposure to air pollution and London is no exception. Air pollution affects the health and quality of life of people who live, work in, and visit London.

Recent trends in air quality show that concentrations of key pollutants have reduced in the last 10 years. NO<sub>10</sub> concentrations fell by 13 per cent and PM<sub>10</sub> concentrations fell by 24 per cent. Mayoral transport policies including initiatives such as the Congestion Charge, improvements to London's buses and the Taxi Emissions Strategy, combined with EU regulated improvements in vehicle technology have contributed to this reduction in recent years. However, air quality in London continues to breach EU and national health based targets. This is why the Mayor is proceeding with the implementation of the Low Emission Zone as the most effective way of quickly reducing pollutants that are among the most harmful to human health. All London Boroughs have declared part or all of their boroughs as Air Quality Management Areas; this is a positive move as the need to address poor air quality is recognised and action is now being taken.

*Water Quality* Rivers in London support a variety of wildlife and the River Thames is one of the cleanest metropolitan rivers in the world. In the last 20 years around 120 species of fish have been recorded. There has been an overall improvement in both chemical and biological water quality in London's rivers and the number of pollution incidents monitored by the Environment Agency has fallen.

The recent welcome announcement to construct the Thames Tideway Tunnel (the single 30km long tunnel planned to intercept sewage and rainwater discharges along the River Thames) will improve the environmental quality of the Thames further and help to meet European obligations on sewage treatment. Water quality in the Lower Lee catchment area should improve from regeneration of the area as a result of the Olympic and Paralympic Games.

*Noise* Excessive levels of unwanted sound can affect the quality of life. The Mayor's Ambient Noise Strategy focuses on reducing noise through better management of transport systems, better town planning and better use of buildings. For example, Transport for London is in the process of replacing existing road surfaces with quieter types. Boroughs deal with other sources of noise such as neighbour noise. The majority of noise complaints are about domestic sources of noise (for example, alarms, animals, music and DIY).



## Chapter 5: Road Traffic Levels

There is an on-going need to reduce the environmental impacts of road traffic levels and the challenge for London is to deliver a sustainable transport system capable of supporting the success of the London economy and predicted population growth.

Good progress towards this goal has been made as London has achieved a world-beating modal shift away from the private car to public transport, cycling and walking. Since 2000 the number of journeys by all modes has increased and 50 per cent of journeys are less than 2km. Uniquely, London has achieved a five per cent shift away from car use, saving 500,000 car journeys and an estimated 210,000 tonnes of carbon dioxide emissions per year. Cycling in London has grown fast, up 83 per cent in the past six years. There are now an estimated 480,000 cycle journeys every day across London, around 30,000 more than a year ago and approximately 60 per cent more than in 2000. Despite this increase, campaigns to increase safety awareness for all road users have contributed to a reduction of 28 per cent in the number of cyclists killed or seriously injured on London's roads. Overall there has been a 29 per cent decrease in the numbers of road traffic collisions reported in London since 2001.

Traffic coming into and out of London has been relatively stable since 2000 but that crossing into central and inner London has decreased. The decrease in vehicles entering Central London is likely to be due to the Congestion Charging Scheme. Public transport use has continued to grow strongly with tube, bus, Docklands Light Railway and Croydon Tramlink networks experiencing growth in patronage. Significant improvement in the quality and coverage of the bus network has helped to increase bus use by over 34 per cent from 2000/01 – 2005/06 to 6 million passengers per day. Increases in bus patronage in London account for 100 per cent of the growth in bus usage in the UK. Bus kilometres have increased by 27 per cent since 2000/01 and bus priority measures, such as bus lanes and traffic signal priority at junctions, have improved reliability. Fare incentives have been progressively introduced too – with the aim of making London more accessible to young people and students.



## Chapter 6: Land Quality and Land Use

Two thirds of London's 1,600 square kilometres are occupied by green space or water. The Green Belt accounts for 22 per cent of London's land and London is unique in designating nearly 10 per cent of its area as Metropolitan Open Land within the built environment (some 107,000 hectares), protecting spaces such as Richmond Park and Hampstead Heath. Through the Further Alterations to the London Plan, the Mayor continues to protect these valuable open spaces and areas of land covered in this way have remained stable.

River restoration has a key role in urban regeneration and renewal. Restored rivers positioned at the heart of London's urban fabric make a huge contribution to improving the quality of life for the people of London and revitalising its wildlife. Over 6km of watercourse have been fully or significantly improved since 2003 and the report summarises a range of schemes including the River Quaggy which used to flow in a concrete pipe under Sutcliffe Park in Kidbrooke, South London, and has now been restored to an attractive meandering stream.

There has been a small net increase in recreational open space (such as playing fields and sports grounds) and the area of derelict land has dropped by three quarters due to development. In the Further Alterations to the London Plan a target that at least 96 per cent of new residential development should be on previously developed land was achieved in 2005/06. This is significantly above the national target of 60 per cent. The 737 allotments and 16 city farms continue to provide valuable green spaces in the urban environment that can help improve people's quality of life by promoting healthy food, exercise, education and community interaction.

The Mayor has led work on a 'Green Grid' for East London, which will create a network of interlinked, multi-functional open spaces to promote healthy living and improve quality of life. East London will be a major focus for regeneration and development, with the Olympic Park and Thames Gateway development and providing a significant opportunity to radically improve the environment in East London.



