Strategic Environmental Assessment of the Proposed Revisions to the Mayor’s Transport Strategy and the Mayor’s Air Quality Strategy to Introduce a Low Emission Zone

Environmental Report
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### TABLE OF CONTENTS

1. **INTRODUCTION** ............................................................... 2
2. **SEA SCOPE AND PROGRAMME** ..................................... 3
3. **THE TRANSPORT AND AIR QUALITY STRATEGIES** ....... 7
4. **THE STATE OF THE ENVIRONMENT** ............................. 11
5. **ASSESSMENT METHODOLOGY** ..................................... 19
6. **ALTERNATIVES** ............................................................. 20
7. **AIR** ............................................................................. 24
8. **HUMAN HEALTH** ........................................................... 51
9. **BIODIVERSITY, FLORA AND FAUNA** ......................... 63
10. **CLIMATE** ...................................................................... 68
11. **MATERIAL ASSETS** .................................................... 72
12. **CULTURAL HERITAGE** .................................................. 75
13. **LANDSCAPE / TOWNSCAPE** .................................... 78
14. **IMPLEMENTATION** ........................................................ 80
15. **ADDITIONAL INFORMATION** ....................................... 83
   
   **APPENDIX**
   
   1. **1 – CONTEXT REVIEW** .................................................. 84
   2. **2 – BASELINE INDICATORS** ......................................... 168
   3. **3 – CONSULTATION COMMENTS** ................................. 188
   4. **4 – MAPS** .................................................................. 195
1 INTRODUCTION

1.1 Background

1.1.1 Scott Wilson, with support from Air Quality Consultants, has been commissioned by Transport for London (TfL), on behalf of the Mayor of London, to undertake the Strategic Environmental Assessment (SEA) of the proposed revisions to the Mayor’s Transport Strategy and the Mayor’s Air Quality Strategy to introduce a Low Emission Zone (LEZ) in London.

1.2 Consultation on the proposed revisions and the Environmental Report

1.2.1 This report documents the findings from the SEA process so far and will be consulted on as part of the public and stakeholder consultation on the draft revisions to the Mayor’s Transport and Air Quality Strategies.

1.2.2 If the proposed revisions are published, then following their adoption an SEA Statement that meets the requirements of Regulation 16 of the SEA Regulations will be prepared. This statement will describe how environmental considerations have been integrated into the plan or programme, how the environmental report has been taken into account, how the responses of consultees have been taken into account, the reasons for choosing the plan or programme as published in the light of other reasonable alternatives and the measures that are to be taken to monitor the significant environmental effects of the implementation of the plan or programme.
2 SEA SCOPE AND PROGRAMME

2.1 Introduction

2.1.1 SEA is a process that takes place within a defined legal framework. This introduction is intended to provide a helpful overview of the framework but is not intended as a detailed, comprehensive or authoritative account of the legal framework.

2.2 Strategic Environmental Assessment

2.2.1 SEA involves the systematic identification and evaluation of the environmental effects of a strategic action (i.e. a plan or programme). In 2001, the European Council and Parliament legislated for SEA with the adoption of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the ‘SEA Directive’). The aim of the SEA Directive is “to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes, with a view to promoting sustainable development”.

2.2.2 The Directive was transposed in England by the Environmental Assessment of Plans and Programmes Regulations 2004 (the ‘SEA Regulations’), which entered force on 21st July 2004. The SEA Regulations apply (with some specific exceptions) to plans and programmes subject to preparation and/or adoption by a national, regional or local authority or prepared by an authority for adoption through a legislative procedure by Parliament or Government and are required by legislative, regulatory or administrative provisions. It also applies to modifications to these same plans and programmes, unless the modification is a minor one and is unlikely to have significant environmental effects.

2.2.3 In this instance the ‘plans and programmes’ in question are the proposed revision to the Mayor’s Transport Strategy and a similar proposed revision to the Mayor’s Air Quality Strategy. A formal view as to the need to undertake SEA for the Mayor’s Transport Strategy was requested of the statutory bodies¹. TfL has taken into account the views of the statutory bodies and the criteria for determining the likely significance of effects on the environment specified in the SEA Regulations and has made a formal determination that the proposed revisions to the Mayor’s Transport and Air Quality Strategies are likely to have significant environmental effects and therefore SEA is required.

2.2.4 The Regulations require plan-making authorities to carry out an environmental assessment of the plan or programme and to:

- Prepare an ‘Environmental Report’ on the likely significant effects on the environment of the draft plan and alternatives to it
- Consult the statutory bodies on the scope and level of detail of the Environmental Report
- Consult the public on the draft plan or programme and the accompanying Environmental Report
- Take into account the Environmental Report and the results of consultation in decision-making
- Provide information following adoption of the plan or programme showing how the environmental assessment affected its evolution (known as the ‘SEA Statement’).

2.3 The SEA Programme

2.3.1 Guidance for plan-making authorities has been published by the Office of the Deputy Prime Minister and by the Department for Transport. These advocate a five-stage (A to E) approach to undertaking SEA (see Figure 1).

2.3.2 To facilitate consultation with the statutory bodies a Scoping Report was prepared. This set out the findings of Stage A, which includes gathering an evidence base, and Stage B, dealing with alternatives to the plan or programme. Consultation on the scope of the SEA took place during October and November 2005 and consideration has been given to the comments from the consultees. The actions taken in response are listed in Appendix 3.

2.3.3 TfL consulted the Environment Agency, English Nature, English Heritage and the Countryside Agency on the scope of the SEA. This was a statutory duty imposed by the SEA Regulations.

2.3.4 In addition, TfL consulted the London Assembly, the Greater London Authority functional bodies, the London Health Commission and the London Sustainable Development Commission as part of the formal consultation on the proposed revisions.

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2.3.5 Stage C, the environmental assessment of the revisions to the Transport and Air Quality Strategies, took place between November 2005 and January 2006. This Environmental Report is the output from Stage C and it is now being made available for public consultation, as required by the SEA Regulations.

2.4 The SEA Scope

2.4.1 The environmental assessment focuses principally on the following topics, where significant effects are thought to be likely:

- Air
- Human health.

2.4.2 In addition the assessment also gives brief consideration of the following topics, where significant effects are not thought likely but may occur:

- Biodiversity (including flora and fauna)
- Climate
2.4.3 As far as practical, the assessment considers significant effects in quantitative terms within the Greater London Authority area. Significant effects beyond this geographical area are possible but are not feasible to model with any degree of certainty. Accordingly these potential effects are dealt with in qualitative terms.
3 THE TRANSPORT AND AIR QUALITY STRATEGIES

3.1 Introduction

3.1.1 The SEA Regulations state that the Environmental Report must provide:

“An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes” (SEA Regulations, Schedule 2)

3.1.2 The Mayor’s Transport Strategy and Air Quality Strategy are discussed below, along with an explanation of the proposed revisions to introduce a Low Emission Zone.

3.2 The Mayor’s Transport and Air Quality Strategies

3.2.1 The Greater London Authority (GLA) was established in 2000. It covers the area of the 33 London Boroughs, including the Corporation of London. It is made up of a directly elected executive Mayor and a separately elected Assembly, which primarily exercises scrutiny functions.

3.2.2 The GLA Act requires the Mayor to produce a number of strategies covering topics such as air quality, biodiversity, culture, economic development, noise, transport, spatial development and waste.

3.2.3 The Mayor's Transport Strategy sets the policy framework for transport in London. The integrated set of measures spans a broad ten-year horizon (2001-2011), and longer for some major projects, covering all means of transport and the management of the capital's road system. It provides the context for the more detailed plans of the various implementation agencies, particularly TfL, the London Boroughs and the Strategic Rail Authority, and sets the priorities that these plans need to address.

3.2.4 To support the vision of London as an exemplary sustainable world city (see Figure 2), the Mayor’s Transport Strategy seeks to increase the capacity, reliability, efficiency, quality and integration of the transport system to provide the world-class system that the capital needs. This improved transport system will be developed with sufficient capacity to facilitate sustainable population and employment growth, and support London’s growing prosperity. It will support regeneration and promote social inclusion, allowing the benefits of prosperity to be experienced more widely. It will also contribute to improving the quality of London’s environment and reducing energy consumption. It will ensure that all Londoners and London’s transport users benefit from a better quality of life, greater safety and security, and improved health.
London – an exemplary sustainable world city

The Mayor’s vision is to develop London as an exemplary sustainable world city based on:

- Strong and diverse economic growth
- Social inclusivity to allow all Londoners to share in London’s future success
- Fundamental improvements in environmental management and use of resources.

Achieving the vision of London as an exemplary sustainable world city will make London:

- A prosperous city: in which all share in the benefits of wealth created in London’s dynamic economy
- A city for people: a liveable city of safe, attractive streets, where goods and services are within easy reach and where everyone feels safe and secure
- An accessible city: with fast, efficient and comfortable means of transport, and access to affordable homes, education and training, health, leisure and recreation
- A fair city: showing tolerance and abolishing all forms of discrimination, where neighbourhoods and communities have a say in their futures
- A green city: making efficient use of natural resources and energy, respecting the natural world and wildlife, using to the full the varied patterns of open space, eco-friendly design and construction methods, recycling waste and creating new ‘green industries’.

Figure 2. The Mayor’s vision for London

3.2.5 The Mayor’s Air Quality Strategy sets out policies and proposals to achieve the Mayor’s aim of improving London’s air quality to the point where pollution no longer poses a significant risk to human health, although it is recognised that this will be a very challenging task. The policies and proposals focus on air pollution arising from road transport, other modes of transport, industrial sources, construction and fires, and energy and heating. The Strategy also sets out the Mayor’s statutory duties for meeting air quality objectives adopted by the National Government following tough, legally-binding air quality targets set by the European Union.

3.3 The London Low Emission Zone

3.3.1 On behalf of the Mayor, TfL is consulting on draft revisions to the Mayor’s Transport and Air Quality Strategies. The proposed revisions seek to take
forward the Mayor’s commitment made in his 2004 election manifesto subject to consultation, to designate the whole of Greater London a Low Emission Zone. The LEZ would deter the most polluting, diesel-engined vehicles from driving in the Greater London area. The objectives of the proposed LEZ are outlined in Figure 3.

### The Objectives of the Proposed Low Emission Zone

The Mayor has a statutory duty to take steps towards achieving Government air quality objectives (and EU limit values) for seven locally managed pollutants in London. The objectives of the proposed LEZ are two-fold:

- To move London closer to achieving the national statutory air quality objectives (and EU limit values) for 2010, in support of the Government’s Air Quality Strategy (AQS) and the EU’s Air Quality Framework and Daughter Directives
- To improve the health and quality of life of people who live and work in London, through improving air quality.

#### Figure 3. The Objectives of the Proposed Low Emission Zone

3.3.2 The LEZ would cover the whole of Greater London, excluding motorways. The LEZ would target the reduction of small particles (PM$_{10}$) and oxides of nitrogen (NO$_X$), as these are thought to have the greatest impact on human health\(^4\). In order to drive within the LEZ without charge, vehicles would have to comply with certain emissions standards (known as Euro standards). Non-compliant vehicles could still drive within the LEZ but their owners would have to pay a charge in order to do so.

3.3.3 The LEZ core option would apply to Heavy Goods Vehicles (HGVs) over 3.5 tonnes, along with coaches and buses. From 2008 compliant vehicles would have to meet the Euro III standard for PM$_{10}$ only. From 2010 this standard would be tightened to Euro IV for PM$_{10}$.

3.3.4 TfL is currently assessing the feasibility of extending the standard to Euro IV for both PM$_{10}$ and NO$_X$ in 2010 to further reduce nitrogen dioxide emissions. This is referred to as the core plus NO$_X$ option.

3.3.5 The proposed LEZ could potentially be extended to cover diesel-engined Light Goods Vehicles (LGVs) from 2010, subject to further analysis of the costs and benefits of doing this. This is known as the core plus LGV option.

3.3.6 Private cars would not be affected by the LEZ as, while cars account for a relatively high proportion of NO$_X$ and PM$_{10}$ emissions in Greater London, the

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\(^4\) London Low Emission Zone Feasibility Study Phase II Final Report, AEA Technology (2003). The health impacts of the nitrogen oxides are through the nitrogen dioxide component. NO$_X$ = nitric oxide (NO) + nitrogen dioxide (NO$_2$). Nitric oxide is converted to nitrogen dioxide mostly by reaction with ozone (O$_3$)
cost of administering and enforcing a scheme that included cars would be prohibitive. Polluting cars can be targeted more cost effectively through other initiatives to discourage car use, such as the congestion charge or by improving the accessibility and reliability of London’s public transport. The Mayor’s Taxi Emissions Strategy will require all London licensed taxis to meet Euro III emission standards for PM$_{10}$ and NO$_X$ by mid 2008.

3.3.7 TfL has drafted proposed revisions to the Mayor’s Transport Strategy to make provision for the LEZ. At the same time, it is proposed that the Mayor’s Air Quality Strategy, which already makes reference to the LEZ, will be updated to include details of the LEZ.
4 THE STATE OF THE ENVIRONMENT

4.1 Introduction

4.1.1 The SEA Regulations state that the Environmental Report must provide information on:

“The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme”

“The environmental characteristics of areas likely to be significantly affected” (SEA Regulations, Schedule 2).

4.1.2 This requirement is addressed in Section 4.2 below, and draws on the baseline data collected for the Scoping Report.

4.1.3 The Regulations also state that the Environmental Report must provide information on:

“Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC [the ‘Birds Directive’] and 92/43/EEC [the ‘Habitats Directive’]” (SEA Regulations, Schedule 2).

4.1.4 This requirement is addressed in Section 4.3 below.

4.1.5 Finally, the SEA Regulations state that the Environmental Report must provide information on:

“The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation”.

4.1.6 This requirement is addressed in Section 4.4 below.

4.2 Current and likely future state of the environment

Population

4.2.1 London is one of the most culturally diverse cities in the world. Population stood at 7,188,000 in 2001 and is projected to rise to 7,470,000 in 2011 and 7,736,000 by 2021 (Source: National Statistics). According to GLA figures, approximately one third of Londoners are from black and minority ethnic
communities, including some white minority groups such as Irish, Cypriot and Turkish communities. A significant growth in black and minority ethnic communities is projected to 2021.

Human health

4.2.2 There are wide variations in health across London. The London Health Commission has developed a set of ten indicators designed to monitor trends in determinants of health, inequalities in health and health outcomes. Measurements for all seven determinants of health, including the level of air pollution (PM$_{10}$ and NO$_2$), have improved over the last decade. However, one of the key determinants, the unemployment rate, has recently risen in London while continuing to fall over England and Wales as a whole (see Appendix 2). Health is likely to continue to improve in the absence of the LEZ, as demonstrated by increases in life expectancy and decreases in infant mortality, although self assessed health status has remained fairly constant.$^5$

Air

4.2.3 Road transport emissions are the principal source of air pollution in London, although a significant proportion of the pollution originates outside the capital. Levels of pollution can be dramatically affected by prevailing weather conditions and this makes year-on-year comparisons potentially misleading. Nevertheless air pollution has improved significantly for most of the pollutants covered by the National Air Quality Strategy: carbon monoxide, lead, sulphur dioxide, benzene, polycyclic aromatic hydrocarbons and 1,3-butadiene.

4.2.4 NO$_X$ and PM$_{10}$ continue to exceed the national statutory air quality objectives, as evidenced by the number of authorities with Air Quality Management Areas declared to tackle them (see Appendix 2). The major source of these pollutants is road transport and some vehicles create considerably more pollution than others, depending on type, model, age and use of vehicle. New vehicles are much cleaner than a decade ago, but older, poorly maintained and poorly driven vehicles of all types create a disproportionate amount of pollution.

4.2.5 Ever improving technical standards mean that the emissions of NO$_X$ and PM$_{10}$ per vehicle are steadily decreasing and this trend is likely to continue. However progress towards the national statutory air quality objectives for these two pollutants will be slower in the absence of the LEZ than with the LEZ in place.

Biodiversity, flora and fauna

4.2.6 Thirty-three sites in London are designated Sites of Special Scientific Interest (SSSI), or nationally important wildlife habitats. Three of these also carry an internationally important designation (Special Protection Area or Special Area of Conservation). The Mayor has identified a further 103 Sites of Metropolitan Importance for Nature Conservation that cover about ten percent of the Greater London area. The River Thames, at 23 square kilometres, is London’s largest single wildlife site.

4.2.7 As shown in Appendix 2, a higher percentage of SSSIs in London are currently at unfavourable status than elsewhere in the country. The reasons for unfavourable status vary from site to site but, in at least one case, poor air quality is a contributory factor, through excess nitrogen deposition, which can affect plants directly and also over-enrich the fertility of naturally infertile habitats, such as heathland. The impact of air pollution is hard to disaggregate from other impacts but it is likely that an improvement in air quality will benefit some threatened habitats in London. Any improvement is likely to be smaller without the proposed LEZ but it is not easy to demonstrate this conclusively.

4.2.8 London is home to a number of nationally and internationally rare species, including, in particular, important populations of the stag beetle (*Lucanus cervus*), the black redstart (*Phoenicurus ochruros*) and the greater yellow-rattle (*Rhinanthus serotinus*). Air quality is not thought to be an issue for these species.

4.2.9 The Government’s favoured sustainable development indicator of biodiversity is the population of native bird species. This is considered to be a good indicator of the broad state of biodiversity because birds occupy a wide range of habitats and tend to be near the top of the food chain. In addition, plenty of data has been collected enabling a trend to be discerned. The status of this indicator in London is mixed, with some species showing significant increases in numbers and others declining dramatically (see Appendix 2). It is likely that this mixed trend will continue without regard to future improvements in air quality.

Climatic factors

4.2.10 Over the last decade a scientific consensus has emerged that attributes observed increases in global temperatures to carbon dioxide emissions resulting from the combustion of fossil fuels. Emissions of carbon dioxide cannot be measured directly but instead are estimated from figures for energy consumption. There are a number of other gases emitted to the atmosphere in much smaller quantities that also have important global warming potential and these are measured as the equivalent amount of...
carbon dioxide.

4.2.11 Nationally the emissions of greenhouse gases are thought to be declining in line with the target established by the Kyoto Protocol, although there is evidence that this trend may have stalled recently (see Appendix 2). Total greenhouse gas emissions in London 1999-2000 were estimated at 40,323,777 tonnes (carbon dioxide equivalent). The trend is not likely to be significantly different in the absence of the proposed LEZ.

Material assets

4.2.12 The baseline indicator on unfit dwellings has been included in Appendix 2 because the London Health Commission have identified unfit dwellings as a determinant of ill health. The indicator shows that the number of unfit dwellings in London has declined overall since 2001. Buildings of any kind are prone to long-term damage from sulphur and nitrogen in the atmosphere but this effect will not be significant in the period covered by this study, whether the LEZ is implemented or not.

Cultural heritage

4.2.13 London possesses a rich cultural heritage. The United Nations has designated four World Heritage Sites within the capital: Greenwich, Westminster Abbey, the Tower of London and the Royal Botanic Gardens in Kew. There are approximately 40,000 Listed Buildings which are considered to be of national importance and 700 of these are considered ‘at risk’, although it is not known if any of these have been damaged by air pollution (see Appendix 2).

4.2.14 Buildings of architectural or historic importance are more vulnerable to the long-term damage from air pollution described above, in part because damage may already have accumulated over time but also because threshold for significant impacts would be lower, owing to the venerability of such structures.

Landscape and townscape

4.2.15 Greater London covers an area of approximately 1,590 square kilometres or about 614 square miles. Perhaps surprisingly, only around a third of this area is covered by buildings and made ground, such as roads and car parks. The rest consists of green spaces and water. As well as parks, gardens, playing fields and golf courses, there are private gardens, which alone cover nearly a fifth of the land area. The outskirts include substantial down, wood and heathland habitats. Some of the open land in Outer London is used for agriculture.

4.2.16 The Green Belt surrounds London but also occupies nearly 35,000 hectares
inside the GLA boundary. About 15,000 hectares is Metropolitan Open Land, such as Richmond Park, Wimbledon Common, Hampstead Heath, Hackney Marshes, Oxleas Wood, Hyde Park and Mitcham Common (see Appendix 2).

4.2.17 Compared with the other English regions, London has a relatively small amount of vacant and derelict land available for re-development. A total of 960 hectares of vacant and derelict land existed in 2004 (Source: ODPM), although this figure is likely to decline steadily because government planning policy encourages re-use of previously developed land wherever possible. This trend is not likely to be affected by the LEZ proposals.

**Soil**

4.2.18 Quantified data for environmental impacts on soils is very difficult to obtain. Appendix 2 includes indicators showing the percentage of sensitive habitats exceeding critical loads for acidification and eutrophication, effects that are in part a consequence of combustion of fossil fuels. Critical loads are thresholds above which the deposition of pollutants risks significant harm to the environment.

4.2.19 It is thought that about a third of the UK’s surface area is sensitive to acid deposition, and a third to eutrophication. In recent years the percentage of sensitive habitat area where acid deposited exceeded critical loads has fallen very significantly, but the area exceeding critical loads for eutrophying pollutants has risen slightly. It is not clear if this pattern has been repeated in London but it is likely that the area exceeding critical loads will be higher in the absence of the proposed LEZ, but not significantly so.

**Water**

4.2.20 The Environment Agency is responsible for monitoring the health of rivers by looking at the water quality. This is achieved through a process called the General Quality Assessment (GQA) and separate assessments are produced for chemical and biological quality. Chemical quality is defined by measurements of dissolved oxygen, biochemical oxygen demand and total ammonia taken from samples. Biological quality is based on the populations of macroinvertebrates, or small animals, that are found in the stream.

4.2.21 Water quality, particularly biological water quality, is generally worse in London than elsewhere in the country (see Appendix 2). Although water pollution can occur through atmospheric deposition, sources of water pollution are many and London’s water quality is not likely to be significantly influenced by improvements in air quality.
4.3 Relevant environmental problems

4.3.1 During the preparation of the Scoping Report, a context review of plans and programmes related to the proposed revisions of the Mayor’s Air Quality and Transport Strategies was conducted. This context review is presented below in Appendix 1. As discussed previously, a baseline data collection exercise was also undertaken during the scoping phase, and this data is presented in Appendix 2.

4.3.2 Relevant environmental problems were identified from the context review and the baseline data. These problems are summarised below, by environmental topic.

Air

- Progress against national statutory air quality objectives is insufficient and further steps need to be taken in order to meet them
- Street maintenance creates delays and congestion on the road network, leading to increased emissions of pollutants and higher levels of traffic noise
- There is a need to promote modal shift from private car use to public transport in order to address congestion, pollution and greenhouse gas emissions
- There is a need to promote integration of land use planning and transport planning in order to reduce the need to travel and, hence, congestion, pollution and greenhouse gas emissions.

Human health

- Long-term exposure to air pollutants is associated with a number of adverse health impacts and Londoners are exposed to the highest levels of air pollution in the UK
- Health and life expectancy of Londoners is relatively poor (in comparison to other regions and the rest of England).

Biodiversity, flora and fauna

- There are pressures on biodiversity from air pollution, in particular from nitrogen deposition
- Sites of Special Scientific Interest are in poor condition relative to those in the South East and East of England; London appears unlikely to achieve the target of having 95% of the SSSI area in favourable or recovering condition by 2010.
Climate

- There is an urgent need to reduce greenhouse gas emissions and this is a national priority.
- Air transport, particularly from Heathrow Airport, makes a significant contribution to pollution and greenhouse gas emissions.
- There is a need to use less energy and increase the energy efficiency of buildings and vehicles in order to conserve resources, limit pollution and reduce emissions of greenhouse gases.

Cultural heritage

- Atmospheric pollution contributes to the deterioration of the fabric of historic buildings.

4.4 Relevant environmental protection objectives

4.4.1 The following environmental protection objectives have been identified as relevant to the proposed revisions of the Mayor’s Transport and Air Quality Strategies.

Air

Statutory air quality objectives for nitrogen dioxide (NO₂) from the National Air Quality Strategy (in Regulations):

- 40 µg/m³ (annual mean) by 31st December 2005
- 200 µg/m³ (one hour mean) not to be exceeded more than 18 times per year by 31st December 2005.

Statutory air quality objectives for small particles (PM₁₀) from the National Air Quality Strategy (in Regulations):

- 40 µg/m³ (annual mean) by 31st December 2004
- 50 µg/m³ (twenty-four hour mean) not to be exceeded more than 35 times per year by 31st December 2004.

Provisional air quality objectives for small particles (PM₁₀) from the National Air Quality Strategy (for London):

- 23 µg/m³ (annual mean) by 31st December 2010
- 50 µg/m³ (twenty-four hour mean) not to be exceeded more than 10 times per year by 31st December 2010.

Aspirational air quality target for small particles (PM₁₀) from the National Air Quality Strategy (for London):
• 20 µg/m³ (annual mean) by 2015.

Statutory emissions ceiling for UK emissions of oxides of nitrogen (NOₓ) from Directive 2001/81/EC:

• 1,167,000 tonnes NOₓ by 2010.

**Human health**

• No relevant objectives identified.

**Biodiversity, flora and fauna**

World Summit on Sustainable Development commitment repeated in UK Sustainable Development Strategy:

• Achieve by 2010 a significant reduction in the current rate of loss of biological diversity.

DEFRA Public Service Agreement 3:

• Target of 95% of the SSSI area in favourable or recovering condition by 2010.

**Climate**

Kyoto Protocol target for the UK:

• Cut emissions of greenhouse gases by 12.5% below 1990 levels by 2008-2012.

UK Climate Change Programme targets:

• Reduce CO₂ emissions to 20% below 1990 levels by 2010
• Reduce CO₂ emissions to 60% below 1990 levels by 2050.
5 ASSESSMENT METHODOLOGY

5.1 Introduction

5.1.1 The methodologies to assess the impacts of the proposed revisions to the Mayor’s Transport Strategy and the Mayor’s Air Quality Strategy are given in the individual technical chapters, below. The SEA Regulations require the Environmental Report to discuss:

“The likely significant effects on the environment … on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors” (SEA Regulations, Schedule 2).

5.1.2 As discussed in Section 4.5, above, the Scoping Report identified the SEA Topics where significant effects were thought likely. The assessment was carried out for each SEA Topic with reference to relevant environmental problems identified through a review of related policies, plans, programmes, strategies and initiatives and an analysis of baseline data from a range of sources.

5.2 Significance

5.2.1 Whether an effect is considered likely to be significant will depend on whether it has a material impact on an SEA Topic. The effects may be judged according to:

- Probability, duration, frequency and reversibility of the effects
- Cumulative nature of the effects
- Trans-boundary nature of the effects
- Risks to human health or the environment
- Magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)
- Value and vulnerability of the area likely to be affected due to: special natural characteristics or cultural heritage; exceeded environmental quality standards or limit values; intensive land-use; or effects on areas having a recognised national, community or international protection status.
6 ALTERNATIVES

6.1 Introduction

6.1.1 The SEA Regulations require that:

“The report shall identify, describe and evaluate the likely significant effects on the environment of (a) implementing the plan or programme; and (b) reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme.” (SEA Regulations, Regulation 12).

6.1.2 This chapter describes approaches that TfL have considered might meet their objectives, but which have been dismissed during the development of the preferred LEZ option and identifies those alternatives that remain in further development of the plan.

6.2 Approaches other than a Low Emission Zone

6.2.1 The 2003 LEZ Feasibility Study concluded that a London LEZ was a suitable approach to helping achieve air quality objectives in London. Other measures within the Mayor’s control such as traffic reduction measures, workplace parking levies or parking fines are not practical means to achieving the same reductions in road transport related emissions as the proposed LEZ.

6.2.2 Since the publication of the Feasibility Study, TfL has reviewed alternative ways at both the national and local levels for addressing road transport related emissions. The conclusion of this work is, in the context of current government initiatives, that alternatives are unlikely to deliver the same level of benefits in the same or shorter timeframe. Alternative methods to a LEZ for achieving road transport related emission reductions that have been considered are summarised below. These include:

- **Relying on the natural vehicle replacement cycle and tighter Euro standards to produce the same air quality improvements as the proposed LEZ.** Work undertaken by TfL estimates that the introduction of a London LEZ would achieve reductions in PM$_{10}$ emissions in 2010 that would only have been achieved four to five years later under the natural vehicle replacement cycle.

- **Higher levels of Vehicle Excise Duty (VED) for more polluting vehicles.** Government has indicated it has no plans to support the introduction of differential VED rates depending on PM$_{10}$ and NO$_{X}$ emission levels.
Grants for retro-fitting emissions reducing equipment to vehicles. Government has indicated that it intends to phase out grants and, potentially, the Reduced Pollution Certificate (RPC) scheme that encourages operators to clean up their vehicles in exchange for a VED rebate. European Union rules limit any environment-related grant to 30 per cent of the capital cost of the equipment. Funding grants for operators to this level is unlikely to be cost-effective, and unlikely to provide adequate incentives to operators to clean up their vehicles.

Scraping of older vehicles. The issues relating to the provision of incentives for scrapping older vehicles are similar to those relating to grants. There would also be a number of problems in targeting financial assistance to the large number of UK vehicles that operate in London but are registered outside.

Roadside emissions testing. A pilot programme has established that roadside emissions tests are fairly insensitive and therefore the numbers of vehicles detected would be quite small. The assessment of the pilot concluded that a roadside emissions testing programme would contribute very little to moving London towards the national statutory air quality objectives for PM$_{10}$ and NO$_x$.

6.2.3 On the basis of TfL’s analysis and review, and in the absence of national initiatives, the proposed LEZ scheme represents the most effective option for achieving reductions of the most harmful road transport generated emissions between 2008 and 2015. The alternatives described above are not considered further in this Environmental Report.

6.3 Variant LEZ scenarios

6.3.1 The LEZ core option is one among a number of configurations; others considered and not preferred by TfL include:

- A variant with a boundary at the M25. This option would maximise the health and air quality benefits of the LEZ, but would be difficult to implement and enforce, requiring the agreement of non-London local authorities to include parts of their areas in the LEZ. TfL also has no powers over roads maintained by the Highways Agency without the consent of the Secretary of State.

- A variant applying to the Transport for London Road Network (TLRN) only. TfL could introduce the LEZ under a Traffic Regulation Order on its own roads, and by so doing some Boroughs might be encouraged to join TfL in implementing the LEZ. However, there could be significant dis-benefits in terms of increased pollution and
congestion from vehicles diverting off the TLRN to avoid the LEZ, and the amount of signage required could contribute to visual clutter.

- **A variant covering the existing Central London Congestion Charging Scheme area and the area of the western extension.** It is estimated that the air quality and health benefits gained from a scheme covering this small area of London would be very small and would not address a substantial number of the areas in London that are projected to exceed statutory air quality objectives.

- **A variant that extends controls to private cars.** There has been careful consideration of whether to include private cars in the LEZ. Whilst cars account for a relatively high proportion of NO\textsubscript{X} and PM\textsubscript{10} emissions in Greater London, the cost of administering and enforcing a scheme that included cars would be substantial. Fitting pollution abatement equipment to several hundred thousand cars would also be impractical.

6.3.2 These variants are not considered further in this Environmental Report.
6.4 Proposals to be assessed in the Environmental Report

6.4.1 In addition to “business as usual” (no Low Emission Zone) three options are considered:

- The **LEZ core option** – this would commence in 2008, and include HGVs, buses and coaches. The emission standard would be Euro III for PM$_{10}$ from 2008 and Euro IV for PM$_{10}$ from 2010.

- The additional **core plus NO$_X$ option** - this would be the same as the LEZ core option, but with emission standards of Euro IV for both PM$_{10}$ and NO$_X$ from 2010.

- The additional **core plus LGV option** – again, this would be the same as the LEZ core option but would include LGVs from 2010. The standard for LGVs would be a rolling age-based limit of 10 years.
7 AIR

7.1 Introduction

7.1.1 The air quality assessment is based on the modelling study carried out by King’s College Environmental Research Group (ERG) on behalf of TfL. The study has defined baseline conditions in 2008, 2010, 2013 and 2015 assuming a Low Emission Zone is not implemented. This incorporates national and international air quality measures that are currently in place or have already been agreed, in particular measures to reduce emissions from new vehicles, as well as local measures such as congestion charging, bus fleet upgrades and the taxi emissions strategy. It does not cover congestion charging or other measures being introduced as part of the local authority action plans.

7.1.2 The proposed LEZ is evaluated against these baseline projections. The LEZ is designed to bring forward the already agreed national and international measures to reduce emissions from heavy goods vehicles, and remove the more polluting vehicles from London’s roads. The modelling covers a range of potential LEZ scenarios, however, the focus of this assessment is on the LEZ core option and the two additional options described in section 6.4 above.

7.1.3 Future conditions have been predicted for the LEZ core option which envisages the following emissions standards being set for the LEZ:

- 2008 Euro III for PM_{10} only
- 2010 Euro IV for PM_{10} only

7.1.4 The core plus NO_{X} option for which the LEZ standards would be as follows:

- 2008 Euro III for PM10 only
- 2010 Euro IV for PM_{10} and NO_{X}

7.1.5 The core plus LGV option for which the LEZ standards would be as follows:

- 2008 Euro III for PM10 only (for HGVs, buses and coaches)
- 2010 Euro IV for PM_{10} only + 10 yr rolling age limit for LGVs

7.2 Methodology

7.2.1 The assessment reported here as part of the SEA is based upon the modelling studies carried out by ERG on behalf of TfL. The ERG traffic-air quality model is based on a GIS system including a link-based road network.
For every link, emissions are calculated taking into account traffic flows, link length and running speed, and are fed into the air quality model to calculate the dispersion of the various pollutants. The modelling has been carried out using 2002 meteorology. This is known to be an average pollution year. Had 2003 been used, which was a high pollution year, due to the lower wind speeds and more frequent winds from continental Europe, then absolute concentrations predicted for future years would have been higher, and the differences between the baseline and LEZ scenarios would have been somewhat greater.

7.2.2 Emissions are modelled for oxides of nitrogen (NO\textsubscript{x}), nitrogen dioxide (NO\textsubscript{2}), carbon dioxide (CO\textsubscript{2}), Volatile Organic Compounds (VOC) and small particles (PM\textsubscript{10} and PM\textsubscript{2.5}). The resultant air quality impacts are modelled for NO\textsubscript{x}, NO\textsubscript{2}, and PM\textsubscript{10}, both in terms of the predicted levels and predicted changes in concentration.

7.2.3 Progress towards the achievement of the national statutory air quality objectives in London is determined from the calculations of predicted levels and changes in concentration of NO\textsubscript{2} and PM\textsubscript{10}.

7.3 Baseline

7.3.1 The baseline emissions of nitrogen oxides and PM\textsubscript{10} from traffic in London are set out in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Oxides (tonnes)</th>
<th>PM\textsubscript{10} (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>34700</td>
<td>2400</td>
</tr>
<tr>
<td>2010</td>
<td>27600</td>
<td>2150</td>
</tr>
</tbody>
</table>

7.3.2 These translate into the baseline concentrations as shown in Figures 4 and 5 for nitrogen dioxide in 2008 and 2010 respectively and Figures 6 and 7 for PM\textsubscript{10} in 2008 and 2010 respectively.

