

# Draft Revised Mayor's Transport Strategy Integrated Impact Assessment: Appendix F: Report on the Assessment of the Proposal to Defer LEZ Phase 3 from 2010 to 2012

Report for Transport for London

MVA Consultancy in Association With ERM and Future Inclusion

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# 1 Introduction

**The purpose of this Appendix is to outline the assessment undertaken on the proposal to defer the implementation of Phase 3 of the Low Emission Zone (LEZ) Scheme from 2010 to 2012. The assessment establishes the baseline conditions and assesses the predicted impacts of the proposal. The findings of this assessment have informed the IIA assessment of the complete Draft Revised MTS.**

## 1.1 Role of this Appendix

- 1.1.1 The Draft Revised MTS Proposal 94 (b) proposes to defer the implementation of Phase 3 of the LEZ from 2010 to 2012: "*The Mayor will defer the implementation of Phase three of the scheme covering LGVs and minibuses (which was due to commence in 2010) to 2012*". For the purposes of this assessment, this is referred to as the proposed 'deferral' of Phase 3.<sup>1</sup>
- 1.1.2 This proposal is assessed as part of the collective suite of policies and proposals contained within the Draft Revised MTS, as detailed in Chapter 2 of the main body of the IIA Report. In addition, it has been considered prudent to provide more detailed assessment around the potential impacts of this specific proposal to determine what impacts may be likely to arise as a consequence and whether they are significant. This assessment considers two alternatives, that of not deferring Phase 3 (introducing Phase 3 in 2010) or not introducing Phase 3 at all.
- 1.1.3 To ensure consistency of approach and assessment, the proposal to defer has been assessed using the same approach outlined within the main body of the Report, and using the same IIA Assessment Framework found in Chapter 5. This IIA assessment comprises a strategic level assessment of a London-wide transport strategy following the guidance in paragraphs 2.22 to 2.2.4 of the Practical Guide to Strategic Environmental Assessment (ODPM 09/2005). In addition it meets the requirements of EqIA, HIA and AEI, whilst also taking into account the HRA Screening.
- 1.1.4 This Appendix, therefore, details the findings of the specific assessment of deferring the implementation of LEZ Phase 3 from 2010 to 2012 using the MTS IIA Assessment Framework. The findings from this assessment have been drawn on directly in the assessment of the Draft Revised MTS as a whole, as summarised in Chapter 6 of the IIA report.

## 1.2 Structure of this Appendix

- 1.2.1 The subsequent sections in this Appendix are as follows:
- Section 2: The Role of the Low Emission Zone and Phase 3
  - Section 3: Setting the Context: Baseline Conditions
  - Section 4: Assessment Findings; and

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<sup>1</sup> It should be noted that this proposal has previously been alluded to as a 'suspension'; within the context of the Draft Revised MTS the proposal is one of deferment.

## 1 Introduction

- Section 5: Monitoring Provision.



## 2 The Role of the Low Emission Zone and Phase 3

### 2.1 The Low Emission Zone

- 2.1.1 The London Low Emission Zone scheme (hereafter referred to as LEZ or the 'scheme') is one of the principal mechanisms through which the Mayor seeks to reduce emissions of air quality pollutants arising from transport related activities within London. The scheme commenced in 2008 with the aim to bring forward improvements in air quality standards that would otherwise happen through the natural vehicle replacement<sup>2</sup>. Put simply, it seeks to induce the early uptake of cleaner or retrofitted vehicles and reduce emissions which would otherwise arise through the ongoing operation of existing vehicles not compliant with the more stringent standards.
- 2.1.2 LEZ forms part of a range of existing and proposed air quality improvement initiatives in the Draft Mayor's Air Quality Strategy (MAQS) and also as part of the focus on reducing transport related emissions in the Draft Revised MTS. The scheme has an important role as part of the wider package of measures to move London towards the attainment of UK and European air quality objectives and the delivery of health benefits for Londoners.
- 2.1.3 LEZ was first considered in 2001 when a Feasibility Study<sup>3</sup> was undertaken on behalf of the GLA, TfL, the Association of London Government (now London Councils), DfT and Defra. The Study endorsed the use of LEZ as a means to help achieve air quality objectives in London. In early 2005, TfL completed a review of the findings from the Feasibility Study, and in June 2005, the Mayor delegated responsibility to TfL to prepare and consult on revisions to his Transport and Air Quality Strategies (MTS and MAQS) for the introduction of a London-wide LEZ scheme. Following consultation, the Mayor published his MTS and MAQS Revisions on 25 July 2006. This was followed by a public and stakeholder consultation on the detailed LEZ Scheme Order. The current proposal to defer the introduction of Phase 3 of LEZ from 2010 to 2012 follows from an announcement by the current Mayor in February 2009 that he wanted to suspend the planning introduction of the scheme in 2010, given the current economic circumstances. The proposal forms part of the suite of policies and proposals in the Draft Revised MTS and emerging Draft MAQS.

### 2.2 LEZ Aims

- 2.2.1 LEZ is primarily aimed at delivering reductions in emissions to air by introducing cleaner vehicles into the vehicle fleet or encouraging retrofitting of vehicles, in advance of the normal replacement cycle, and thereby assisting the achievement of associated health and environmental benefits. This comes at the expense of increased costs for the vehicle owners affected, who incur costs to ensure that their vehicle is compliant or be subject to a charge for non-compliance. Thus, the effect of the LEZ is to pro-actively promote the uptake of vehicles that have lower emissions (or retrofitting solutions) i.e. to encourage 'cleaner' vehicles on London roads.

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<sup>2</sup> TfL The Low Emission Zone Statement

<sup>3</sup> Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

## 2 The Role of the Low Emission Zone and Phase 3

- 2.2.2 LEZ assumes a role not just within the context of improving London's air quality but also as a contributor to the achievement of the UK Government's objective to meet European air quality limit values for the nation as a whole.
- 2.2.3 The EU Air Quality Directive<sup>4</sup> required compliance with the limit values for PM<sub>10</sub><sup>5</sup> by January 2005 and for the NO<sub>2</sub><sup>6</sup> limit values by January 2010. The limit value for daily average PM<sub>10</sub> is being achieved in London in a small number of areas. In line with the provisions of the EU 2008 Air Quality Directive, the UK Government has applied to the European Commission to extend the date for compliance with the daily average PM<sub>10</sub> limit value for eight areas (including Greater London) until 2011. This requires certain conditions to be met, most importantly that a viable action plan to meet the limit value by 2011 is in place. The timing of the deferral of Phase 3 to 2012 is therefore important in this context. The UK Government is expected to make a similar application for a time extension to 2015 for the annual mean NO<sub>2</sub> limit value.
- 2.2.4 In Defra's submission to the EC Commission, mention was made specifically of the Mayor's intention to defer or remove Phase 3. The submission noted that, 'should the Mayor decide to suspend Phase 3, the UK Government expects him to put in place measures that would contribute to achieving the limit values to the same or greater extent.' Such measures are primarily found in the emerging Draft MAQS and in the suite of policies and proposals in the Draft Revised MTS. The proposal to defer Phase 3 is, therefore, considered within this context.