## Chapter 7: Biodiversity

London has a great variety of wildlife habitats, from extensive woodland, heath and marshes, to the River Thames and the more formal landscapes of the Royal Parks and city squares as well as huge areas of private gardens. These green spaces are home to a tremendous diversity of wildlife, including over 300 species of birds and 1,500 species of flowering plants. Protecting these habitats is key and the Mayor's target to ensure that there is no net loss of wildlife sites in London is being met. The total area of sites identified as being of importance to wildlife has increased by almost 1000 hectares since 2003. Having access to nature can have beneficial effects on well-being and areas of deficiency in access to nature is a new indicator in this State of the Environment report.

Trends in London's bird populations can provide an indication of changes to the local natural environment and the latest results from national bird monitoring show that birds are faring better in London than they are in surrounding areas.



## Conclusion

A key issue in compiling this second State of the Environment report has been the difficulty in collating much of the information and, due to changes and improvements in methodologies, the difficulty in properly providing a comparison to the initial baseline in 2003. The report should be treated, therefore, as a snapshot giving an indication of progress since the last report.

Despite this, it is clear that there has been considerable improvement and it is anticipated that when the next State of the Environment report is published in 2011, just before the Olympic and Paralympics Games of 2012, a number of radical policies and initiatives will have been implemented and London will be an environmental showcase to millions of visitors from within this country and from around the world.



## Summary Table of Indicators

### Key to Trends:

- ↑ Upward trend, increase
- Stable trend, no change
- ↓ Downward trend, decrease
- No discernable trend, or insufficient data available, or multiple factors.

*NB: Indicator numbers are consistent with the previous State of Environment report.*

No.	Indicator	Trend
31	Total Energy Consumption 2000-2003	↑
31a	Total CO <sub>2</sub> emissions between 1990-2006	↑
32	Non-CO <sub>2</sub> Greenhouse gas emissions per annum in London	↓
33	Energy produced from renewable sources	↑
34	No. of houses in fuel poverty in London	↑
9	Tidal closures of Thames barrier	↑
10	No. of flood alerts in greater London	○
11	No. of properties flooded per annum in each borough	↓
12	No. of properties flooded from sewers per annum	↓
6	Average domestic water consumption per capita (litres per day)	→
7	Average domestic water consumption per households (Litres per day)	→
8	Water supply losses due to leakage	↑
13	Ground water levels at Trafalgar Square	→
28	Municipal waste arising from 2000/01 to 2005/06 (London)	→
29	Municipal waste management method from 2001/01 to 2005/06 (London)	○
30	Number (%) of households served by a kerbside collection of dry recyclables 2005/06	↑
24	Quality of street environment	○
25	Local street and environmental cleanliness (percentage of land of a good/acceptable std of cleanliness) by borough.	↑
26	Cleanliness of the Thames foreshore by borough (Thames 21)	○
27	Cleanliness index of the canal network by borough (Thames 21)	↑
19	Total Emissions (tonnes per year) of the main air pollutants in greater London	○
19a	Relative annual mean Monitored pollutant concentrations	↓
20	Percentage of London area covered by Air Quality Management Areas	↑

No.	Indicator	Trend
15	Percentage of rivers in London where the chemical quality is classed as good or very good.	↑
16	Percentage of rivers in London where the biological quality is classed as good or very good.	↑
14	Number of pollution incidents in a year having a significant or major impact on air, land or water.	↓
22	Number of journeys and distance travelled (per person per year)	↑
21	Traffic counts at London cordons since 1990	↓
21a	Trends in use of public transport	↑
23	Road casualties and % change	↓
1	Area of green belt and MOL in Greater London 2007	→
5	Length of non-tidal river restored per year	↑
4	Changes in area of recreational open space in each borough (hectares) from 2001 to 2003	↑
3	Number of allotments sites in each borough	○
2	Area of derelict land in each borough	↓
18	Total area of wildlife sites identified in London	↑
37	Areas of deficiency in access to nature by borough, 2006	○
17	Mean trend for 26 bird species in London, the SE and E of England 1994 – 2005	↑

A full copy of this report can be downloaded from  
<http://www.london.gov.uk/mayor/environment/soereport.jsp>

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### Chinese

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### Vietnamese

Nếu bạn muốn có văn bản tài liệu này bằng ngôn ngữ của mình, hãy liên hệ theo số điện thoại hoặc địa chỉ dưới đây.

### Greek

Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος εγγράφου στη δική σας γλώσσα, παρακαλείστε να επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυδρομικά στην παρακάτω διεύθυνση.

### Turkish

Bu belgenin kendi dilinizde hazırlanmış bir nüshasını edinmek için, lütfen aşağıdaki telefon numarasını arayınız veya adrese başvurunuz.

### Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ:

### Hindi

यदि आप इस दस्तावेज की प्रति अपनी भाषा में चाहते हैं, तो कृपया निम्नलिखित नंबर पर फोन करें अथवा नीचे दिये गये पते पर संपर्क करें

### Bengali

আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলিপি (কপি) চান, তা হলে নীচের ফোন নম্বরে বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

### Urdu

اگر آپ اس دستاویز کی نقل اپنی زبان میں چاہتے ہیں، تو براہ کرم نیچے دئے گئے نمبر پر فون کریں یا دیتے گئے پتے پر رابطہ کریں

### Arabic

إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى الاتصال برقم الهاتف أو مراسلة العنوان أدناه

### Gujarati

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