7.3.3 The following features are apparent in the baseline data:

**Nitrogen dioxide (Figures 4 and 5)**

- Concentrations are generally higher in central London
- The highest concentrations are alongside the main roads throughout Greater London, i.e. within about 20-30 m, although the pattern differs to that for PM\textsubscript{10}, e.g. the M4 in from the west stands out for nitrogen dioxide, but not for PM\textsubscript{10}

Transport for London
January 2006
The influence of the M25 can be seen where sections run close to or within the Greater London boundary, e.g. to the northeast of London. Concentrations decrease significantly between 2008 and 2010. Concentrations remain above the annual mean objective and limit value of 40 μg/m³ at some locations in both 2008 and 2010 (the limit value applies from 2010). These are mainly alongside main roads, but in 2008 exceedences are also evident at many locations in central London. In 2010 areas with nitrogen dioxide concentrations above the objective and limit value are more limited, and mostly found within central London. There are however, some areas within central London where concentrations are just below the objective. Heathrow airport also stands out as a nitrogen dioxide hotspot, but the high concentrations are known to be mostly within the airport boundary.

PM_{10} (Figures 6 and 7)

Concentrations are highest alongside the main roads throughout Greater London, and at background locations, i.e. away from the immediate influence of a main road, in central London. The most significant roads are not though the same as those for nitrogen dioxide, e.g. the north circular stands out more for PM_{10} than for nitrogen dioxide, while the M25 stands out less. The statutory 2004 annual mean objective and 2005 annual mean limit value, both at 40 μg/m³, are not exceeded in 2008 or 2010 (Figures 6 & 7). The statutory 2004 24-hour objective and 2005 limit value, both at no more than 35 days above 50 μg/m³, are exceeded close to sections of a number of main roads, including the North Circular, the A4, the A12 the A40 and the A102. More stringent provisional objectives have been set for 2010. The provisional annual mean objective of 23 μg/m³ will be exceeded alongside many main roads, especially the North Circular, the A12, the A102, as well as in central London.

[Technical Note: the following air quality maps are calculated with micrograms of pollutants per cubic metre (μg/m³). The term equates to 1 millionth of a gram of PM_{10} or NO₂ per cubic metre of air. The concentration levels are presented using a detailed area map that shows the figures for every 20m x 20m grid.]
Figure 4. Baseline annual mean nitrogen dioxide in Greater London in 2008 (Source: ERG)
Figure 5. Baseline annual mean nitrogen dioxide in Greater London in 2010 (Source: ERG)
Figure 6. Baseline annual mean PM$_{10}$ in Greater London in 2008 (Source: ERG)
Figure 7. Baseline annual mean PM$_{10}$ in Greater London in 2010 (Source: ERG)
7.3.4 A measure of the current (2004/05) air quality across London is also provided by the number of Local Authorities who have declared Air Quality Management Areas (AQMAs). Traffic related AQMAs have been declared by 30 of the 33 local authorities, all of which cover nitrogen dioxide, with 26 also covering PM$_{10}$ (although in at least one case the PM$_{10}$ source is primarily re-suspended dust from industrial operations and not exhaust gases).

![Figure 8. London Boroughs with declared Air Quality Management Areas for NO$_2$ only (blue), PM$_{10}$ only (green) or NO$_2$ and PM$_{10}$ (red). Note that some cover a whole Borough while others are restricted to smaller areas within a Borough.](image)

7.4 Projected impacts of the proposed LEZ on Emissions

7.4.1 The projected impact of the proposed LEZ is calculated first in terms of the change in emissions of nitrogen oxides and PM$_{10}$ from motor vehicles, with this information then being used to calculate the change in overall concentrations of nitrogen dioxide and PM$_{10}$ present in the air. As there are other sources of these pollutants, both in London and outside that contribute to concentrations found within London, the changes in concentrations are proportionally smaller than the changes in emissions from traffic. The
effects of these changes on people then depend on the number of people exposed to these changes in concentration. It is the change in this population exposure that drives the health impact calculations. The section below examines the changes in emissions, and the following section assesses the changes in concentrations. The health impacts are covered in Chapter 8 of this report.

**LEZ core option**

7.4.2 The ERG modelling study has been used to calculate total emissions of a number of pollutants from road traffic within Greater London. As the focus of the air quality impacts is on nitrogen dioxide and PM$_{10}$, this section will just deal with nitrogen oxides and PM$_{10}$ emissions. The results are summarised in Table 2. The baseline emissions and those with the core option for the LEZ are illustrated in Figures 9 and 10. The greatest reductions brought about by the proposed LEZ are for PM$_{10}$, as is to be expected, given that the core option deals directly with PM$_{10}$ (NOx emissions are also reduced but as a result of operators buying cleaner vehicles to comply with the PM$_{10}$ standard.)

*Table 2. Emissions of nitrogen oxides and total PM$_{10}$ (exhaust plus tyre and brake wear) from traffic in Greater London with and without LEZ core option (Source: ERG)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Oxides (tonnes)</th>
<th>PM$_{10}$ (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>With LEZ</td>
</tr>
<tr>
<td>2008</td>
<td>34700</td>
<td>33600</td>
</tr>
<tr>
<td>2010</td>
<td>27600</td>
<td>26400</td>
</tr>
</tbody>
</table>
Dashed line with arrows shows improvement brought forward by 5 years.
Figure 9. Emissions of nitrogen oxides from traffic in Greater London (te per annum) with base case and LEZ core option, 2008 to 2015
Figure 10. Emissions of PM$_{10}$ from traffic in Greater London (te per annum) with base case and LEZ core option, 2008 to 2015 (Source: ERG)
The projected percentage reductions brought about by the proposed LEZ in each of the two scenario years are set out in Table 3, broken down by area of Greater London. It can be seen that the greatest reductions occur in outer London. Also the reductions are greatest in 2010, when the Euro IV emission limits are introduced, but reduce thereafter. This is because the effect of the LEZ is to bring forward measures that are already programmed to be introduced. Examination of Figures 9 and 10, together with the values in Table 2, shows that in 2010 the LEZ would bring forward the reduction in traffic emissions of PM$_{10}$ by around 5 years, i.e. the 2015 emissions without the LEZ would be achieved in 2010 with the LEZ. The LEZ core option would bring forward the reduction in traffic emissions of nitrogen oxides by about half a year. The percentage reductions in traffic emissions are greater for PM$_{10}$ than nitrogen oxides.

### Core plus NO$_X$ option

The results for the scenario with a tighter target for nitrogen oxides in 2010 are set out in Table 4 below.

### Table 3. Percentage reduction in emissions of nitrogen oxides and total PM$_{10}$ (exhaust plus tyre and brake wear) from traffic in Greater London with LEZ core option, for different zones (Source: ERG). Percentages are relative to the baseline in each of the years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Oxides (%)</th>
<th>PM$_{10}$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central</td>
<td>Inner</td>
</tr>
</tbody>
</table>

### Table 4. Percentage reduction in emissions of nitrogen oxides and total PM$_{10}$ (exhaust plus tyre and brake wear) from traffic in Greater London with option of nitrogen oxides controls as well as PM$_{10}$ (Source: ERG). Percentages are relative to the baseline in each of the years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Oxides (%)</th>
<th>PM$_{10}$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central</td>
<td>Inner</td>
</tr>
<tr>
<td>2013</td>
<td>-4.70</td>
<td>-5.41</td>
</tr>
<tr>
<td>2015</td>
<td>-2.60</td>
<td>-2.88</td>
</tr>
</tbody>
</table>

The core plus NO$_X$ option clearly has a significant impact on nitrogen oxides emissions, more than tripling the reduction (compare Table 3 with Table 2). There is a slightly greater reduction in PM$_{10}$ emissions with this option.
Core plus LGV option

7.4.6 The core plus LGV option has a slightly greater impact on the reduction in PM$_{10}$ emissions, but much smaller impact on nitrogen oxides emissions than the core plus NO$_X$ option (compare Table 5 with Table 4).

Table 5. Percentage reduction in emissions of nitrogen oxides and total PM$_{10}$ (exhaust plus tyre and brake wear) from traffic in Greater London with option of LGV controls as well as PM$_{10}$ (Source: ERG). Percentages are relative to the baseline in each of the years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Oxides (%)</th>
<th>PM$_{10}$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central</td>
<td>Inner</td>
</tr>
<tr>
<td>2010</td>
<td>-3.93</td>
<td>-4.60</td>
</tr>
<tr>
<td>2015</td>
<td>-1.29</td>
<td>-1.48</td>
</tr>
</tbody>
</table>

7.5 Impact of the LEZ on Concentrations

7.5.1 The health benefits of the proposed LEZ are related to the changes in concentrations of pollutants present in the air. This section examines the changes in air quality concentrations brought about by the changes in emissions, both in absolute terms and in relation to exceedences of the air quality objectives and limit values.

LEZ core option

7.5.2 Concentrations have been calculated for the 2008 and 2010 scenarios. The changes in both nitrogen dioxide and PM$_{10}$, due to the core option of the LEZ, are illustrated in Figures 11-16.
Figure 11. Differences in annual mean nitrogen dioxide in Greater London in 2008 due to LEZ core option (Source: ERG)
Figure 12. Differences in annual mean nitrogen dioxide in Greater London in 2010 due to LEZ core option (Source: ERG)
Figure 13. Differences in annual mean PM$_{10}$ in Greater London in 2008 due to LEZ core option (Source: ERG)
Figure 14. Differences in annual mean PM$_{10}$ in Greater London in 2010 due to LEZ core option (Source: ERG)
Figure 15. Differences in number of days with PM\textsubscript{10} above 50 µg/m\textsuperscript{3} in Greater London in 2008 due to LEZ core option
Figure 16. Differences in number of days with PM$_{10}$ above 50 µg/m$^3$ in Greater London in 2010 due to LEZ core option.
The reductions in nitrogen dioxide concentrations with the LEZ core option are concentrated in central London, but also extend out along a number of road corridors. These are not necessarily the same road corridors that show up in the total concentrations maps. This will reflect the proportions of HGVs on the roads. Key routes likely to be affected by the proposed LEZ are the North Circular, the M25 and to the east of London the A13 and the A102 north-south route through Blackwall Tunnel. An important observation is the benefit around the M25. A significant proportion of the health benefits is thus likely to occur outside of Greater London.

The reductions in annual mean nitrogen dioxide are mostly in the 0 to 0.25 μg/m\(^3\) range, rising to 0.5 to 1.0 μg/m\(^3\) in central London alongside main roads. They are greater in 2010, when it is proposed that the LEZ is based on the Euro IV standard, than 2008. Table 6 shows the impact on both the area within Greater London predicted to be above the annual mean air quality objective and limit value of 40 μg/m\(^3\) and the number of people exposed above this level. The core option reduces these measures by around 13% and 11% respectively in 2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nitrogen Dioxide</th>
<th></th>
<th>PM(_{10})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area &gt;40 ug/m(^3)</td>
<td>Population &gt;40 ug/m(^3)</td>
<td>Area &gt;23 ug/m(^3)</td>
</tr>
<tr>
<td></td>
<td>Km(^2)</td>
<td>% reduction</td>
<td>1,000s</td>
</tr>
<tr>
<td>2008 baseline</td>
<td>80</td>
<td>627</td>
<td>98</td>
</tr>
<tr>
<td>2008 + LEZ core option</td>
<td>75</td>
<td>6.3</td>
<td>576</td>
</tr>
<tr>
<td>2010 baseline</td>
<td>30</td>
<td>194</td>
<td>37</td>
</tr>
<tr>
<td>2010 + LEZ core option</td>
<td>26</td>
<td>13.3</td>
<td>172</td>
</tr>
<tr>
<td>2010 + LEZ NO(_x) variant</td>
<td>21</td>
<td>30.0</td>
<td>135</td>
</tr>
<tr>
<td>2010 + LEZ LGV variant</td>
<td>25</td>
<td>16.7</td>
<td>173</td>
</tr>
</tbody>
</table>

The reductions in annual mean PM\(_{10}\) concentrations are less apparent than those for nitrogen dioxide (compare Figures 13 and 14 with Figures 11 and 12), even though the percentage reductions in emissions from road traffic are larger (Table 3). This is due to the greater role of other sources of PM\(_{10}\), including natural sources outside London. The change in number of days above 50 μg/m\(^3\) is confined to locations alongside main roads (Figures 15 and 16).

Table 6 shows a more significant impact on both the area within Greater London predicted to be above the provisional 2010 annual mean air quality objective of 23 μg/m\(^3\) of particulate and the number of people exposed to
emissions above this level. The reductions are 18.4% and 18.8% respectively in 2010.
Figure 17. Differences in annual mean NO$_2$ in Greater London in 2010 due to LEZ under the core plus NO$_X$ option (Source: ERG)
Other options

7.5.7 The NO\textsubscript{X} variant, which applies Euro IV limits to nitrogen oxides, as well as to PM\textsubscript{10}, has a greater impact on the reduction in nitrogen dioxide concentrations (Figure 17, compared with Figure 12). A much larger area would see concentrations reduced by more than 1 µg/m\textsuperscript{3}. These results further emphasise the importance of the reductions along the M25 corridor, which are largely outside Greater London and hence not shown in Figure 19.

7.5.8 The spatial pattern for nitrogen dioxide reductions for the core plus LGV option, and the spatial patterns for PM\textsubscript{10} with both the NO\textsubscript{X} and LGV options, are similar to those for the core option and are therefore not shown. The impacts of these options on both the area and the number of people within Greater London predicted to be above the objectives and limit values are set out in Table 6. The alternative of the core plus NO\textsubscript{X} option is more beneficial for both nitrogen dioxide and PM\textsubscript{10} than the core plus LGV option.

Impacts outside London

7.5.9 It is estimated that the introduction of cleaner vehicles travelling in and outside London would result in an overall positive net impact outside the proposed boundary. The 2005 operator survey carried out by TfL suggested that some operators said they would transfer their non-compliant vehicles out of the Greater London area. However these would be counterbalanced by the number of cleaner vehicles on the roads as a result of the LEZ. Using calculations based on vehicle mileage and place of registration, TfL has estimated that the LEZ would bring about an equivalent of around 6,000 additional cleaner vehicles being used outside London. Thus the London LEZ would generate a net gain in reduced vehicle emissions outside London.

7.6 Effects

7.6.1 The LEZ core option would reduce emission exposure for people who live and work in and visit London and the area immediately outside, along the M25 corridor. It would also bring London closer to achieving the statutory air quality objectives and EU limit values. These two achievements thus meet the objectives of the proposed LEZ (see Figure 3, Chapter 3 above).

7.6.2 The core plus NO\textsubscript{X} option produces much greater benefits for nitrogen dioxide, with emissions of nitrogen oxides from traffic decreasing by around 12%, compared with around 4% with the core option in 2010 (Tables 3 and 4). This option has very little impact on PM\textsubscript{10} emissions.

7.6.3 The core plus LGV option produces much smaller benefits in terms of
nitrogen oxides, around 5% in 2010 compared with around 4% with the core option and only marginally greater benefits in terms of PM$_{10}$, with a reduction of around 10% in 2010, compared with around 8% under the core option (Tables 4 and 5).

7.6.4 The spatial extent of the improvements is large, extending to all 1,590 km$^2$ and a population of 7.2 million residents within Greater London. Of this area, 37 km$^2$ is predicted to be above the annual mean PM$_{10}$ provisional objective in 2010, with the LEZ core option reducing this to 30 km$^2$, while the population above this objective in 2010 reduces from 253,000 to 206,000 with the LEZ core option (Table 6). Additional improvements are predicted outside Greater London, especially along the M25 corridor.

7.6.5 The LEZ is designed to bring forward air quality improvements. In the early years, the core option would bring forward the nitrogen dioxide improvements by about 6 months, but would be more significant for PM$_{10}$, especially with the 2010 adoption of Euro IV emission controls, bringing forward the improvements by about 5 years.

7.6.6 There are issues relating to the possible increase in primary nitrogen dioxide from vehicles fitted with particle traps that could give rise to adverse impacts for nitrogen dioxide, which need to be considered in more detail – see mitigation section.

7.7 Mitigation

7.7.1 The scheme itself is a mitigation measure, designed to improve air quality in London. The modelling shows that this would be the case, thus in principle no additional measures are required.

7.7.2 For emissions of NO$_X$, the overall trend in London is one of gradual reduction. Although levels of NO$_X$ and NO$_2$ are declining overall, it has recently been observed at some roadside monitoring stations that the proportion of NO$_X$ emitted as NO$_2$ has been rising. There are thought to be several reasons for this, including congested driving conditions, higher numbers of diesel engined vehicles and also the fitting of some types of particulate filters which generate NO$_2$ as part of their cleaning process.

7.7.3 TfL has undertaken a series of vehicle emissions tests to investigate this issue further and will continue to seek expert input to interpret the available data to ensure the best available estimates of the NO$_X$ / NO$_2$ ratio are incorporated into forecasts of LEZ impacts. This will be taken account of in developing the LEZ procedures and ongoing monitoring.
7.8 Conclusions

7.8.1 The air quality impacts arising from the proposed LEZ have been assessed using the results of the modelling study for the whole of Greater London carried out by ERG. These results show that the LEZ core option would give rise to reduced emissions of nitrogen oxides and \( \text{PM}_{10} \), especially in the early years, which would translate to reduced exposure to nitrogen dioxide and \( \text{PM}_{10} \), especially alongside main roads, as well as background areas away from roads especially in central London, where concentrations are highest. The LEZ core option would also contribute to meeting the statutory national air quality objectives and EU limit values. In 2010, there would be a reduction of about 11% in the area of London and number of people exposed to annual mean nitrogen dioxide levels above the objective and limit value, with this increasing to an 18-19% reduction in the case of \( \text{PM}_{10} \) (Table 5). The proposals thus meet one of the key objectives of the proposed LEZ (see Figure 3, Chapter 3 above).

7.8.2 The core plus NO\(_x\) option would bring about much larger reductions in exposure to nitrogen dioxide, further contributing to meeting the annual mean objective and limit value. This option would make little difference to the \( \text{PM}_{10} \) reductions predicted with the core option. The core plus LGV option would, on the other hand, give rise to only marginal benefits compared with the core option.

7.8.3 An important component of the improvement occurs along the M25, a large part of which is outside Greater London. These improvements add to the health benefits calculated for the concentration reductions within Greater London.

7.8.4 There are issues relating to the possible increase in primary nitrogen dioxide emissions with the introduction of some types of particle trap. TfL will monitor this issue should the LEZ be implemented.
8 HUMAN HEALTH

8.1 Introduction

8.1.1 This assessment of the impacts of the LEZ on human health is largely based on the work undertaken by AEA Technology (AEA) in quantifying the impacts of the proposed LEZ, and upon the Health Impact Assessment (HIA) of the LEZ carried out by Environmental Resources Management (ERM).

8.1.2 Figure 18 provides definitions for the key terms used in this chapter.

8.2 Methodology

8.2.1 Short and long-term exposure to air pollutants, in particular PM$_{10}$, is associated with a number of adverse health impacts, including heart conditions and lung diseases, such as asthma, bronchitis and emphysema. Changes in the levels of concentrations of both PM$_{10}$ and NO$_2$ found in the atmosphere have been modelled by ERG.

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**Terminology**

This health analysis depends on statistical techniques to predict impacts and this makes use of some terminology that may not be easy to understand. The following key terms are used in this chapter:

**Acute health effects** - acute exposure (usually known as acute health effects or effects of daily variations in pollution); are the ways that air pollution on a given day or adjacent days can affect the health of people on the same day or on the days immediately following. These effects are usually expressed in terms of the number of health effects each year.

**Deaths brought forward** - deaths brought forward attributed to air pollution. This is to signify that people whose deaths are brought forward by acute higher air pollution almost certainly have serious pre-existing cardio-respiratory disease and so in at least some of these cases, the actual loss of life is likely to be small: the death might have occurred within the same year and, for some, may only be brought forward by a few days.

**Chronic health effects** - chronic exposure (longer-term, possibly lifetime) and health effects (usually known as chronic health effects).

**Years of life lost** - studies of chronic exposure give results in terms of changes to mortality hazards (age-specific death rates) per unit change in pollution. For impact estimation, this change in mortality hazards can be most reliably represented by using life table methods to express mortality impacts in the target population in terms of changes in life expectancy and/or in total life-years gained for given reductions in air pollution.

**Morbidity** - acute exposures (from observation of response to day-to-day variations in ambient PM) on the cardiovascular system as well as the respiratory system, leading to a range of possible health impacts from minor cases (such as lost time at work) through to hospital admission.

---

*Figure 18. Health analysis terminology (Source: AEA Technology)*
8.2.2 The direct health benefits (i.e. those resulting from improved air quality) of the proposed LEZ have been estimated, using the predicted air quality data produced by ERG and high-resolution population data. The three variants of the LEZ, described above in Chapter 3, have been assessed:

- The LEZ core option
- The core plus NOX option
- The core plus LGV option

8.2.3 The change in impacts (i.e. benefits) is measured in terms of the number of health outcomes using methods employed in previous studies by the Department for Environment, Food and Rural Affairs (DEFRA) and Clean Air For Europe (CAFE). Figure 19 provides further information about these two methodologies.

### Health benefits methodologies – two approaches

The most recently published Government analysis method for air quality benefits in the UK was presented in the Air Quality Evaluation Report published by DEFRA in 2005. This method was used by AEA as the primary analysis methodology. It should be noted that the method is currently being updated by DEFRA as part of the Air Quality Review.

The DEFRA approach quantifies the role of particles in short-term (acute) pollution effects – including numbers of deaths brought forward and respiratory hospital admissions avoided; and long-term (chronic) effects – including mortality measured as the change in life expectancy (years of life lost), i.e. the aggregate change in statistical life expectancy across the population. A conservative approach to estimating health impacts is adopted in the DEFRA methodology and this increases the confidence in the predictions made using the method, however it is likely to result in an underestimate of the benefits.

Work has progressed in Europe on a similar method for air quality benefits analysis as part of the European Commission’s CAFE air quality programme, to undertake the benefits analysis for the future air quality in Europe. This approach attempts to estimate the total cost of air pollution and covers a more comprehensive range of impacts, although at the cost of greater uncertainty in the impact predictions.

The CAFE method has significant differences to that used by DEFRA, for instance it subsumes acute, or short-term mortality within the numbers for chronic, or long-term mortality. Two alternative approaches are used for quantifying the long-term exposure effects. The first is similar to the DEFRA analysis above and quantifies the years of life lost, although it uses different hazard rates. The second converts these years of life lost into premature deaths. The CAFE method also quantifies the specific infant mortality effects (from short-term air pollution exposure). These are additive to the chronic mortality effects.

The CAFE method was used by AEA to supplement the findings of the DEFRA analysis.

**Figure 19. Air quality health benefits analysis methodologies (Source: ERM)**

---

8 The Air Quality Evaluation (DEFRA, 2005) and CAFE Benefits Analysis (2005).
8.2.4 The main health outcomes quantified in this chapter are:

- Short-term (acute) pollution effects – premature mortality, or deaths brought forward, and respiratory hospital admissions
- Long-term (chronic) effects - changes in life expectancy, known as chronic mortality

8.2.5 Additional impacts are also quantified, including the likely occurrence of certain non-fatal health episodes, such as bronchitis, admissions to hospital and restricted activity owing to poor air quality.

8.2.6 Impacts are calculated using the general relationship: \( \text{impact} = \text{pollution} \times \text{people at risk} \times \text{response function} \). Pollution is expressed in terms of concentration. The response function varies with impact category and is defined by the Government’s Committee on the Medical Effects of Air Pollutants (COMEAP). For example, the response function for the percentage change in rate of deaths brought forward from a change in concentration of PM\(_{10}\) is 0.075\% per \( \mu g / m^3 \).

8.2.7 Additional work to investigate how the LEZ might influence health outcomes within the Greater London Area was undertaken by ERM. The findings were published in the HIA and are summarised below.

8.3 Baseline

8.3.1 Statistics show that Londoners have worse than UK average health. Life expectancy at birth was 75.9 years for males and 80.8 years for females in 2002. This compares unfavourably with figures in excess of 77 and 81 years respectively in the two neighbouring regions, East of England and South East. Similarly, self-assessed health in London is worse than in the East of England and the South East (see Appendix 3).

8.3.2 The London Health Commission has selected a set of indicators to monitor the factors known to have the biggest impact on public health (known as the key determinants of health). Air pollution, as measured by levels of NO\(_2\) and PM\(_{10}\), is included among these indicators. There were 445,747 admissions to hospital for acute and chronic respiratory conditions in 2000/01, although the proportion of these admissions attributable to air pollution is not known. This represents a decline in admissions of around 4% since 1997/98 (see Appendix 3).

8.3.3 The impact of PM\(_{10}\) on health can be estimated using the DEFRA and CAFE methodologies. Tables 7 and 8 show the predicted mortality outcomes attributable to PM\(_{10}\) without the LEZ in place. Note these are alternative approaches for quantifying the same health effects - they should not be
added together.

Table 7. Health impacts of PM$_{10}$ without the LEZ, using DEFRA methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact (attributable to PM$_{10}$ only)</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All PM$_{10}$</td>
<td>Traffic PM$_{10}$</td>
</tr>
<tr>
<td>Acute mortality (deaths brought forward)</td>
<td>908</td>
<td>227</td>
</tr>
<tr>
<td>Chronic mortality (years of life lost)</td>
<td>52,499</td>
<td>13,125</td>
</tr>
<tr>
<td>Respiratory hospital admissions (cases / year)</td>
<td>959</td>
<td>240</td>
</tr>
</tbody>
</table>

8.3.4 Table 7 shows that small particles from traffic sources are likely to be responsible for 227 deaths brought forward in 2008, a figure that would decline to 216 deaths brought forward in 2010. These would almost certainly be people with serious pre-existing cardio-respiratory disease and so in at least some of these cases, the actual loss of life is likely to be small: the death might have occurred within the same year and, for some, may only be brought forward by a few days.

8.3.5 Similarly the DEFRA method predicts that traffic-sourced PM$_{10}$ will be responsible for 13,125 years of life lost in 2008 and a further 12,473 years of life lost in 2010. This represents the impact in terms of shortened lives across the whole population of London as a result of long-term, possibly whole-life, exposure to air pollution.

Table 8. Health impacts of PM$_{10}$ without the LEZ, using CAFE methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact (attributable to PM$_{10}$ only)</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All PM$_{10}$</td>
<td>Traffic PM$_{10}$</td>
</tr>
<tr>
<td>Chronic mortality (years of life lost)</td>
<td>58,762</td>
<td>14,690</td>
</tr>
<tr>
<td>Chronic mortality (premature deaths)</td>
<td>8,036</td>
<td>2,009</td>
</tr>
<tr>
<td>Infant mortality (premature deaths)</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

8.3.6 The CAFE methodology predicts somewhat higher chronic mortality from traffic-sourced PM$_{10}$ without the proposed LEZ. This method also predicts the impact in terms of the number of premature deaths from long-term PM$_{10}$ exposure$^9$. (Note that these figures should not be compared with the deaths brought forward quoted in Table 8, which refer to acute mortality from short-term exposure to PM$_{10}$.)

$^9$ The European Commission has estimated – in the recent CAFE programme - that each person in the UK will lose, on average, 7 months of life from current air pollution levels.
8.3.7 Table 9 shows the predicted morbidity outcomes, using the CAFE methodology (the DEFRA methodology does not predict these outcomes), attributable to PM\textsubscript{10} without the LEZ in place. These are measures of not-fatal health impacts. Again the figures clearly show that the adverse health impacts resulting from exposure to PM\textsubscript{10} are forecast to decline in the absence of the proposed LEZ.

*Table 9. Morbidity impacts of PM\textsubscript{10} without the LEZ, using CAFE methodology (Source: AEA Technology)*

<table>
<thead>
<tr>
<th>Impact (attributable to PM\textsubscript{10} only)</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>All PM\textsubscript{10}</td>
<td>2,856</td>
<td>2,714</td>
</tr>
<tr>
<td>Traffic PM\textsubscript{10}</td>
<td>714</td>
<td>679</td>
</tr>
<tr>
<td>Chronic bronchitis (cases / year)</td>
<td>690</td>
<td>656</td>
</tr>
<tr>
<td>Cardiac hospital admissions (cases / year)</td>
<td>1,119</td>
<td>1,063</td>
</tr>
<tr>
<td>Respiratory hospital admissions (cases / year)</td>
<td>5,023,380</td>
<td>4,773,953</td>
</tr>
<tr>
<td>Adult respiratory symptoms (days / year)</td>
<td>3,660,153</td>
<td>3,478,414</td>
</tr>
<tr>
<td>Child respiratory symptoms (days / year)</td>
<td>490,680</td>
<td>466,316</td>
</tr>
<tr>
<td>Adult respiratory medicine use (days / year)</td>
<td>354,208</td>
<td>336,621</td>
</tr>
<tr>
<td>Restricted activity (days / year)</td>
<td>8,850,723</td>
<td>8,411,255</td>
</tr>
</tbody>
</table>

8.4 Impacts

8.4.1 The introduction of the proposed LEZ would have a variety of potential impacts on human health. These include direct impacts from improvements to air quality and indirect impacts resulting from changes to economic factors.

8.4.2 The direct impacts from air quality improvements vary depending on which methodology is used to predict them. This is because the methodologies use different approaches to quantify the benefits (see Figure 17). For clarity the impacts predicted by each methodology are discussed separately.

*Impacts predicted using the DEFRA methodology*

8.4.3 The health benefits predicted by the DEFRA methodology are given in Table 10, below. The health benefits relate to the direct impacts of PM\textsubscript{10} concentrations only. This is consistent with Department of Health and European Commission guidance, which does not recommend the quantification of direct health impacts of NO\textsubscript{2}.
8.4.4 Therefore this method suggests that between 42 and 52 deaths brought forward resulting from high concentrations of PM$_{10}$, would be avoided by the LEZ. These are acute deaths that would have otherwise occurred within a short period of time without the LEZ, and, although the method cannot precisely define this period, most of the acute deaths would be likely to occur within the 2008 – 2015 time span.

8.4.5 Similarly between 2,435 and 3,005 additional years of life would be lost without the LEZ. These years of life lost represent the effects of long-term exposure to higher levels of PM$_{10}$ and could mean many people living a little longer, or a smaller number of people living quite a lot longer. The method cannot give detailed evidence on when these years of life lost would have occurred, though recent analysis indicates that most of the years of life lost would have occurred within the time-scale of the overall LEZ scheme.

8.4.6 Admissions to hospital for severe respiratory conditions would reduce by between 41 and 51 cases per year over the life of the scheme, depending on the option implemented, according to estimates using the DEFRA method.

8.4.7 The human health impacts outside of London are given in Table 11, below.

Table 11. Total mortality benefits outside of London from reductions in PM$_{10}$ using DEFRA methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact</th>
<th>LEZ core option</th>
<th>Core plus NO$_X$ option</th>
<th>Core plus LGV option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in acute mortality (deaths</td>
<td>2.2</td>
<td>5.1</td>
<td>2.6</td>
</tr>
<tr>
<td>brought forward)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in chronic mortality (years of life lost)</td>
<td>124</td>
<td>296</td>
<td>152</td>
</tr>
<tr>
<td>Reduction in respiratory hospital admissions (cases)</td>
<td>2.1</td>
<td>5.0</td>
<td>2.6</td>
</tr>
</tbody>
</table>

8.4.8 As might be expected the impacts of the proposed LEZ on the health of people outside of London is much smaller. One interesting feature is that the benefits of the core plus NO$_X$ option are higher than the core plus LGV option, which is the reverse of the situation in London. Baseline figures, for expected mortality without the LEZ, are not available.
Impacts predicted using the CAFE methodology

8.4.9 The CAFE methodology, described above, predicts the health impacts in Table 12.

Table 12. Total mortality benefits from reductions in PM$_{10}$ using CAFE methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact</th>
<th>LEZ core option</th>
<th>Core plus NO$_x$ option</th>
<th>Core plus LGV option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in chronic mortality (years of life lost)</td>
<td>1,658</td>
<td>1,731</td>
<td>2,085</td>
</tr>
<tr>
<td>Reduction in chronic mortality (premature deaths)</td>
<td>227</td>
<td>237</td>
<td>285</td>
</tr>
<tr>
<td>Reduction in infant mortality (premature deaths)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>

8.4.10 The CAFE methodology predicts that between 227 and 285 premature deaths would be avoided, or between 1,658 and 2,085 years of life saved, by the LEZ. One way of looking at this is that the impact of the LEZ would be for several hundred people to live (on average) about three years longer.

8.4.11 The United States Environmental Protection Agency$^{10}$ has considered that 30% of the effect of reduced pollution on life expectancy occurs immediately (within a year) following exposure, 50% of the effect is distributed over years 2-5; and the remaining 20% is distributed over years 6-20. This would mean that most of the benefits attributable to the LEZ would occur within the study period.

Table 13. Morbidity benefits from reductions in PM$_{10}$ due to the LEZ core option, using CAFE methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic bronchitis (cases / year)</td>
<td>9.4</td>
<td>15.4</td>
</tr>
<tr>
<td>Cardiac hospital admissions (cases / year)</td>
<td>2.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Respiratory hospital admissions (cases / year)</td>
<td>3.7</td>
<td>6.0</td>
</tr>
<tr>
<td>Adult respiratory symptoms (days / year)</td>
<td>16,598</td>
<td>27,019</td>
</tr>
<tr>
<td>Child respiratory symptoms (days / year)</td>
<td>12,093</td>
<td>19,687</td>
</tr>
<tr>
<td>Adult respiratory medicine use (days / year)</td>
<td>1,621</td>
<td>2,639</td>
</tr>
<tr>
<td>Child respiratory medicine use (days / year)</td>
<td>1,170</td>
<td>1,905</td>
</tr>
<tr>
<td>Restricted activity (days / year)</td>
<td>29,243</td>
<td>47,606</td>
</tr>
</tbody>
</table>

$^{10}$ Various studies on the costs and benefits of the US Clean Air Act (for example, see http://www.epa.gov/sab/pdf/council_hes_background_info_092104.pdf)
8.4.12 The CAFE method considers a wider range of health impacts resulting from PM$_{10}$ pollution, examining the likely consequences for annual morbidity in 2008 and 2010, as shown in Tables 13-15.

8.4.13 Table 13 shows that the direct health benefits from reductions in PM$_{10}$ increase over time. A comparison with the baseline morbidity impacts from PM$_{10}$ given in Table 9 demonstrates that the impact of the LEZ core option in 2008 and 2010 is very small (around 0.3% and 0.6% respectively) as a proportion of morbidity resulting from all PM$_{10}$. However the impact is somewhat greater (about 1.3% in 2008 and 2.2% in 2010 for all categories) when compared with PM$_{10}$ from traffic sources only.