### 2.3 Key Stages of the Scheme

- 2.3.1 LEZ was originally proposed to be implemented in four chronological stages:
- Phase 1 – commenced in February 2008 – requires heavy goods vehicles (HGVs) over 12 tonnes to meet the Euro III particulate matter (PM) emission standard to drive within a designated zone of Greater London (the Low Emission Zone or LEZ) without paying a charge;
  - Phase 2 – commenced in July 2008 – requires lighter HGVs (between 3.5 to 12 tonnes) and buses and coaches over 5 tonnes with more than 9 seats to meet the Euro III for PM standard to drive within the Low Emission Zone without paying a charge;
  - Phase 3 – originally planned to be implemented in October 2010 – would require large vans (between 1.205 and 3.5 tonnes) and minibuses with more than 9 seats<sup>7</sup> but weighing less than 5 tonnes to meet the Euro III for PM standard to drive without charge; and

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<sup>4</sup> Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

<sup>5</sup> Particulate matter (PM) is a complex assemblage of non-gaseous material of varied chemical composition. It is categorised by the size of the particle (for example PM<sub>10</sub> is particles with a diameter of less than 10 microns).

<sup>6</sup> All combustion processes produce oxides of nitrogen (NO<sub>x</sub>). In London, road transport and heating systems are the main sources of emissions. NO<sub>x</sub> is primarily made up of two pollutants – nitric oxide (NO) and NO<sub>2</sub>. NO<sub>2</sub> is of most concern due to its impact on health, however, NO easily converts to NO<sub>2</sub> in the air – so to reduce concentrations of NO<sub>2</sub> it is essential to control emissions of NO<sub>x</sub>.

<sup>7</sup> Vehicles comprising 8 passenger seats plus 1 driver's seat



- Phase 4 – due to be implemented in January 2012 – will require HGVs over 3.5 tonnes and buses and coaches over 5 tonnes with more than 9 seats<sup>8</sup> to meet Euro IV for PM standard to drive without charge.
- 2.3.2 LEZ as a scheme is, therefore, already operational through the implementation of Phases 1 and 2. Phases 3 and 4 of LEZ are the forthcoming phases yet to be introduced but whose purpose and scope are pre-defined under the terms which introduced the scheme as a whole. This assessment, therefore, examines the benefits of Phase 3 in the context of the broader LEZ scheme.
- 2.3.3 While the requirements for LEZ have been structured around the particulate matter element of the Euro standards, LEZ also delivers NO<sub>x</sub> and CO<sub>2</sub> benefits by incentivising bringing forward the replacement of non-compliant vehicles. This results in improvements in all emissions.
- 2.3.4 The Draft Revised MTS notes the potential for the future introduction of Phase 5 of LEZ but this proposal is subject to ongoing feasibility studies and consultation before its potential implementation in 2015. This assessment has not, therefore, considered this proposal.

### 2.4 Pre-Compliance and Non-Compliance

- 2.4.1 The introduction of each Phase of LEZ has the effect of promoting compliance prior to the actual date of implementation, as vehicle operators invest in compliant vehicles ahead of the deadline. Compliance does not have to be achieved by replacement; retrofitting the appropriate emission control system to a vehicle is also an option. The result of this effect is to achieve a reduction in emissions ahead of the date of implementation. TfL's analysis of LEZ implementation to date indicates that during the year before Phases 1 and 2 of LEZ were introduced (2007), 'operator pre-compliance' with the requirements of the scheme had already delivered about half of the changes to vehicles and emissions that TfL expected in 2008, when full compliance with the requirements of each phase would be expected. Similar pre-compliance benefits for LEZ Phase 3 could therefore be reasonably expected<sup>9</sup>. This may be particularly relevant considering the current availability of the National Scrappage Scheme, which has recently been expanded so that all LGVs affected by LEZ Phase 3 are now eligible.
- 2.4.2 When considering each Phase of LEZ it is therefore important to recognise that their respective impacts some time prior to, as well as during, Phase implementation. Once each Phase is implemented consideration then turns to the impacts of compliance rate achieved and resulting impact on emissions.

### 2.5 The Proposal

- 2.5.1 In February 2009, the Mayor announced his intention to suspend the planned introduction of LEZ Phase 3 in 2010, in light of the economic recession and its impact on small businesses, charities and self-employed Londoners. LEZ Phase 3 would require larger vans and minibuses to meet a minimum Euro III PM standard. The Mayor is now proposing to defer

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<sup>8</sup> Vehicles comprising 8 passenger seats plus 1 driver's seat

<sup>9</sup> TfL 2008 London Low Emission Zone Impacts Monitoring: Baseline Report

the implementation of this phase to 2012. Phase 4 of LEZ, requiring HGVs, buses and coaches to meet a Euro IV PM standard, would continue to be implemented as planned, also in 2012<sup>10</sup>. Any LEZ in London must be in conformity with the Mayor's Transport and Air Quality Strategies. Therefore, to defer the implementation of Phase 3 until 2012 will require a revision to the MTS and MAQS and a variation to the LEZ Scheme Order. Any Variation Order will be subject to public consultation and will need to be confirmed by the Mayor having regard to responses to this consultation and other statutory criteria.

- 2.5.2 The proposal being assessed is solely the deferment of the introduction of Phase 3 of LEZ from 2010 to 2012. This Phase was and is intended to focus specifically on LGVs and minibuses, with the central aim of introducing cleaner vehicles in this category through either the early replacement of old vehicles or retro-fitting.
- 2.5.3 The deferral of LEZ Phase 3 from 2010 to 2012 is hereafter referred to as 'the proposal' or 'deferral of Phase 3' in this Appendix.

### 2.6 The Rationale for the Mayor's Proposal

- 2.6.1 The Proposal to defer the introduction of Phase 3 until 2010 is being put forward for consideration by the Mayor in light of changing economic conditions. It is recognised that economic conditions are currently adverse. GDP grew at 2.7% a year on average between 2001 (when LEZ was first considered) and 2006 (when the then Mayor published MTS and MAQS revisions including LEZ) It has by contrast significantly fallen by 5.6% in the last five quarters; this is a steeper fall than the previous two recessions.
- 2.6.2 London employment and retail sales have also fallen. The proposal will result in postponing pre-compliance and compliance costs and their impact on businesses, from 2009/10 to 2011/12. Relatively speaking, the same level of compliance costs have a larger impact on businesses when margins are tight and profitability is low; the impact of such costs is, therefore, lessened by deferral.
- 2.6.3 This assessment notes the context within which the proposal is being put forward and considers the drivers for the proposal within the context of wider prevailing sustainability conditions – environmental, social and economic – to reflect upon the sustainability of the proposal and realistic alternatives to this; these including retention of the introduction of Phase 3 in 2010 or not introducing Phase 3 of LEZ at all.