*Table 14. Morbidity benefits from reductions in PM$_{10}$ due to the NO$_X$ variant, using CAFE methodology (Source: AEA Technology)*

<table>
<thead>
<tr>
<th>Impact</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic bronchitis (cases / year)</td>
<td>9.4</td>
<td>16.2</td>
</tr>
<tr>
<td>Cardiac hospital admissions (cases / year)</td>
<td>2.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Respiratory hospital admissions (cases / year)</td>
<td>3.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Adult respiratory symptoms (days / year)</td>
<td>16,598</td>
<td>28,486</td>
</tr>
<tr>
<td>Child respiratory symptoms (days / year)</td>
<td>12,093</td>
<td>20,756</td>
</tr>
<tr>
<td>Adult respiratory medicine use (days / year)</td>
<td>1,621</td>
<td>2,783</td>
</tr>
<tr>
<td>Child respiratory medicine use (days / year)</td>
<td>1,170</td>
<td>2,009</td>
</tr>
<tr>
<td>Restricted activity (days / year)</td>
<td>29,243</td>
<td>50,190</td>
</tr>
</tbody>
</table>

*Table 15. Morbidity benefits from reductions in PM$_{10}$ due to the core plus LGV option, using CAFE methodology (Source: AEA Technology)*

<table>
<thead>
<tr>
<th>Impact</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic bronchitis (cases / year)</td>
<td>9.4</td>
<td>18.3</td>
</tr>
<tr>
<td>Cardiac hospital admissions (cases / year)</td>
<td>2.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Respiratory hospital admissions (cases / year)</td>
<td>3.7</td>
<td>7.2</td>
</tr>
<tr>
<td>Adult respiratory symptoms (days / year)</td>
<td>16,598</td>
<td>32,123</td>
</tr>
<tr>
<td>Child respiratory symptoms (days / year)</td>
<td>12,093</td>
<td>23,406</td>
</tr>
<tr>
<td>Adult respiratory medicine use (days / year)</td>
<td>1,621</td>
<td>3,138</td>
</tr>
<tr>
<td>Child respiratory medicine use (days / year)</td>
<td>1,170</td>
<td>2,265</td>
</tr>
<tr>
<td>Restricted activity (days / year)</td>
<td>29,243</td>
<td>56,598</td>
</tr>
</tbody>
</table>
8.4.14 Table 14 demonstrates that the core plus NO\textsubscript{X} option would reduce annual morbidity from PM\textsubscript{10} by a larger amount than the LEZ core option alone, while Table 15 shows that the core plus LGV option has the greatest health benefits in terms of reducing morbidity from PM\textsubscript{10}. The core plus NO\textsubscript{X} option would see a reduction of about 1.3\% in 2008 and 2.4\% in 2010 in morbidity from PM\textsubscript{10} from traffic sources only. The equivalent figures for the LGV option are 1.3\% and 2.7\%.

8.4.15 Table 16 shows the aggregated impact of the LEZ options using the CAFE analysis, for the whole of the study period (2008-2015).

*Table 16. Total morbidity benefits from reductions in PM\textsubscript{10} using CAFE methodology (Source: AEA Technology)*

<table>
<thead>
<tr>
<th>Impact</th>
<th>LEZ core option</th>
<th>Core plus NO\textsubscript{X} option</th>
<th>Core plus LGV option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in chronic bronchitis (cases)</td>
<td>80.6</td>
<td>84.1</td>
<td>101.3</td>
</tr>
<tr>
<td>Reduction in cardiac hospital admissions (cases)</td>
<td>19.5</td>
<td>20.3</td>
<td>24.5</td>
</tr>
<tr>
<td>Reduction in respiratory hospital admissions (cases)</td>
<td>31.6</td>
<td>33.0</td>
<td>39.7</td>
</tr>
<tr>
<td>Reduction in adult respiratory symptoms (days)</td>
<td>141,735</td>
<td>147,951</td>
<td>178,240</td>
</tr>
<tr>
<td>Reduction in child respiratory symptoms (days)</td>
<td>103,272</td>
<td>107,801</td>
<td>129,870</td>
</tr>
<tr>
<td>Reduction in adult respiratory medicine use (days)</td>
<td>13,845</td>
<td>14,452</td>
<td>17,410</td>
</tr>
<tr>
<td>Reduction in child respiratory medicine use (days)</td>
<td>9,994</td>
<td>10,432</td>
<td>12,568</td>
</tr>
<tr>
<td>Reduction in restricted activity (days)</td>
<td>249,725</td>
<td>260,676</td>
<td>314,042</td>
</tr>
</tbody>
</table>

8.4.16 The CAFE approach predicts between 31 and 39 hospital admissions for respiratory conditions resulting from concentrations of PM\textsubscript{10} would be avoided between 2008 and 2015 under the various LEZ options. Proportional reductions in cardiac admissions would be expected and there would be a lower incidence of chronic bronchitis.

8.4.17 The CAFE analysis also indicates that considerable reductions in respiratory symptoms and in the use of medicines for respiratory problems would be expected annually with the LEZ in place. Likewise persons suffering restricted activity because of poor air quality would benefit from the LEZ.

8.4.18 The CAFE method predicts that total mortality outside of London would be affected as shown in Table 17.
### Table 17. Total mortality benefits outside of London from reductions in PM$_{10}$ using CAFE methodology (Source: AEA Technology)

<table>
<thead>
<tr>
<th>Impact</th>
<th>LEZ core option</th>
<th>Core plus NO$_X$ option</th>
<th>Core plus LGV option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in chronic mortality (years of life lost)</td>
<td>234</td>
<td>557</td>
<td>286</td>
</tr>
<tr>
<td>Reduction in chronic mortality (premature deaths)</td>
<td>11.4</td>
<td>27.1</td>
<td>13.9</td>
</tr>
<tr>
<td>Reduction in infant mortality (premature deaths)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

8.4.19 The CAFE method confirms the DEFRA method findings that the benefits of the core plus NO$_X$ option are the highest of the options outside of London, and that the overall impact of all of the schemes would be small.

### 8.5 Effects

#### Direct health effects

8.5.1 The direct health effects of the LEZ core option include a reduction in the number of people dying early because of high concentrations of PM$_{10}$ and a general improvement in health of Londoners. In turn, this would mean fewer hospital admissions, lower demand for medicines and fewer days during which people in poor health find themselves restricted in activity.

8.5.2 The DEFRA approach suggests that largely during the 2008 – 2015 period some 45 premature deaths would be avoided from short-term PM$_{10}$ impacts (acute mortality), people who are likely to be in already poor health and may have died anyway within a year and perhaps within days. More significantly, both the CAFE and the DEFRA analyses indicate that premature mortality from longer-term PM$_{10}$ impacts (chronic mortality) would also be reduced. The effect of this impact would be to avoid 241 premature deaths according to the CAFE approach, possibly adding several years of life for some of these people.

8.5.3 Both the DEFRA and the CAFE methodologies demonstrate that the LGV variant results in the greatest reductions in mortality and morbidity (non-fatal, pollution-related illnesses) caused by high concentrations of PM$_{10}$ within Greater London. The DEFRA approach predicts that 55 premature deaths from short-term PM$_{10}$ impacts would be avoided, although again these lives may not be extended by very long. Both methodologies agree that there would be significant beneficial effects on chronic mortality from long-term impacts, with the CAFE method predicting 300 fewer people dying early from PM$_{10}$ pollution. Again, some of these people might live for several additional years.

8.5.4 The core plus NO$_X$ option is expected to result in the greatest decreases in direct NO$_2$ concentrations, however the health benefits associated with
reductions in NO₂ pollution would be largely experienced outside London. The health benefits in London fall between those of the LEZ core option and the LGV variant. The DEFRA methodology gives a figure of 47 fewer premature deaths from short-term PM₁₀ impacts and the CAFE methodology suggests 251 fewer premature deaths from long-term PM₁₀ impacts.

**Noise effects**

8.5.5 Noise effects on health are investigated in the HIA, which concluded that any noise benefits of the LEZ would be modest. This benefit is associated with small reductions in engine noise and not exhaust or transmission noise, or noise generated from the road surface.

8.5.6 A decrease of approximately 0.3dB(A) in central London and a 0.1dB(A) across London as a whole is projected. A figure of 3dB(A) is generally accepted as the threshold for significance for changes in ambient noise, therefore the noise effects of the LEZ options are not likely to be significant.

**Indirect health effects**

8.5.7 Employment and income are regarded as key determinants of health and influence a range of factors including access to housing, education, diet, lifestyle, coping skills, services and social networks. These are in turn key determinants for a range of physical and mental health impacts and ultimately health and well-being. Unemployment, poverty and inequality are strongly associated with illness and premature death, demonstrated by the Black Report¹¹ and more recently by the Acheson Report¹².

8.5.8 The cost of compliance with the LEZ may result in unemployment or loss of income for HGV, coach and bus operators affected by the core option, and for LGV operators under the core plus LGV option. However there are likely to be economic benefits in certain sectors: among vehicle manufacturers, resulting from a short-term increase in demand for new, compliant vehicles, for instance; or among mechanics, needed to fit particle filters to non-compliant vehicles.

8.5.9 Other potential health impacts include:

- A possible small reduction in road traffic accidents as a result of modernised fleets
- A potential improvement in a community’s perception of its environment
- A possible small increase in overall levels of physical activity.

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¹² Independent Inquiry into Inequalities in Health, Sir Donald Acheson, 1998
8.6 Mitigation

8.6.1 The effects of the LEZ options on human health are essentially beneficial and therefore no mitigation measures are proposed.

8.7 Conclusions

8.7.1 Both the DEFRA and the CAFE methodologies demonstrate that all of the LEZ options result in reductions in mortality and morbidity caused by high concentrations of PM$_{10}$ within Greater London.

8.7.2 The core plus LGV option results in the greatest improvements in measured health outcomes from PM$_{10}$ within Greater London.

8.7.3 The core plus NO$_X$ option is expected to result in the greatest decreases in direct NO$_2$ concentrations, however the health benefits associated with reductions in NO$_2$ pollution would be largely experienced outside Greater London.

8.7.4 The greatest benefit to human health is likely if the NO$_X$ or LGV options are adopted in 2010, or if both were adopted.
9 BIODIVERSITY, FLORA AND FAUNA

9.1 Introduction

9.1.1 The following chapter examines the likely impacts of the proposed revisions to the Mayor’s Air Quality and Transport Strategies on biodiversity, flora and fauna.

9.2 Methodology

9.2.1 There is currently no accepted method for relating biodiversity to air quality. Atmospheric nitrogen deposition represents a threat to naturally nutrient-poor plant communities. In the past, regulatory assessment of these impacts has focused on the critical loads approach, where estimated atmospheric deposition loads are compared with ‘critical loads’ below which environmental effects do not occur, according to present understanding. Hence, where exceedence occurs on nature conservation sites, ecological impacts are expected.

9.2.2 Critical loads are available for most UK habitats of nature conservation significance and are presently exceeded across London. The modelled future NO\textsubscript{X} levels are used to predict where improvements in biodiversity may be expected. This approach provides a risk assessment that can indicate the likelihood of future change on a large (supra-regional) scale.

9.2.3 However, there are limitations to applying the critical loads and levels approach to site-based assessment. Exceedence does not indicate whether changes are already occurring, nor does it provide a means of monitoring the extent of any actual change.

9.2.4 Although air pollution is likely to be a contributing factor to habitat degradation and consequently to the decline in some species, it is impossible to separate out air pollution from the range of factors influencing habitat quality or condition. Neglect or inappropriate management, and pressure from recreational use are likely to be much more significant influences on habitat quality at most sites of nature conservation importance within London (English Nature response to the SEA Scoping Report). For this reason no attempt is made to quantify impacts on individual sites.

9.3 Baseline

9.3.1 As described in Section 4.2, there are sites of international, national and metropolitan importance for nature conservation within London. At a local level, sites of borough and even local importance for nature conservation have been identified for most London Boroughs. Many of these sites support habitats that are known to be sensitive to air pollution, particularly the eutrophication and acidification that may result from nitrogen pollutants.
### Table 17. Sites of International Importance (‘European Sites’) in London

<table>
<thead>
<tr>
<th>Site</th>
<th>Reason for selection</th>
<th>Adversely effected by air pollution?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epping Forest Special Area of Conservation</td>
<td>Beech forests with holly, growing on acid soils, in a humid Atlantic climate; Northern Atlantic wet heaths with <em>Erica tetralix</em> and European dry heaths; and Stag Beetle</td>
<td>Yes: Epping Forest represents Atlantic acidophilous beech forests in the north-eastern part of the habitat’s UK range. Although the epiphytes at this site have declined, largely as a result of air pollution, it remains important for a range of rare species, including the moss <em>Zygodon forsteri</em>. The long history of pollarding, and resultant large number of veteran trees, ensures that the site is also rich in fungi and dead-wood invertebrates.</td>
</tr>
<tr>
<td>Wimbledon Common Special Area of Conservation</td>
<td>Northern Atlantic wet heaths with <em>Erica tetralix</em>; European dry heaths; and Stag Beetle</td>
<td>No</td>
</tr>
<tr>
<td>Richmond Park Special Area of Conservation</td>
<td>Stag Beetle</td>
<td>No</td>
</tr>
<tr>
<td>Lee Valley Special Protection Area</td>
<td>Waterfowl</td>
<td>No</td>
</tr>
<tr>
<td>South-West London Waterbodies Special Protection Area</td>
<td>Waterfowl</td>
<td>No</td>
</tr>
</tbody>
</table>

9.3.2 Table 17 (above) shows the sites of international importance (so-called ‘European Sites’) in London. It can be seen that Epping Forest is the only site currently identified as being adversely affected by air pollution. None of the SSSIs in London, other than Epping Forest, which is also a SSSI, are described as being affected by air pollution (Source: English Nature).

9.4 Impacts

9.4.1 The introduction of the LEZ core option is predicted to result in an overall reduction in levels of PM$_{10}$, while the option that introduces tighter NO$_X$ controls in 2010 would also reduce concentrations of NO$_X$ (see Chapter 7, above).

9.4.2 At high levels NO$_X$ can be directly toxic to higher plants. Nitrous oxides also contribute to wet and dry deposition of nitrogen, causing eutrophication of naturally nitrogen-limited terrestrial and aquatic ecosystems. Such eutrophication may result in the degradation of semi-natural habitats and the loss of species of nature conservation significance.
9.4.3 Nitrogen deposition can also result in perturbation of ecosystems through acidification. Furthermore, nitrogen oxides are one of the precursors for photochemical ozone formation; this is of relevance because ozone is toxic to plants in relatively low concentrations.

9.4.4 Studies along the A31 in Hampshire showed an effect on heathland vegetation up to 200m from the dual carriageway. This was attributed mostly to the effect of NO\textsubscript{X} but the effect of de-icing salts and heavy metals was also acknowledged\textsuperscript{13}.

9.4.5 The critical load for NO\textsubscript{X} for UK habitats is given as 30g NO\textsubscript{X} (as NO\textsubscript{2}) m\textsuperscript{-3} annual mean\textsuperscript{14}. This is currently exceeded over most of Greater London and is expected to continue to be so (see Chapter 7, Figures 4 and 5, above).

9.4.6 There is some evidence of reduction in shoot growth and reproduction in some species of fern at concentrations of NO\textsubscript{2} that are lower than those known to cause damage to higher plants\textsuperscript{15}.

9.4.7 Mosses, liverworts and lichens are particularly vulnerable to air pollution because they receive their nutrients from the atmosphere. Direct damage has also been recorded to tree species sensitive to air pollution.

9.4.8 There is no critical load for PM\textsubscript{10} and no information on the specific effects of these particles on biodiversity.

9.5 Effects

9.5.1 Degradation of epiphytic (tree-living) lichen assemblages and declining tree health, both of which have been observed within Epping Forest SSSI / SAC, are believed to result in part from poor air quality. NO\textsubscript{2} and sulphur dioxide (SO\textsubscript{2}) are probably the most important air pollutants in determining lichen biodiversity\textsuperscript{16}.

9.5.2 However, whilst there is much information on SO\textsubscript{2} impacts on epiphytes, there is much less information available on NO\textsubscript{X} impacts, despite the fact that NO\textsubscript{X} has replaced SO\textsubscript{2} as the main urban acidifying air pollutant. Whilst there are no published studies of NO\textsubscript{2} impacts on lichens, research in Japan demonstrated that the distribution of epiphytic bryophytes (mosses and


\textsuperscript{14} www.apis.ac.uk


SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

Liverworts) was less when NO2 levels exceeded 0.02 ppm\(^{17}\). Nonetheless, there is emerging evidence that changes in the composition and health of lichen assemblages can be related to levels of nitrous oxides\(^{18}\).

9.5.3 Other habitats are known to be sensitive to air pollution, particularly eutrophication with nitrogen. Pollution may therefore be one of a number of different factors that have resulted in a degradation of habitats of significance within other sites of nature conservation importance within London.

9.5.4 The LEZ core option would have relatively little effect on NO\(_X\) emissions and would therefore be of correspondingly limited benefit in biodiversity terms. It is therefore possible that only the improvements in NO\(_X\) concentrations that are predicted as a consequence of the core plus NO\(_X\) option would noticeably benefit biodiversity. However since the current understanding of air pollution impacts on biodiversity is limited this must remain speculative.

9.6 Significance

9.6.1 Although air pollution is believed to have a negative effect on semi-natural habitats and species and the LEZ would be expected to improve air quality, any positive ecological effects that result from the predicted improvements in air quality resulting from the introduction of the proposed LEZ are likely to be insignificant.

9.6.2 One possible exception is Epping Forest SAC, a site where air pollution has been identified as a contributory factor in the unfavourable status of elements of the site. With sites of international importance for nature conservation, even small improvements may be perceived as being significant.

9.6.3 As lichens appear to respond to relatively small changes in concentrations of pollutants, including NO\(_2\), there are likely to be discernible changes in lichen assemblages on trees where the greatest improvement in concentrations of NO\(_2\) are predicted (see Figures 11 and 12, Chapter 7, above). It has been suggested that these changes could be considered to be significant. Consideration is being given to a project designed to monitor any such changes.

9.7 Mitigation

9.7.1 The extent of the effects is uncertain but they are expected to be positive. Therefore no mitigation to address adverse effects on biodiversity is required.


\(^{18}\) APRIL (2002) – Effects of NO\(_X\) and NH\(_3\) on lichen communities and urban ecosystems. March 2002.
9.8 Conclusions

9.8.1 Although air pollution is likely to be a contributing factor to habitat degradation (and consequently to the decline in some species), it is difficult to separate out air pollution from the range of factors influencing habitat quality or condition. Neglect or inappropriate management, and pressure from recreational use are likely to be much more significant influences on habitat quality at most sites of nature conservation importance within London (English Nature response to the SEA Scoping Report).

9.8.2 Existing information does not allow one to quantify with any certainty the likely effects of the predicted reductions in levels of NO\textsubscript{X} and PM\textsubscript{10}. Information on the ecological effects of these pollutants is rarely available and information on the effects of reducing the levels of these pollutants does not exist.

9.8.3 Existing levels of understanding do not allow a meaningful distinction to be drawn between the LEZ options.
10 CLIMATE

10.1 Introduction

10.1.1 The modelling of carbon emissions formed part of the air quality modelling carried out for TfL by ERG. Quantified estimates of the likely carbon emissions from traffic in the Congestion Charging Zone, Inner London, Outer London and London as a whole were made for the four standard scenarios:

- “Business as usual” (no Low Emission Zone)
- The LEZ core option
- The core plus NO\textsubscript{X} option
- The core plus LGV option.

10.2 Methodology

10.2.1 Emissions of CO\textsubscript{2} have been modelled by ERG. An estimate of the expected change in these emissions is used to assess the overall impact of the proposed LEZ in terms of greenhouse gas emissions. The calculations assume that older vehicles fitted with particle traps to comply with the standards for PM\textsubscript{10} suffer a fuel penalty of 0.8%.

10.3 Baseline

10.3.1 Estimates given in the Mayor’s State of the Environment Report indicate that emissions of greenhouse gases in London between 1999 and 2000 amounted to 40,323,777 tonnes carbon dioxide equivalent, from all sources. The contribution from transport sources was 8,547,816 tonnes carbon dioxide equivalent (21% of the total).

10.3.2 Estimates for the UK as a whole show a steadily rising trend until 2003 for emissions from transport, to 127,824,000 tonnes carbon dioxide equivalent. Emissions from all sources appeared to peak in the period 1999-2002, although the most recent estimates show a further increase in 2003. The latest UK total from all sources is 722,328,000 tonnes carbon dioxide equivalent. Complete figures for UK emissions of greenhouse gases are given in Appendix 2.

10.3.3 London therefore emits around 5.6% of the UK total of greenhouse gases and around 6.7% of gases from transport sources.
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

10.4 Impacts

10.4.1 The differing outcomes of the four scenarios are shown in Table 18 below. Two features are common to all scenarios. First, there is a predicted decline in carbon emissions between 2008 and 2010 in the Congestion Charging Zone. This reflects the continuing influence of the congestion charge on traffic behaviour. Second, all four scenarios, including the business as usual scenario, exhibit a decline in emissions after 2013, which is likely to be a result of the increasing fuel efficiency of vehicles. If vehicles consume less fuel there will be a corresponding decline in greenhouse gas emissions. Therefore neither of these outcomes represents an impact of the LEZ.

Table 18. Predicted greenhouse gas emissions (tonnes per year). Source: ERG

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2008</th>
<th>2010</th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business as usual (no LEZ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- CCZ</td>
<td>251,583</td>
<td>249,536</td>
<td>253,450</td>
<td>252,854</td>
</tr>
<tr>
<td>- Inner</td>
<td>2,460,541</td>
<td>2,467,044</td>
<td>2,528,485</td>
<td>2,523,566</td>
</tr>
<tr>
<td>- Outer</td>
<td>8,987,935</td>
<td>9,053,515</td>
<td>9,304,829</td>
<td>9,291,330</td>
</tr>
<tr>
<td>- Total</td>
<td>11,700,060</td>
<td>11,770,096</td>
<td>12,086,764</td>
<td>12,067,750</td>
</tr>
<tr>
<td>LEZ core option</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- CCZ</td>
<td>251,434</td>
<td>249,582</td>
<td>253,486</td>
<td>252,873</td>
</tr>
<tr>
<td>- Inner</td>
<td>2,459,408</td>
<td>2,467,667</td>
<td>2,528,869</td>
<td>2,523,759</td>
</tr>
<tr>
<td>- Outer</td>
<td>8,982,526</td>
<td>9,057,935</td>
<td>9,307,177</td>
<td>9,292,410</td>
</tr>
<tr>
<td>- Total</td>
<td>11,693,368</td>
<td>11,775,185</td>
<td>12,089,532</td>
<td>12,069,041</td>
</tr>
<tr>
<td>LEZ core option + NOx standards introduced in 2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- CCZ</td>
<td>251,434</td>
<td>249,589</td>
<td>253,492</td>
<td>252,878</td>
</tr>
<tr>
<td>- Inner</td>
<td>2,459,408</td>
<td>2,467,694</td>
<td>2,528,905</td>
<td>2,523,790</td>
</tr>
<tr>
<td>- Outer</td>
<td>8,982,526</td>
<td>9,057,845</td>
<td>9,307,205</td>
<td>9,292,464</td>
</tr>
<tr>
<td>- Total</td>
<td>11,693,368</td>
<td>11,775,128</td>
<td>12,089,602</td>
<td>12,069,131</td>
</tr>
<tr>
<td>LEZ core option + controls on LGVs over ten years old</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- CCZ</td>
<td>251,434</td>
<td>249,573</td>
<td>253,482</td>
<td>252,872</td>
</tr>
<tr>
<td>- Inner</td>
<td>2,459,408</td>
<td>2,467,574</td>
<td>2,528,832</td>
<td>2,523,748</td>
</tr>
<tr>
<td>- Outer</td>
<td>8,982,526</td>
<td>9,057,446</td>
<td>9,307,033</td>
<td>9,292,375</td>
</tr>
<tr>
<td>- Total</td>
<td>11,693,368</td>
<td>11,774,593</td>
<td>12,089,347</td>
<td>12,068,995</td>
</tr>
</tbody>
</table>
10.4.2 The clearest impact of the LEZ, whether the core option or the two alternative scenarios, is for a slight rise in greenhouse gas emissions compared with the business as usual scenario. The reason for this is that an expected response by some vehicle operators is to retrofit particle traps to existing engines rather than to purchase an entirely new vehicle. This action would meet the requirement for abatement of PM$_{10}$ pollution but at the cost of a slight decrease in fuel efficiency. The figures above assume a 5% fuel consumption penalty resulting from the fitting of a particulate trap. Higher consumption of fuel would then result in an increase in greenhouse gas emissions.

10.4.3 The predicted rise in emissions follows an initial fall following the introduction of the proposed LEZ. This initial impact is likely to be a consequence of new, fuel-efficient vehicles entering the fleet in 2008 followed by the slower retrofit of particle traps on the vehicles that are not replaced.

10.5 Effects

10.5.1 The effect of the LEZ in climate change terms is likely to be an initial fall in greenhouse gas emissions, followed by a small steady rise compared with the business as usual scenario. The predicted increase is in the region of 0.001% to 0.005% per annum, compared to the business as usual scenario, depending on the LEZ variant adopted.

10.5.2 The increase in emissions is smallest for the fourth scenario (core option plus controls on LGVs over ten years old). In practice the difference in emissions is predicted to be very small, both between the LEZ variants themselves and compared with the business as usual scenario.

10.5.3 The actual impacts of the proposed LEZ on CO$_2$ are unclear, as it is not clear how operators would respond to its introduction. For example, if more operators than expected upgrade to newer vehicles rather than fitting particulate traps, there may actually be a reduction in greenhouse gas emissions. If fewer operators buy newer vehicles, there may be a larger increase. There are a number of other uncertainties in the modelled outputs, which make it difficult to predict the impact of the proposed LEZ on greenhouse gas emissions. These include the performance of particulate trap technology and factors that affect the fuel consumption of vehicles, including weight of the vehicle, driving conditions and driving style.

10.6 Significance

10.6.1 The likely effect of all three LEZ scenarios is for a very small rise in greenhouse gas emissions, an increase predicted to be no more than 5,000 tonnes carbon equivalent per annum, depending on the year and the
scenario concerned (see Table 18). This represents a very small fraction of the annual transport-related emissions in London, estimated to be 8,547,816 tonnes carbon dioxide equivalent in 1999-2000, to say nothing of the total UK emission from all sources, 722,328,000 tonnes carbon dioxide equivalent in 2003. While not significant in itself, it would make a small contribution to the cumulative total of UK emissions.

10.7 Mitigation

10.7.1 It is expected that the proposed LEZ would have a negligible impact on greenhouse gas emissions. However, this is an issue that would be monitored after the implementation of the proposed LEZ.

10.8 Conclusions

10.8.1 The effect of the proposed LEZ on climate change is expected to be negligible.
11 MATERIAL ASSETS

11.1 Introduction

11.1.1 The SEA Regulations do not define the phrase ‘material assets’ but it is taken here to mean the built environment, in particular houses and other buildings. This assessment of material assets effects is based largely on work carried out for TfL by AEA Technology

11.2 Methodology

11.2.1 Sulphur and nitrogen have the potential to cause damage to buildings, an effect thought magnified by synergistic interaction with ozone. Damage to materials is a known air pollution issue. The possible impacts include:

- Acid corrosion of stone, metals and paints
- Ozone damage to polymeric materials, particularly natural rubbers

11.2.2 Soiling of buildings and other structures leading to the need for cleaning is another well-known effect of poor air quality.

11.2.3 Significant impacts to individual buildings or other material assets are not thought likely as a result of the proposed LEZ. However an insignificant amount of damage to an individual structure might be considered significant if measured cumulatively, over all the buildings in an individual ward or Borough for instance. Therefore the modelled change in the concentration of NO₂ is mapped to show areas where such cumulative impacts are most likely to occur.

11.3 Baseline

11.3.1 According to the evidence base prepared for the London Housing Strategy, there are approximately 3.1 million dwellings in London in 2003 and this total is increasing by an average of 19,000 dwellings per year. Of these some 225,850 were considered ‘unfit’, a figure declining to 183,579 in 2004.

11.3.2 Dwellings may be unfit for many reasons, but structural stability and freedom from disrepair are among them. Some of these unfit dwellings could be considered sensitive receptors if the fabric of the building has deteriorated and is likely to be further affected by air pollution. It is not possible to quantify how many dwellings might fall into this category.
11.4 Impacts

11.4.1 Sulphur and nitrogen have the potential to cause damage to buildings and other structures, an effect thought magnified by synergistic interaction with ozone. However, the proposed LEZ is not designed to reduce the levels of sulphur in the atmosphere and sulphur is not a major component of vehicle exhaust emissions. While one of the options of the proposed LEZ would reduce the concentrations of nitrogen dioxide, the impact is essentially to bring forward the air quality improvements by five years.

11.4.2 Various studies on the analysis of damages to materials in structures such as houses and factories exist\(^{21}\). These studies indicate that the pollutants most concerned in acid damage are sulphur dioxide and nitrogen dioxide. The most important impacts are on natural stone and zinc coated materials.

11.4.3 Although ozone is a major determinant of the lifetime of many rubber materials exposed to the ambient air, only two UK studies have investigated the problem from an environmental perspective. The most recent study\(^ {22}\) undertook experimental assessments of a range of rubber formulations. It found that damage to rubber goods from ozone exposure in the UK was estimated at between £35 and £189 million, with a best estimate of £85 million/year.

11.4.4 Soiling of buildings and materials by particles (PM\(_{10}\) and PM\(_{2.5}\)) is one of the most obvious signs of pollution in urban areas. The analysis of building soiling is concerned with the deposition of particles on external surfaces and the discolouration of stone and other materials. Different types of particle emission have different soiling characteristics. Diesel emissions, for instance, have a much higher soiling factor relative to petrol due to their particulate elemental carbon (PEC) content.

11.5 Effects

11.5.1 The material damage benefits from the proposed LEZ would be extremely low, because of the low levels of sulphur in modern fuel. The LEZ is not designed to reduce sulphur dioxide so any impacts would be incidental in this respect. The LEZ option that introduces tighter NO\(_x\) standards in 2010 would have the greatest impact on material damage, since this would result in the greatest reduction of this pollutant.

11.5.2 Soiling of buildings causes economic damage through cleaning and amenity costs. Although soiling damage has an obvious cause and effect, the quantification of soiling damage is not straightforward. In individual instances the effect is likely to be small.

\(^{21}\) Europe-wide ICP and the European Commission DG Research, - ExternE and associated projects

11.6 Significance

11.6.1 The effect of the LEZ on material assets is not judged likely to be significant.

11.7 Mitigation

11.7.1 While not significant, the effects are likely to be benign and therefore no mitigation would be required.

11.8 Conclusions

11.8.1 The LEZ is not likely to have significant effects on material assets in London. Any effects are likely to be beneficial but very limited in magnitude on individual structures.
12 CULTURAL HERITAGE

12.1 Introduction

12.1.1 Just as there are impacts from air pollution on material assets generally, so there are impacts on structures that are especially important for their architectural or historic value. The significance of any effects is likely to be greater on buildings and other structures of cultural heritage importance since they are, in the main, older and therefore more sensitive to corrosion or soiling.

12.2 Methodology

12.2.1 Significant impacts to the fabric of individual cultural assets such as Listed Buildings or monuments are not thought likely as a result of the proposed LEZ. Cumulative impacts on the whole stock of cultural assets are a possibility, although no methodology exists to assess this. Therefore the modelled change in the concentration of NO$_2$ is mapped to indicate where such cumulative impacts are most likely to occur.

12.3 Baseline

12.3.1 Chapter 4 identified aspects of London’s abundant cultural heritage. Among the most important assets are the four World Heritage Sites designated by the United Nations for their international cultural importance:

- Greenwich
- Westminster Abbey
- The Tower of London
- The Royal Botanic Gardens in Kew.

12.3.2 The Greater London Sites and Monuments Record lists more than 73,000 sites, artefacts and Listed Buildings. Among these are approximately 40,000 Listed buildings, which are considered to be of national importance, and 700 of these are considered ‘at risk’, although it is not known if any of these have been damaged by air pollution (see Appendix 2). The location of Scheduled Ancient Monuments, also of national importance, is shown on Map 14 (Appendix 4).

12.3.3 London has a total of 892 Conservation Areas, designated by individual London Boroughs for their architectural or historic importance.
12.4 Impacts

12.4.1 Owing to their sensitivity, damage to cultural heritage assets can provide early evidence of air pollution. The impact of the proposed LEZ on cultural heritage assets is likely to be very similar to that on material assets more generally (see Chapter 11).

12.4.2 The main impact is the soiling of sensitive receptors such as important Listed Buildings, which then require cleaning with the risk of damage to irreplaceable architectural detail. In this respect the LEZ core option should prove beneficial since it would reduce the concentration of small particles in the atmosphere.

12.4.3 Atmospheric pollution can contribute to the deterioration of the fabric of historic buildings. The LEZ option introducing tighter NOX emissions standards would be most beneficial since the predicted reduction of NOX and NO2 concentrations is highest in this scenario.

12.5 Effects

12.5.1 As discussed in the chapter on material assets, the effect of the tighter NOX standards is likely to be minimal, although individual structures that are particularly sensitive may benefit disproportionately. While oxides of nitrogen play an important role, sulphur dioxide is the principal pollutant associated with acid damage and concentrations of this gas are not likely to differ as a result of the LEZ options proposed.

12.5.2 All proposed LEZ options would have a beneficial effect on the soiling of cultural heritage assets as PM10 concentrations would be reduced. However the effect would be limited.

12.6 Significance

12.6.1 It is likely that effects on cultural heritage assets from acid damage and soiling would be limited. These effects would be experienced to varying degrees by many buildings and monuments, some of which may be vulnerable and very sensitive to pollution impacts. That said, the duration of the impact is predicted to be relatively short and for this reason the effect is probably not likely to be significant.

12.7 Mitigation

12.7.1 While probably not significant, the effects are likely to be benign and therefore no mitigation would be required.
12.8 Conclusions

12.8.1 The effect of the LEZ on cultural heritage is not expected to be significant. There may, however, be individual assets that are particularly sensitive to pollution effects that would benefit from the option that targets NO$_X$. 
13 LANDSCAPE / TOWNSCAPE

13.1 Introduction

13.1.1 This chapter explores the potential effects of the proposed LEZ on landscape / townscape in London. Methodology for landscape / townscape impact assessment is fairly well developed in project level Environmental Impact Assessment and concerns the effects of a development on areas of homogenous landscape and on views experienced by local people and visitors.

13.1.2 This methodology relies on a level of detail that is as yet unavailable in the proposed revisions to the Mayor’s Air Quality and Transport Strategies. Consequently the following discussion deals in general terms with the possible adverse effects of the proposed LEZ and identifies mitigation measures that would be necessary to avoid them.

13.2 Methodology

13.2.1 Significant impacts are not thought likely as a result of the proposed LEZ, though cameras and signage will be required as part of the proposed LEZ infrastructure. This chapter focuses principally on mitigation measures that can be adopted to prevent adverse impacts arising during the possible implementation of the scheme.

13.3 Baseline

13.3.1 Given that the specific impacts of the proposed LEZ on landscape / townscape are currently unknown it is only possible to identify the baseline generically and not in detail. This baseline would include existing Landscape Character Areas (LCAs) of homogenous landscape character. Typical LCA components include landform, land cover, vegetation, settlement pattern, remoteness and degree of tranquillity. Examples might include parks, open countryside, or Conservation Areas with buildings of similar architectural character.

13.3.2 The baseline might also include individual monuments or buildings of architectural importance. It also includes Zones of Visual Influence (ZVIs) within which views of the LEZ infrastructure may be achieved. Examples of a ZVI would be an everyday view enjoyed by local residents or a view seen by visitors to a particular location.

13.4 Impacts

13.4.1 Impacts cannot be predicted accurately at this stage on the basis of the information in the proposed revisions to the Mayor’s Air Quality and Transport Strategies. Potential impacts would be the result of intrusion from
the infrastructure associated with the LEZ: for example signs and cameras.

13.5 Effects

13.5.1 There is scope within the design and positioning of LEZ infrastructure to reduce or avoid altogether any adverse landscape effects from the scheme. Potential adverse effects would include intrusion into a ZVI or LCA and the subsequent degradation of a view or a change in landscape characteristics.