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<sup>10</sup> The MTS notes this as *"The implementation of Phase four of the scheme in 2012, introducing a further tightening of emission standards (to Euro IV PM) for HGVs, buses and coaches, will deliver further benefits for air quality."*(para 649)



## 3 Setting the Context: Baseline Conditions

### 3.1 Introduction

- 3.1.1 The SEA regulations require a description of the baseline situation and how it is likely to evolve in the absence of the proposed strategy (deferral of LEZ Phase 3 to 2012). Phases 1 and 2 of the LEZ scheme are in operation. In the absence of the proposal, Phase 3 would be implemented in 2010 with Phase 4 being implemented in 2012. This, therefore, comprises the baseline situation, hereafter referred to as 'the baseline' or 'Phase 3 2010'.
- 3.1.2 Information presented in this section draws on the impact assessment work undertaken to guide the development of LEZ as a whole, and TfL's Impacts Monitoring Baseline Report<sup>11</sup>. This has allowed analysis of the baseline and subsequent assessment to focus on those issues which are pertinent to this proposal e.g. changes in air quality and potential impacts on health and wellbeing. Throughout this section it is noted where information relates to LEZ as a whole or to LEZ Phase 3 specifically (where this information is available).
- 3.1.3 This section begins by presenting the information from which the baseline has been constructed. It then provides an overview of the current baseline conditions in terms of air quality (the primary focus of LEZ). The section then goes on to describe the expected future baseline situation, in the absence of the proposal i.e. if LEZ Phase 3 is introduced in 2010.

### 3.2 Evidence Base: Assessments Informing the Introduction of LEZ

- 3.2.1 A series of impact assessments were carried out in 2006, as part of the development of the LEZ scheme. These assessments predicted and assessed the anticipated effects of the implementation of LEZ as whole. In July 2008, TfL published an Impacts Monitoring Baseline Report for LEZ. TfL also published the Travel in London. In October 2009 the Mayor published his draft Air Quality Strategy, which contains more recent air quality modelling for London as a whole. Taken together these documents provide current air quality baseline information<sup>12</sup>.
- 3.2.2 A full list of assessments and reports drawn on in this baseline review is as follows:

- GLA (2009) Clearing the air: The Mayor's draft Air Quality Strategy for consultation with the London Assembly and functional bodies
- TfL (2008) London Low Emission Zone Impacts Monitoring: Baseline Report
- TfL (2009) Travel in London
- SDG (2006) Proposed London Low Emission Zone Economic and Business Impact Assessment, Final Report
- TRL (2006) Proposed London Low Emission Zone Equality Impact Assessment, Final Report

<sup>11</sup> TfL (July 2008) London Low Emission Zone Impacts Monitoring Baseline Report  
<http://www.tfl.gov.uk/assets/downloads/roadusers/lez/lez-impacts-monitoring-baseline-report-appendix-1.pdf>

<sup>12</sup> *Ibid*

- AEA Energy and Environment (2006) London Low Emission Zone: Health Impact Assessment, Final Report
- Scott Wilson (2006) Environmental Appraisal of the Proposed London Low Emission Zone

#### 3.3 The Baseline and How This Is Likely to Evolve Under the Scenario of Phase 3 2010

##### Overview

- 3.3.1 As previously noted, the following table summarises the current characteristics and the predicted trends with LEZ Phase 3 being implemented in 2010. It also identifies the issues emerging from this baseline and trends analysis, which are subsequently addressed in the assessment. Issues are discussed for air quality as a whole and for each of the assessment strands.
- 3.3.2 To understand the future baseline situation, TfL have carried out some air quality modelling. As air quality is affected by many different factors which increase in uncertainty for future year projections (for example construction work, weather, pollutants outside London), modelling analysis has only been carried out as far as 2015. This timeframe ties in with the potential extended deadlines for the EU prescribed limit values (2011 for PM<sub>10</sub> limit values and 2015 for NO<sub>2</sub> limit values).
- 3.3.3 It should be noted that although the LEZ scheme is aimed at reducing emissions, and there is a relationship between emissions and concentrations, concentrations are affected by a number of other factors (including the weather and pollution from outside London) and so a reduction in emissions, will not usually lead to a commensurate reduction in pollutant emissions. TfL modelling assessed both concentrations and emissions.
- 3.3.4 The existing LEZ is predominantly focused on reducing PM<sub>10</sub> emissions. Consequently this is the pollutant that is primarily the focus in the baseline situation and the assessment. However, the specific association between long term exposure to fine particles and mortality effects has also been observed for the PM<sub>2.5</sub> fraction. Emission controls for vehicles under LEZ as a whole will be effective for this fraction as well as for PM<sub>10</sub> and it should be understood that whilst the assessment here refers predominantly to PM<sub>10</sub>, the health consequences for changes in concentrations also apply to PM<sub>2.5</sub>.

**Table 1 Summary of Key Characteristics of the Future Baseline: Under LEZ Phase 3 2010**

Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
<b>Air Quality</b>			
<b>Air quality in London</b>	<p>London's air quality has improved significantly over the past 50 years or so, with concentrations of both PM<sub>10</sub> and NO<sub>2</sub> declining until around 2001, although they have remained broadly stable since that time<sup>13</sup>.</p> <p>However, London's outdoor air pollution is the worst of any city in the UK and amongst the worst in Europe<sup>14</sup>.</p>	<p>The 2006 EA work estimated that the greatest air quality benefits under LEZ as a whole would be felt in 2012 (PM<sub>10</sub> emissions in 2012 will be 138 tonnes (6.4%) lower and NO<sub>x</sub> emissions in 2012 will be 2480 tonnes (9.8%) lower under LEZ as a whole) with benefits being felt within London and also in the wider area<sup>15</sup>.</p> <p>The trend will therefore be a reduction in NO<sub>x</sub> and PM<sub>10</sub> emissions and which is expected to result in an improvement in air quality in London. This trend will be as a result of a combination of the LEZ, other TfL measures already adopted, and a background trend in vehicle fleet turnover</p>	<p>While emissions have reduced over time further improvements are required to meet the EU limit values for PM<sub>10</sub> and NO<sub>x</sub> concentrations.</p> <p>Emissions reductions are sought not just from transport-related activities but more broadly</p>
<b>PM<sub>10</sub> emissions</b>	<p>The EU limit value for daily mean PM<sub>10</sub> concentrations is regularly exceeded at the side of major roads in central London<sup>16</sup>.</p> <p>Road transport is the dominant source of PM<sub>10</sub> emissions in central London, contributing 83% in 2006<sup>17</sup> (a third of which arise from non-exhaust sources such as through</p>	<p>Since LEZ as a whole aims to reduce emissions from diesel-engined vehicles, it targets a major contributor to PM<sub>10</sub> emissions. PM<sub>10</sub> emissions from non-exhaust sources, such as tyre and brake wear are unlikely to be affected by the LEZ scheme<sup>18</sup>.</p> <p>As noted above, the trend with LEZ will be a reduction in PM<sub>10</sub></p>	<p>PM<sub>10</sub> emissions from transport make up a significant proportion of all PM<sub>10</sub> emissions. This pollutant needs to be reduced to improve air quality and, therefore, tackling emissions from transport-related activities is a key means to</p>