13.6 Significance

13.6.1 There is no reason to suggest that there would be any significant landscape/townscape effects.

13.7 Mitigation

13.7.1 TfL would take account of the potential for visual intrusion in scheme design and seek to ensure that an appropriate level of consultation with stakeholders takes place over the positioning of infrastructure.

13.7.2 In every case where new signs and/or cameras are to be erected, TfL would review adjacent signs and equipment to see whether they can be rationalised and integrated with the new signs in order to reduce clutter.

13.8 Conclusions

13.8.1 Whilst any impacts are likely to be slightly adverse, there is scope to mitigate these considerably in the detailed design and location of infrastructure.
14 IMPLEMENTATION

14.1 Introduction

14.1.1 The final form of the LEZ would influence the extent of some of the environmental effects identified in this report. For instance, the infrastructure associated with the scheme (cameras and signs) could be sited sensitively to prevent avoidable impacts on townscape or landscape or an increased risk of accidents.

14.1.2 Some of the effects that would result from the implementation of the LEZ would require mitigation to offset negative or enhance positive effects. Others may require further investigation. Some of this mitigation might be beyond the authority of TfL but quite straightforward for other bodies to achieve.

14.1.3 This chapter considers how the effects of proposed revisions to the Mayor’s Transport and Air Quality Strategies can be addressed in order to improve the possible implementation of the LEZ from an environmental perspective.

14.2 Links to other tiers of plans and programmes and the project level

14.2.1 The Scoping Report identified a number of steps proposed or already being taken by the London Boroughs to address poor air quality. This Report encourages the following best practice measures within all Borough Local Implementation Plans or Air Quality Action Plans, to complement the LEZ and enhance the beneficial air quality effects:

- Continue encouragement for non-car means of travel (public transport, walking and cycling)
- Promote still closer integration between transport and land use planning to reduce the need to travel
- Continue engineering measures at junctions to free traffic bottlenecks and avoid tailbacks
- Encourage the use of Clear Zones to tackle local pollution hotspots
- Facilitate provision of clean fuel infrastructure (LPG in filling stations, electric vehicle charging points etc.)
- Promote Freight Quality Partnerships where these do not already exist
- Investigate the outcome of the Camden trial use of NOXER paving stones, which are designed to absorb oxides of nitrogen

14.2.2 This Report also encourages Local Planning Authorities to adopt policies in Local Development Frameworks that support the LEZ and enhance the beneficial effects:

- Promote still closer integration between land use and transport planning to reduce the need to travel
• Consider refusal of planning permission for proposed developments that adversely affect air pollution hotspots

• Encourage the Home Zone concept (streets designed primarily to meet the interests of pedestrians and cyclists rather than motorists)

14.2.3 Implementation of the LEZ should take into account the specific mitigation measures summarised in the next section.

14.3 Summary of proposed mitigation

14.3.1 The following table summarises mitigation measures proposed in the assessment chapters:

*Table 19. Proposed mitigation measures*

<table>
<thead>
<tr>
<th>Effect</th>
<th>Proposed mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible increase in emissions of primary nitrogen dioxide resulting from particle traps fitted to control small particles</td>
<td>Technical solution may be required to address this issue if it arises</td>
</tr>
<tr>
<td>Very small increase in greenhouse gas emissions expected in London as a result of LEZ</td>
<td>If the LEZ is to be extended to cover later EURO standards or other gases, ensuring zero increase in greenhouse gas emissions should be a priority</td>
</tr>
<tr>
<td>Possible visual intrusion from LEZ infrastructure</td>
<td>Take account of visual intrusion in scheme design and ensure an appropriate level of consultation with Boroughs, English Heritage etc.</td>
</tr>
<tr>
<td>Possible visual intrusion from LEZ infrastructure</td>
<td>In every case where new signs and/or cameras are to be erected, TfL should review adjacent signs and equipment to see whether they can be rationalised and integrated with the new signs in order to reduce clutter.</td>
</tr>
</tbody>
</table>
14.4 Proposals for monitoring

14.4.1 The following measures are proposed to monitor the impacts of the LEZ:

Table 20. Proposed monitoring measures

<table>
<thead>
<tr>
<th>SEA Topic</th>
<th>Proposed monitoring</th>
<th>Why this indicator?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>Ambient annual mean NO$<em>2$ and PM$</em>{10}$ roadside concentrations, as a 3-year</td>
<td>Key traffic related pollutants for which there are statutory objectives. (Added in</td>
</tr>
<tr>
<td></td>
<td>rolling average, for 5 sites across the GLA area, including inner and outer London</td>
<td>response to Environment Agency comments on Scoping Report)</td>
</tr>
<tr>
<td></td>
<td>locations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of local authorities with Air Quality Management Areas for NO$_2$ due to</td>
<td>Measure of the extent of poor air quality</td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of local authorities with Air Quality Management Areas for PM$_{10}$ due</td>
<td>Measure of the extent of poor air quality</td>
</tr>
<tr>
<td></td>
<td>to transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Balance between HGVs and LGVs entering LEZ</td>
<td>LEZ may create an incentive for operators to switch from HGVs to LGVs</td>
</tr>
<tr>
<td>Biodiversity (including</td>
<td>Changes in epiphytic (tree-borne) lichens</td>
<td>Lichens considered to be a good bio-monitor for traffic-related air quality</td>
</tr>
<tr>
<td>flora / fauna)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human health</td>
<td>Sites of Special Scientific Interest in unfavourable / declining condition owing to</td>
<td>Data for condition of SSSIs in London is available on English Nature website</td>
</tr>
<tr>
<td></td>
<td>poor air quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mortality from Bronchitis and Emphysema years of life lost (YLL) up to age 75</td>
<td>Dataset collected by London Health Observatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mortality from Asthma years of life lost (YLL) up to age 75</td>
<td>Dataset collected by London Health Observatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mortality from all Circulatory Diseases</td>
<td>Dataset collected by London Health Observatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of hospital admissions for respiratory diseases</td>
<td>Referred to in strategy revisions documents</td>
</tr>
<tr>
<td>Climate</td>
<td>Estimate of the total emissions of greenhouse gases from transport sources</td>
<td>Tackling climate change is the number one priority in the UK Sustainable Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strategy</td>
</tr>
<tr>
<td>Material assets</td>
<td>[No significant impacts likely]</td>
<td></td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>[No significant impacts likely]</td>
<td></td>
</tr>
<tr>
<td>Landscape / townscape</td>
<td>[No significant impacts likely]</td>
<td></td>
</tr>
</tbody>
</table>
15 ADDITIONAL INFORMATION

15.1.1 The following website provides general information on SEA:

Office of the Deputy Prime Minister (ODPM) – Introduction to SEA, SEA regulations, SEA guidance
http://www.odpm.gov.uk ('Home' > ‘Planning’ > ‘Environmental Assessment’ > 'Strategic Environmental Assessment')
APPENDIX 1 – CONTEXT REVIEW

When preparing the Scoping Report, Scott Wilson identified a number of key messages from the context review that should be taken into account in undertaking the SEA process. These key messages form part of the evidence base used to determine the key environmental issues or suggest ways of addressing environmental problems. This list of messages is not necessarily exhaustive but focuses on issues identified as significant during the context review.

<table>
<thead>
<tr>
<th>Key Message</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is an urgent need to reduce emissions of carbon dioxide and other greenhouse gases from all sources, including transport</td>
<td>Kyoto Protocol; Sixth Environmental Action Programme; UK Framework Sustainable Development Strategy; Future of Transport White Paper; Mayor’s Energy Strategy</td>
</tr>
<tr>
<td>Long-term exposure to air pollutants is associated with a number of adverse health impacts, including cardio-vascular and respiratory diseases, and these affect certain vulnerable groups disproportionately</td>
<td>WHO European Charter on Transport, Environment and Health; Sixth Environmental Action Programme; Directive 96/62/EC and Daughter Directives; National Air Quality Strategy; Mayor’s Air Quality Strategy; London Health Strategy</td>
</tr>
<tr>
<td>There are pressures on biodiversity from pollution, in particular in London from nitrogen deposition that can affect plants directly and also increase the fertility of naturally infertile habitats</td>
<td>Sixth Environmental Action Programme; Mayor’s Biodiversity Strategy</td>
</tr>
<tr>
<td>The need to use less energy and increase energy efficiency of buildings and vehicles, thereby limiting emissions of pollutants and greenhouse gases</td>
<td>UK Framework Sustainable Development Strategy; Future of Transport White Paper; Mayor’s Energy Strategy</td>
</tr>
<tr>
<td>Street maintenance creates delays and congestion on road network, leading to increased emissions of pollutants and higher levels of traffic noise</td>
<td>Mayor’s Ambient Noise Strategy</td>
</tr>
<tr>
<td>Smoother traffic flows will result in less pollution and noise – although the optimum traffic speeds to limit noise and pollution are not necessarily the same</td>
<td>Mayor’s Ambient Noise Strategy</td>
</tr>
<tr>
<td>Alternative fuels – such as natural gas or hydrogen – would be quieter and far less polluting and should be encouraged</td>
<td>Future of Transport White Paper; Mayor’s Energy Strategy; Mayor’s Ambient Noise Strategy; Mayor’s Air Quality Strategy; Borough-level Air Quality Action Plans and Local Implementation Plans</td>
</tr>
<tr>
<td>The need to promote modal shift from private car use to public transport – to address congestion, pollution and greenhouse gas emissions</td>
<td>Future of Transport White Paper; Mayor’s Transport Strategy; Borough-level Local Implementation Plans</td>
</tr>
<tr>
<td>The need to integrate land use planning and transport planning that will reduce the need to travel and, hence, reduce congestion, air pollution and greenhouse gas emissions</td>
<td>Future of Transport White Paper; The London Plan; Mayor’s Transport Strategy; Mayor’s Tourism Strategy; Borough-level Local Implementation Plans</td>
</tr>
</tbody>
</table>
### Key Message

<table>
<thead>
<tr>
<th>The Mayor’s Transport Strategy states that some disadvantaged people are unable to participate fully in opportunities that London has to offer. (An implication of this would be that any LEZ configuration that targeted cars could make this situation worse.)</th>
<th>Mayor’s Transport Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of economic growth (housing, jobs, tourism and entertainment) is essential to maintain London’s position as a world class city (Note that in practice this is likely to be at odds with the need to reduce pollution and greenhouse gas emissions)</td>
<td>The London Plan, Mayor’s Transport Strategy; Mayor’s Cultural Strategy; Mayor’s Tourism Strategy</td>
</tr>
<tr>
<td>Air transport, particularly from Heathrow Airport, makes a significant contribution to pollution and greenhouse gas emissions – including traffic to and from the airport</td>
<td>Future of Transport White Paper; Mayor’s Air Quality Strategy</td>
</tr>
<tr>
<td>Securing a night aircraft ban to reduce disturbance from noise would reduce the total number of flights (and indirectly reduce pollution and greenhouse gas emissions)</td>
<td>Mayor’s Ambient Noise Strategy</td>
</tr>
<tr>
<td>Poor levels of air quality deter people from visiting the city and discourage outdoor sporting and recreational activities</td>
<td>Mayor’s Tourism Strategy</td>
</tr>
<tr>
<td>Roadside emissions testing is favoured by some London Boroughs but not by all</td>
<td>Borough-level Air Quality Action Plans and Local Implementation Plans</td>
</tr>
<tr>
<td>A trial of NOXER paving stones that absorb nitrogen dioxide was planned for 2002/3 in Camden, if successful this might be a useful mitigation measure in other plans</td>
<td>Camden Air Quality Action Plan</td>
</tr>
<tr>
<td>Clear Zones, that involve measures such as access control and re-allocation of road space to create traffic-free areas, are planned (or already introduced) by a number of authorities</td>
<td>City of Westminster and Camden Air Quality Action Plans; Hammersmith and Fulham Local Implementation Plan; Lambeth Draft Local Implementation Plan</td>
</tr>
<tr>
<td>The impacts of LEZ may be more significant at specific locations than London-wide and thus have real potential to assist in meeting national statutory air quality objectives at measuring sites</td>
<td>Lewisham First Draft Local Implementation Plan</td>
</tr>
<tr>
<td>There is a need for an orbital public transport alternative to the M25</td>
<td>Richmond upon Thames Draft Local Implementation Plan for Transport; Bromley Draft local Implementation Plan</td>
</tr>
<tr>
<td>Mitigation of nitrogen emissions through planting of trees is policy in Hounslow</td>
<td>Hounslow Draft Local Implementation Plan for the Transport Environment</td>
</tr>
<tr>
<td>Freight Quality Partnerships, which aim to achieve best practice in environmentally sensitive, economic, safe and efficient freight transport, are not in place in all Boroughs</td>
<td>Borough-level Local Implementation Plans</td>
</tr>
<tr>
<td>Controlled Parking Zones, which discourage the use of the private car, are in use by some Boroughs</td>
<td>Borough-level Local Implementation Plans</td>
</tr>
<tr>
<td>Alternatives to road transport (walking and cycling, for instance) are encouraged in Local Implementation Plans</td>
<td>Borough-level Local Implementation Plans</td>
</tr>
<tr>
<td>Key Message</td>
<td>Sources</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EU Limit values and UK objectives focus most attention on hotspots where exceedences occur. This is not the most effective control option for pollutants having no threshold for effect.</td>
<td>Particulate Matter in the United Kingdom; Air Quality Expert Group; National Air Quality Strategy (Addendum)</td>
</tr>
</tbody>
</table>
**Kyoto Protocol**

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>United Nations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status (e.g. statutory, non-statutory)</td>
<td>Statutory</td>
</tr>
<tr>
<td>Date</td>
<td>1992</td>
</tr>
</tbody>
</table>

**Summary / Overview**

Protocol aim to achieve quantified emission limitation and reduction in order to promote sustainable development.

**Opportunities / Synergies / Constraints / Challenges**

- Enhancement of energy efficiency in relevant sectors of the national economy
- Promotion of sustainable forms of agriculture
- Research and promotion of renewable forms of energy
- Encouragement of reforms aimed at limiting or reducing greenhouse gas emitting sectors
- Cooperate with other Parties to the Convention
- Minimise adverse effects of climate change

**Implications for the SEA Methodology**

Need to measure the LEZ impact in terms of carbon emissions.

Internet link: [http://unfccc.int/resource/docs/convkp/kpeng.html](http://unfccc.int/resource/docs/convkp/kpeng.html)
World Health Organisation (WHO) Guidelines

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>World Health Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status (e.g. statutory, non-statutory)</td>
<td>Non-statutory</td>
</tr>
<tr>
<td>Date produced</td>
<td>1999</td>
</tr>
</tbody>
</table>

Summary / Overview

The World Health Organisation set air quality guidelines, which are applicable globally. There is a general downward revision of air quality standards as evidence becomes available of health-based effects of certain air pollutants. Therefore the WHO guidelines are likely to be revised again in coming years. Numerical guideline values are not to be regarded as separating the acceptable from the unacceptable, but rather as indicators. They are proposed in order to help avoid major discrepancies in reaching the goal of effective protection against recognised hazards for human health and the environment.

Opportunities / Synergies / Constraints / Challenges

Guideline values for individual substances (based on effects other than cancer or odour annoyance):

<table>
<thead>
<tr>
<th>Substance</th>
<th>Time-weighted average</th>
<th>Averaging time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>5 ng/m³ª</td>
<td>Annual</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>10 mg/m³</td>
<td>8 hours</td>
</tr>
<tr>
<td>Lead</td>
<td>0.5 µg/m³</td>
<td>Annual</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>40 µg/m³</td>
<td>Annual</td>
</tr>
<tr>
<td>Ozone</td>
<td>120 µg/m³</td>
<td>8 hours</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>Dose-response</td>
<td>-</td>
</tr>
<tr>
<td>Sulphur dioxides</td>
<td>50 µg/m³</td>
<td>Annual</td>
</tr>
</tbody>
</table>

Guideline values based on effects on terrestrial vegetation:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Guideline value (Critical level)</th>
<th>Averaging time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur dioxide</td>
<td>10-30 µg/m³ª</td>
<td>Annual</td>
</tr>
<tr>
<td>Nitrogen oxides</td>
<td>30 µg/m³</td>
<td>Annual</td>
</tr>
<tr>
<td>Ozone</td>
<td>0.2-10 ppm.h&quot;</td>
<td>5 days – 6 months</td>
</tr>
</tbody>
</table>

Implications for the SEA Methodology

Vegetation values would be useful benchmarks for ecology methodology

Internet link: [http://www.euro.who.int/air/activities/20050223_3](http://www.euro.who.int/air/activities/20050223_3)
### WHO European Charter on Transport, Environment and Health

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>WHO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status (e.g. statutory, non-statutory)</td>
<td>Charter, signed by UK ministers, with specific commitments</td>
</tr>
<tr>
<td>Date produced</td>
<td>1999</td>
</tr>
</tbody>
</table>

### Summary / Overview

This document records commitments by member states in adopting the Charter, which was elaborated by ministries of transport, environment and health. The Charter sets out the principles, strategies and a plan of action to guide policies towards achieving transport sustainable for health and the environment. It begins with European Health21 targets agreed in 1998. It identifies Road transport as a major contributor to human exposure to air pollution. Long-term exposure to air pollutants and levels exceeding air quality guideline values is associated with a number of adverse health impacts, including effects on cardiovascular diseases and on respiratory diseases in adults and children. Such exposure may reduce life expectancy. Some pollutants such as benzene and some types of particle, increase cancer risks. Health impacts of transport are disproportionately felt by certain vulnerable groups. It incorporate sustainable development into principles for transport policy, namely: sustainability, the precautionary principle; prevention; protection and promotion of health and safety; the “polluter pays” principle, including internalisation of externalities; multi-sectoral integration of environment and health requirements and involvement of health authorities in decision-making on transport, land use and infrastructure policies; equity; public participation and public access to information; subsidiarity; efficiency. It identifies guiding strategies and a plan of action.

### Opportunities / Synergies / Constraints / Challenges

Commitment for Member States to define by 2004 national quantitative or, where technically not feasible, qualitative health targets towards agreed health targets, including for air quality, taking account of existing international obligations, of cost–effectiveness and practicability.

Opportunities in so far as LEZ scheme demonstrably adopts sustainability principles, follows guiding strategies and contributes to plan of action.

Opportunity to contribute to achievement of agreed national targets

### Implications for the SEA Methodology

Consult London health authorities regarding LEZ scheme

### Internet link

http://www.euro.who.int/document/peh-ehp/charter_transporte.pdf
### SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

Environmental Report

<table>
<thead>
<tr>
<th>The European Environment &amp; Health Action Plan 2004-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proponent body</strong></td>
</tr>
<tr>
<td><strong>Status (e.g. statutory, non-statutory)</strong></td>
</tr>
<tr>
<td><strong>Date produced</strong></td>
</tr>
</tbody>
</table>

### Summary / Overview

The Action Plan is designed to give the EU the scientifically grounded information needed to help all 25 EU member states reduce the adverse health impacts of certain environmental factors and to endorse better co-operation between actors in the environment, health and research fields. It takes the concerns of the other institutions into account in the identification of the actions propose and is designed to fit with existing actions at regional, national, European and international level, notably to the WHO pan European Environment and Health process and its commitments to ensuring safer environments for children.

### Opportunities / Synergies / Constraints / Challenges

Opportunities and synergies related to the key actions identified in the Action Plan are identified below, under the key objectives of the action plan.

1 - **IMPROVE THE INFORMATION CHAIN** by developing integrated environment and health information to understand the links between sources of pollutants and health effects:
   - Action 1: Develop environmental health indicators for air emissions
   - Action 2: Contribute to integrated monitoring of the environment, to allow the determination of relevant human exposure
   - Action 4: Co-operate with Action Plan coordinating

2 - **FILL THE KNOWLEDGE GAP** by strengthening research on environment and health and identifying emerging issues
   - Action 5-8: Identify opportunities to conduct innovative environment and health research relevant at European level, including methodological development, targeted research on air emissions exposures and related diseases and disorders. Investigate effectiveness of LEZ scheme as a way to address hazards associated with air emissions

3 - **RESPONSE: REVIEW POLICIES AND IMPROVE COMMUNICATION** by developing Awareness Raising, Risk Communication, Training & Education
   - Promote public understanding of environment and health interactions addressed by LEZ and the health-related benefits of scheme.

### Implications for the SEA Methodology

The need for public consultation can be met during consultation on the Environmental Report. Indicators are being developed for the baseline and these might also be appropriate for monitoring.


Proponent body: Commission of the European Communities
Status (e.g. statutory, non-statutory): Statutory
Date produced: 2001

Summary / Overview
The strategic focus of the Sixth Environmental Action Programme effectively sets out the environmental objectives and priorities that will be an integral part of the European Community’s strategy for sustainable development. Implementation of existing environmental legislation needs to be improved. Integration of environmental concerns into other policies must be deepened. Working with the market through business and consumer interests will contribute to more sustainable production and consumption patterns. Individual citizens make daily decisions that directly or indirectly impact the environment – better quality and easily accessible information on the environment and practical matters will shape opinions and thus decisions. Land use planning and management decisions can have major influence on the environment – The Community can provide support by promoting best practice and through structural funds.

Opportunities / Synergies / Constraints / Challenges
Four priority areas:
- Climate change – ratification and implementation of Kyoto Protocol to cut greenhouse emissions by 8% over 1990 levels by 2008-12. This must be considered a first step to the long-term target of 70% cut.
- Nature and biodiversity – pressures from pollution, unsustainable use of land and risks to biodiversity need to be redressed. Valuable environmental areas protected by Natura 2000 programme and this must be implemented fully.
- Environment and health – increasing evidence that human health is affected by environmental problems relating to air and water pollution, dangerous chemicals and noise. A holistic and comprehensive approach required with particular attention to vulnerable groups such as children and elderly.
- Sustainable use of natural resources and management of waste – ensure the consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment.

Implications for the SEA Methodology
The SEA will address the first three priority areas. Climate change targets must be incorporated into baseline.

Internet link: http://europa.eu.int/comm/environment/newprg/

**Proponent body** | European Commission
---|---
**Status (e.g. statutory, non-statutory)** | Statutory
**Date produced** | 1979

**Objectives / messages**

The main provisions of the Directive include:

- The maintenance of the favourable conservation status of all wild bird species across their distributional range (Article 2) with the encouragement of various activities to that end
- The identification and classification of Special Protection Areas for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance
- The establishment of a general scheme of protection for all wild birds
- Restrictions on the sale and keeping of wild birds
- Specification of the conditions under which hunting and falconry can be undertaken
- Prohibition of large-scale non-selective means of bird killing
- The conditions under which permission may be given for otherwise prohibited activities
- Encouragement of certain forms of relevant research
- Requirements to ensure that introduction of non-native birds do not threaten other biodiversity

**Implications for the SEA Methodology**

Special Protection Areas not likely to be significantly impacted by LEZ, so no specific implications.


---


**Proponent body** | European Commission
---|---
**Status (e.g. statutory, non-statutory)** | Statutory
**Date produced** | 1992

**Objectives / messages**

The Habitats Directive sets out the requirement to submit and subsequently adopt Special Areas of Conservation (SAC) under the Natura 2000 network. Article 6 of the Directive sets out the requirements for protection, and compensation for loss of these sites.

**Implications for the SEA Methodology**

There are three Special Areas of Conservation in London. The impacts of the LEZ on these three sites will need to be assessed.

**Internet link:** http://europa.eu.int/comm/environment/nature/nature_conservation/eu_nature_legislation/habitats_directive/index_en.htm

Proponent body
Council of the European Union

Status (e.g. statutory, non-statutory)
Statutory

Date produced
1996

Summary / Overview
The Framework Directive on ambient air quality revises preceding legislation and introduces new legislation for air pollutants that have not been previously regulated. This Directive is supported by a number of Daughter Directives, which set the numerical limit values and thresholds for particular pollutants. This Directive establishes long-term air quality objectives in order to protect the environment as a whole and human health and asserts that concentrations of harmful air pollutants should be avoided, prevented or reduced and limit values and/or alert thresholds set for ambient air pollution levels.

Opportunities / Synergies / Constraints / Challenges
- Assess ambient air quality on the basis of common methods and criteria: Limit values and alert thresholds set, criteria and techniques established for:
  - Location of sampling points
  - Minimum number of sampling points
  - Reference measurement and sampling techniques
  - Spatial resolution for modelling and objective assessment methods
  - Reference modelling techniques
- Obtain adequate information on air quality and ensure it is made available to the public, inter alia by means of alert thresholds
- Maintain ambient air quality where it is good and improve in other cases
- Atmospheric pollutants to be taken into consideration in the assessment and management of ambient air quality: sulphur dioxide, nitrogen dioxide, fine particulate matter, suspended particulate matter, lead, ozone, other air pollutants, benzene, carbon monoxide, poly-aromatic hydrocarbons, cadmium, arsenic, nickel and mercury
- Action plans developed for zones within which concentrations of pollutants in ambient air exceed limit values
- When setting limit values and alert thresholds the following may be taken into account:
  - Degree of exposure of sectors of the population in particular sensitive sub groups
  - Climatic conditions
  - Sensitivity of flora and fauna and their habitats
  - Historic heritage exposed to pollutants
  - Economical and technical feasibility
  - Long-range transmission of pollutants, of which secondary pollutants including ozone

Implications for the SEA Methodology
The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

Internet link: http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=CELEX:31996L0062:EN:HTML
Summary / Overview
The purpose of this Directive is to reduce the emissions of sulphur dioxide from the combustion of certain types of liquid fuels and thereby to reduce the harmful effects of such emissions on human health and the environment. Reductions in the emissions of sulphur dioxide resulting from the combustion of petroleum-derived liquid fuels shall be achieved by imposing limits on the sulphur content of such fuels.

Opportunities / Synergies / Constraints / Challenges
Heavy fuel oil, which includes petroleum-derived liquid fuel, may not be used if the sulphur content exceeds 1.00% by mass. Member State may authorise heavy fuel oils with sulphur content between 1.00 and 3.00% by mass to be used in part or whole of their territory only while emissions from that Member State do not contribute to critical loads being exceeded. Gas oils including marine gas oil not to be used if their sulphur content exceeds 0.20% by mass until 2008 when the percentage is reduce to 0.10% by mass. Short term (not exceeding 6 months) exemptions may be applied for to the Commission if, as a result of a sudden change in supply of crude oil, petroleum products or other hydrocarbons, it becomes difficult for a Member State to apply the limits on the maximum sulphur content.

Implications for the SEA Methodology
The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

Internet link: http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=CELEX:31999L0032:EN:HTML
Council Directive 1999/30/EC relating to limit value for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>Council of the European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Statutory</td>
</tr>
<tr>
<td>Date produced</td>
<td>1999</td>
</tr>
</tbody>
</table>

Summary / Overview

This is the first Daughter Directive and relates to limit values for sulphur dioxide, nitrogen oxides, lead and particulates (PM10). Limit values laid down are minimum requirements; Member States may maintain or introduce more stringent protective measures in particular to protect the health of vulnerable categories of population, such as children and hospital patients. Ecosystems and vegetation should be protected against adverse effects of oxides of nitrogen.

Opportunities / Synergies / Constraints / Challenges

- Limit values for the protection of human health:
  - Sulphur dioxide 1 hour 350 µg/m³ not exceeded more than 24 times per year
  - Nitrogen dioxide & oxides of nitrogen 1 hour 200 µg/m³ not exceeded more than 18 times per year
  - Particulate matter (PM10) 24 hour 50 µg/m³ not exceeded more than 35 times per year
- Assess concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air on the basis of common methods and criteria
- Obtain adequate information on concentrations of said pollutants and make available to the public and appropriate organisations such as environmental organisations, consumer organisations, organisations representing the interests of sensitive populations and other relevant health care bodies by means, for example, of broadcast media, press, information screens or computer network services
- Maintain ambient air quality where it is good and improve it in other cases
- Information on ambient concentrations of sulphur dioxide, nitrogen dioxide and particulate matter shall be updated at least on a daily basis
- Ambient concentrations of lead shall be updated at least on a three-monthly basis

Implications for the SEA Methodology

The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

Internet link:
http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31999L0030&model=guicheti

**Proponent body**
The European Parliament and The Council of the European Union

**Status (e.g. statutory, non-statutory)**
Statutory

**Date produced**
2000

**Summary / Overview**
The second Daughter Directive relating to limit values for benzene and carbon monoxide in ambient air. Benzene is a human genotoxic carcinogen and there is no identifiable threshold below which there is no human health. Member States should encourage research into the effects of benzene and carbon monoxide taking air pollution in enclosed spaces into account as well as that in outside air. Standardised accurate measurement techniques and common criteria for the location of measuring stations and important element in the assessment of ambient air quality with a view to obtaining comparable information across the Community. Information on concentrations of benzene and carbon monoxide should be forwarded to the Commission as a basis for regular reports.

**Opportunities / Synergies / Constraints / Challenges**
- Establish limit values for concentrations of benzene and carbon monoxide in ambient air intended to avoid, prevent or reduce harmful effects on human health and the environment as a whole. Limit value for the protection of human health:
  - Benzene calendar year 5 µg/m³
  - Carbon monoxide maximum daily 8-hour mean 10 mg/m³
- Assess concentrations of benzene and carbon monoxide in ambient air on the basis of common methods and criteria
- Obtain adequate information on concentrations and ensure that is made available to the public
- Maintain ambient air quality where it is good and improve in other cases with respect to benzene and carbon monoxide

**Implications for the SEA Methodology**
The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

**Internet link:** http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=CELEX:32000L0069:EN:HTML
Summary / Overview
The aim of this Directive is to limit emissions of acidifying and eutrophying pollutants and ozone precursors in order to improve the protection in the Community of the environment and human health against risks of adverse effects from acidification, soil eutrophication and ground-level ozone and to move towards the long-term objectives of not exceeding critical levels and loads and of effective protection of all people against recognised health risks from air pollution by establishing national emission ceilings, taking the years 2010 and 2020 as benchmarks, and by means of successive reviews.

Opportunities / Synergies / Constraints / Challenges
Interim environmental objectives:
- **Acidification**: The areas where critical loads are exceeded shall be reduced by at least 50% (in each grid cell) compared with the 1990 situation.
- **Health related ground level ozone exposure**: The ground-level ozone load above the critical level for human health (AOT60=0) shall be reduced by two-thirds in all grid cells compared with the 1990 situation. In addition, the ground-level ozone load shall not exceed an absolute limit of 2.9 ppm.h in any grid cell.
- **Vegetation related ground level ozone exposure**: The ground-level ozone load above the critical level for crops and semi-natural vegetation (AOT40=3 ppm.h) shall be reduced by one-third in all grid cells compared with the 1990 situation. In addition, the ground-level ozone load shall not exceed an absolute limit of 10 ppm.h, expressed as an exceedence of the critical level of 3 ppm.h in any grid cell.

National emissions ceilings:
- SO₂: 585 Kilotonnes
- NOx: 1167 Kilotonnes
- VOC: 1200 Kilotonnes
- NH₃: 297 Kilotonnes

Implications for the SEA Methodology
The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.


<table>
<thead>
<tr>
<th>Proponent body</th>
<th>European Parliament and The Council of the European Union</th>
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<td>Date produced</td>
<td>2002</td>
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**Summary / Overview**

The third Daughter Directive relating to ozone in ambient air. The purpose of this Directive to establish long-term objectives, target value, alert threshold and an information threshold for concentrations of ozone in ambient air in the Community, designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole. To promote increased cooperation between Member States in reducing ozone levels.

**Opportunities / Synergies / Constraints / Challenges**

- Alert threshold for ozone 1 hour average 240 µg/m³
- Information threshold for ozone 1 hour average 180 µg/m³
- Obtain adequate information on ambient levels of ozone and ensure that is made available to the public and relevant organisations
- Maintain ambient air quality where it is good and improve in other cases with respect to ozone
- Community progress towards attaining the long-term objectives shall be subject to successive reviews as part of the process using the year 2020 as a benchmark
- Member States shall draw up a list of zones and agglomerations in which the levels of ozone in ambient air (as appropriately assessed) are higher than the target values found in Annex I of this Directive
- Short-term action plans at appropriate administrative levels indicating specific measures to be taken in the short-term taking into account particular local circumstances, for the zones where there is a risk of exceedences of the alert threshold
- In zones and agglomerations where during any of the previous five years of measurement, concentrations of ozone have exceeded a long-term objectives, fixed continuous measurement is mandatory

**Implications for the SEA Methodology**

The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

Directive 2002/49/EC relating to the assessment and management of environmental noise (the Environmental Noise Directive (END))

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>European Commission</th>
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<tr>
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<tr>
<td>Date produced</td>
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</table>

Summary / Overview

The aim of the END is to define a common approach across the European Union with the intention of avoiding, preventing or reducing on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. This will involve:

- Informing the public about environmental noise and its effects;
- The preparation of strategic noise maps for: large urban areas (referred to as 'agglomerations' in the END), major roads, major railways and major airports as defined in the END; and
- Preparing action plans based on the results of the noise mapping exercise. Such plans will aim to manage and reduce environmental noise where necessary, and preserve environmental noise quality where it is good.

The noise mapping and action planning process is to be taken forward on a five-yearly rolling programme. The first round of mapping and action planning applies to the largest of the agglomerations (including the industries and ports within them), the busiest major roads and railways and all major airports.

By 30 June 2007, strategic noise maps showing the situation in the preceding calendar year must be drawn up for all agglomerations with over 250,000 inhabitants, and for all major roads with over 6 million vehicle passages a year, major railways with over 60,000 train passages a year, and major civil airports. This will be extended by 30 June 2012 to cover all agglomerations, major roads and railways. Action plans must be developed to address issues arising.

Implications for the SEA Methodology

Any noise objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive. Noise impacts from the LEZ may not be significant, however.


Transport for London
January 2006

Proponent body: European Parliament and Council of the European Union

Status: Statutory

Date produced: 2004

Summary / Overview

The Forth Daughter Directive relating to arsenic, cadmium, nickel, mercury and polycyclic aromatic hydrocarbons (PAHs). Scientific evidence shows that arsenic, nickel, cadmium and some polycyclic aromatic hydrocarbons are human genotoxic carcinogens and there is no identifiable threshold below which these substances do not pose a risk to human health. Impact on human health and the environment occurs via deposition. With the aim of minimising harmful effects on human health and the environment as a whole, of airborne arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons, targets values should be set to be attained as far as possible.

Opportunities / Synergies / Constraints / Challenges

- **Target values:**
  - Arsenic 6 ng/m³
  - Cadmium 5 ng/m³
  - Nickel 20 ng/m³
  - Benzo(a)pyrene 1 ng/m³

- Target values would not require any measure entailing disproportionate costs
- Regarding industrial installations they would not involve measures beyond the application of best available techniques (BAT) as required by Directive 96/61/EC concerning integrated pollution prevention and control
- Target values of this Directive are not to be considered as environmental quality standards as defined in the afore mentioned Directive and which according to Article 10 of that Directive require stricter conditions than those achievable by BAT
- As with previous Directives reviewed objectives of this Directive are to establish target values for said pollutants, determine common methods and criteria for assessment, ensure ambient air quality with respect to said pollutants is maintained where good and improved in other cases and make information available to the public and concerned organisations
- Member States shall draw up a list of zones and agglomerations where targets are exceeded and not entailing disproportionate costs shall demonstrate the application of all necessary measures directed in particular at the predominant emission sources in order to attain target values

Implications for the SEA Methodology

The air quality objectives are key environmental protection targets relevant to the Mayor’s Air Quality / Transport Strategies and must be identified as such in the Environmental Report in order to comply with the SEA Directive.

SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

Air Quality Thematic Strategy (COM (2005) 446)

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>Commission of the European Communities</th>
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<td>Status (e.g. statutory, non-statutory)</td>
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<td>Date produced</td>
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Summary / Overview

The thematic strategy on air pollution establishes interim objectives for air pollution in the EU and proposes measures for achieving them. It recommends that current legislation be modernised, be better focused on the most serious pollutants and that more is done to integrate environmental concerns into other policies and programmes.

Opportunities / Synergies / Constraints / Challenges

In relation to health, ground level ozone and particulate matter are the pollutants of most concern. Exposure can lead to impacts ranging from minor effects on the respiratory system to premature mortality:

- Ozone is not emitted directly but is formed through the reaction of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of sunlight
- Particulate matter can be emitted directly to the air or be formed in the atmosphere from gases such as sulphur dioxide, nitrogen oxides and ammonia

Ecosystems are also damaged by:

- The deposition of the acidifying substances – nitrogen oxides, sulphur dioxide and ammonia – which lead to loss of flora and fauna
- Excess nutrient nitrogen in the form of ammonia and nitrogen oxides can disrupt plant communities, leach into freshwaters leading in each case to a loss of biodiversity (“eutrophication”)
- Ground level ozone that results in physical damage and reduced growth of agricultural crops, forests and plants.

Air pollution also causes damage to materials leading to a deterioration of buildings and monuments.

It is proposed that Member States undertake more comprehensive monitoring of ambient levels of PM2.5 in urban areas as a first step in reducing average urban concentrations throughout their territory. A uniform interim reduction target of 20% is proposed for all Member States to be attained between 2010 and 2020.

Implications for the SEA Methodology

Achieving the Sixth Environmental Action Plan objectives of “levels of air quality that do not give rise to significant negative impacts on, and risks to human health and the environment” means:

- For the natural environment, no exceedence of critical loads and levels
- For human health, the situation is more complex as there is no known safe level of exposure for some pollutants such as particulate matter and ground level ozone but there is strong health evidence, however, that measures taken to reduce these pollutants will have beneficial effects for the EU population.

The Strategy has been estimated to deliver at least €42 billion per annum in health benefits but to cost approximately €7.1 billion per annum (this suggests that more substantial air quality improvements are still cost effective).

One of the proposals is to introduce standards for fine particulate matter in air: PM2.5 and this may require a forward-looking approach to SEA mitigation and monitoring.

The Commission proposes to move to a system of electronic reporting based on a shared information system using the INSPIRE framework for spatial data reporting.

The Commission will also be considering establishing a common framework for designating low-emission zones.

## One Future – Different Paths: The UK’s Shared Framework for Sustainable Development

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### Summary / Overview

The Shared Framework sets the overarching requirements for achieving sustainable development in the UK and devolved democratic bodies.

The framework covers the period 2005 – 2020 and comprises:

- A shared understanding of sustainable development
- A common purpose outlining what we are trying to achieve and the guiding principles we all need to follow to achieve it
- Our sustainable development priorities for UK action, at home and internationally
- Indicators to monitor the key issues on a UK basis

### Opportunities / Synergies / Constraints / Challenges

There are 5 principles that a policy must adhere to in order to be sustainable, namely:

- Living within Environmental Limits
- Ensuring a strong healthy and just society
- Achieving a sustainable economy
- Promoting good governance
- Using sound science responsibly

The Framework highlights the importance of ‘sound science’ and in particular the acknowledgement of the element of uncertainty though the ‘precautionary principle’.

### Implications for the SEA Methodology

- The SEA Objectives must address the relevant priority areas highlighted in the framework
- The Shared Framework places a greater stress on environmental factors than the 1999 strategy
- In particular it names climate change as the number one priority

### Working with the grain of nature: a biodiversity strategy for England

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#### Summary / Overview

In June 1992, 159 governments signed the Convention on Biological Diversity (CBD) at the Earth Summit in Rio de Janeiro. The CBD called for the preparation and enforcement of national strategies and action plans to conserve, protect and enhance biodiversity. The UK Biodiversity Action Plan (UKBAP):

- Is the Government’s response to the CBD
- Describes the UK’s biological resources
- Commits a detailed plan for the protection of these resources
- Has 391 Species Action Plans, 45 Habitat Action Plans and 162 Local Biodiversity Action Plans with targeted actions

The Strategy sets out a series of actions that will be taken by the Government and its partners to make biodiversity a fundamental consideration across all main sectors of public policy.

#### Opportunities / Synergies / Constraints / Challenges

Economic activities can adversely affect biodiversity, by using up the resources on which biodiversity relies; by converting resources and habitats to other uses; by polluting habitats and by increasing the risk of impacts from invasive species.

This leads to real economic costs including:

- The direct costs of preventing further habitat degradation or of mitigating the effects of habitat loss;
- The costs of replacing the goods and services biodiversity provides (such as coastal defence, clean water and recreational opportunities) if they are lost
- Indirect economic costs through knock-on effects on other activities and negative environmental impacts in terms of lost future economic opportunities, for example for new drugs or materials from natural sources

- Economic decision-makers may not take external costs and benefits into consideration.

  Examples are:
  - Nutrient and pesticide pollution from agriculture
  - Point source water pollution
  - Water abstraction
  - Landfill waste practices
  - Air pollution

#### Implications for the SEA Methodology

There are potential indirect benefits from preserving biodiversity via air quality improvements (See above.)

**Internet link:** [http://www.ukbap.org.uk/EBG/england_biodiversity_strategy.asp](http://www.ukbap.org.uk/EBG/england_biodiversity_strategy.asp)
The Future of Transport White Paper

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<tr>
<td>Date produced</td>
<td>2004</td>
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</table>

Summary / Overview

- The White Paper is built around three central themes:
- Sustained investment over the long term
- Improvements in transport management
- Planning ahead - cannot build a way out of the problems on the road networks

The White Paper stresses the balance between the need to travel and the need to improve quality of life: seeking solutions that meet long-term economic, social and environmental goals.

Opportunities / Synergies / Constraints / Challenges

Constraints and challenges:
- Mobility comes at a cost, whether financial, social or environmental
- As the economy grows, the need and desire to travel will also increase
- People now often commute long distances to work, some by choice and some because of circumstances beyond their control
- Demographic changes will continue to have a significant effect
- There is a need for coherent transport networks with:
  - The road network providing a more reliable and freer-flowing service for both personal travel and freight
  - The rail network providing a fast, reliable and efficient service, particularly for interurban journeys and commuting into large urban areas
  - Bus services that are reliable, flexible, convenient and tailored to local needs
  - Walking and cycling a real alternative for local trips
  - Ports and airports providing improved international and domestic links

Environmental strategy:
- There will continue to be a strong presumption against schemes that would significantly affect environmentally sensitive sites or important species habitats or landscapes
- Environmental impacts of new and existing transport infrastructure will be kept to a minimum, ensuring that mitigation measures are implemented to a high standard
- Ensure delivery of carbon savings and reduce the impact of other emissions which pollute the environment
- Encourage the development, introduction and take-up of new vehicle technologies and fuels
- Ensure that the noise impacts of transport are reduced and mitigated
- Invest in public transport to provide alternatives to the car

Implications for the SEA Methodology

Note:
- Stress against significant impacts on species, habitats and landscapes
- Importance of reducing carbon emissions
- Role of new vehicle technologies
- Airport Surface Access Strategies to be reflected in Regional Transport Strategies – possible mitigation
- Improvement to local air quality hot spots can only be delivered locally

Internet link:
http://www.dft.gov.uk/stellent/groups/dft_about/documents/divisionhomepage/031259.hcsp
The Air Quality Strategy for England, Wales, Scotland and Northern Ireland Working Together for Clean Air

Proponent body
Department of the Environment, Transport and the Regions in partnership with the Scottish Executive, The National Assembly for Wales and the Department of the Environment in Northern Ireland.

Status (e.g. statutory, non-statutory)
Statutory

Date produced
2000

Summary / Overview
The proposals in this strategy aim to protect people’s health and the environment without imposing unacceptable economic or social costs. They form an essential part of the Government’s strategy for sustainable development. The pollutants covered are: benzene; 1,3-butadiene; carbon monoxide; lead; nitrogen dioxide; ozone; particles (PM10); and sulphur dioxide.

Opportunities / Synergies / Constraints / Challenges
This Strategy sets objectives for eight main air pollutants to protect health. Performance against these objectives will be monitored where people are regularly present and might be exposed to air pollution. Under local air quality management (LAQM), local authorities will work towards achieving the objectives prescribed by regulation for seven of the pollutants, but not for ozone since this is affected by pollutants produced outside the UK. The table below sets out these objectives.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Objective</th>
<th>Date to be achieved by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>16.25μg/m3 (5ppb) Running annual mean</td>
<td>31 December 2003</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>2.25μg/m3 (1ppb) Running annual mean</td>
<td>31 December 2003</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>11.6mg/m3 (10ppm) Running 8-hour mean</td>
<td>31 December 2003</td>
</tr>
<tr>
<td>Lead</td>
<td>0.5μg/m3 0.25μg/m3 Annual mean</td>
<td>31 December 2004 31 December 2008</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>200μg/m3 (105ppb) not to be exceeded more than 18 times per year</td>
<td>1 hour mean 31 December 2005</td>
</tr>
<tr>
<td>Particles (PM10)</td>
<td>50μg/m3 not to be exceeded more than 35 times a year</td>
<td>24 hour mean 31 December 2004</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>350μg/m3 (132ppb) not to be exceeded more than 24 times per year</td>
<td>1 hour mean 31 December 2004</td>
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</table>

Implications for the SEA Methodology
Benchmarks for the SEA objectives

### AQEG Nitrogen Dioxide in the United Kingdom

<table>
<thead>
<tr>
<th><strong>Proponent body</strong></th>
<th>Defra’s Air Quality Expert Group</th>
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<tbody>
<tr>
<td><strong>Status (e.g. statutory, non-statutory)</strong></td>
<td>Independent Advisory Group</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>2004</td>
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</tbody>
</table>

#### Summary / Overview

Detailed analysis of nitrogen dioxide in the United Kingdom. Includes emission sources and trends, analysis of monitoring data and predictions of future concentrations.

#### Opportunities / Synergies / Constraints / Challenges

- Road transport largest source of NO\textsubscript{X} emissions in the UK. Emissions predicted to decline by about a half by 2010.
- Exceedences of objectives in London not confined to the roadside.
- Primary emissions of NO\textsubscript{2} are key. Related to diesel vehicles, especially when slow moving.
- Exceedences of 1-hour NO\textsubscript{2} objective less likely than exceedences of annual mean objective.
- Future exceedences depend on the model used. The ERG model was one of the models used.
- In 2010 NO\textsubscript{X} in central London will be one third domestic and commercial, one third traffic and one third other sources.
- With current policies, exceedences of objectives and limit values will remain in 2005 and 2010 respectively.
- Heavy duty vehicles make a major contribution to NO\textsubscript{X} emission and primary NO\textsubscript{2} emissions.
- Current estimates of future concentrations may be optimistic because of rising O\textsubscript{3} concentrations and increases in primary NO\textsubscript{2} emissions.
- The chemistry of NO\textsubscript{2} is such that reductions in emissions of NO\textsubscript{X} will not lead to proportional reductions in concentrations of NO\textsubscript{2}.

#### Implications for the SEA methodology

Reductions in emissions will make less than proportional reductions in concentrations.

#### Internet link: http://www.defra.gov.uk/environment/airquality/aqeg/nitrogen-dioxide/
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

The Highways Agency Family of Strategic Plans

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>Highways Agency</th>
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<td>Date produced</td>
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**Summary / Overview**

The Government's White Paper, "A New Deal for Transport: Better for Everyone" recognised that traffic growth lies at the heart of the national traffic debate and that building new roads alone will not solve the problem of congestion.

The White Paper and the associated Roads Review, "A New Deal for Trunk Roads in England", changed the role of the Highways Agency from one of a road builder and maintainer to that of a Network Operator and provided it with a new strategic aim:

"To contribute to sustainable development by maintaining, operating and improving the trunk road network in support of the Government's integrated transport and land use policies".

**Opportunities / Synergies / Constraints / Challenges**

Three Investment Areas:
- Maintain
- Operate
- Improve

Five Investment Criteria:
- Safety
- Environment
- Economy
- Accessibility
- Integration

- *Making Maintenance the Priority* commits the HA to plan maintenance in consultation with local highways authorities, taking into account the requirements of regional and local transport plans
- *The Targeted Programme of Improvements* identifies London Orbital (M25) and the motorways leading to it (M1, M3, M4, M20 and M40) as among the most congested, and therefore most polluting, roads in the country
- *The Targeted Programme of Improvements* commits the HA to take practical steps to minimise vehicle emissions through the design of schemes and during construction
- In *Towards a Balance with Nature* the HA promises to take practical steps to minimise emissions, including appropriate highway designs to influence vehicle operation plus controls on the performance of contractors
- *Better Value from Busy Roads* states that the HA will employ a range of measures and work with others who can influence the operation of the network to reduce the costs of congestion
- *Encouraging Sustainable Travel* includes a commitment to take the needs of pedestrians and cyclists etc into account in designing and operating trunk routes (for example by reducing severance)
- The HA promises in *Working in Partnership* to work with others to ensure passengers and freight operators can switch efficiently and smoothly between different modes of transport, and to broaden the choices available

**Implications for the SEA Methodology**

- The HA promises to make it’s air quality monitoring available data via the internet – this could be useful in the assessment phase (if available now)
- There may be scope to promote the objectives of the LEZ in the Highways Agency’s *Family of Strategic Plans*: i.e. scope for mitigation

Internet link: [http://www.highways.gov.uk/aboutus/corp_docs.htm#main_reports](http://www.highways.gov.uk/aboutus/corp_docs.htm#main_reports)
The London Health Strategy Outline Strategic Framework

<table>
<thead>
<tr>
<th>Proponent body</th>
<th>NHS Executive London Regional Office</th>
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<tr>
<td>Date produced</td>
<td>March 2000</td>
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</table>

Summary / Overview

Priorities:
- Work for health and regeneration
- Address inequalities and poverty
- Promote the health of black and minority ethnic people
- Improve transport, and related aspects of the environment

Other important objectives:
- Improve London by tackling housing and homelessness, crime and disorder, and water fluoridation
- Promote the health of these other vulnerable groups, and improve their access to services: young children, young people, and refugees and asylum seekers
- Promote healthier lifestyles, by reducing smoking, substance misuse, and accidental deaths and injuries

Opportunities / Synergies / Constraints / Challenges

The determining factors of health are:
- Education
- Jobs – possible negative impact on employment from LEZ
- Income
- Housing
- Social support
- Environmental quality – LEZ should have a positive impact on environmental quality

A range of transport related interventions could have a positive influence on health. These can broadly be divided between:
- Technical measures – such as fuel quality improvements or design of zero emission vehicles
- Transport planning – influencing options for road, rail and other transport systems

Implications for the SEA Methodology

The following transport policy initiatives are identified as having potential to improve health:
- Reducing motor vehicle use, emissions and speed
- Actively promoting walking and cycling, for example by improving safety through separating cycles from motorised traffic
- Improving the quality and accessibility of public transport, particularly for elderly, disabled and disadvantaged people, with the potential added benefit of increasing the extent to which people walk to and from transport facilities
- Ensuring that policies help improve accessibility to employment and other key facilities, particularly in deprived areas

There is some crossover between all of these initiatives and the aim of improving air quality – therefore they have potential to form mitigation measures

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**Summary / Overview**

Outline of the main findings and recommendations of the HIA on the draft London Plan

**Opportunities / Synergies / Constraints / Challenges**

The most important proposals for health are:

- Targets for affordable housing
- Principle of protecting open spaces
- Promotion of mixed and multiple uses of buildings and facilities
- Partnership to improve skills and reduce barriers to employment

Possible flaws:

- Might some of the key assumptions prove mistaken – particularly those relating to economic growth, population growth and housing demand?
- The implementation and construction phase of major developments will mean considerable and long-lasting disruption for people in areas of intensification

**Implications for the SEA Methodology**

None identified

**Internet link:** [http://www.londonshealth.gov.uk/pdf/spatial.pdf](http://www.londonshealth.gov.uk/pdf/spatial.pdf)
Green light to clean power: The Mayor’s Energy Strategy

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Summary / Overview

The Strategy’s specific objectives are:
- To reduce London’s contribution to climate change by minimizing emissions of carbon dioxide from all sectors (commercial, domestic, industrial and transport) through energy efficiency, combined heat and power, renewable energy and hydrogen
- To help to eradicate fuel poverty, by giving Londoners, particularly the most vulnerable groups, access to affordable warmth
- To contribute to London’s economy by increasing job opportunities and innovation in delivering sustainable energy, and improving London’s housing and other building stock

The underlying principles are:
- Use less energy (Be Lean)
- Use renewable energy (Be Green)
- Supply energy efficiently (Be Clean)

Opportunities / Synergies / Constraints / Challenges

- London should reduce its emissions of Carbon dioxide by 20 per cent, relative to the 1990 level, by 2010 and 60 per cent by 2050. However some LEZ scenarios suggest a small increase in the emissions of Carbon dioxide.
- Increased energy efficiency and more power generated from renewable sources should decrease the output of NO2 and PM10 from energy generation – although not a major source of PM10.
- Transport for London to lead in adopting new and fuel-efficient technology for use in London’s public transport and TfL’s own vehicles. This will include actively reviewing the opportunities for hydrogen and fuel cells.
- The Mayor wants to establish a small number of ‘Energy Action Areas’, in defined geographical areas that act as showcase low-carbon communities, demonstrate a range of sustainable energy technologies and techniques in different types of buildings, and provide a means of targeting resources.

Implications for the SEA Methodology

Need to consider the impact of non-transport related reductions in emissions.

Internet link: http://www.london.gov.uk/mayor/strategies/energy/docs/energy_strategy04.pdf
Connecting with London’s nature: The Mayor’s Biodiversity Strategy

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**Summary / Overview**

London’s environment has wild areas of woodland, heath, wetlands and marshes, Royal Parks and city squares. These, together with community gardens, public open spaces and private gardens, support a remarkable diversity of wildlife. London’s green areas are under significant pressure from both competing land uses and a shortage of resources to continue their upkeep.

The Mayor is committed to a programme of re-survey to keep the information on London’s habitats updated every ten years.

**Objectives for biodiversity:**
- Biodiversity for people: to ensure all Londoners have ready access to wildlife and natural green spaces
- Nature for its own sake: to conserve London’s plants and animals and their habitats
- Economic benefits: to ensure the economic benefits of natural green space and greening are fully realised
- Functional benefits: to ensure London enjoys the functional benefits that biodiversity can bring
- Sustainable development: to recognise biodiversity conservation as an essential element of sustainable development

**Opportunities / Synergies / Constraints / Challenges**

Five sites in London are recognised as being of European importance:
- The reservoirs and gravel pits of the Lea Valley which support internationally important populations of waterfowl, are designated a Special Protection Area (SPA)
- A second SPA covers a number of reservoirs to the south-west of London, including Kempton Park Reservoirs
- Wimbledon Common, Richmond Park and Epping Forest, are candidates for recognition as Special Areas of Conservation under the European Union Habitats Directive, principally for their populations of stag beetles
- The Lea Valley and South West London Waterbodies Special Protection Areas are also protected under the Ramsar Convention

There are 38 Sites of Special Scientific Interest in London
- The most important link between air quality and biodiversity in London is probably nitrogen deposition, predominantly from vehicle emissions, which can affect plants directly and also enrich the fertility of naturally infertile habitats, such as heathland, damaging this habitat. Data on nitrogen dioxide show that the whole of London is at present above critical levels.

**Implications for the SEA Methodology**

Consider estimating concentrations of NOX as well as NO2 and PM10

**Internet link:** [http://www.london.gov.uk/mayor/strategies/biodiversity/docs/strat_full.pdf](http://www.london.gov.uk/mayor/strategies/biodiversity/docs/strat_full.pdf)
### Taxi Emissions Strategy

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### Summary / Overview

The Mayor’s Taxi Emissions Strategy will reduce the emissions from London’s taxis, by up to 50% by the end of 2007. This Strategy is part of the Mayor’s plan to make London a Low Emission Zone, which will remove the most polluting buses, coaches and lorries from London’s streets. Taxis are responsible for 24 per cent of PM$_{10}$ and 12 per cent of NO$_X$ of road transport emissions in central London.

London's taxi fleet will be expected to meet strict emissions standards by 2007. Taxi drivers will be able to meet the requirements by bringing forward the date at which they planned to invest in a new, cleaner cab, fitting abatement technology or converting to run on alternative fuels. Funding for these options will be provided through a small environmental surcharge on each fare, from April 2005.

### Opportunities / Synergies / Constraints / Challenges

- 20,000 black taxis operate in London – emissions improvements on this fleet will clearly support the objectives of the LEZ

### Implications for the SEA Methodology

Ensure that the reductions in emissions from the taxi strategy form part of the assumptions in the traffic model.

### Internet link:

http://www.london.gov.uk/mayor/environment/air_quality/mayor/taxi_emissions.jsp
Sounder City: The Mayor’s Ambient Noise Strategy

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Summary / Overview

Noise can disrupt communication and other activities and increase stress. Noise levels are often higher where transport and buildings are concentrated. Busy roads, major rail corridors, and aircraft are the main sources of ambient noise. London is becoming more of a ‘24 hour city’ and more flexible patterns of living and working, tend to mean more noise in hitherto quieter periods of the day. Visual design quality in London has risen. Similar attention needs to be given to achieving good acoustic design. Evidence for the indirect health effects of noise is less conclusive than, for example, air pollutants.

Objectives:
- To minimise the adverse impacts of road traffic noise
- To encourage preferential use of vehicles which are quieter in their operating conditions
- To minimise the adverse impacts of noise from freight and servicing
- To promote effective noise management on rail networks in London
- To minimise the adverse impacts of aircraft noise in London, especially at night
- To minimise the adverse impacts of noise on or around London’s rivers and canals, while retaining working wharves and boatyards, and enhancing water space tranquillity and soundscape quality
- To minimise the adverse impacts of industrial noise, recognising the use of best practicable means/best available techniques, and the need to retain a diverse and sustainable economy
- To improve noise environments in London’s neighbourhoods, especially for housing, schools, hospitals and other noise sensitive uses
- To protect and enhance the tranquillity and soundscape quality of London’s open spaces, green networks and public realm

Opportunities / Synergies / Constraints / Challenges

- A key issue is the backlog of basic street maintenance caused by decades of under investment – funds used to implement the LEZ will not be available for other purposes such as maintenance
- Securing a night aircraft ban across London might also reduce the numbers of flights and therefore emissions
- Design needs to give a higher priority to all aspects of sound – passive ventilation and cooling of buildings can avoid annoying fan and other plant noise (and would reduce demand for energy)
- Both noise and air pollutants come mainly from the same sources. Reducing traffic volumes, encouraging smoother traffic flows, and using vehicles running on alternative fuels such as compressed natural gas or hydrogen, which are often cleaner and quieter, can both reduce noise and improve air quality
- The optimum traffic speeds for minimising air pollutant emissions are not the same as those for minimising traffic noise
- Continuous building frontages can screen noise, but narrow, high-sided ‘urban street canyons’ can hinder dispersion of polluted air
- A Low Emission Zone would be likely to have a modest effect on noise, reducing the level of some noise events

Implications for the SEA Methodology

No specific implications

Internet link: http://www.london.gov.uk/mayor/strategies/noise/docs/noise_strategy_all.pdf
Cleaning London’s air: The Mayor’s Air Quality Strategy

Proponent body: Greater London Authority
Status (e.g. statutory, non-statutory): Statutory
Date produced: September 2002

Summary / Overview
EU Air Quality Framework and Daughter Directives, together with the National Air Quality Strategy (NAQS), set a series of targets for the main pollutants that impact human health. The Mayor’s Strategy implements the requirements of this legislation in London. NAQS recognises that London is one of the places in the UK that may not be able to meet these targets because of its special circumstances. Individual pollutants have different impacts on health, collectively the impacts may be synergistic (i.e. greater than the sum of the impacts of individual pollutants).

Opportunities / Synergies / Constraints / Challenges
- London economy growing faster than national average – predicted to create 636,000 jobs (2002-2016)
- Large numbers of visitors – increased from 17 million to around 30 million in 1990s
- Road traffic is predicted to increase by 4.5% in Inner London and 7.5% in Outer London (2002-2011)
- Heathrow, Gatwick, Stanstead, Luton and City airports together had 116 million passengers which may double by 2020
- Pollution effects from air / road transport to and from Heathrow is a particular concern
- PM10 and Ozone are the pollutants about which most is known in terms of health impacts
- Unclear if the absolute level of pollutants or changes in the concentrations has the greatest impacts on health

The Mayor aims to
- Reduce traffic and improve public transport – may assist LEZ effectiveness
- Accelerate introduction of cleaner vehicles to London’s roads
- Introduce one or more low emission zones
- Reduce emissions by vehicle class
- Manage traffic to encourage alternative modes of transport
- Reduce emissions from Heathrow (primarily from ground sources rather than aircraft)
- Encourage switch of passengers and freight to rail and shipping
- Limit pollution from industrial sources
- Target construction sites, domestic fires and energy efficiency in buildings through the planning system

Implications for the SEA Methodology
- Need to consider synergistic effects of pollutants in some fashion during the assessment process. However it may not be possible to do more than say the predicted benefits may be understated if they do not take account of synergies between pollutants.
- Congestion charging and parking levies would not necessarily achieve the objectives, according to London Planning Advisory Committee – suggests this option does not need to be examined further.
- Cleaner Transport Forum, National Society for Clean Air and Environmental Protection and DfT are considering the implications nationwide

Internet link: http://www.london.gov.uk/mayor/strategies/air_quality/air_quality_strategy.jsp
The Mayor’s Transport Strategy

**Proponent body**: Transport for London

**Status (e.g. statutory, non-statutory)**: Statutory

**Date produced**: July 2001

**Summary / Overview**

Strategy identifies gridlock of the transport system as the single biggest problem for London. It harms business efficiency, threatens to undermine the city’s competitive position in the world, and worsens the quality of life of Londoners. Implementing the Transport Strategy will increase the overall capacity of London’s Underground and rail systems by up to 50 per cent along with an increase of 40 per cent in bus capacity across London by 2011.

**Opportunities / Synergies / Constraints / Challenges**

Ten priorities:
- Reducing traffic congestion
- Overcoming the backlog of investment on the Underground
- Making radical improvements to bus services across London
- Better integration of the National Rail system with London’s other transport systems
- Increasing the overall capacity of London’s transport system by promoting: major new cross-London rail links and new Thames river crossings in east London
- Improving journey time reliability for car users reducing car dependency by increasing travel choice
- Supporting local transport initiatives;
- Making the distribution of goods and services in London more reliable, sustainable and efficient
- Improving the accessibility of London’s transport system
- Bringing forward new integration initiatives and provide much better information and waiting environment

**Drivers of change**:  
- Increasing demand for travel resulting from growth
- New economy based on information technology and electronic communications
- Environmental protection policies such as increasingly stringent controls on vehicle emissions of pollutants and greenhouse gases, and efforts to increase recycling
- Gradual extension of opening hours for shopping and leisure activities, leading to increasing off-peak travel demand
- Impacts of transport improvements proposed in the Strategy in facilitating travel by those currently deterred by, for example, congestion, overcrowding, high costs, or an inaccessible network

**Implications for the SEA Methodology**

No specific implications

**Internet link**: [http://www.london.gov.uk/mayor стратегии транспорта/transport/trans_strat.jsp](http://www.london.gov.uk/mayor стратегии транспорта/transport/trans_strat.jsp)
The London Plan

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Summary / Overview

The London Plan is the strategic plan setting out an integrated social, economic and environmental framework for the future development of London, looking forward 15–20 years. It integrates the physical and geographic dimensions of the Mayor’s other strategies, including broad locations for change and providing a framework for land use management and development, which is strongly linked to improvements in infrastructure, especially transport. It provides the London-wide context within which individual boroughs must set their local planning policies and sets the policy framework for the Mayor’s involvement in major planning decisions in London. It sets out proposals for implementation and funding and it is London’s response to European guidance on spatial planning and a link to European Structural Funds.

Opportunities / Synergies / Constraints / Challenges

- Growth can only be accommodated without encroaching on open spaces if development takes place more intensively, leading to higher densities and plot ratios on existing brownfield sites.
- The future scale and phasing of development should be integrated with the capacity of the public transport system and accessibility of different locations.
- Growth will be inhibited unless a range of supply side issues is dealt with to match the demand, including the supply of commercial floorspace, housing, relevant skills, adequate transport and a high quality environment.
- Areas of London that have not benefited from recent development – notably in parts of the east – should be prioritised for future development.

Six Objectives:

1. To accommodate London’s growth within its boundaries without encroaching on open spaces.
2. To make London a better city for people to live in.
3. To make London a more prosperous city with strong and diverse economic growth.
4. To promote social inclusion and tackle deprivation and discrimination.
5. To improve London’s accessibility.
6. To make London a more attractive, well-designed and green city.

Environmental Policies:

- The shift towards a compact city will enable the efficient use of resources such as land and energy.
- The ‘proximity principle’ – which states that resources and wastes should be collected, re-used or disposed of as close as possible to their source – will be applied.
- A stronger emphasis in support of the Environmental Strategies to the prevention of environmental problems in London will be applied.
- Measures against the impacts of climate change will be needed.

Implications for the SEA Methodology

- Consideration of economic impacts of LEZ – the (presumably negative) impact will have indirect health effects offsetting any health benefits to some extent.
- Monitoring Framework should be integrated with the AMR.

Internet link: http://www.london.gov.uk/mayor/strategies/sds/london_plan/lon_plan_all.pdf
London Cultural Capital: Realising the potential of a world-class city

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**Summary / Overview**

The GLA Act 1999 requires that the Culture Strategy contain ‘policies with respect to culture, media and sport in Greater London’. It also provides that the strategy may contain policies relating to ‘the arts, tourism and sport; ancient monuments and sites; buildings and other structures which are of historical or architectural interest or which otherwise form part of the heritage of Greater London; museums and galleries; library services; archives; treasure, and antiquities of a movable nature; broadcasting, film production and other media of communication’.

**Opportunities / Synergies / Constraints / Challenges**

**Objectives**

- Excellence: to enhance London as a world class city of culture
- Creativity: to promote creativity as central to London’s success
- Access: to ensure that all Londoners have access to culture in the city
- Value: to ensure that London gets the best value out of its cultural resources

The LEZ could be undermined by the third and fourth objectives, since promoting access and ensuring that London gets value from its cultural resources implies increased visitor numbers and some of these visitors will arrive by car, bus and coach, which in turn implies increased emissions.

- However the Strategy admits there are “strong sustainability arguments for increased cultural provision at neighbourhood and local level”
- The planning of new cultural facilities and major events needs to be integrated with transport routes
- Poor levels of air quality deter people from coming to the city and discourage outdoor sporting and recreational activities
- Pollution also causes long-term physical damage to London’s rich built heritage
- London’s tourism industry is particularly dependent on visitors from abroad, but international tourism generates high levels of air and coach travel which are a major contributor to poor air quality

**Implications for the SEA Methodology**

Method needed to assess the impact of pollution - especially Sulphur and Nitrogen – on the built and heritage environments

**Internet link:** [http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf](http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf)
## Visit London: the Mayor’s Plan for Tourism in London

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### Summary / Overview

The strategy presents high-level objectives for London’s tourism sector and outlines the framework for delivering tourism support over the 3-year plan period and beyond.

### Opportunities / Synergies / Constraints / Challenges

- Need to manage the impacts of tourism including:
- Effective area and visitor management to reduce visitor pressure in central locations and improve ways of getting around the city
- Increasing the supply of visitor accommodation across London, ensuring better distribution, to ease congestion and improve value for money
- Making it easier for people to use public transport, especially between London’s airports and central London, and to spread visitors’ use of public transport, providing incentives to maximise off-peak usage
- Working with relevant stakeholders to minimise the negative impacts of aviation and London’s airports through increases in efficiency in air transport and noise performance

### Implications for the SEA Methodology

No specific implications

### Internet link

SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

London’s Health: developing a vision together. The London Health Strategy
Outline Strategic Framework March 2000

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Summary / Overview

The London Health Strategy sets up a broadly based Coalition for Health and Regeneration, working to improve the health and well-being of Londoners. It builds enthusiastically on the huge amount of strategic work already under way across the capital. It pays special attention to diversity and to health inequalities, both between groups and between parts of London. This document sets out the framework.

The strategy takes account of: (1) factors which determine Londoners’ health; (2) health related issues which can benefit from an enhanced London focus.

The strategy’s fundamental principles are those of: (1) working in partnership; (2) involving citizens and communities; (3) sharing intelligence. Partners in the strategy look forward to working creatively with the Mayor and the Greater London Authority.

The four, closely interconnected top priorities are to: (1) work for health and regeneration; (2) address inequalities and poverty; (3) promote the health of black and minority ethnic people; (4) improve transport, and related aspects of the environment.

It is also important to: (2) promote the health of these other vulnerable groups, and improve their access to services: young children, young people, and refugees and asylum seekers;

All this must be underpinned by developing: (1) ways of measuring progress – ten high level indicators are proposed; (2) health impact and health inequalities impact assessments; (3) wider research and evidence; (4) practitioners’ knowledge and skills; (5) the London Health Observatory.

Opportunities / Synergies / Constraints / Challenges

Opportunities and synergies for the LEZ scheme include:
Identify effects of scheme on direct and indirect influence of transport on health, including via economic, social and environmental development. Identify effects of scheme on adverse impacts on health, both direct and indirect.

Expected health benefits of LEZ scheme, included for vulnerable groups, resulting from reduced emissions
Collaboration with Coalition for Health and Regeneration, regarding the potential and actual benefits to health of Londoners resulting from the scheme
Measure progress against indicators (develop more specific indicators to contribute to high level indicators)
Challenge/opportunity to demonstrate contribution to addressing inequalities, poverty, health of BME people and other vulnerable groups as well as to regeneration

Implications for the SEA Methodology

Data gathering & baseline indicators
Health Impact Assessment will be a key input to the SEA
Refer to Strategy summary statistical data for baseline data and details on indicators

Internet link: http://www.londonshealth.gov.uk/strategy.htm

Transport for London
January 2006
### Summary / Overview

The Draft South East Plan Part 1 includes core regional policies for the South East. It was handed to Government on 29 July 2005 after gaining approval from the South East England Regional Assembly on 13 July 2005.

### Opportunities / Synergies / Constraints / Challenges

Cross-cutting themes:
- Sustainable Development
- Global Competition
- Climate Change
- European Perspective
- Resource Use
- Technological Changes
- Disparities and Deprivation

The Plan’s sustainability appraisal highlighted a growing concern regarding the impact of the transport system on the environment.

The Plan notes that air quality has improved over recent decades but there are locations with poor air quality in the region, largely due to emissions from transport, trans-boundary pollution and high ozone levels. This is therefore an issue of regional significance.

The primary driver for national, regional and local air quality management is the protection of human health, although the impact of certain pollutants on wildlife habitats and vegetation is also a concern.

### Implications for the SEA Methodology

Consider the wider implications of the LEZ on the region’s air quality, health and biodiversity.