<sup>13</sup> GLA (2009) Draft Mayor's Air Quality Strategy

<sup>14</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

<sup>15</sup> Scott Wilson (2006) Environmental Appraisal of the Proposed London Low Emission Zone

<sup>16</sup> GLA (2009) Draft Mayor's Air Quality Strategy

<sup>17</sup> GLA (2009) Draft Mayor's Air Quality Strategy

<sup>18</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
	tyre and brake wear). Road traffic also causes re-suspension of particles on the road surface, which further contributes to airborne PM <sub>10</sub> levels.	emissions	achieve this.
NO <sub>x</sub> emissions	NO <sub>2</sub> concentrations exceed annual mean EU limit values at roadside locations across London <sup>19</sup> .	The trend is for a reduction in NO <sub>x</sub> emissions. However, TfL modelling, projecting forward to 2015 suggests that the annual mean NO <sub>2</sub> concentrations will still exceed the limit value across 45% of London without further action <sup>20</sup> .	Traffic is a significant source of NO <sub>x</sub> emissions.  NO <sub>x</sub> needs to be reduced to improve air quality.
Emissions from LGVs	In 2006, Light Goods Vehicles (LGVs) travelled 3.9 billion vehicle kilometres in Greater London, representing 12% of the total vehicle kilometres travelled in London. This corresponds to an estimated 24% of total road traffic emissions of PM <sub>10</sub> (16% across all emission sources in London) and 11% of road traffic emissions of NO <sub>x</sub> (5% across all emission sources in London) <sup>21</sup> .  In recent years, volumes of LGVs across London have been broadly stable <sup>22</sup> .	The Draft Revised MTS estimates that the number of LGVs will increase by 30% by 2031 <sup>23</sup> .  LEZ Phase 3 will help address emissions from LGVs and minibuses. However, the scale of reductions in PM <sub>10</sub> and NO <sub>x</sub> is smaller from Phase 3 than from those phases focused on HGVs.	LGVs and minibuses make a relatively small contribution to overall PM <sub>10</sub> and NO <sub>x</sub> emissions.  Tackling LGV emissions is part of a broader package of measures to reduce emissions from all sources.

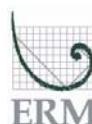
<sup>19</sup> TfL (2008) London Low Emission Zone Impacts Monitoring: Baseline Report

<sup>20</sup> GLA (2009) Draft Mayor's Air Quality Strategy

<sup>21</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

<sup>22</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

<sup>23</sup> TfL (2009) Mayor's Transport Strategy Public Draft



Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
<b>Economic Development and Population Growth</b>			
Level of compliance	<p>In mid 2009, approximately a quarter of LGVs and minibuses are non-compliant with the LEZ Phase 3 standard<sup>24</sup>.</p> <p>LEZ Phase 3 implementation in 2010 will require these vehicles to become compliant in the next year, which while it would deliver reductions in emissions, will cause additional strain given current economic conditions.</p>	<p>TfL estimates that in 2010, approximately 17% of LGVs and minibuses would be required to take action by 2010.</p>	<p>Compliance with LEZ Phase 3 2010 would present a cost to some individuals and businesses.</p> <p>Compliance costs are likely to affect disproportionately smaller businesses with less capacity to absorb such costs.</p>
LGV ownership and costs of compliance	<p>Almost half of all vans are privately owned. The majority of LGV operators are in the service sector, rather than in the haulage or freight sector, while the largest single industry sector is construction<sup>25</sup>.</p> <p>TfL estimate that the average expected cost of compliance through retrofitting for LGVs is estimated as between £500 and £2000 per vehicle.</p>	<p>Companies with larger fleets tend to have newer vans and are better able to redeploy fleets. As such, LEZ phase 3 2010 would be unlikely to have a significant impact on larger businesses. The impact on companies and private operators with smaller fleets and older vehicles would be greater, and these operators are estimated to incur the highest LGV unit cost of compliance. However, there would be some benefits for the vehicles sales and retrofit industry.</p> <p>The trend is for LGVs to be increasingly compliant through natural turnover by 2010, but with greatest cost to operators who own older vehicles</p>	<p>As above, financial costs associated with compliance of LGVs are likely to affect smaller businesses proportionately more than larger businesses.</p> <p>Most costs of compliance are likely to be one-off (either through retrofitting or purchasing a newer vehicle).</p>
Minibus ownership and costs of	<p>'Hire or reward' and the vehicle rental sector account for the largest share of minibus business</p>	<p>Larger fleet sizes offer options for re-deployment as well as access to resources to invest in upgrading and renewing</p>	<p>As above, financial costs associated with compliance of minibuses are likely</p>

<sup>24</sup> TfL Analysis

<sup>25</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report



Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
compliance	<p>activity. Due to the high intensity of use and the trend towards contract leasing, vehicles servicing these sectors tend to be younger (and therefore compliant with the LEZ Phase 3 regulations)<sup>26</sup>.</p> <p>A small proportion of minibus activity is related to community organisations providing mainly voluntary and charitable services. These tend to have older fleets and limited transport alternatives<sup>27</sup>.</p> <p>TfL estimate that the average expected cost of compliance through retrofitting for minibuses is estimated as between £1,400 and £2,500 per vehicle<sup>28</sup>.</p>	<p>fleets, therefore the economic impact on smaller businesses operating in this sector is likely to be greatest.</p> <p>A number of community organisations would face the prospect of having to replace or retrofit their non-compliant vehicles sooner than expected.</p> <p>The trend is therefore for commercial minibuses to be compliant for LEZ, with some community organizations facing higher costs to achieve compliance.</p>	<p>to affect smaller businesses more than larger businesses. Non-commercial operators of minibuses, including charitable and community organisations are also likely to be disproportionately affected by the costs of compliance. The current economic conditions have affected charity fundraising.</p>
<b>Equality</b>			
Health inequalities	<p>Areas experiencing the highest concentrations of PM<sub>10</sub> and NO<sub>2</sub> tend to be those with higher indices of multiple deprivation and higher mortality rates. Black, Asian and minority ethnic people have also been found to experience higher levels of air pollution than the average for the London population<sup>29</sup>.</p> <p>Groups at greater risk</p>	<p>The trend is for improvement in air quality in London under LEZ as a whole (through LEZ, other TfL measures and natural fleet turnover) which will go towards reducing the inequalities gap in terms of exposure to air pollution</p>	<p>Any improvements in air quality across London will help address health inequalities.</p>

<sup>26</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

<sup>27</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report

<sup>28</sup> SDG (2006) Proposed London Low Emission Zone Economic and Business Impact Assessment, Final Report

<sup>29</sup> TRL (2006) Proposed London Low Emission Zone Equality Impact Assessment, Final Report

<sup>30</sup> TRL (2006) Proposed London Low Emission Zone Equality Impact Assessment, Final Report

Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
<b>Economic inequalities</b>	<p>from exposure to air pollution include older people, young people, those with asthma, existing cardiovascular or respiratory problems, people over 65, and pregnant women<sup>30</sup>.</p> <p>Information on business ownership suggests that small business owners are more vulnerable to impacts than larger businesses or chains of businesses who can more readily afford the charge<sup>31</sup>.</p>	<p>Cost of complying with LEZ Phase 3 2010 implementation will have a disproportionate impact on small businesses. This is a consequence both of the greater average age of vehicles in small fleets and the greater vulnerability of small businesses to increased cost</p>	<p>Costs affecting small businesses are likely to have a disproportionate impact on Black and Asian groups and women.</p>
<b>Minibus Use</b>	<p>Young people, older people and disabled people have been shown to be more reliant on minibuses for transport than other groups, since this form of transport is more commonly used for youth groups and other community transport schemes. Furthermore, minibuses are often used for employee transport in service sectors where large numbers of ethnic minority workers are employed.</p>	<p>Possible reduction in community services (due to being unable to comply with the scheme), could have implications for health, in terms of physical health (through the provision of healthcare or healthy food), and mental health and wellbeing (such as participating in the community and use of local amenities).</p>	<p>Increased costs associated with minibus use (from retrofitting, replacement or non-compliance charge) could have a disproportionate impact on equalities groups. The impact is likely to be felt by charitable and community organisations.</p>
<b>Health and Wellbeing</b>			
<b>Health and wellbeing</b>	<p>Evidence from a wealth of epidemiological studies demonstrates convincingly that exposure to airborne particles is associated with increased mortality and adverse health effects.</p>	<p>Reducing airborne PM<sub>10</sub> and NO<sub>2</sub> concentrations through the LEZ will bring associated health benefits including lower mortality and reductions in hospital admissions. These benefits will be experienced proportionately more in</p>	<p>Improving air quality may lead to reductions in the adverse health impacts associated with air pollution.</p>

<sup>31</sup> TRL (2006) Proposed London Low Emission Zone Equality Impact Assessment, Final Report

Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
<p>central London.</p> <p>Reduction in older (and hence noisier) vehicles from the fleet will have a marginal impact in mental wellbeing benefits related to traffic noise.</p>			
<p><b>Safety and security</b></p>			
<p>Road traffic accidents</p>	<p>In 2006, there were 70 people killed or seriously injured and 550 people slightly injured whilst travelling in goods vehicles, about 2% of the total road traffic casualties<sup>32</sup>.</p> <p>There has been a background trend of reducing road casualties in recent years<sup>33</sup>.</p>	<p>The number of journeys made by vehicles is not expected to change following the implementation of LEZ as a whole, but there is the potential for LEZ as a whole to lead to some marginal improvements in road safety through the procurement of newer vehicles with better road safety performance features.</p> <p>The expectation is for the current trend of reducing road casualties to be unaffected by the implementation of LEZ Phase 3</p>	<p>Procurement of newer vehicles may lead to some small improvements in road safety though other factors do also impinge upon this.</p>
<p><b>Climate Change</b></p>			
<p>CO<sub>2</sub> Emissions</p>	<p>From the 2006 London Atmospheric Emissions Inventory, it was estimated that LGVs accounted for 13% of road traffic emissions of CO<sub>2</sub> and 3% for CO<sub>2</sub> across all emission sources in London<sup>34</sup>.</p>	<p>The purchasing of newer, more fuel-efficient vehicles in order to achieve compliance with LEZ Phase 3 in 2010 will lead to benefits in terms of reducing CO<sub>2</sub> emissions, however the relative impact of this is expected to be very small.</p>	<p>Reducing CO<sub>2</sub> emissions from traffic will reduce the impact on climate change. The extent of such reductions is limited, however.</p>

<sup>32</sup> TfL (2007) Travel in London Report

<sup>33</sup> TfL (2009) Travel in London

<sup>34</sup> TfL (2008) London Low Emission Zone Impacts Monitoring Baseline Report





Baseline Issue / Factor	Current Characteristics	Predicted Trends (with LEZ phase 3 being introduced in 2010)	Issues Identified
<b>The Physical Environment and Public Realm</b>			
<b>Biodiversity</b>	The majority of the natural vegetation within the Greater London area is under some kind of environmental stress as a result of air pollution (in particular NO <sub>x</sub> ) <sup>35</sup> .	The trend is for a reduction in emissions of nitrogen dioxide and particulate matter through the collective delivery of all Phases of LEZ, which has the potential to have a small beneficial effect on biodiversity within London.	Improvements in air quality will have a small benefit for London's biodiversity
<b>Damage to cultural heritage features</b>	London possesses a rich cultural heritage with four World Heritage Sites, and 73,000 sites, artefacts and Listed Buildings listed in the Greater London Sites and Monuments Record <sup>36</sup> .	With LEZ as a whole, the trend is to reduce emissions of particulate matter which will have a beneficial effect of reducing the soiling and decay, due to dry deposition, of cultural heritage assets in London.	Improvements in air quality will have a limited benefit for London's cultural heritage features.

### Summary of Characteristics of the Future Baseline: with LEZ remaining in place

- 3.3.5 The future baseline is the situation with LEZ Phase 3 being introduced in 2010. The data indicates that Phase 3 would make positive contribution to the reduction in PM<sub>10</sub> and NO<sub>x</sub> emissions.
- 3.3.6 The reduction of emissions arising from implementation of LEZ Phase 3 in 2010 are expected to have health benefits, in particular, with respect to respiratory and cardiovascular health. The baseline indicates that there is some evidence to suggest that such benefits would be particularly felt by certain equalities groups, in particular, those suffering socio-economic deprivation. The trend would, therefore, be of a slight improvement in health status.
- 3.3.7 PM<sub>10</sub> and NO<sub>x</sub> emissions arising from vehicular activity are anticipated to decline through cleaner technology and fuel and improved standards of fuel efficiency in vehicles brought about by the imposition of Euro standards. With respect to the specific contribution that LEZ as a whole makes, the trend was expected to be one of bringing forward emissions reductions including through tackling the contribution which LGVs make.
- 3.3.8 The magnitude of any benefit predicted to accrue in respect of baseline conditions through the specific implementation of LEZ Phase 3 in 2010, (and for the subsequent two years to 2012 as well as for potential pre-compliance benefits in 2009) has not been formally estimated in any previous impact assessment. Instead all four of the initially proposed

<sup>35</sup> Scott Wilson (2006) Environmental Appraisal of the Proposed London Low Emission Zone

<sup>36</sup> Scott Wilson (2006) Environmental Appraisal of the Proposed London Low Emission Zone

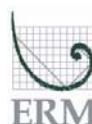
### 3 Setting the Context: Baseline Conditions

phases of LEZ have been analysed as a single package. What can be stated, however, is that the baseline would be expected to result in an environmental and health improvement over these initial years. Furthermore, the benefit in 2009-2011 would, be larger than for any similar period in the future, as the number of vehicles affected would be greatest. This is because the population of LGVs and minibuses not compliant with the Euro III emission standard will decline naturally with time.