### Internet link

Internet link: [http://www.southeast-ra.gov.uk/southeastplan/plan/view_plan.html](http://www.southeast-ra.gov.uk/southeastplan/plan/view_plan.html)
The first East of England Plan sets out a draft regional strategy for planning and development in the region to the year 2021. It is formally a draft ‘Regional Spatial Strategy’ (RSS) and, once finalised, it will provide the statutory framework for local authorities to produce more detailed local development plans and local transport plans for their areas. The region has strong linkages with adjoining regions. It has a particularly close geographic and functional relationship with London. Although air quality in the region is relatively good there were, as at May 2003, 38 AQMAs identified where one or more of the air quality objectives are unlikely to be met. These included a cluster of problem sites in the urban areas close to London.

Opportunities / Synergies / Constraints / Challenges

Transport links to London remain very important, particularly in the south of the region with large numbers commuting into London on a regular basis. Much of both the road and rail network is heavily congested and while there is a significant infrastructure deficit, there is a need to encourage travel by means other than the private car and reduce the need to travel. Local development documents and local transport plans, having regard to the increased levels of development and associated infrastructure proposed across the region, will include objectives, proposals and policies that seek to:

- Reduce or reverse the growth of motor traffic
- Encourage infrastructure for cleaner transport fuels such as liquified petroleum gas (LPG) and compressed natural gas (CNG)
- Ensure that new development does not exacerbate air quality in existing and potential air quality management areas (AQMAs)
- Pay particular attention to any potential effects on wildlife, where potentially polluting development, increased motor traffic or intensive agricultural facilities producing ammonia, are expected close to sensitive habitats such as Sites of Special Scientific Interest (SSSIs)
- Seek to mitigate existing and potential air quality pollution problems.

Implications for the SEA Methodology

Consider the wider implications of the LEZ aim to minimise adverse impacts on environmental assets such as nature conservation and landscape character, historic features, mineral reserves, water resources and air quality of this neighbouring region and maintain good access to housing, jobs, schools, shopping and leisure facilities.

Internet link: http://www.eera.gov.uk/category.asp?cat=452
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

Environmental Report

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**Summary / Overview**

In Westminster, as is the case in most urban areas, there are two pollutants that will not meet the targets without further action. These are nitrogen dioxide and fine particles (known as particulates or PM10s). In 1998 the City Council carried out a review of air quality in Westminster and found that the standards for both pollutants were exceeded by up to 92% and 284% respectively. Using computer-modeling systems predicted that unless significant action is taken the standards would not be met by the due dates - 2004 and 2005.

**Opportunities / Synergies / Constraints / Challenges**

- Working with other boroughs and the Greater London Authority to develop a Low Emission Zone across all or parts of Greater London.
- Promotion of alternative vehicle fuels such as liquid petroleum gas (LPG) compressed natural gas (CNG), electricity and hydrogen.
- Buses – lobby Mayor to specify Euro 3 minimum standard & introduction gas fuels
- Taxis - lobby Mayor to specify Euro 3 or Euro 2 with particulate traps minimum standard
- All vehicles – continue use of parking concessions to encourage alternatively fuelled vehicles
- Road-side emissions testing
- Clear Zone – monitoring in Covent Garden, use of clean fuels in Covent Garden
- Travel Plan – promote alternative forms of transport
- Public transport - improvements

**Implications for the SEA Methodology**

The package of measures is potential mitigation for related plans and programmes that do not include the full set

**Internet link:**

Summary / Overview
As the primary cause of poor air quality is road traffic, this Action Plan focuses on ways to reduce pollution from vehicles. The plan concentrates on action to reduce nitrogen dioxide and fine particles (PM10) but the action outlined will also have an impact on other pollutants such as carbon monoxide and sulphur dioxide. It is anticipated that the objective for nitrogen dioxide, and possibly PM10, will still not be met by the prescribed dates. Air quality modelling undertaken for traffic reduction scenarios, indicates that any improvement in air quality from local action will be very slight.

Opportunities / Synergies / Constraints / Challenges
- The Corporation has undertaken air quality modelling to establish the effects on local air quality of limiting traffic in the City Timed Access areas.
- The Corporation will, together with Transport Action, identify any appropriate sites for alternative refuelling infrastructure in the City. It will also consider any recommendations made by the London Clean Fuel Working Group on alternative refueling sites.
- The Corporation of London will enforce the regulations requiring drivers to switch off idling engines from Autumn 2003.
- All new contracts will encourage the use of low and zero emission vehicles.
- All new contracts awarded by the Corporation of London will specify that contractor’s vehicles must meet Euro II emissions standards as a minimum until December 2004 and Euro III emissions standards as a minimum after December 2004.
- The Corporation of London has successfully applied for powers to enforce emission standards at the roadside. The powers will be used from July 2003 in conjunction with the City of London Police. The scheme will be coordinated with the rest of London.

Implications for the SEA Methodology
The Corporation of London has undertaken an air quality modelling exercise to establish the effect of a 10% and 15% reduction in traffic by 2005 in the City.

## London Borough of Barnet Air Quality Action Plan

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<th>Proponent body</th>
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<td>Status (e.g. statutory, non-statutory)</td>
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### Summary / Overview

Most of the Action Plan measures are aimed at reducing levels of pollution from vehicle exhausts’ emissions. This is essential because air quality research commissioned by the Borough has predicted that levels of Nitrogen Dioxide and fine particles produced by vehicle engineers will result in widespread failures of Government air quality targets. These findings led to the whole Borough being declared as an Air Quality Management Area in April 2001 due to predicted levels of Nitrogen Dioxide and fine particles. Additional research indicates that this designation remains correct.

### Opportunities / Synergies / Constraints / Challenges

Themes that arose in two or more of the groups are as follows:

- Traffic volumes in the Borough
- Effects of road humps and speed restrictions
- Effects of air quality on residents on local streets away from the main houses
- Barnet Council needing to look at internal issues such as co-ordination between departments on air quality.
- Air quality issues on roads running through the Borough that are not managed by the Council.
- The need for lobbying and partnership approached on vehicles passing through the Borough.
- The need to concentrate on alternative fuels e.g. LPG
- The need to get older more polluting cars off the roads replacing them with newer cleaner ones
- Cycling
- The impact of new developments
- The need for more specific information on the effects of air quality on health in locations
- Information on air quality in Barnet.

### Implications for the SEA Methodology

None identified

### Internet link

### Camden Air Quality Action Plan 2002-2005

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<th>Proponent body</th>
<th>Camden Borough Council</th>
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<td>Status (e.g. statutory, non-statutory)</td>
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#### Summary / Overview

In London Borough of Camden, the major source of air pollution is road vehicle emissions (though gas heating is likely to contribute as much as road transport to nitrogen oxide (NOx) emissions). As Camden's further modelling work predicted that nitrogen dioxide would exceed the air quality objective more widely than expected, the Council has declared that the AQMA should cover the whole borough.

#### Opportunities / Synergies / Constraints / Challenges

- **LEZ Study**: The study so far has shown that the most appropriate geographical area for a LEZ would be the GLA boundary or up to (but not including) the M25. A LEZ restricted to the Congestion Charge Area, or to the North and South Circular, would be of much less benefit. As regards vehicle categories, it shows that despite HGVs making up a smaller proportion of traffic in central London than the national average, they still contribute disproportionately to emissions. This is partly due to traffic speeds. An HGV in central London may emit 40% more NOx per vehicle kilometre than one in out London. Combined with measures to reduce overall traffic levels in Camden, a LEZ could contribute significantly towards achieving NAQS objectives in most parts of Camden. Camden Council and other London Boroughs generally support options to define a LEZ at either the Greater London boundary or M25.
- **In 2000**, Camden, Westminster and the Corporation of London jointly identified a Clear Zone area and successfully bid for funding for three years (2000 – 2003) to introduce a package of measures aimed at delivering the Clear Zones objectives. Camden hopes to secure further funding to continue implementing measures in these areas and to extend the Clear Zone possibly to include areas around Bloomsbury and Hatton Garden.
- **Emissions reduction through promotion of alternative fuels**
- **Road traffic reduction through traffic management schemes**
- **Trial of NOXER paving stones** is planned for the financial year 2002/3. These paving stones have been specially developed by Mitsubishi to absorb nitrogen oxides (NOx) from the air and are currently used in Japan where results have shown they may lead to a localised reduction in NOx by 5-10%.

#### Implications for the SEA Methodology

NOXER paving stones a possible mitigation measure? Depends if they have been successful when on trial.

SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

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<th>London Borough of Enfield Air Quality Action Plan</th>
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**Summary / Overview**

It is the traffic exhaust emissions along main roads and the Transport for London Road Network (TLRN), which create areas of poor air quality in pollution ‘corridors’ alongside these roads. The impact that the Council will be able to have on traffic emissions is relatively limited; the overall air quality in the borough will depend very significantly on the measures adopted by Transport for London (TfL) on the TLRN roads over which TfL has authority.

**Opportunities / Synergies / Constraints / Challenges**

- The Council will actively support the introduction of a Low Emission Zone across London
- The Council will support the introduction of a Low Emission Zone across London
- The Council will work as part of the North London Air Quality Cluster Group to ensure consistency of approach to air quality issues within neighbouring authorities and that the borough’s are properly represented with respect to Greater London
- The Council will continue with a programme of emissions testing with the Vehicle Inspectorate and the Metropolitan Police to carry out random roadside emissions and safety checks on vehicles
- The Council has become a designated authority to carry out roadside vehicle emissions testing, and will participate in the London wide testing scheme
- The Council will lobby Government for air quality funding to implement local air quality management measures
- The Council will work towards increasing the number of motor traders taking part in the Responsible Motor Traders Scheme
- The Council will launch its Green Travel Plan
- The Council will continue to encourage freight vehicles travelling through the borough to use the Transport for London Road Network
- The Council will introduce policies in its revised Unitary Development Plan, and Section 106 agreements to encourage appropriate development to install electric vehicle charging points

**Implications for the SEA Methodology**

None identified

**Internet link:**
In Hammersmith & Fulham, air quality is a matter of concern, mainly in respect of two principal pollutants: nitrogen dioxide and small particles. Research has shown that road traffic is the main source of these pollutants.

**Objectives:**
- Increase the use of cleaner fuelled vehicles
- Reduce unnecessary pollution, especially that caused by the most heavily polluting vehicles
- Control & minimise emissions from buildings and construction sites
- Ensure land use policies reduce the need to travel
- Promote the use of public transport, cycling and walking
- Encourage more efficient use of vehicles
- Improving local environmental conditions through local traffic management schemes
- Encourage more sustainable travel habits

**Internet link:**
London Borough of Richmond Air Quality Action Plan

Proponent body | London Borough of Richmond
Status (e.g. statutory, non-statutory) | Status
Date produced | 2003

Summary / Overview
- In order to deliver this Plan with its partners Richmond upon Thames Council will:
- Work with other authorities to promote clean air initiatives, especially a low emission zone (dependent on the recommendations of the joint London Low Emission Zone Feasibility Study) and vehicle exhaust emissions testing
- Continue to consult on the implementation and review of this Plan
- Integrate the policies in this Plan with the UDP and the LIP

Opportunities / Synergies / Constraints / Challenges
Some Local measures:
- Where practical, undertake changes at congestion hotspots to seek to avoid tailbacks of queuing vehicles.
- Refuse planning consent for activities, which are likely to lead to a significant worsening of air pollution in ‘hot spot’ areas.
- Assess possibilities for carrying out local environmental measures that seek to reduce localised air pollution.

Some London-wide measures:
- Participate in the development of a low emission zone (LEZ) in London, to restrict access by the most polluting vehicles, subject to feasibility and assessment of any local emission impact.
- The measure will target heavy goods vehicles and vans.
- Encourage BAA to take action to reduce emissions at Heathrow from surface access traffic, site traffic, aircraft and other sources.

Implications for the SEA Methodology
Heathrow is a significant air quality issue – mitigation could include recommendations for plans and programmes relating to the airport

Internet link: http://www.richmond.gov.uk/airqualityactionplan.pdf
## SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
**Environmental Report**

**Tower Hamlets Draft Air Quality Action Plan**

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<th>The Borough of Tower Hamlets</th>
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### Summary / Overview

Detailed modelling has predicted that two key pollutants, namely nitrogen dioxide and fine particulate matter (PM10) will exceed the objectives set by Central Government for 2004 - 2005. The most significant levels of air pollution that have been measured come from road traffic. The London Area Transport Study 1991 showed that over 60% of traffic was non-local and travelling through the borough. This trend is set to continue, as Tower Hamlets is located between the City and the expanding Thames Gateway regional corridor.

### Opportunities / Synergies / Constraints / Challenges

- Monitor air quality to measure the success of the key performance indicator over time.
- Use a Geographical Information System to map trends and target areas for improvement and fully integrate this into the decision-making process for the Council’s key development strategies.
- Actively support and take part in the London wide Vehicle Emissions Testing Scheme.
- Use Controlled Parking mini-zones to target congested parking around tube stations and bordering the Central London Congestion Charging Zone.
- Implement a comprehensive Street-scene programme to improve the street environment in Tower Hamlets. This takes a targeted approach to implementing Home Zones in residential areas, improving street signage and removing street clutter, improving safety for cyclists and improving the pedestrian environment.
- Lead by example by using a fleet of electric vans for pest control within the Environmental Health, Environmental Protection Division.
- Develop Supplementary Planning Guidance for Planning Applications, requiring submission and approval of air quality assessments for major developments before developments can commence.
- Support and facilitate the development of major transport infrastructure improvement projects in the borough including Cross-Rail and the two to three car expansion of the Docklands Light Railway.
- Support the development and implementation of a Low Emission Zone for London.
- Establish a Council Vehicle Fleet Register with a full emissions inventory for Council and Contractors’ vehicles together with an emissions improvement programme.

### Implications for the SEA Methodology

None identified

The emphasis of the action plan is mainly concerned with reducing emissions from road transport vehicles, through traffic restraint and reduction schemes, emissions improvements and regulation, combined with balancing measures such as improved walking, cycling and public transport. Notwithstanding this, the non-transport related sources are also targeted where possible.

Review and assessment showed that there would be areas of exceedences of Government objectives for nitrogen dioxide (NO₂ - annual average) and fine particles (PM₁₀ - 24 hour average) alongside most of the main roads in a network across the Borough. There were also areas of exceedence predicted for the SO₂ objective but these exceedences resulted mainly from large regional sources such as the power generating industry. This prompted more detailed investigation and modelling by the Environment Agency together with changes to the permitted emissions from certain plants. The outcome was that the objective for SO₂ was likely to be achieved in Wandsworth.

The measures in the action plan for the Council to implement are divided into seven categories:

- Measures aimed at reducing the use of cars.
- Measures aimed at reducing emissions from vehicles.
- Development control.
- Enforcement of regulatory powers.
- Energy use and heating.
- Education and promotional initiatives.
- Encouraging businesses.

In order to achieve the measures detailed under these categories the action plan adopts the following approach:

- Providing accurate and up to date information on air pollution levels in the borough both now and in the future.
- Ensuring all council activities consider the effect on air pollution.
- Taking all reasonable steps to minimise the impact of council activity on air pollution.
- Taking a lead role in helping the community make changes necessary to improve air quality.
- Working in partnership with stakeholders to achieve a reduction in air pollution.
- Working in the context of regional and national strategies.
- Taking a balanced approach using policy, regulation and good practice.

None identified

Internet link:
http://www.wandsworth.gov.uk/NR/rdonlyres/egjcxiqbde5urmzj2duvdk72nod37wceyztekoftxelebv5dfp57wgxx3rebsykdy3uhbwsz6c4aw52o7qocnq3wqe/env_AQAP_Jan04.pdf
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

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<th>Royal Borough of Kensington and Chelsea Air Quality Action Plan</th>
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**Summary / Overview**

The Council believes that two pollutants, nitrogen dioxide (NO2) and particulates, will still exceed Government target levels for the next few years. As stated in the Review and Assessment report, the entire population of the Borough is exposed to levels of nitrogen dioxide above the Government’s health based standard. For those living or working near to busy roads, conditions often result in elevated levels of the pollutant.

**Opportunities / Synergies / Constraints / Challenges**

The modelling results indicate that very considerable reductions will be needed in order to achieve the annual mean objective for nitrogen dioxide. A large part of the pollution experienced in the Royal Borough comes from road traffic. For instance, of the emissions generated within Kensington and Chelsea, just under half of the NOX and nearly 70% of PM10 are attributable to road traffic.

The Action Plan considers 25 actions aimed at improving air quality in the Borough. The Council considers that the Low Emission Zone (LEZ) idea is probably the most important new measure to reduce pollution. They will therefore push hard for the implementation, by the end of 2006, of an LEZ across London. If this proves impossible, they will investigate a smaller-scale, local LEZ.

HGVs are expected to produce more NOX (37.1%) than any other single vehicle type. Petrol cars will produce around a fifth of all traffic related NOX, and of this fifth, half will come from cars that were registered before 1993.

**Implications for the SEA Methodology**

None identified

**Internet link:** [http://www.rbkc.gov.uk/EnvironmentalServices/AirQuality/actionplan0309.pdf](http://www.rbkc.gov.uk/EnvironmentalServices/AirQuality/actionplan0309.pdf)
Croydon Council declared an air quality management area (AQMA) on 2nd October 2000. The Council identified this area as likely to have pollution levels exceeding the Government’s Air Quality Strategy objective for nitrogen dioxide (NO2). Croydon’s action plan contains a wide range of proposed measures to improve air quality throughout the borough. The central proposal in the plan is the designation of Croydon as a low emission zone (LEZ), preferably as part of a London-wide zone, which would prohibit access to London to goods vehicles, buses and taxis unless they met a certain minimum standard of exhaust emissions.

Opportunities / Synergies / Constraints / Challenges

Croydon has an AQMA based on the annual mean objective for NO2. The AQMA is in the centre of Croydon. The main requirement, therefore, is on meeting the air quality objectives in this area. However, many proposals included in the plan would need to be implemented over a wider area to improve air quality in central Croydon. Criteria established for evaluating the actions proposed:

- Improve facilities for environmentally friendly modes of transport and reduce the need for transport
- Balance costs and benefits
- Maintain public input and support to help position Croydon as a good practice model
- Achieve air quality improvement while maintaining economic advantage and exploring wider economic opportunities
- Avoid adversely affecting health and ideally lead to health benefits
- Avoid widening inequalities and ideally reduce inequalities

Key actions in the plan include:

- A low emission zone for Croydon;
- Further clean up of emissions from Council vehicles;
- Roadside emissions testing of vehicles with the Police and Vehicle Inspectorate and testing and re-tuning at car parks;
- Providing advice and support to schools and businesses to develop green travel plans;
- Restricting car parking spaces in new developments in central Croydon;
- Installation of electric vehicle charging points in Council car parks;
- Improving car park signage and access to prevent queuing and circling of traffic in central Croydon;
- Working with public transport providers to improve ticketing, public transport integration and security;
- Giving priority to public transport, cyclists and pedestrians in Wellesley Road through the Vision 2020 project;
- Seeking funding from developers through section 106 agreements, to improve public transport and walking and cycling facilities;
- Extending the London Bus Initiative;
- Extending flexible working and home working for Council staff;
- Developing a car share database with major employers in the borough;
- Working with Government and industry to provide infrastructure for low emission vehicles.

Implications for the SEA Methodology

None identified

Internet link: http://www.croydon.gov.uk/pdfs/2003/AQAP_2.pdf
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

Environmental Report

<table>
<thead>
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<th>London Borough of Ealing Air Quality Action Plan</th>
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**Summary / Overview**

Ealing Council declared its whole borough an air quality management area (AQMA) on 14th December 2000. This was required after a review and assessment of air quality within the borough predicted that the levels of two pollutants, PM10 (fine particles) and nitrogen dioxide were predicted to fail to meet the nationally set objectives. As road traffic is the main source of nitrogen dioxide and a major source of fine particle emissions within the borough it is natural that most of the measures relate to attempting to reduce emissions from this source.

**Opportunities / Synergies / Constraints / Challenges**

The policies and proposals within the Action Plan are grouped into six categories:

- Traffic reduction
- Reducing the need to travel
- Promotion of cleaner technologies and alternative fuels
- Improving environmentally friendly forms of transport
- Non-traffic measures
- Awareness raising

59 measures have been proposed, the major policy measure being the introduction of a Low Emission Zone for the borough. Others include:

- Roadside emission testing
- Development and adoption of Green Travel Plans
- Improving public transport speeds and reliability
- The introduction of new cycling infrastructure and the upgrading of existing facilities
- Improving pedestrian facilities and encouraging walking as a whole

**Implications for the SEA Methodology**

Roadside emission testing is a potential mitigation / enhancement for other LIPs

**Internet link:**

http://www.ealing.gov.uk/services/environment/pollution/air+pollution/airqualityplan.doc
London Borough of Greenwich Draft Air Quality Action Plan

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<th>Proponent body</th>
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**Summary / Overview**

The Council declared the whole Borough an AQMA, which came into effect on the 1st July 2001, based upon exceedences of NOX and PM10. The focus of the Plan is mainly concerned with reducing emissions from road transport vehicles, with an emphasis on balancing supply side measures such as improved cycling walking and public transport and demand side management, such as traffic restraint and regulation.

**Opportunities / Synergies / Constraints / Challenges**

Plan is underpinned by seven principles:
- Provide accurate and up to date information on air pollution levels in the Borough
- Ensure all Council activity is integrated in considering the effect it has on air pollution
- Take all steps to minimise the impact of Council activity on air pollution
- Lead and help the community to accelerate the changes necessary to improve air quality
- Work with stakeholders in partnership to achieve reductions in air pollution
- Adopt a balanced and proportionate approach to improving air quality, including policy, practice, encouragement and enforcement
- To work within the context of national and regional strategies

For example, Greenwich Borough Council fully support and promote:
- The Mayor’s Air Quality Strategy
- The Low Emission Zone Study and will work in partnership to implement appropriate schemes
- The uptake of cleaner fuels and technologies
- The ‘greening’ of commercial vehicles through the promotion of funding available from the Energy Savings Trust
- The Mayor’s Transport Strategy through Interim Local Implementation Plan
- The work within SELTRANS to secure improvements in public transport to reduce car dependency
- Thames Gateway London Partnership measures that will improve air quality around Greenwich
- Walking and cycling as a healthy alternative to car transport including the provision of appropriate routes and facilities

**Implications for the SEA Methodology**

Indirect health benefits of economic stimulus from Thames Gateway Bridge are thought to outweigh the negative health effects of the increase in traffic. The reverse might be true of the LEZ and some account of this should be taken in the methodology adopted.

Internet link: http://www.greenwich.gov.uk/NR/rdonlyres/4ADCC88E-6302-4C05-8A99-0BFE2A4E5113/0/ps_pollution_airqualityactionplan.pdf
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

London Borough of Hackney Air Quality Action Plan

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Summary / Overview

As a result of the review and assessment process, LB Hackney declared and AQMA within the south of the Borough. This initially covered the area within the vicinity of Shoreditch and the inner ring road alongside main arterial routes. However, consideration to the longer-term PM$_{10}$ objectives for 2010 has meant that the initial AQMA order has now been revised to cover the whole Borough and to additionally include PM$_{10}$. The AQMA has been declared on the basis of NO$_X$ exceedences and the longer-term objectives for PM$_{10}$.

Opportunities / Synergies / Constraints / Challenges

Six overall themes within which the policy can be packaged and examples of such policy:

- Reduced emissions from transport
  - Roadside emissions testing
  - Council fleet to use alternative fuel or retro-fit particulate traps, catalytic converters
  - LEZ
- Encouraging modal shifts in public behaviour
  - London bus priority network
  - Promotion of cycle network
  - Sustainable travel plans
- Traffic reduction
  - Reduce volumes by 25% from 1997 traffic levels by 2010
  - Controlled parking zones and home zones
  - Extension of congestion charging zone
- Working with business
  - Managing freight – sustainable distribution strategy
  - Restriction of goods vehicles
  - Inland waterway distribution
- Non-traffic measures
  - Local Authority Pollution Control (LAPC)
  - Smoke control policy
  - Code of construction practice to control dust levels
- Raising awareness
  - Travel awareness campaigns
  - Provision of air quality data
  - Promote work of Energy Savings Trust Powershift and Cleanup programmes

Implications for the SEA Methodology

The six overall themes give a good overview of possible responses to air quality problems

London Borough of Haringey Air Quality Management Area Action Plan

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**Summary / Overview**

The Government’s air quality standards for PM$_{10}$ and Oxides of Nitrogen (NO$_2$) will not be met by the required dates (PM$_{10}$ – 2004 and NO$_2$ – 2005). The Council declared an Air Quality Management Area (AQMA) on 1 July 2001. The AQMA covers the whole borough. Two hot spots were identified as part of this work: Tottenham Hale and Muswell Hill roundabout. The former is part of the TLRN network.

**Opportunities / Synergies / Constraints / Challenges**

The actions are split into:

- Action to reduce emissions from vehicles
  - LEZ
  - Encourage use of cleaner fuels especially council’s own fleet
  - Vehicles emissions testing
- Action to reduce traffic volumes
  - Reduce traffic through land-use system
  - Existing land-use policy integrating transport & land use planning
  - Cycling plan, parking plan
- Action to reduce emissions from non-road traffic sources
  - Industrial sources
  - Heating emissions
  - Energy efficiency
- Awareness raising, education and public information
  - State of the environment report including air quality
  - Walk to school week participation
  - Working with Haringey Cycling Campaign at local events

**Implications for the SEA Methodology**

None identified

**Internet link:** [http://www.haringey.gov.uk/final_air_quality_management_area_action_plan-oct_04.pdf](http://www.haringey.gov.uk/final_air_quality_management_area_action_plan-oct_04.pdf)
Harrow Council declared its whole borough an air quality management area (AQMA) in January 2002. This was required after a review and assessment of air quality within the borough predicted that two pollutants, PM_{10} (very fine particles) and nitrogen dioxide (NO_{2}) were likely to exceed nationally set objectives. The modelling, employed during review and assessment, demonstrates that the main contribution to nitrogen dioxide concentrations within the borough is road traffic, whilst the majority of PM_{10} concentrations can be attributed to background sources. However, those locations, which experience the highest PM_{10} concentrations, are also those most influenced by the contribution from road transport.

As road traffic is the main source of nitrogen dioxide and a major source of fine particle emissions within the borough it is natural that most of the measures relate to attempting to reduce emissions from this source. Harrow Council supports the principles of a LEZ for London in principle. However, the feasibility study identifies a number of issues that need further analysis before a successful scheme can be implemented. These issues will need to be resolved before the Council is able to make a further commitment to the scheme. In particular, the issue of funding must be resolved.

The policies and proposals within this Action Plan have been grouped into the following sections:
- Reducing emissions from vehicles
- Reducing road traffic – discouraging non-essential journeys by road
- Promoting alternative modes of transport to the private car
- Encouraging walking as a means of travel
- Encouraging cycling as a means of travel
- Encouraging development that does not impact upon air quality
- Public information and education

Internet link: http://www.harrow.gov.uk/ccm/navigation/environment/pollution/air-quality/
Sea of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

Environmental Report

London Borough of Hounslow Air Quality Action Plan

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**Summary / Overview**

An air quality update was presented to the Executive of the Council in July 2004 where it was shown that more of the borough was predicted to exceed the prescribed standard for Nitrogen Dioxide. The decision was taken to declare the whole Borough an Air Quality Management Area and this decision will be ratified at the Borough Council Meeting of July 26th 2005. The mapped concentrations clearly demonstrate the high concentrations that are forecast across the AQMA. Even in locations where they do not exceed the 40 μg.m-3 standards, they are close to it. It is forecast that the standard will be exceeded very significantly around Heathrow and busy roads.

**Opportunities / Synergies / Constraints / Challenges**

Hounslow will pursue the air quality objectives, whilst:

- Improving the quality of life and health of the residents and workers in Hounslow
- Acting in a cost-effective manner, through careful selection of options
- Integrating this work with other Council Strategies and the activities of Council Departments, regional bodies, outside Agencies and other interested parties
- Taking account of the needs and views of local people, and acting, where possible, to stimulate local employment and the local economy

The options considered of most relevance for improving air quality across Hounslow:

- Package 1: Switching to Cleaner Transport Modes
- Package 2: Tackling Through Traffic
- Package 3: Promotion of Cleaner Vehicle Technology
- Package 4: Measures Specific to Heathrow Airport
- Package 5: Measures Concerning Local Industries and Other Businesses
- Package 6: Improving Eco-efficiency of current and future developments, Including properties owned or run by the Council
- Package 7: Actions to be Taken Corporately, Regionally and in Liaison with the Mayor

Can be assessed using:

- Costs
- Effectiveness in reducing NOx emissions and NO2 levels
- Prioritisation ranking
- Reasons for rejection (where appropriate)
- Other impacts (on other air pollutants, social inclusion, congestion, attractiveness of public transport, noise and economic vitality)
- Other plans that include the same measure
- Stakeholder comments
- Implementation process for each option with a monitoring mechanism

**Implications for the SEA Methodology**

Consider using the assessment criteria as decision-making criteria

Internet link: http://www.hounslow.gov.uk/home/a-z_services/a/airpollution.htm#air_quality_action_plan

Transport for London
January 2006
**London Borough of Islington Air Quality Action Plan**

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**Summary / Overview**

In August 2000 Islington Council completed its third stage review. The review showed that despite an expected steady improvement of air quality in Islington over the following years, the objectives for two pollutants, nitrogen dioxide and particles are not likely to be achieved. As a consequence the Council declared an Air Quality Management Area across a large part of the borough on the 19th of January 2001. The source apportionment work has shown that up to 78% of NOX (and NO2) and up to 98% of particulate pollution concentrations measured in Islington come from sources outside the borough. These statistics show clearly how important it is to work in partnership with other local authorities and organisations outside Islington in order to reduce air pollution levels.

**Opportunities / Synergies / Constraints / Challenges**

Examples of general policy measures:

- AQMA (subject to further review and assessment)
- Development plans – reduce impact of pollution
- Green procurement policy - should have regard to environmental considerations
- Monitoring air quality
- Staff objectives and induction
- Health authority liaison
- Trees – surveying and protection
- Carbon assessment and reduction in regeneration areas
- Road traffic related action
- Zoning – Low Emission Zone
- Freight management

**Implications for the SEA Methodology**

Islington work demonstrates the ineffectiveness of low emission zone based on a single Borough – this approach cannot be regarded as an alternative

**Internet link:** [http://www.islington.gov.uk/pdf/environment/airqualityactionplan.pdf](http://www.islington.gov.uk/pdf/environment/airqualityactionplan.pdf)
London Borough of Merton Air Quality Action Plan

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**Summary / Overview**

In March 2001 the London Borough of Merton declared an Air Quality Management Area. The Action plan has been produced by the Environmental Health Section in consultation with colleagues from a number of other Sections in the Council including Transport Planning, Highways Engineering, Policy and Plans, Development Control, Education, Business Regeneration, Waste Services and Transport Services.

**Opportunities / Synergies / Constraints / Challenges**

Traffic related actions:
- Low Emission Zone
- Vehicle emissions testing
- Cleaner fuels and vehicles
- Traffic Reduction
- Traffic Restraint and Parking Controls
- Land Use Planning
- Alternatives Modes of Transport
- Freight management

**Implications for the SEA Methodology**

None identified

Summary / Overview

In October 2001, the London Borough of Waltham Forest designated the whole borough an AQMA for the pollutants of nitrogen dioxide (NO₂) and respirable particles (PM₁₀). A comprehensive 3-stage review and assessment determined that the objective levels for these pollutants would not be met along certain roads in the borough. The Stage 4 Review and Assessment confirmed this and in particular, the annual mean NO₂ objective is the more stringent of the objectives that need to be met.

Opportunities / Synergies / Constraints / Challenges

Congestion Zone – likely 5% increase in traffic along North Circular route, proposed IKEA store in neighbouring Enfield Borough likely to further increase traffic in the district by 3%.

There are six main objectives of this Air Quality Action Plan:

- Demonstrate the council's commitment to improving air quality
- Provide an overview of local key policies with respect to air quality
- Improve air quality while maintaining economic stability and to explore wider economic opportunities.
- Involve all relevant council departments and external agencies where appropriate, to ensure a balanced and integrated approach.
- Engage everyone who lives, works and travels in and through Waltham Forest.
- To improve the quality of life and health of the residents and workforce in Waltham Forest.

The actions are arranged under sequential headings for their direct impact on air quality, these headings and examples of actions are shown below:

- Air Quality - To support and lobby the Mayor for a London-wide Low Emission Zone (LEZ) study. To participate in the proposed London-wide Vehicle Emissions Testing.
- Traffic Management – For the past 20 years the Council has introduced traffic management schemes in residential areas to prevent or discourage through traffic from diverting into these areas, and is continuing to do so.
- Promotion and Awareness Raising – Promotion of more sustainable forms of transport and associated health benefits by ‘Car Free Day’. Completion of Waltham Forest Transport Website and ‘Transport Choices leaflet’ distribution.
- General Policy Measures - Air Quality is a material consideration for developments at the planning stage, requiring air quality assessments.

Implications for the SEA Methodology

The point about Underground service improvements underlines that there may be complementary measures that TfL can introduce to maximise the effectiveness of the LEZ – this is possible mitigation.

**SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone**

**Environmental Report**

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<th><strong>Lewisham First Draft Local Implementation Plan</strong></th>
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**Summary / Overview**

The Local Implementation Plan is a plan to implement the London Mayor’s Transport Strategy. The London Mayor’s Transport Strategy links to and works with each of his other strategies. In turn, the Council’s implementation of his Transport Strategy has to work with and support the wider objectives, policies and actions established locally and sub-regionally through a variety of plans including the Corporate Plan, the Development Plan, the Community Plan, the Neighbourhood Renewal Strategy and the Air Quality Management Action Plan.

**Opportunities / Synergies / Constraints / Challenges**

- Motor traffic is the major source of locally important pollutants (Nitrogen Dioxide and fine particles (PM$_{10}$))
- Principal actions:
  - Traffic reduction
  - Greater use of alternative fuels and technology to reduce emissions from various sources including, motor vehicles
  - Greater use of public transport and other ‘cleaner’ modes
- Other actions:
  - The Council will support and promote the implementation of a Low Emission Zone (LEZ) across the Greater London Boundary as soon as is reasonable practicable and ideally by the end of 2006
  - Target to limit traffic growth to 4% within the inner London part of the Eastern sub-regions between 2001 and 2011
  - LEZ scenarios modelling:
  - For Nitrogen dioxide the indicated predicted improvement would be sufficient to ensure that an additional four locations will meet the Lewisham Air Quality Strategy annual mean objective

**Implications for the SEA Methodology**

- Local impacts of LEZ at specific locations appear to be more significant than predicted London-wide impacts
- Have traffic growth targets been incorporated into the emissions modelling for the LEZ as a whole?

**Internet link:**
http://www.lewisham.gov.uk/TransportAndStreets/TransportPolicy/LocalImplementationPlan.htm

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**Transport for London**

**January 2006**
Summary / Overview
The Local Implementation Plan (LIP) is a statutory document required by the Greater London Authority (GLA) Act 1999. It sets out the Council’s proposals for taking forward the Government’s and the Mayor’s policies to promote sustainable forms of transport whilst fostering economic growth and improving the quality of life in the Borough.