- 3.3.9 The baseline in respect of economic factors suggests this is a less opportune time in the economic cycle than others for the imposition of additional costs.
- 3.3.10 Business conditions in London are likely to remain difficult for the next year or so. Factors highlighted by GLA Economics analysis, note that there is a range of reasons making it likely that there will only be a slow recovery initially after the recession comes to an end. These include the recognition that confidence in the economy remains weak and a significant fiscal retrenchment is required to bring the UK's public finances back to a sustainable long-term position. Other factors include the availability of credit to households and firms, which is still limited and the need for financial institutions to strengthen their balance sheets further. International trade flows are also not expected to return to pre-recession levels quickly and in the future when recovery becomes less fragile the current loose monetary policy across the globe (low interest rates and quantitative easing) will need to be tightened.

#### 3.4 Consideration of the Baseline

- 3.4.1 There are obvious key challenges within environmental, social and economic baseline conditions to be considered when seeking to understand how conditions will evolve in the absence of the proposal. These issues are pertinent to the context within which the proposal and its alternatives are assessed and are explored further in the narrative of the assessment in Section 4.



## 4 Assessment Findings

### 4.1 Introduction

- 4.1.1 This chapter summarises the assessment findings of the proposal to defer the introduction of Phase 3 of LEZ from 2010 to 2012, taking into account the baseline conditions and trends identified in the previous chapter and noting the extent to which the proposal would give rise to effects and whether these are significant.
- 4.1.2 When assessing the impacts forecast to arise from the proposal to defer the implementation of Phase 3 from 2010 to 2012, the assessment took due account of the specific nature of Phase 3. The deferral of LEZ Phase 3 is assessed in the context of the contribution which the scheme would make to improving air quality within London and the wider impacts of this in social, economic and environmental terms i.e. the sustainability of the scheme as a whole.
- 4.1.3 This assessment has also taken into account the wider package of measures proposed (referred to in section 4 of this appendix) currently included in the Draft Revised MTS and the emerging Draft MAQS which form the wider policy context within which the proposed deferment of Phase 3 would be implemented. This policy context would be likely to bear on the scale or severity of its potential impact.
- 4.1.4 The assessment has identified, where possible, quantifiable data specific to Phase 3. The identification of impacts has, however, more broadly relied on qualitative data to determine the relative significance and severity or scale of impacts. The impacts identified have, therefore, been arrived at by the exercise of judgement, where quantification has not been possible and/or where a determination of the relative impact of Phase 3 has been required.

### 4.2 Alternatives Considered through this Assessment

- 4.2.1 This is an assessment of a proposal to defer a stage of the LEZ that has not yet been introduced. The assessment, accordingly, assesses the following three options, including the current proposal or Preferred Option:
- Retaining the 'do minimum' i.e. retaining the introduction of Phase 3 of LEZ in 2010 as proposed in the MTS 2006 and the operation of the LEZ scheme;
  - The proposal or option to defer the implementation of Phase 3 of LEZ from 2010 to 2012; and
  - The option of not introducing Phase 3 at any point, in 2010, 2012 or any subsequent date.
- 4.2.2 These options are assessed, as appropriate, within the context of the emerging policies and proposals within the Draft Revised MTS and Draft MAQS so far as they would be likely to affect their respective likely significant impacts.

### 4.3 Deferred and Differing Level of Impact

- 4.3.1 With respect to what Phase 3 seeks to achieve, there are two key elements for consideration in the assessment, namely:



- **When the impact of Phase 3 will materialise:** deferment will see Phase 3 introduced in 2012 (as opposed to 2010). The impacts of the deferment are largely temporal compliance impacts deferred from 2010 to 2012<sup>37</sup> (with pre-compliance in 2011 rather than 2009).
- **What the net impact will be in terms of the objectives of Phase 3:** while most of the benefits of Phase 3 will still be achieved, albeit a little later, TfL estimates that deferment of Phase 3 from 2010 to 2012 will mean some loss of emissions reduction benefits, to the extent of between 10-20%. In terms of wider impacts, compliance costs in 2011/2012 are expected to be somewhat lower than they would have been in 2009/10 because of the natural turnover of vehicles.

4.3.2 The deferment of Phase 3 is, therefore, assessed in terms of these two factors and the environmental, social and economic impacts these are predicted to give rise to.

#### 4.4 Assessment: Recognising the Element of Uncertainty

4.4.1 The assessment has used analysis undertaken by TfL to understand the potential impacts of this proposal and to establish what wider measures are required to mitigate against any predicted adverse impacts of the deferral of LEZ Phase 3.

4.4.2 It is important to note, however, that TfL's analysis of estimates is based on current available information. It is not possible to quantify with precision future impacts given there are many variables involved and the future effect of wider measures within the Draft Revised MTS are not precisely known. Nevertheless, despite these uncertainties it is considered that the assessment is robust and provides as accurate a prediction of likely significant impacts as can be produced with current knowledge.

#### 4.5 Assessment of the Proposal

4.5.1 The Assessment Framework, developed for analysis of the Draft Revised MTS has been used to assess the impacts of the proposal.

4.5.2 A scoring system, accordingly, has been used to identify the nature and the magnitude of the predicted impacts of the proposal in respect of each of the key aspects of sustainability, as follows:

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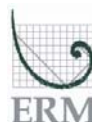
<sup>37</sup> TfL's published LEZ impacts monitoring report confirms that during the year before phases 1 and 2 of the LEZ were implemented (2007), 'operator pre compliance' with the requirements of the scheme had already delivered about half of the changes to vehicles and emissions that TfL expected in 2008. Similar pre-compliance benefits for LEZ Phase 3 as experienced for LEZ Phases 1 and 2 could be expected.

Nature and Magnitude of Significant Impact	Colour and Assessment Code	Description of Impact
<b>Strong positive</b>	✓✓	A <b>positive</b> impact of <b>moderate to major</b> magnitude.
<b>Positive</b>	✓	A <b>positive</b> impact of <b>minor to moderate</b> magnitude.
<b>Neutral</b>	---	An impact where <b>no</b> change from the current situation is expected.
<b>Uncertain</b>	?	Where uncertainty exists as to the overall impact – or – there are both positive and negative impacts
<b>Negative</b>	X	A <b>negative/adverse</b> impact of <b>minor to moderate</b> magnitude.
<b>Strong negative</b>	X X	A <b>negative/adverse</b> impact of <b>moderate to major</b> magnitude.

4.5.3 The summary of the assessment findings is shown in tabular form against the IIA Assessment Framework. These findings have informed the assessment of the Draft Revised MTS. The assessment score (colour and coding) reflects how the proposal (deferral of Phase 3 until 2012) performs against the 'do minimum' option of retaining the introduction of Phase 3 in 2010. Commentary is also made in the assessment narrative on how the proposal performs against the option of not introducing Phase 3 at all.

**Table 3.1 Assessment of Deferring the Implementation of Phase 3 of the Low Emission Zone from 2010 to 2012**

IIA Assessment Framework Headline Objectives	Assessment
<b>A – To contribute to, and facilitate, more sustainable and efficient economic progress within London</b>	
1. Promote more sustainable transport and travel patterns for all users and potential users of the London transport system	<p>X</p> <ul style="list-style-type: none"> <li>TfL estimates that approximately 530,000 vehicles subject to Phase 3 LEZ drive within Greater London each year. Of these, around 90,000 are predicted to not comply with Euro III for PM emission standards by 2010, although many of these would only make infrequent journeys into Greater London.</li> <li>Relative to the scenario that Phase 3 would be introduced in 2010, the proposal has been assessed to have an adverse impact on the use and uptake of cleaner technologies with vans and minibuses by postponing the requirement to meet Euro III for PM emission standards until 2012. This also reflects the deferred benefit from pre-compliance which would have materialised in 2009, but would be deferred until</li> </ul>



IIA Assessment Framework Headline Objectives	Assessment
	<p>2011 under the proposal. Relative to the option of not introducing Phase 3 at all, the proposal is comparatively positive, as the benefit is deferred (or the vast majority at least) rather than lost.</p> <ul style="list-style-type: none"> <li>• The primary impact of the proposal is, therefore, the delay in encouraging more sustainable transport (via retrofitted or new vehicles).</li> <li>• The predicted impact of the proposal with respect to the attainment of this objective is assessed to be <b>adverse</b> in the context of London as a whole, but <b>minor</b> in magnitude given the limited timeframe for deferral. The option of not introducing Phase 3, would give rise to a more adverse impact.</li> </ul>
<p>2. Increase the economic efficiency and environmental and social sustainability of freight transport and transfer within and around London and the South East</p>	<ul style="list-style-type: none"> <li>• Relative to the option of retaining Phase 3 introduction in 2010, the proposal has been assessed to have an adverse impact with regard to freight transport impact on communities and the environment, with greater emissions projected to occur through freight related LGV activity during the deferral period. The scale of LGV freight activity has a direct impact upon the degree of severity of potential negative impacts arising from the proposal.</li> <li>• It is recognized however that freight traffic is undertaken with HGVs as well as LGVs; the former already being subject to regulation under Phase 1 and Phase 2 of LEZ. Relative to the option of not introducing Phase 3 at all, the proposal will also generate benefit in respect of enhancing the environmental sustainability of such vehicles in 2011/2012.</li> <li>• The predicted impact of this proposal on economic efficiency is predicted to be beneficial (compared to the option of retaining introduction in 2010) with respect to LGVs owned by businesses that would not be subject to the costs of compliance, either through retrofitting or vehicle replacement until 2012 (noting also the costs of pre-compliance); Compliance costs are, as previously mentioned, likely to lower in 2011/2012 and both the avoidance of costs in the immediate timeframe and their subsequent reduction in the future, give rise to a positive impact, particularly in the current economic climate.</li> <li>• Given that there are both positive and negative impacts predicted to arise in respect of this proposal, the overall impact of this, is therefore, assessed as <b>uncertain</b>. Both other options are also assessed as uncertain for this reason.</li> </ul>

IIA Assessment Framework Headline Objectives	Assessment
3. Facilitate and contribute to regeneration across all communities in London	<ul style="list-style-type: none"> <li>✓ • Analysis of the potential impacts which are likely to occur following the introduction of LEZ Phase 3 in 2010 indicated that the scheme could create disbenefit for both individuals and local and small businesses, these disbenefits primarily comprising: <ul style="list-style-type: none"> <li>○ costs of purchasing before 2010 new or used compliant vehicles, or costs of retrofitting and upgrading existing vehicles;</li> <li>○ the proposed daily LEZ charge, evasion penalty charge and the probability of evaders getting caught; and</li> <li>○ direct and indirect costs to businesses of potential business relocation, changed distribution patterns and restricted access.</li> </ul> </li> <li>• The proposal will therefore reduce these business disbenefits during the deferral period postponing the costs to be incurred for 2 years. It is also noted that the compliance costs in 2011/2012 are predicted to be lower than those experienced in 2009/2010 (natural vehicle replacement). This is assessed as having a positive economic impact on local and small businesses. This is viewed as particularly pertinent given the current economic climate.</li> </ul>
4. Contribute to enhanced productivity and competitiveness amongst all businesses within the London area	<ul style="list-style-type: none"> <li>✓ • However, the earlier (2010) uptake of newer vehicles through the introduction of LEZ Phase 3 would have been expected to improve operational reliability with less breakdowns and disruption to traffic and so there may be some disbenefit to network resilience with the proposal during the deferral period.</li> <li>• The benefits to businesses of deferral are expected to outweigh the disbenefits to network resilience and a positive impact has therefore been predicted to arise and this is expected to apply to areas targeted for regeneration as well as assisting business competitiveness more generally across London as a whole during the deferral period.</li> <li>• The predicted impact with respect to the attainment of this objective is assessed to be <b>positive</b> in the context of London as a whole and <b>minor</b> in magnitude. Under the option of not introducing Phase 3, this benefit is likely to be similar or slightly greater.</li> </ul>
5. Help to facilitate and contribute to increased employment and earnings especially in low-waged areas	<ul style="list-style-type: none"> <li>✓ • With the proposal, the savings made by businesses by not having to comply with Phase 3 during the deferral period will have a positive cash flow benefit. If this is invested in the business, there may be expected to be an increase in employment and earnings. This would be likely to have a disproportionate beneficial impact on low-wage earners due to the greater use of LGVs by small businesses which tend to employ low-wage earners.</li> <li>• By not further reducing NO<sub>x</sub> and PM<sub>10</sub> emissions from LGV until two years later, there is a potential negative impact on health and wellbeing; this would disproportionately affect less advantaged sections of the community, including those on low incomes. This may</li> </ul>