Opportunities / Synergies / Constraints / Challenges
The Council’s main strategy for improving air quality in Croydon currently centres around:

- Securing the implementation of a low emission zone (LEZ) for London in cooperation with the GLA, ALG and other London boroughs
- Reducing emissions from the Council’s fleet and contractors’ vehicles, including establishing pilot projects to run fleet vehicles on hydrogen and other cleaner fuels such as water diesel emulsion
- Working with business to reduce emissions from freight vehicles and prepare industry for the LEZ via the South London Freight Quality Partnership

The Council has received funding to establish a sub-regional freight quality partnership (FQP) among the boroughs which form the London Air Quality Network’s South London Cluster Group (the London Boroughs of Croydon, Merton, Bromley, Sutton, Lewisham and Wandsworth), with Croydon as the lead borough. The FQP will help implement measures in the borough’s Air Quality Action Plan and the Noise Action Plan, which are subject of separate proposals.

The FQP will develop new, and enhance existing, sustainable distribution systems for goods and services, striking a balance between economic and environmental considerations. Its aims are to:

- Reduce congestion by increasing night-time deliveries and possibly through development of consolidation centres (subject to feasibility)
- Reduce air pollution and noise by increased use of alternatively-fuelled vehicles and emissions abatement technology
- Identify measures to reduce road freight traffic in specific residential areas in deprived wards
- Identify measures to reduce the number of children killed or seriously injured in road traffic accidents involving freight vehicles near to schools

Implications for the SEA Methodology
South London Freight Quality Partnership possible consultee for scoping report

Internet link:
http://www.croydon.gov.uk/transportstreets/TransPlan/109202/lipexecutivesummary.pdf
Haringey Draft Local Implementation Plan

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**Summary / Overview**

London Boroughs have been asked to produce Local Implementation Plans to demonstrate how their local transport plans and programmes will contribute to implementing the key priorities set by the Mayor. Funding from Transport for London (TfL) depends on how well the Boroughs help to fulfil the Mayor’s Transport Aims.

Haringey has produced a draft Local Implementation Plan for consultation. The LIP sets out details of specific transport schemes up to March 2009 with indicative proposals for the two years after that. The document contains the Haringey Transport Strategy along with Plans for Parking, Walking, Cycling, Road Safety and School Travel Plans.

**Opportunities / Synergies / Constraints / Challenges**

- Target of 0% traffic growth to 2011
- The Mayor is expecting Haringey to cater for 19,000 new households by 2016
- North London Partnership includes the London Boroughs of Barnet, Enfield, Haringey and Waltham Forest
- Proposals for Low Emissions Zones in North London will be progressed in line with the studies being undertaken within London

**Implications for the SEA Methodology**

North London Partnership a possible consultee

**Internet link:**
http://www.haringey.gov.uk/council/strategiesandpolicies/haringey_transport_strategy.htm#lip
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

Environmental Report

Waltham Forest Draft Local Implementation Plan

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Summary / Overview

Each London Borough is now required to produce a Local Implementation Plan (LIP), setting out its strategy for implementing the Mayor’s Transport proposals in the local area. The LIP sets out eight priority areas for implementation and defines policies and targets for each:

- Improving road safety
- Improving bus journey times and reliability
- Reducing traffic congestion
- Improving working of parking and loading arrangements
- Improving accessibility and social inclusion on the transport network
- Encourage walking
- Encourage cycling
- Bringing transport infrastructure to a good state of repair

Opportunities / Synergies / Constraints / Challenges

Main problems in Waltham Forest:

- Worsening traffic congestion, resulting in lower speeds for buses and making journeys more unpredictable
- Increasing pollution levels leading to a detrimental effect on health
- Overcrowded and unreliable public transport
- Inadequate integration of public transport
- More facilities and safety measures needed for pedestrians and cyclists

Key policies and targets:

- Traffic volumes in Waltham Forest to be limited to a growth of 3% between 2005 and 2011 with zero growth in town centre areas
- An increase in the proportion of personal travel made by means other than car
- An increase of at least 10% in journeys made on foot per person in the borough between 2001 and 2014
- An increase in cycling of at least 80% between 2001 and 2010

Implications for the SEA Methodology

None identified

Internet link: http://www.lbwf.gov.uk/index/transport/envpl-local-impl-plan.htm
SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone
Environmental Report

Bexley Draft Local Implementation Plan 2005 / 6 - 2010 / 11

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Summary / Overview

The draft LIP is the Consultation Draft for the Council’s first Local Implementation Plan (LIP) for the period 2005/06 to 2010/11. This is a statutory plan to be prepared by each London Borough under the Greater London Authority Act 1999. Its purpose is to put forward the policy context and proposals of the borough for the implementation of the Mayor of London’s Transport Strategy (MTS) in each Borough.

The Council’s programmes and proposals primarily relate to the eight priority areas of the MTS:
- Improving road safety, especially on the roads around the primary and secondary schools in the Borough
- Improving bus journey times and reliability
- Relieving traffic congestion and improving journey time reliability
- Improving the working of parking and loading arrangements to provide fair, reasonable and effective enforcement of regulations
- Improving accessibility and social inclusion on the transport network
- Encouraging walking by improving the street environment, conditions for pedestrians and through the use of travel demand measures
- Encouraging cycling by improving the street environment, conditions for cyclists and through the use of travel demand measures
- Bringing transport infrastructure to a state of good repair

Opportunities / Synergies / Constraints / Challenges

- Car ownership in Bexley is relatively high compared to other London Boroughs
- Inadequate public transport infrastructure that often fails to provide a viable alternative to the car
- About a quarter (24%) of households do not have access to a car
- Only 40% of the Borough’s population live within 800 metres of a rail station
- No part of the Borough is connected to the London Underground system
- Government’s major regeneration priority is Thames Gateway and Bexley is strategically located within it
- Manor Road, Erith has been designated as the first AQMA, highlighting particulates as the major problem
- Bexley has no formal commitment to the LEZ

Implications for the SEA Methodology

The Council works closely with the Thames Gateway London Partnership (TGLP - through an active role in the Transport Task Group), the South East London Transport Strategy (SELTRANS) and the South London Economic Development Alliance (SLEDA) – possible consultees

Internet link: http://www.bexley.gov.uk/service/environ/transport/lip/
Richmond upon Thames Draft Local Implementation Plan for Transport

Proponent body: London Borough of Richmond upon Thames
Status (e.g. statutory, non-statutory): Statutory
Date produced: May 2005

Summary / Overview
The LIP is a consultation document to set out the Council’s thinking in regards to traffic and transport priorities, policies, proposals and programme in line with the Council’s Transport Strategy “A Clear Road Ahead”. It also demonstrates how Richmond upon Thames Traffic and Transport’s priorities, policies, proposals and programme’s will help deliver the Mayor’s Transport Strategy.

- Five transport objectives:
  - Improve safety for all network users
  - Achieve safe, unobstructed flow of traffic on network
  - Protect local residents and businesses from adverse of parking, pollution, congestion and noise
  - Facilitate choice of transport modes
  - Co-ordinate land-use and transport policies to minimise the need to travel

Opportunities / Synergies / Constraints / Challenges
- Air quality exceeds the values prescribed for NO₂ and PM₁₀ and the whole Borough is an AQMA
- Need for orbital route alternative to M25
- SWELTRAC Freight Quality Partnership to be developed – possible synergy with LEZ objectives
- Support for London Bus Priority Network – will assist in providing alternatives to the car
- Commitment to London Cycling Network

The Council is interested in the possible establishment of a Low Emission Zone (LEZ) for London, and is working with the Greater London Assembly to ensure that any LEZ that is established is the most effective and feasible model taking into account London Boroughs’ capacity and resources.

Implications for the SEA Methodology
SWELTRAC (South West London Transport Conference) is co-ordinating body for sub-regional policy and is a potential consultee

Internet link: http://www.richmond.gov.uk/lip_for_transport_full_draft_4_may_05.pdf
Hammersmith and Fulham Local Implementation Plan For Transport (Consultation Draft)

**Proponent body**  
London Borough of Hammersmith and Fulham

**Status (e.g. statutory, non-statutory)**  
Statutory

**Date produced**  
February 2005

**Summary / Overview**

The LIP sets out how, within the context of the Mayor’s Transport Strategy, the Council aims to provide a framework for a safe, efficient, integrated and environmentally sustainable transport system for people and goods, by:

- Giving high priority to the needs and safety of “vulnerable” travellers
- Maintaining a road network which is sufficient to cater for essential traffic movements, with a presumption against any increase in road capacity for general traffic
- Promoting traffic management and traffic calming measures so as to protect residential areas and main shopping streets from the environmental impacts of through traffic
- Promoting traffic restraint and traffic reduction

**Opportunities / Synergies / Constraints / Challenges**

- The whole borough was designated as an Air Quality Management Area for Nitrogen dioxide (NO2) and small particles (PM10) in 2000
- The Borough is relatively well served by the London Underground network, with the Piccadilly, District and Central lines running east-west across it
- Car ownership in the Borough is relatively low, with 49% of households having no car in 2001, but the number of cars owned by increased by 15% between 1991 and 2001 and could grow by more than 20% by 2031
- An area to the north and east of Hammersmith Town Centre as a Clear Zone

The main transport issues currently facing the borough are:

- The relatively poor level of personal accessibility available to many Borough residents
- The congestion of road traffic and the overcrowding of passenger rail services, particularly at peak times
- The recent and predicted future growth in the demand for travel
- The environmental consequences of transport use
- Car parking supply and demand (both on and off-street)
- Public transport service performance and provision
- The need to co-ordinate transport, land-use planning and economic development
- The economic impact of transport / traffic conditions
- The enforcement of bus priority / parking / waiting / loading regulations
- The international transport dimension, including the impact of air travel on the Borough
- The Council will “join a London Low Emission Zone (LEZ) if the feasibility study shows this to be an effective measure in tackling excessively polluting vehicles and encourage other boroughs to join”

**Implications for the SEA Methodology**

- Uncertainty over car ownership in future – this needs to be factored into the traffic methodology
- Encourage complementary mitigation measures in other plans that restrain the car and encourage people to shift modes of transport
- SWELTRAC (South and West London Transport Conference), WLTS (West London Transport Strategy), Park Royal Partnership and Green Areas are the partners that it might be suitable to consult

**Internet link:**  
Kingston upon Thames Local Implementation Plan (Consultation Draft)

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**Summary / Overview**

Every London Borough has been asked by the Mayor to prepare a transport plan setting out how they will achieve the transport proposals set out in his Transport Strategy. The Local Implementation Plan summarises the transport strategy proposed by the Royal Borough of Kingston for the years to 2011.

In line with the London wide approach in the Mayor’s Strategy the Council will pursue demand restraint policies.

On the great majority of the Borough’s roads the Council will promote and prioritise the interests of users following a hierarchy of: Pedestrians; Cyclists; Public and Community Transport Vehicles and Taxis; Freight Vehicles and Powered two Wheelers (PTWs); and Private Cars.

**Opportunities / Synergies / Constraints / Challenges**

- The London rail network is largely radial, i.e. the lines radiate out from central London and are rarely convenient for short or longer distance orbital journeys.
- The conjunction of a river crossing and Kingston’s status as a Metropolitan town centre mean that the town centre attracts high levels of traffic to it, and has high levels of traffic passing through it.
- Six main roads converge in Kingston town centre and congestion can rapidly spread across the Thames and also south, east and north to impact on significant parts of the region’s road network.
- Shortfall in public transport accessibility to Kingston town centre is from the south and west, especially from Surrey districts.
- Walking and cycling are already important means of transport for local journeys and neither topography nor climate is a deterrent to increased walking and cycling.
- Significant redevelopment in Kingston town centre is under consideration that would increase retail capacity by around 20% and provide additional residential capacity and cultural/leisure facilities.
- Well over 80% of the Borough’s residents have easy access to a car.
- The entire Borough has been declared an Air Quality Management Area and the Council has a commitment to play a full part in a London wide Low Emission Zone (LEZ) once that becomes operational.

**Implications for the SEA Methodology**

The Borough’s hierarchy putting pedestrians before other network users might be developed in the SEA methodology, but with London residents at the top of the hierarchy.

**Internet link:**
http://www.kingston.gov.uk/transport_and_streets/consultations/local_implementation_plan.htm
# Bromley Draft Local Implementation Plan

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## Summary / Overview

All London boroughs are preparing a Local Implementation Plan (LIP). The Bromley LIP documents plans for Bromley’s future transport schemes in line with the Mayor of London’s Transport Strategy. The LIP is a statutory document and must be approved by the Mayor of London and will cover the period 2006 to 2011.

### Transport Priorities:

- Reach the Local Public Service Agreement target agreed with the government to reduce the number of people either killed or seriously injured on the roads in Bromley
- Press the Mayor of London for a decision on the proposed extension of the Tramlink to Crystal Palace and continue to improve access to Bromley in partnership with Transport for London
- Undertake a Best Value Review of “Reducing dependence on the car”.

### Opportunities / Synergies / Constraints / Challenges

- Bromley is the lead partner in the SELTRANS (South East London Transport Strategy) partnership
- Bromley has high levels of car ownership
- There are significant radial flows of through traffic and periods of intense congestion, especially around town centres
- Fewer than one in three residents work in the Borough - transport links are therefore important
- Commitment to the concept of increasing orbital travel options
- The Council supports the Mayor’s proposals to extend the East London Line southwards to West Croydon via Crystal Palace, Penge West and Anerley and the extension of the Croydon Tramlink to Crystal Palace
- London Biggin Hill Airport is within the Borough boundaries
- ‘Bromley on the Move’ illustrates that while congestion was the top issue for both car and non-car users, few car users indicated that they would easily be persuaded to travel by other means
- Traffic volumes – between 2001 and 2011 to achieve, in the southern sub-region of Outer London, a reduction in weekday traffic growth from 7.5% to 4% and zero growth in town centres (in LBB only Bromley town centre is identified specifically)

### Implications for the SEA Methodology

- SELTRANS are a possible consultee
- Possible mitigation – propose limitations to expansion of Biggin Hill Airport
- Possible mitigation – propose orbital alternatives to M25

### Internet link:
http://www.bromley.gov.uk/content/transport/transp_strategy/lip_transp_plans.html
### Hounslow Draft Local Implementation Plan for the Transport Environment

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### Summary / Overview
The London Borough of Hounslow’s Draft Local Implementation Plan (LIP) has been designed for two key purposes:
- To set out a sustainable transport strategy for Hounslow with objectives, policies and proposals and a ten year estimated delivery programme
- To demonstrate to the Mayor of London how the London Borough of Hounslow’s transport strategy will help achieve the outcomes set out in the Mayor’s Transport Strategy 2001

### Opportunities / Synergies / Constraints / Challenges
- Hounslow has developed along road and rail routes, which now carry heavy volumes of traffic to and from central London
- Heathrow Airport, immediately to the west of Hounslow, also generates significant through traffic
- Urgent need to improve the accessibility of the Borough’s public realm
- Robust encouragement of the modal shift to counteract negative effects on both the environment and health
- Growing demand for travel
- The need to integrate transport / environment improvements with regeneration to help tackle issues of unemployment and social exclusion
- Possibility of Heathrow specific LEZ to reduce emissions and accelerate take up of cleaner vehicle technology
- Establishment of code of practice for airlines best operating practice to maximise reduction of emissions
- NOx emissions from Heathrow exceed those from traffic in Hounslow

### Implications for the SEA Methodology
Hounslow works with West London Transport Strategy (WLTS); South and West London Transport Conference (SWELTRAC); London Bus Priority Network (LBPN); London Cycle Network Plus (LCN+); London Bridge Engineering Group (LoBEG); London Technical Advisors’ Group (LoTAG); Green Areas Partnership and the Strategic Walking Group.

Mitigation of nitrogen emissions through planting schemes is a policy in Hounslow – there may be potential for this to be adopted elsewhere

Internet link: [http://www.hounslow.gov.uk/draft_lip.pdf](http://www.hounslow.gov.uk/draft_lip.pdf)
The London Borough of Redbridge has produced a consultation Draft Local Implementation Plan, which is a statutory document setting out how the Borough proposes to implement locally the Mayor of London’s Transport Strategy until the year 2010/2011.

The key objectives are as follows:
- More walking and cycling
- Wider public transport patronage
- Support for town centre economies and regeneration
- Reduced environmental impact of travelling, especially by car
- Road traffic and congestion reduced
- Improved air quality

Opportunities / Synergies / Constraints / Challenges
- The Borough is comprehensively served by buses
- It has good rail, underground and road links with central London and the Docklands, London airports (especially London City and Stansted Airports), and Kent and the Channel ports
- It is proposed that the Borough be served by new public transport services, including East London Transit Scheme
- 73% of households have access to a car / van
- Road traffic congestion largely due to traffic merely passing through the Borough to and from Central and South London and the North Docklands area
- Road traffic reduction on the Borough’s road network experienced since 1999
- The entire Borough was declared an Air Quality Management Area in 2003
- In 1999 the Council adopted an approach to achieve zero traffic growth between 2000 and 2005
- Analysis of monitoring data trends suggests a traffic reduction of 3% between 2001 and 2011
- Redbridge does not have its own Freight Quality Partnership
- The Borough has given notice of withdrawal from the London Lorry Control System

Implications for the SEA Methodology
Would the development of a Quality Freight Partnership in Redbridge benefit the LEZ? This is a possible mitigation measure.

Lambeth works with SELTREANS, Cross River Partnership, Central London Partnership and Lambeth Freight Quality Partnership

**SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone**

**Environmental Report**

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<th><strong>Tower Hamlets Draft Consultation Local Implementation Plan</strong></th>
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### Summary / Overview

The role of the Draft Consultation LIP is to detail and justify all the transport related projects and strategies in Tower Hamlets for the period covering 2005/06 through to 2010/11.

**Key policies:**
- Enhancing London’s international, national and regional transport links
- Extension of the DLR to London City Airport and CrossRail linking Tower Hamlets to Heathrow Airport
- Better public transport through improved quality, capacity, integration and new infrastructure
- Reduction of congestion and making better use of London’s streets

### Opportunities / Synergies / Constraints / Challenges

- 38 bus services covering the entire Borough and this includes 10 night bus services
- The Borough is served by approximately 16 A-Roads of which 4 roads bisect the Borough providing important cross-Borough links
- The overland rail network in the Borough is limited to three stops on 3 different lines
- The CTRL Station at Stratford that is currently under construction
- Crossrail proposals would provide a new public transport link providing access through the Borough, from Thames Gateway to Heathrow
- The Docklands Light Railway (DLR) provides a high frequency, fully accessible light rail service to 16 stations within the Borough, generally in the south and east
- In total, there are 12 underground stations in the Borough
- The Borough has a very low rate of vehicle ownership compared with the national average - 43.2% of Tower Hamlets households own a vehicle
- Reduction of congestion and making better use of London’s streets will assist in improving air quality, journey times, improving conditions for buses and encouraging people to walk and cycle more often

### Implications for the SEA Methodology

Thames Gateway London Partnership is a possible consultee

Internet link: [http://www.towerhamlets.gov.uk/data/transport/draft-lip.cfm](http://www.towerhamlets.gov.uk/data/transport/draft-lip.cfm)
Havering consultation Draft Local Implementation Plan

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Summary / Overview

The Local Implementation Plan (LIP) is a programme of action to improve transport which is to be taken forward by the London Borough of Havering from April 2005 to March 2009 with indicative projections beyond this period to 2010/2011. It presents the full range of Council transport initiatives and projects and shows how and when they will address local transport issues in an integrated manner. It is also a statement of intent reflecting how Havering will implement the Mayor's Transport Strategy.

Opportunities / Synergies / Constraints / Challenges

Priorities from Havering Integrated Transport Strategy:

- Cleaner Air to Breathe
- Making it Easier to Walk
- Making it Easier to Cycle
- Cutting the Stranglehold of Traffic
- Quality Places to live where People are the Priority
- Increasing Prosperity backed by a Modern Transport System

Context

- 23.3% of households do not own a car
- 45.9% own 1 car
- Over 30% of households own 2 or more cars
- Almost 7% have 3 or more cars
- 47% of people drive to work

- Major proposed addition to the local transport network is East London Transit
- Crossrail will bring faster direct links from the Borough to the City and Central London, as well as to west London and Heathrow Airport

- Importance of ‘softer’ network e.g. pedestrian and cycling network
- Importance of ‘softer’ measures to improve travel choices

Implications for the SEA Methodology

Do not under-estimate the potential of the ‘softer’ network as a complementary / mitigation measure

Internet link:
http://www.havering.gov.uk/servlet/page?_pageid=536&_dad=portal30&_schema=PORTAL30&_type=site&_fsiteid=182&_fid=539571&_fnavbarid=1&_fnavbarsiteid=182&_fedit=0&_fmode=2&_fdisplaymode=1&_fCalledfrom=1&_fdisplayurl=
### SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

**Environmental Report**

#### Barnet Draft Consultation Local Implementation Plan

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#### Summary / Overview

The M1 corridor along the west side of Barnet forms a main route from North London to the rest of the country, (refer to Figure 2.1). Freight sidings are also available at Cricklewood in the south west of the borough permitting rail freight to and from the East Midlands, Central London and the South Coast. Future development of the Thameslink and the Channel Tunnel Rail Link will enhance rail transport to the south coast and the continent. The road network in Barnet is dominated by the corridor of radial routes along the west side of the borough that incorporates the M1, A1, A41 and A5, and the orbital A406 North Circular Road.

In outer London Borough’s, greater distances and less widespread public transport provision, coupled with a tendency for travel into London to be less of a dominant factor make car use more important, and car ownership more common. In particular the green belt wedge in the middle of the borough presents a significant barrier to travel across the borough by public transport, but the east of the borough also suffers from limited public transport accessibility. Barnet residents make about 11% of all trips by bus, and bus is the only real public transport option for east-west trips through the borough. However routes catering for such movements and for trips north into Hertfordshire there are few and often a number of changes have to be made to complete a journey. An estimated 630,000 car trips are made each day in or through Barnet. Just over a quarter of these trips are trips wholly within the borough. Nearly half either start or end in the borough, with the remaining quarter being purely through trips.

#### Opportunities / Synergies / Constraints / Challenges

Given the expected population growth in Barnet over the next ten years, demand for transport can be expected to increase significantly. Even without considering growth from the regeneration areas in the borough, the incremental population growth is expected to be almost 8%. During the 10 years to 2001 the 5.7% population increase coincided with a 7.5% increase in traffic on Barnet’s roads. Assuming a similar relationship in future 8% population growth could lead to 10.5% increase in road traffic demand, coupled with around 8% increased demand for other modes. This reduction in road traffic growth would require an increase in public transport provision and use of around 3.5% taking the overall increased provision and use needed to nearly 20%.

The whole of London Borough of Barnet was declared an Air Quality Management Area in April 2001. The cabinet approved Barnet’s Air Quality Action Plan in January 2003. It includes the action point to make the borough a LEZ by including the borough in a London wide LEZ, although stated that the decision whether or not to include Barnet in a London wide LEZ will only be taken when the feasibility study and options have been fully assessed by the Council. The Borough is awaiting instructions from the Mayor/GLA as to how to progress.

#### Implications for the SEA Methodology

Air quality problems highlighted by the Implementation Plan – SEA to recommend ongoing monitoring of air quality. Ways to improve and increase the bus services. Trends and data for the Borough available for baseline evidence. Need to consider the impact of non-transport related reductions in emissions

### Hackney Consultation Draft Local Implementation Plan

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<th>Proponent body</th>
<th>London Borough of Hackney</th>
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<td>Date produced</td>
<td>2005</td>
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#### Summary / Overview
The Hackney Consultation Draft LIP is the Borough’s response to the Mayor of London’s Transport Strategy (MTS). The concept of the Local Implementation Plan (LIP) originates from the Greater London Authority Act 1999, which requires all London Boroughs to set out how they intend to implement London wide transport policies at a local level.

#### Opportunities / Synergies / Constraints / Challenges
- Achieve zero growth of weekday traffic between 2001-2011
- Maintain or increase the proportion of personal travel made by means other than car
- Achieve an increase of at least 10% in journeys made on foot per person in London between 2001 and 2015
- Achieve an increase of at least 80% in cycling in London between 2001 and 2011

[Difficulty in downloading this document – summary only used so far]

#### Implications for the SEA Methodology
None identified

#### Internet link
**Summary / Overview**

The Local Implementation Plan is a statutory document setting out how Harrow proposes to plan and deliver integrated transport improvements in order to implement the Mayor of London’s Transport Strategy at the local level. It focuses on financial years between 05/06 and 08/09.

The principal aims are:
- Reducing the need to travel
- Providing alternatives to car use
- Providing for car use
- Changing attitudes and behaviour
- Meeting freight and servicing needs

**Opportunities / Synergies / Constraints / Challenges**

- The council considers tackling congestion and pollution as a result of high level of car use to be one of the main challenges for the future of the Borough
- Aims to reallocate road space away from car use – principally towards promoting bus use, but also other sustainable transport modes when significant progress has been made towards providing an acceptable public transport alternative, or such provision is imminent
- The council will seek to secure a fully integrated approach to the provision and operation of public transport services within Harrow
- Progressively install Controlled Parking Zones in all areas of the Borough experiencing on-street parking stress, subject to consultation with the local community
- No reference to the LEZ found in the LIP

**Implications for the SEA Methodology**

West London Transport Strategy is agreed by the West London Alliance (WLA) includes the six boroughs of Brent, Ealing, Hammersmith & Fulham, Harrow, Hillingdon and Hounslow – potential consultees

Barking and Dagenham Local Implementation Plan Draft

Proponent body: London Borough of Barking and Dagenham
Status (e.g. statutory, non-statutory): Statutory
Date produced: May 2005

Summary / Overview
The Local Implementation Plan (LIP) is in effect the Council’s transport plan. It is a statutory document the main purpose of which is to set out transport policies and proposals, which will implement the Mayor’s Transport Strategy at the local/Borough level. The Plan covers the time span 2005-2011. The LIP is geared to address a range of objectives that have been derived from the Council’s Community Strategy and Mayoral objectives. Key amongst these are social inclusion; regeneration; sustainability and environmental improvement. These in turn inform LIP policies. The Borough is well served by radial east-west rail, tube and highway networks. Bus services also tend to follow this pattern. In all cases links north south are comparatively poor and there are isolated pockets of the Borough.

Opportunities / Synergies / Constraints / Challenges
- The Council has set out the existing transport problems it faces and the opportunities it has to meet the Mayor’s eight priority areas for transport. There are a number of strategic transport schemes considered necessary to meet the needs of the Borough. They include:
  - Rail network improvements – including Crossrail and upgrades to existing lines
  - DLR extension to Barking Riverside
  - East London (Thames Gateway) Transit with upgrade to tram
  - Thames Gateway Bridge
  - Improved and new bus routes – particularly north/south and to improve access to major community services such as hospitals
  - Improvements to Barking Station and other interchanges
  - A number of road schemes – particularly Renwick Road/A13 junction for improved access into Barking Riverside
- The Council has a number of initiatives and strategies geared towards the environment such as Air Quality Management and Biodiversity and Energy strategies. There are existing air quality and noise problems along some roads in the Borough.

Implications for the SEA Methodology
None identified

This Local Implementation Plan adopts the relevant policies contained in Brent's Unitary Development Plan and Cultural Strategy with regard to transportation planning for cultural attractions and events and sporting events in the Borough. In addition, the LIP contains cross-cutting policies with regard to:

- Walking, cycling and road danger reduction;
- Public transport, in particular coach parking, improved accessibility to stations and improved interchange / integration;
- Park and Ride, traffic management, parking enforcement and car parking standards for development; and
- Travel awareness and travel plans supported by the implementation of this Local Implementation Plan.

The most popular mode of choice is the private motorcar or van, with a third of people traveling by this mode. The next most popular mode is the London Underground (the Tube). More than a quarter of Brent's population between the ages of 16-74 in employment use the tube to get to and from work. Just fewer than 13% of people use the bus, with 6.6% of people completing their work journey on foot. The current trend is for traffic levels to continue to grow with increasing car ownership and consequent decreasing average journey speeds. This growth is having unacceptable economic, social and environmental impacts, particularly upon urban realm, quality of life and health. The Council is seeking to address the lack of investment in the Boroughs streets, in order to deliver its obligations under the Traffic Management Act and to create environments that are conducive to the use of sustainable modes.

In April 2001, large parts of the Borough were declared AQMA’s. The AQMA is for nitrogen dioxide and fine particles (PM10). This includes the entire area south of the North Circular Road. The LIP has been devised to take account of the air quality impact of the transport network and sets out a range of policies which comply with the Borough’s AQMA. In addition, the LIP proposes additional measures to support the AQMA and the requirements of the MTS and MAQS, which are specifically targeted at air quality.

None identified

Internet link:
Local Implementation Plan (LIP) for the London Borough of Greenwich and sets out the proposals considered appropriate for implementation of the Mayor’s Transport Strategy (MTS) in the borough. The 2005/06 settlement will include funding for key local schemes in Greenwich, including:

- Reducing social exclusion - £398,000 allocated to walking and cycling schemes
- Supporting economic regeneration. £200,000 for further Greenwich town centre improvements and £350,000 for Woolwich town centre
- Reducing road casualties - £1.1m for road safety schemes

The strategy contained within this LIP represents a comprehensive package of measures aimed at addressing the problems and issues identified. It seeks to create an efficient road network which is better managed, using technology to maximise capacity which benefits all road users, accommodates extra trips on better public transport and through walking and cycling which, together with more efficient networks, will mean congestion is kept to a minimum. Key to the success of the strategy are the following:

- Making best use of the existing transport network
- Enhancing the quality of public transport
- Targeting investment to support regeneration
- Tackling congestion

Outstanding challenges include:

- Maintaining the pace of regeneration, jobs growth and redevelopment
- Overcoming continual poverty, unemployment and social exclusion among many London Borough of Greenwich residents
- Diversifying accessibility to jobs and other opportunities. In particular, improving accessibility for residential parts in the south of the Borough to access new job opportunities in the north and in the wider Thames Gateway
- Improving air quality, the environment and mitigating the adverse impacts of the car
- Extending real transport choice, quality and convenience to London Borough of Greenwich residents
- Setting targets and measurable indices against which the success of any transport strategy can be measured

Hillingdon Local Implementation Plan Draft

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<thead>
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<th>Proponent body</th>
<th>London Borough of Hillingdon</th>
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<tr>
<td>Date produced</td>
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### Summary / Overview

Hillingdon is the second largest London Borough and has a great diversity of urban areas and villages within a rural and suburban setting. Transport is crucial to the way of life for Hillingdon’s residents and businesses especially with its position on the outer edge of London. Hillingdon is also unique in having Heathrow, the world’s busiest international airport, within its boundary. Heathrow generates a considerable amount of road and railway traffic. Hillingdon’s recently adopted Borough Transport Strategy (January 2005) has provided the strong local basis on which to develop the LIP transport initiatives up to 2010/2011. The LIP’s transport proposals focus on eight priority areas and include timelines, funding information and monitoring to ensure the successful implementation of the initiatives.

### Opportunities / Synergies / Constraints / Challenges

Heathrow Airport, the world’s busiest international airport, is located in the south of the Borough and is a significant generator of car borne and freight traffic, particularly on the local road network especially from areas to the west of the Borough. According to the 2001 census, 60% of Hillingdon’s population traveled to work in private cars or vans and Hillingdon continues to have the highest car ownership level of all the London Boroughs. The high dependency on the use of cars in Hillingdon has resulted in several congestion hot spots and creates serious pressures on on-street parking in the borough. High car use has also led to high levels of noise and air pollution at various locations along the major road network. While Hillingdon aims to improve and expand the public transport network and to promote alternative modes of travel, it is accepted that in areas such as Hillingdon with highly dispersed demand patterns, car use will continue to be an important travel method for the foreseeable future.

The LIP’s transport proposals focus on eight priority areas and include timelines, funding information and monitoring to ensure the successful implementation of the initiatives. These eight priority areas are:

- Road Safety
- Bus Journey Times
- Relieving Traffic Congestion
- Parking and Loading
- Accessibility and Social Inclusion
- Walking
- Cycling
- Transport Infrastructure

### Implications for the SEA Methodology

None identified

Summary / Overview

The Council has published a series of innovative Strategy Plans. These present the Council’s transport strategies in detail and set out the programmes and targets for change. The Plans are objective led and target driven. The Council believes that they provide a model for the development of local integrated transport strategies. The Strategy Plans are daughter documents to the LIP. The following strategy plans have been published and are enclosed with the LIP:

- The Camden Walking Plan – Fourth Review
- The Camden Cycling Plan – Second Review
- The Road Safety Plan (2002-2003), now superseded by Chapter 6 of the LIP

The policies and strategies described in the LIP will enable the Council to make a positive contribution to a range of the objectives in the Camden Community Strategy, provided the bids for resources in the LIP are successful. The most direct contribution is to the goal of creating a safe and healthy place and in doing so to bring benefits to both the residential and business communities in the borough. The policies and strategies for transport contained within this document seek to reflect other key priorities including regeneration and partnership.

Opportunities / Synergies / Constraints / Challenges

The borough has two overlapping transport policy objectives when it comes to traffic flows. Firstly it wishes to reduce the total motor traffic flows, and secondly it wishes to retain personal mobility by encouraging a switch to more sustainable means of transport – walking, cycling and public transport use. The borough is relatively well served by public transport, and this has improved with the introduction of new and improved bus services in conjunction with the Congestion Charging Scheme. Camden strongly supports the retention of new route 603, which adds considerable value to the relatively light orbital services in the borough.

Camden’s land use and transport planning are aimed to:

- Reduce climate change through the reduction in motor vehicle use and related pollution;
- Improve people’s health by promoting car free lifestyles and improved air quality;
- Secure social cohesion by the promotion walking, cycling and public transport and people’s quality of life; and
- Improve the quality of the public realm.

Camden’s relevant UDP policies and LIP programmes also aim to help regenerate the public realm by prioritising walking, cycling and public transport measures, as well as the creation of more people friendly zones. These strategic policies are supported and expanded by a series of more detailed policies and commitments.

Implications for the SEA Methodology

None identified

Internet link: http://www.camden.gov.uk/ccm/content/transport-and-streets/traffic-in-camden/camdens-local-implementation-plan.en
### Merton Local Implementation Plan Draft

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#### Summary / Overview

The Council has also utilised this opportunity to address the requirements of the Road Traffic Management Act 2004, local transport requirements, which have been raised by the public, local Members and officers, the Council’s Community Plan and other relevant policy documents such as the Unitary Development (UDP) and the Air Quality Management Plan. These have been addressed largely in a programme of works, which are included in the five-year plan matrix within the document, which will be carried out within the Borough subject to public support and funding. The works are listed under eight key themes:

- Improving road safety
- Improving bus journey times and reliability
- Relieving traffic congestion and improving journey reliability
- Improving parking and loading arrangements
- Improving accessibility and social inclusion
- Encouraging walking by improving the street environment and conditions for pedestrians
- Encouraging cycling by improving conditions for cyclists
- Bringing transport infrastructure to a state of good repair.

#### Opportunities / Synergies / Constraints / Challenges

The London Borough of Merton has two overarching LIP objectives;

- To undertake, where required, a series of technical and perception surveys of areas and amongst all sectors of the community to better understand the travel needs of all and demand on local infrastructure; and
- To ensure appropriate procedures and guidance are in place to allow delivery of transport schemes of the highest quality possible and provide optimum value for money.

The LIP includes a range of projects, which aim to improve accessibility to transport throughout the Borough. These include measures to improve safety and security relating to all transport modes including cycles and walking and public transport, including enhancing the streetscape and incorporating appropriate design measures to improve safety and security as well as CCTV and better lighting.

Council declared an Air Quality Management Area (AQMA) when it found that annual levels of nitrogen dioxide ($\text{NO}_2$) and particulates ($\text{PM}_{10}$) were being exceeded. Noise is a particularly significant issue in the built up area such as Merton and is mainly associated with the road network in the Borough. London Borough of Merton has an area of 37.6 km$^2$. The area affected by Lden levels of greater than 60 dB(A) is 4.7 km$^2$. This equates to 13% of the total area.

#### Implications for the SEA Methodology

None identified

Internet link: [http://www.merton.gov.uk/living/transport/transportplanning/lip.htm](http://www.merton.gov.uk/living/transport/transportplanning/lip.htm)
This Local Implementation Plan aims to create conditions that widen transport choice for all, while reducing the negative impacts that congestion and traffic pollution can have on our lives. It includes a wide range of proposals in areas such as improving road safety, encouraging children (and their parents) to walk to school, improving the state of our roads, and making bus journeys more reliable. Vehicles travel an estimated 1,000 million kilometres on Wandsworth's roads each year. This is the highest figure for an inner London borough. Large volumes of traffic can mean congestion and accidents. Traffic noise and pollutants detract from the quality of the environment and damage health.

Transport strategy has the following core aims:

- To improve road safety
- To maintain and improve the quality of the environment
- To maintain and improve the efficient movement of all traffic, including pedestrians
- To maintain and improve accessibility to the transport system for everyone
- To develop walking, cycling and public transport as viable and safe alternatives to the private car
- To reduce the need for travel through greater travel awareness and use of local services and facilities
- To provide effective and enhanced enforcement of traffic and parking restrictions
- To oppose large-scale road building as unsustainable
- To facilitate effective and sustainable economic growth and regeneration
- To make the best use of the transport infrastructure by effective maintenance and management
- To support large-scale investment in public transport

Since many Wandsworth residents work outside the borough (mostly in central London), good transport links – both public and private – to and from surrounding areas are a priority. The council wants to see a transport system that is safe and efficient and has proper respect for the environment. Central to the strategy is the belief that the key to solving London's transport problems lies in:

- Integrating, improving and expanding public transport facilities
- The restraint of non-essential vehicular traffic through demand management;
- Reducing dependence on the car and encouraging a shift to more environmentally friendly modes of transport

None identified

Internet link:
http://www.wandsworth.gov.uk/Home/EnvironmentandTransport/PlanningService/Transportation/itpcons.htm
Croydon Local Implementation Plan Draft

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Summary / Overview

The Plan builds on previous policies that encouraged commercial development in Central Croydon and the Town, District and Local Centres in the Borough. It gives priority to the regeneration of key sites and areas within the Borough and seeks to achieve a mix of uses, including residential, in locations highly accessible to services, facilities and public transport. This strategy not only supports the vitality and viability of these centres, but it makes the best use of the existing transport infrastructure, enabling people to make multi-purpose journeys and allowing for the efficient use of public transport. It also allows people the opportunity to live and work within an area, thus reducing the need to travel.

Opportunities / Synergies / Constraints / Challenges

The whole borough of Croydon has been designated as an Air Quality Management Area. It is unlikely that air quality objectives for 2005 and 2010 for NO2 and 2010 for PM10 will be met along most of the borough’s busy roads. During 2005 the Council will be revising the current Air Quality Action Plan. Its focus will be on reducing emissions from road transport.

The large population and workforce – combined with a growth in retail and commercial floorspace over the last two decades or so – has inevitably meant that there has been a dramatic growth in traffic over the years. Apart from the new tramway, the most significant component of traffic growth has been in the use of the car, which has been made worse by increased levels of freight on the roads and a relative decline in public transport.

The borough is strategically located on the main road network, with access to the national motorway network via A23 and A22 to the M23 and M25. However, a lack of investment in recent years has given rise to increased congestion on these routes, which is having an adverse impact on the economy of the Borough. Improvements to the transport infrastructure are considered to be essential if the inherent weaknesses in the economy of the borough are to be overcome. This situation is not unique to Croydon – similar problems are faced across the whole country and are being addressed by Government. There are a number of key principles emerging:

- Moving from the concept of ‘predict and provide’ to ‘plan and manage’;
- The integration of land use and transport planning;
- Accessibility – with the emphasis on a choice of transport modes for different types of journeys;
- Sustainability;
- ‘Joined up thinking’, for example, making the link between air pollution, transport and health;
- Partnership – everyone working together to achieve improvement;
- Reducing car use.

Implications for the SEA Methodology

Possible consultees: London Bus Initiative, London Cycle Network, SWELTRAC, SELTRANS.

Internet link: http://www.croydon.gov.uk/transportstreets/TransPlan/109202/?a=5441
### Summary / Overview

Full implementation of this strategy between 2006 and 2016 would result in a broad range of transport improvements in Islington, including the following key achievements:

- Bringing the condition of every borough controlled road in Islington to a state of good repair
- Delivery of traffic reduction measures and controlled parking zones where residents and businesses want them
- Significantly increased walking and cycling in Islington
- Significantly reduced road traffic casualties in line with national targets
- Completion and continued expansion and improvement of the London Cycle Network (LCN+) in Islington

### Opportunities / Synergies / Constraints / Challenges

According to DfT figures, motor vehicles drive about 485 million kilometres each year and over 1.3 million kilometres each day in Islington, including through trips and trips starting and finishing in Islington. Based on the average trip distance in Islington of 4.14 km from LATS, there are about 315,000 individual motor vehicle trips in Islington each day. Islington is therefore one of the most highly congested and densely parked areas of London.

The Sustainable Transport Strategy's main objective is to make Islington's transport environment:

- Safe – reducing the number of people killed and injured on Islington's roads
- Accessible – ensuring that Islington's transport system is accessible to residents and visitors to the borough
- Green – reducing the impacts of transport on the local and global environment, especially by reducing car commuting and increasing walking, cycling and public transport use
- Efficient – reducing journey times and ensuring the transport network is reliable
- Secure – increasing personal security on Islington's streets and at stations
- Attractive – improving the cleanliness and attractiveness of the transport environment, particularly Islington's streets

### Implications for the SEA Methodology

None identified

APPENDIX 2 – BASELINE INDICATORS

The following table summarises the findings of the baseline data collection. Current status is established in relation to targets, where available, or to other regions or the UK as a whole. Trend is based on data series, where these are available. Likely future status is derived from current status and trend.

The current status, trend and likely future status are shown as:

- **Favourable (green)** – on target or favourable trend (green)
- **Possibly unfavourable (yellow)** – possibly missing target, compares poorly with other regions or deteriorating trend
- **Unfavourable (red)** – missing target or deteriorating trend
- **Uncertain or unclear (grey)** – insufficient data to form a conclusion
- **Unclassifiable (white)** – cannot be meaningfully classified

<table>
<thead>
<tr>
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<th>Trend</th>
<th>Likely Future Status</th>
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</tr>
<tr>
<td>Areas of deficiency in accessible wildlife sites</td>
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<tr>
<td>Trends in the population of 21 common birds</td>
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</tr>
<tr>
<td><strong>Population</strong></td>
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<tr>
<td>Years of life lost (YLL) due to bronchitis and emphysema</td>
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<tr>
<td>Admissions to hospital for respiratory conditions (acute and chronic)</td>
<td>Uncertain</td>
<td>Favourable</td>
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</tr>
<tr>
<td><strong>Soil</strong></td>
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<td></td>
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<tr>
<td>Land cover (thousands of hectares)</td>
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<td>Unclassifiable</td>
<td>Unclassifiable</td>
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<tr>
<td>Area of sensitive habitats exceeding critical loads for acidification</td>
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<td>Uncertain</td>
<td>Unclassifiable</td>
</tr>
<tr>
<td>Area of sensitive habitats exceeding critical loads for eutrophication</td>
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<td>Uncertain</td>
<td>Unclassifiable</td>
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<td><strong>Water</strong></td>
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<tr>
<td>Biological water quality</td>
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<tr>
<td>Chemical water quality</td>
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</tr>
<tr>
<td><strong>Air</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nitrogen oxides emissions from road transport</td>
<td>Unfavourable</td>
<td>Uncertain</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Nitrogen oxides emissions</td>
<td>Unfavourable</td>
<td>Uncertain</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Particulate (PM₁₀) emissions from road transport</td>
<td>Unfavourable</td>
<td>Uncertain</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Particulate (PM₁₀) emissions</td>
<td>Unfavourable</td>
<td>Uncertain</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Number of local authorities with Air Quality Management Areas for NO₂ due to transport</td>
<td>Unfavourable</td>
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<td>Unclassifiable</td>
</tr>
<tr>
<td>Number of local authorities with Air Quality Management Areas for PM₁₀ due to transport</td>
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</tr>
<tr>
<td><strong>Climate</strong></td>
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<tr>
<td>Greenhouse gases from transport sources</td>
<td>Unfavourable</td>
<td>Possibly</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Greenhouse gases</td>
<td>Unfavourable</td>
<td>Possibly</td>
<td>Unfavourable</td>
</tr>
<tr>
<td>Number of journeys (per person per year)</td>
<td>Possibly</td>
<td>Favourable</td>
<td>Possibly Unfavourable</td>
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<td><strong>Material Assets</strong></td>
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<tr>
<td>Unfit dwellings</td>
<td>Favourable</td>
<td>Favourable</td>
<td>Favourable</td>
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<td><strong>Cultural Heritage</strong></td>
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<td>Conservation Areas</td>
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<tr>
<td>Listed buildings</td>
<td>Unclassifiable</td>
<td>Unclassifiable</td>
<td>Unclassifiable</td>
</tr>
<tr>
<td>Listed buildings ’at risk’</td>
<td>Uncertain</td>
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<td>Unclassifiable</td>
</tr>
<tr>
<td>World Heritage Sites</td>
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### SEA of the Proposed Revisions to the Mayor’s Transport and Air Quality Strategies: Low Emission Zone

#### Environmental Report

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current Status</th>
<th>Trend</th>
<th>Likely Future Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landscape / Townscape</strong></td>
<td></td>
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<tr>
<td>Area of Green Belt</td>
<td>Unclassifiable</td>
<td>Unclassifiable</td>
<td>Unclassifiable</td>
</tr>
<tr>
<td>Area of Metropolitan Open Land</td>
<td>Unclassifiable</td>
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</tbody>
</table>
### Biodiversity / Flora / Fauna

<table>
<thead>
<tr>
<th>London</th>
<th>South East</th>
<th>East of England</th>
<th>National</th>
<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition of Sites of Special Scientific Interest (SSSI)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Favourable: 49.77%</td>
<td>Favourable: 45.06%</td>
<td>Favourable: 66.06%</td>
<td>England: Favourable: 45.01%</td>
<td></td>
<td></td>
<td>Trend unknown: however London compares poorly with the South East and East of England regions, and England as a whole. London is also a long way from the 2010 target</td>
</tr>
<tr>
<td>Unfavourable / Recovering: 9.88%</td>
<td>Unfavourable / Recovering: 25.32%</td>
<td>Unfavourable / Recovering: 11.31%</td>
<td>Unfavourable / Recovering: 22.72%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Unfavourable / No change: 30.37%</td>
<td>Unfavourable / No change: 14.09%</td>
<td>Unfavourable / No change: 6.68%</td>
<td>Unfavourable / No change: 20.50%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Unfavourable / declining: 9.78%</td>
<td>Unfavourable / declining: 15.47%</td>
<td>Unfavourable / declining: 15.92%</td>
<td>Unfavourable / declining: 11.69%</td>
<td></td>
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</tr>
<tr>
<td>Destroyed / Part Destroyed: 0.20% [2005]</td>
<td>Destroyed / Part Destroyed: 0.07% [2005]</td>
<td>Destroyed / Part Destroyed: 0.03% [2005]</td>
<td>Destroyed / Part Destroyed: 0.08% [2005]</td>
<td></td>
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</tr>
</tbody>
</table>

The Government's Public Service Agreement target is to have 95% of the SSSI area in favourable or recovering condition by 2010.


### Number of Sites of Metropolitan Importance for Nature Conservation (SMINC)

| 136 sites covering 3,574 hectares [2003] | No net loss of important wildlife habitat | [Context Indicator] |

## Biodiversity / Flora / Fauna

<table>
<thead>
<tr>
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<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total area of wildlife sites identified (hectares)</strong></td>
<td></td>
<td></td>
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<tr>
<td>The Thames:</td>
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</tr>
<tr>
<td>2,295; Metropolitan (apart from the Thames): 13,385; Borough Grade I: 7,672; Borough Grade II: 4,697; Local: 1,825; Land not in a Site: 144,720 [2003]</td>
<td></td>
<td></td>
<td></td>
<td>No net loss of important wildlife habitat</td>
<td></td>
<td>[Context Indicator]</td>
</tr>
</tbody>
</table>


### Areas of deficiency in accessible wildlife sites

[Indicator being developed and will be reported in the next State of the Environment Report]

| | | | | | | Unknown |

## Biodiversity / Flora / Fauna

<table>
<thead>
<tr>
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<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard: 79; Feral pigeon: 93; Wood pigeon: 152; Collared dove: 135; Swift: 115; Wren: 118; Dunnock: 106; Robin: 130; Blackbird: 79; Song thrush: 79; Mistle thrush: 62; Blue tit: 143; Great tit: 197; Jay: 79; Magpie: 120; Carrion crow: 155; Starling: 73; House sparrow: 39; Chaffinch: 161; Greenfinch: 119; Goldfinch: 66</td>
<td>South East and East of England: Mallard: 112; Feral pigeon: 103; Wood pigeon: 114; Collared dove: 141; Swift: 117; Wren: 97; Dunnock: 102; Robin: 106; Blackbird: 101; Song thrush: 79; Mistle thrush: 80; Blue tit: 106; Great tit: 112; Jay: 79; Magpie: 113; Carrion crow: 138; Starling: 71; House sparrow: 76; Chaffinch: 110; Greenfinch: 115; Goldfinch: 90</td>
<td>UK: Mallard: 189; Feral pigeon: not known; Wood pigeon: 195; Collared dove: 699; Swift: not known; Wren: 192; Dunnock: 68; Robin: 158; Blackbird: 83; Song thrush: 51; Mistle thrush: 69; Blue tit: 116; Great tit: 152; Jay: 93; Magpie: 218; Carrion crow: 182; Starling: 41; House sparrow: 26; Chaffinch: 134; Greenfinch: 129; Goldfinch: 131</td>
<td>Trend unclear: some species thriving, yet others declining, some dramatically. Comparison with South East, East of England and England as a whole similarly unclear.</td>
<td></td>
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</tbody>
</table>


### Population

<table>
<thead>
<tr>
<th>London</th>
<th>South East</th>
<th>East of England</th>
<th>National</th>
<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (thousands)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

http://neighbourhood.statistics.gov.uk

| Live births (per thousand) | | | | | | |


| Deaths (per thousand) | | | | | | |

### Population

<table>
<thead>
<tr>
<th></th>
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<th>South East</th>
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<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
</table>

http://neighbourhood.statistics.gov.uk
<table>
<thead>
<tr>
<th>Human Health</th>
</tr>
</thead>
</table>

| People describing their health as 'good', 'fairly good' or 'not good' |
|---------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| London                    | South East        | East of England   | National          | Target            | Trend             | Current Status    |
| Good: 5,078,978; Fairly Good: 1,499,198; Not Good: 593,915 [2001] | Good: 5,720,436; Fairly Good: 1,710,768; Not Good: 569,441 [2001] | Good: 3,790,644; Fairly Good: 1,187,940; Not Good: 409,556 [2001] | England & Wales: Good: 35,676,210; Fairly Good: 11,568,363; Not Good: 4,797,343 [2001] | Trend unknown, but the percentage saying their health is 'not good' (12%) is higher than the South East region (10%) and East of England (11%) but lower than England and Wales (13%) |


<table>
<thead>
<tr>
<th>Life expectancy at birth</th>
</tr>
</thead>
</table>


### Human Health

<table>
<thead>
<tr>
<th></th>
<th>London</th>
<th>South East</th>
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<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths from circulatory diseases (Years of Life Lost)</td>
<td>5960 YLL per 10,000 [1991-2001 mean]</td>
<td>10580 YLL per 10,000 [1991-2001 mean]</td>
<td>47555 YLL per 10,000 [1991-2001 mean]</td>
<td>Unknown</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Years of life lost (YLL) due to bronchitis and emphysema</td>
<td>164.5 YLL [2003]</td>
<td>14769.5 YLL [2003]</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Admissions to hospital for respiratory conditions (acute and chronic)</td>
<td>465,470 [1997/98]</td>
<td>445,747 [2000/01]</td>
<td>Improving</td>
<td></td>
<td></td>
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</table>
### Soil

<table>
<thead>
<tr>
<th>Land cover (thousands of hectares)</th>
<th>London</th>
<th>South East</th>
<th>East of England</th>
<th>National</th>
<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suburban: 66; Continuous urban: 36; Semi-natural grass: 29; Mown grass: 13; Tilled land: 12; Deciduous woodland: 8; Other vegetation: 5; Inland water: 2; Estuary: 1; Other Land: 3 [2003]</td>
<td>[Context Indicator]</td>
<td></td>
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</table>


#### Percentage of sensitive habitats exceeding critical loads for acidification

<table>
<thead>
<tr>
<th>[Data Gap]</th>
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</table>


#### Percentage of sensitive habitats exceeding critical loads for eutrophication

<table>
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<tr>
<th>[Data Gap]</th>
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<table>
<thead>
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<th>Water</th>
<th>London</th>
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<th>East of England</th>
<th>National</th>
<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biological river quality (General Quality Assessment Grade)</strong></td>
<td>A: 0; B: 12; C: 19; D: 16; E: 12; F: 0 [2005]</td>
<td>A: 283; B: 248; C: 178; D: 66; E: 16; F: 2 [2005]</td>
<td>A: 197; B: 182; C: 91; D: 23; E: 10; F: 2 [2005]</td>
<td></td>
<td></td>
<td>Unknown</td>
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</tr>
<tr>
<td>Source: Environment Agency</td>
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</tr>
<tr>
<td><strong>Chemical river quality (General Quality Assessment Grade)</strong></td>
<td>A: 1; B: 21; C: 15; D: 19; E: 16; F: 3 [2005]</td>
<td>A: 126; B: 318; C: 277; D: 125; E: 98; F: 8 [2005]</td>
<td>A: 43; B: 356; C: 248; D: 111; E: 97 [2005]</td>
<td></td>
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<td>Unknown</td>
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</tr>
<tr>
<td>Source: Environment Agency</td>
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## Air

<table>
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<th>Trend</th>
<th>Current Status</th>
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<td><img src="http://www.defra.gov.uk/environment/statistics/airqual/kf/aqkf18.htm" alt="Link" /></td>
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### Air

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<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulate (PM10) total emissions (thousands of tonnes)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 [1999]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>UK: 1970: 486</td>
<td></td>
<td></td>
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<td></td>
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<td>1980: 332</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>1990: 287</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2000: 168</td>
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</tr>
<tr>
<td>2001: 169</td>
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<td>2002: 150</td>
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<tr>
<td>2003: 141</td>
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London: [http://www.london.gov.uk/mayor/strategies/air_quality/docs/chap_2.pdf](http://www.london.gov.uk/mayor/strategies/air_quality/docs/chap_2.pdf)


**Number of local authorities with Air Quality Management Areas for nitrogen dioxide due to transport**

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>30 [2005]</td>
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<td></td>
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<td>Unknown</td>
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</table>

[http://www.airquality.co.uk/archive/laqm/laqm.php](http://www.airquality.co.uk/archive/laqm/laqm.php)

**Number of local authorities with Air Quality Management Areas for PM10 due to transport**

<p>| | | | | | | | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>26 [2005]</td>
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<td>Unknown</td>
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[http://www.airquality.co.uk/archive/laqm/laqm.php](http://www.airquality.co.uk/archive/laqm/laqm.php)
### Climate

<table>
<thead>
<tr>
<th>London</th>
<th>South East</th>
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<th>Target</th>
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<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greenhouse gases (thousands of tonnes)</strong></td>
<td></td>
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### Climate

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<tr>
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<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greenhouse gases from transport sources (thousands of tonnes)</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8,548 [1999-2000]</td>
<td></td>
<td></td>
<td>UK:</td>
<td></td>
<td>No London data available but UK data shows a rising trend in transport related emissions</td>
<td></td>
</tr>
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</table>


### Climate

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<th>Target</th>
<th>Trend</th>
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</thead>
</table>
## Material Assets

|-----------------|-----------------------------|-----------------------------------|---------------------------------------|----------------------------------|----------------|--------|----------------|

### Cultural Heritage

<table>
<thead>
<tr>
<th>London</th>
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<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conservation Areas</strong></td>
<td></td>
<td></td>
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<td></td>
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<td>[Context Indicator]</td>
</tr>
<tr>
<td>892 [2004]</td>
<td></td>
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<td></td>
<td>[Context Indicator]</td>
</tr>
<tr>
<td><a href="http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf">http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf</a></td>
<td></td>
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<tr>
<td><strong>Listed buildings</strong></td>
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<td>[Context Indicator]</td>
</tr>
<tr>
<td>Approximately 40,000 [2004]</td>
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<td>[Context Indicator]</td>
</tr>
<tr>
<td><a href="http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf">http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf</a></td>
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<tr>
<td><strong>Listed buildings 'at risk'</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td>700 [2004]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Context Indicator]</td>
</tr>
<tr>
<td><a href="http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf">http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf</a></td>
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</tr>
<tr>
<td><strong>World Heritage Sites</strong></td>
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<td></td>
<td></td>
<td>[Context Indicator]</td>
</tr>
<tr>
<td>Four—Greenwich, Westminster Abbey, the Tower of London and Royal Botanic Gardens Kew [2004]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Context Indicator]</td>
</tr>
<tr>
<td><a href="http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf">http://www.london.gov.uk/mayor/strategies/culture/docs/strategy-all.pdf</a></td>
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</tbody>
</table>
### Landscape / Townscape

<table>
<thead>
<tr>
<th></th>
<th>London</th>
<th>South East</th>
<th>East of England</th>
<th>National</th>
<th>Target</th>
<th>Trend</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of Green Belt (hectares)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trend not really applicable</td>
</tr>
<tr>
<td>34,708 [2003]</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mayor's State of the Environment Report:</td>
<td><a href="http://www.london.gov.uk/gla/publications/environment/green_capital.pdf">link</a></td>
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</tr>
</tbody>
</table>

| Area of Metropolitan Open Land (hectares) |        |            |                 |          |        |       | Trend not really applicable     |
| 15238 [2003]          |        |            |                 |          |        |       |                                 |
| Mayor's State of the Environment Report: | [link](http://www.london.gov.uk/gla/publications/environment/green_capital.pdf) |            |                 |          |        |       |                                 |
### APPENDIX 3 – CONSULTATION COMMENTS

<table>
<thead>
<tr>
<th>Consultation on the Scoping Report</th>
<th>Response to comment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plans and programmes that cover the potential indirect impacts of the revisions have not been reviewed. For example, amendments to the Transport Strategy to allow for an LEZ may result in the re-routing of targeted vehicles to avoid Greater London. This would be likely to result in impacts on air quality, transport networks, noise, biodiversity, cultural heritage and human health outside London. [Environment Agency]</td>
<td>A key assumption of the modelling for the LEZ is that the traffic patterns in London will remain approximately the same. Vehicles will still need to enter London and in the same numbers as before. TfL’s consultation with transport operators has suggested, however, that some re-deployment of older, non-compliant vehicles away from London is likely to take place with compliant vehicles replacing them. This re-deployment might be to anywhere in the UK. This would suggest the need to review a very large number of Local Transport Plans and Air Quality Management Plans and this is not practical.</td>
<td>The fact that there is likely to be a negative impact on air quality outside of London is acknowledged in the Environmental Report.</td>
</tr>
<tr>
<td>The SEA should have regard to the review of the National Air Quality Strategy. [Environment Agency]</td>
<td>Agreed.</td>
<td>Included in the revised context review</td>
</tr>
<tr>
<td>Suggest EU Air Quality Thematic Strategy is reviewed. [Environment Agency]</td>
<td>Agreed.</td>
<td>Included in the revised context review</td>
</tr>
<tr>
<td>The SEA needs to consider any relevant plans and programmes published by the Highways Agency, as it is directly responsible for motorways and trunk roads. [Environment Agency]</td>
<td>True – up to a point. The HA is responsible for the motorways and trunk roads surrounding London and the efficiency of this network will have an indirect bearing on London’s road network and air quality.</td>
<td>The Highways Agency ‘Family of Strategic Plans’ has been reviewed: • Making Maintenance the Priority • The Targeted Programme of Improvements • Towards a Balance with Nature • Better Value from Busy Roads • Encouraging Sustainable Travel • Working in Partnership They are included in the revised context review.</td>
</tr>
<tr>
<td>It is important that the findings of the Health Assessment are integrated into the SEA. [Environment Agency]</td>
<td>Agreed: this has always been the intention.</td>
<td>Included in the analysis of impacts on Human Health.</td>
</tr>
</tbody>
</table>
### Consultation on the Scoping Report

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>We assume that other health-related plans and programmes will be reviewed as part of the Health Assessment. If not, we recommend that additional relevant plans and programmes are reviewed as part of the SEA Scoping Report.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>The Health Assessment is following a well-defined methodology that does not include review of related plans and programmes.</td>
<td>The London Health Strategy Outline Strategic Framework and Health Impact Assessment of the Draft London Plan were reviewed and included in the revised context review.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>We assume that the appropriate health bodies in London will be consulted as part of the assessment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>As stated in the Scoping Report, the London Health Commission were consulted on the scope and level of detail in the SEA.</td>
<td>None required at this stage, however the Environmental Report will also be made available to the appropriate health bodies in London.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>The baseline section of the document lacks clarity, as the baseline information is confined to a set of indicators that have not been explained in the context of the current and likely future state of the environment in London.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>It is possible that this section could be improved as suggested, however the requirement to include a description of the current and likely future state of the environment applies to the Environmental Report and not to the Scoping Report. Such a description is included in this Environmental Report, as was always the intention.</td>
<td>A description of the current and likely future state of the environment is included in the Environmental Report.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>Many of the baseline indicators are not applicable to the issues that are likely to arise from the revisions to the Transport Strategy and Air Quality Strategy and will not provide sufficient or appropriate information to support the SEA Objectives.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>There is some confusion here between the requirement for baseline data to help identify environmental problems relevant to the plan or programme and indicators to monitor the impacts post-adoption. It is accepted that the data as proposed are not sufficient for the latter, but at the scoping stage the data is sufficient to highlight significant environmental problems.</td>
<td>Indicators to monitor the likely significant impacts of the revisions to the Air Quality and Transport Strategies are proposed in the Environmental Report.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>It is unclear whether the indicators for SSSI condition, trends in bird populations, unemployment, description of health, life expectancy at birth and water quality are connected with air quality or will be affected by other factors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>Disagree. It is clear that all of these indicators will be affected by a variety of influences, which may include air quality in many instances. They are baseline indicators and are included to assist in identifying environmental problems and providing evidence for the current and likely future state of the environment in the absence of the plan or programme.</td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Response to comment</th>
<th>Interpretation of the SSSI condition assessment would be required to determine whether an unfavourable condition assessment is likely to be caused by air quality.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Environment Agency]</td>
<td>Agreed, however this is not required for scoping purposes where the aim is to identify environmental problems. The comment is noted and will be reflected in the proposed monitoring indicators.</td>
<td>Interpretation of the SSSI condition assessment will form part of the monitoring of the impacts of the revisions to the Air Quality and Transport Strategies.</td>
</tr>
</tbody>
</table>
**Consultation on the Scoping Report** | **Response to comment** | **Action**
---|---|---
It is also unclear how the indicators for areas of deficiency [in accessible wildlife areas], land cover and unfit dwellings are applicable to the likely effects of the LEZ proposals. [Environment Agency] | The indicators were included to assist in identifying environmental problems relating to (respectively) biodiversity / human health, soil and material assets / human health. It is unlikely that these topics will be significantly affected by the LEZ and this is acknowledged in the Scoping Report (Section 7), but it is still necessary to supply some information to describe the current and likely future state of the environment. | None required.

In order to answer the decision-making criterion for the SEA Objective "to conserve and enhance biodiversity" baseline information is needed on what protected or priority species or habitats exist in London. [Environment Agency] | SEA Objectives and decision-making criteria removed from the Environmental Report. It was felt that they added little to the process in this particular case. | None required.

Linda Davies from Imperial College has carried out a major study looking at lichen diversity and abundance in every London Borough. We suggest that this work is used as a baseline indicator and for monitoring purposes. [Environment Agency] | Agreed. | Subsequently found this could not be done.

An additional indicator that could be used for baseline information is the number of hospital admissions for respiratory diseases before and after introduction of an LEZ. [Environment Agency] | Agreed, but it is more appropriate as an indicator for monitoring. | The indicator is incorporated in the proposed monitoring framework.

The baseline indicators in Tables 3 and 4 cover emissions from vehicles but not concentrations of pollutants. [Environment Agency] | Agreed. Baseline concentrations are examined as part of the assessment in the Environmental Report. | An emissions indicator is incorporated in the proposed monitoring framework.
### Consultation on the Scoping Report

<table>
<thead>
<tr>
<th>Indicator/Comment</th>
<th>Response to comment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The indicators suggested in Tables 3 and 4 do not appear to refer specifically to the impacts of HGVs and LGVs. [Environment Agency]</td>
<td>The indicators were included to assist in identifying environmental problems and to help describe the current and likely future state of the environment. The assessment is based on detailed traffic and emissions modelling, as stated in Section 7 of the Scoping Report. This modelling includes the impacts of a range of vehicle types, HGVs and LGVs.</td>
<td>None required.</td>
</tr>
<tr>
<td>HGVs are not one of the vehicles included in the “number of journeys” indicator under the Climate topic. [Environment Agency]</td>
<td>True, but this data is not readily available.</td>
<td>None required.</td>
</tr>
<tr>
<td>Data gaps are recorded in Appendix 2 for some of the indicators under the Air topic. It is unclear whether these will be filled. [Environment Agency]</td>
<td>This data was still being collected at the time the Scoping Report was issued.</td>
<td>The data has been included in the Environmental Report.</td>
</tr>
<tr>
<td>We are unsure how some of the results presented in Table 4 have been reached, based on the information set out in Appendix 2 (e.g. emissions of nitrogen oxides and particulates, unemployment and bird populations). [Environment Agency]</td>
<td>The entries in Table 4 in the Scoping Report are in error for the emissions indicators. The indicators for bird populations and unemployment are correct.</td>
<td>The emissions indicators have been corrected in the Environmental Report.</td>
</tr>
<tr>
<td>We are concerned that the key messages set out in Tables 2 and 5 do not necessarily indicate the LEZ to be the preferred option to reduce air pollution and improve human health. It is important that any preferred option is clearly justified in the SEA. [Environment Agency]</td>
<td>The Scoping Report does not assess the impacts of the LEZ, rather it sets out the issues and discusses the approach to the assessment. No judgement was made at this stage about which of the LEZ alternatives was the best from an environmental point of view. The phrase ‘preferred option’ was not intended to imply that it was the best environmental option.</td>
<td>The Environmental Report clearly sets out the significant positive and negative impacts of the LEZ and the reasonable alternatives specified in the Scoping Report.</td>
</tr>
<tr>
<td>Consultation on the Scoping Report</td>
<td>Response to comment</td>
<td>Action</td>
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<tr>
<td>Table 5 does not contain all the key issues relevant to the likely impacts of the proposed revisions to the strategies…it does not consider the impacts on air quality and transport networks, noise, biodiversity, cultural heritage and human health if targeted vehicles re-route to avoid London. [Environment Agency]</td>
<td>SEA has to address the likely significant impacts on the environment. A key assumption of the modelling for the LEZ is that the traffic patterns in London will remain approximately the same. TfL’s consultation with transport operators has suggested that some re-deployment of older, non-compliant vehicles away from London is likely to take place with compliant vehicles replacing them. It is not possible to predict where these vehicles might be used and therefore it is not possible to quantify the effects.</td>
<td>The fact that there is likely to be a negative impact on air quality outside of London is acknowledged in the Environmental Report.</td>
</tr>
<tr>
<td>The key issues identified in Tables 2 and 5 suggest that other alternatives should be considered…to ensure that the LEZ option is preferred from an environmental point of view. [Environment Agency]</td>
<td>The alternatives considered are reasonable taking into account the objectives and geographical scope of the revisions to the Air Quality and Transport Strategies. It should be noted that in many cases (e.g. air transport, alternative fuels, or promotion of economic growth) TfL does not have powers to address the other issues identified. In other cases (e.g. improvements in street maintenance) it is already doing so through means other than the revisions.</td>
<td>The other issues listed in the Scoping Report have not been ignored. They have been recommended as mitigation measures, or means to enhance the effectiveness of LEZ.</td>
</tr>
<tr>
<td>We are concerned that there may be perverse incentives to move from heavy goods vehicles to light goods vehicles both in the short term (until light goods vehicles are covered by the LEZ) and in the longer term as a cheaper alternative to outright replacement of diesel heavy goods vehicles, thereby increasing the potential for carbon emissions to rise. [London Sustainable Development Commission]</td>
<td>This is unlikely (TfL asked operators for their likely responses to the LEZ and only 4% suggested they would switch from HGV to LGV) but possible.</td>
<td>The actual responses of operators will be monitored and if this effect occurs, then controls will be extended to LGVs.</td>
</tr>
<tr>
<td>Except for the indicator relating to SSSI condition, the baseline indicators for nature conservation and ecology are not ideal as they are contextual and do not have a relationship to the effects of air quality. Ideally the variation in populations of species which are especially sensitive to air pollution would provide a better indication of the success or otherwise of the LEZ with respect to nature conservation. The research being undertaken by APRIL (Air Pollution Research in London) might furnish appropriate datasets, further information can be found via the APRIL website. [English Nature]</td>
<td>The APRIL website has been investigated already during scoping and no such data is available directly from it. Repeated attempts to contact the individuals named on the website have been unsuccessful.</td>
<td>None required.</td>
</tr>
<tr>
<td>Consultation on the Scoping Report</td>
<td>Response to comment</td>
<td>Action</td>
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<td>-----------------------------------</td>
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</tbody>
</table>
| With respect to SSSIs, the current unfavourable condition of Epping Forest can be attributed in part to air pollution, and the recovery of lichen and epiphytic communities are likely to be a good indicator of improvements in air quality. However, although it is likely that SSSIs such as Wimbledon Common and Richmond Park are affected by air pollution (because they support acid grassland and heathland habitats that are sensitive to air pollution), it will be difficult to establish whether changes to the condition of these sites is linked to the implementation of an LEZ as the current unfavourable condition of these sites is thought to be largely a result of inappropriate management and/or visitor pressure.  
[English Nature] | Agreed. | The assessment methodology has been revised to take these comments into account. |
| By not addressing the impacts of private cars the benefits to nature conservation may only be marginal.  
[English Nature] | Private cars will not be affected by the LEZ as, while cars account for a relatively high proportion of NO\textsubscript{x} and PM\textsubscript{10} emissions in Greater London, the cost of administering and enforcing a scheme that included cars would be substantial. It is also felt that extending the LEZ to include cars would unfairly penalise the poorest members of society. | None required. |
APPENDIX 4 – MAPS