IIA Assessment Framework Headline Objectives	Assessment
	<p>affect the capacity of such groups to participate in economic activity. The overall impact of this is, however, regarded to be minor in magnitude, particularly, in relation to the direct benefit anticipated to arise through the economic impacts discussed above. Relative to the option of not introducing Phase 3, the proposal will still give rise to benefit to health and wellbeing, albeit two years later than anticipated.</p> <ul style="list-style-type: none"> <li>• There are both positive and negative impacts predicted to arise in respect of this proposal, relative to the alternative of not deferring Phase 3. The overall impact of this, is however, assessed as <b>positive</b> in the context of London as a whole, given the short timeframe for deferral and is <b>minor to moderate</b> in magnitude. Under the option of not introducing Phase 3, this benefit is likely to be similar or slightly greater.</li> </ul>
6. Contribute to the alleviation of poverty and its contributory factors	<ul style="list-style-type: none"> <li>✓ • It was noted in the HIA undertaken prior to the introduction of LEZ that the public and voluntary sectors would have incurred potential disbenefit from the costs arising from retrofitting or replacing non-compliant vehicles. The nature of vehicles to be targeted under Phase 3, suggests that it was primarily the introduction of this Phase that would have the most direct negative impact on these sectors and organisations. The proposal will militate against such disbenefit arising for an additional 2 years. The option to not introduce Phase 3 would avoid such cost at all.</li> <li>• Of note is the potential disbenefit of the introduction of the LEZ Phase 3 2010 which would have accrued to community groups who arguably have the least capacity to accommodate the financial cost of retrofitting and/or replacement of minibuses. A positive impact has therefore been predicted to arise reflecting the benefit to these groups of the proposal during the deferral period, and the benefits of additional compliance time; again recognising that the option of not introducing Phase 3 would negate such disbenefit .</li> <li>• It is recognized, however, that those on low incomes experience health inequalities and may be disproportionately affected by the deferred reduction in emissions of air quality pollutants. Relative to the option of not introducing Phase 3, the impact of the proposal is positive in this respect but obviously not as positive as introduction in 2010. The overall impact is, however, predicted to be minor in respect of this.</li> <li>• Taking into account both positive and adverse impacts, the predicted impact with respect to the attainment of this objective under the proposal is assessed to be <b>positive</b> in the context of London as a whole and <b>minor</b> in magnitude,. Under the option of not introducing Phase 3, this benefit is likely to be similar or slightly greater.</li> </ul>

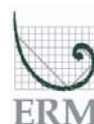


IIA Assessment Framework Headline Objectives	Assessment
<b>B – To enhance equality and actively mitigate the barriers to this</b>	
1. To address the key barriers to equality of access for all users and potential users of the London transport system	<p>✓</p> <ul style="list-style-type: none"> <li>Relative to the option of introducing Phase 3 in 2010, the proposal is predicted to have a positive economic impact during the deferral period on those people who use large vans and minibuses, many of these later being owned and operated by many community groups.</li> <li>The EqIA undertaken to guide the development of the scheme, identified that young people, older people and disabled people were seen to be more reliant on minibuses for transport, through youth groups and other community transport schemes. The proposal will therefore have a positive impact on these groups of people, relative to the alternative of implementing the Scheme in 2010. The option of not introducing Phase 3 will increase this positive impact through the avoidance of costs altogether.</li> <li>Balancing the avoidance of costs with greater time for community groups to accommodate the additional cost, the predicted impact with respect to the attainment of this objective is assessed to be <b>positive</b> in the context of London as a whole and <b>minor to moderate</b> in magnitude. Under the option of not introducing Phase 3, this benefit is likely to be similar or slightly greater.</li> </ul>
2. To give all users and potential users equal opportunity to access the London transport system and sustainable transport choices)	<p>✓</p> <ul style="list-style-type: none"> <li>The proposal will facilitate social inclusion through allowing older minibuses and vans to continue to be used by community groups during the deferral period, and therefore is predicted to give rise to a positive impact in terms of facilitating access to a means of transport such users are dependent upon. This is particularly the case for those users who suffer socio-economic disadvantage and are dependent upon such forms of transport.</li> <li>This advantage is also important for those who have mobility problems in using the transport network and for whom minibus use through organisations/community groups, is a principal means of transport.</li> <li>It is recognised, however, that the minibuses which would no longer be subject to emissions control, will be less environmentally sustainable during the deferral period. By deferring the need for this form of transport to be 'cleaner', this has a direct negative impact upon the environmental sustainability of this form of transport and all those who are dependent upon its use.</li> <li>Balancing social and accessibility benefits with the environmental disbenefit of the deferral, and taking into account wider measures to promote sustainable travel choices, the predicted impact with respect to the attainment of this objective is assessed to be <b>positive</b> in the context of London as a whole and <b>minor</b> in magnitude. Under the option of not introducing Phase 3, this benefit is likely to be similar or</li> </ul>

IIA Assessment Framework Headline Objectives	Assessment	
		slightly greater.
<b>C – To contribute to enhanced health and wellbeing <i>for all</i> within London</b>		
1. To address health inequalities and factors which negatively impact upon health and wellbeing	?	<ul style="list-style-type: none"> <li>The HIA undertaken to inform the development of LEZ noted that the introduction of Phase 3 2010 was predicted to give rise to variable impacts for health and wellbeing.</li> <li>The reduction of emissions would be expected to give rise to positive health impacts to residents, especially those (noting, in particular, those disproportionately affected by air quality – children, elderly, those with pre-existing conditions) living close to the road network (as measured by the shortening of life and the incidence of respiratory diseases).</li> </ul>
2. To promote enhanced health and wellbeing for all	?	<ul style="list-style-type: none"> <li>The deferral of Phase 3, therefore, results in such enhanced benefit materialising later in 2012 (or through pre-compliance in 2011) and a slight reduction in this benefit. Relative to the option of not introducing Phase 3 at all, the proposal still confers a benefit, albeit delayed for a two year timeframe.</li> <li>As previously identified, however, implementation of the Phase would have had some adverse socio-economic consequences for some small businesses, individuals and of community groups and those who are reliant upon community owned vehicles (which are non compliant) for transportation.</li> <li>The net health effect is hard to quantify with accuracy and there are both benefits and disbenefits in respect of impact to health and wellbeing.</li> <li>The overall impact is considered to be variable and therefore deemed to be <b>uncertain</b> given the fact that the scale of both beneficial and adverse impacts noted, is in effect <b>minor</b>, This uncertainty would also for the option not to introduce Phase 3 at all.</li> </ul>

IIA Assessment Framework Headline Objectives	Assessment
3. Improve air quality and the noise climate across London	<div style="display: flex; align-items: center;"> <div style="background-color: orange; width: 20px; height: 100%; margin-right: 5px; text-align: center; line-height: 100%; font-weight: bold; color: white;">X</div> <ul style="list-style-type: none"> <li>• As previously noted, implementation of the proposal would result in both a two year deferment of reductions in emissions – either in pre-compliance or compliance terms and a slight decrease in the aggregate reduction of emissions delivered through Phase 3 – relative to the introduction of Phase 3 in 2010. Relative to Phase 3 not being introduced at all, this benefit is obviously greater.</li> <li>• This has some potential implications in the context of the current non-compliance of London and some other parts of the UK with EU daily mean PM<sub>10</sub> limit value for 2011. There is clearly, however, much less of an impact from deferring the introduction of Phase 3 compared to not implementing it at all and the expectation of pre-compliance benefits in 2011. It is also noted that the emerging Draft Revised MAQS sets out a framework of actions to progress London towards compliance with the EU limit value.</li> <li>• Although the LEZ by itself can never deliver the air quality improvements required to achieve universal compliance with air quality standards, it is an important part of the overall solution. Relative to the option of introducing Phase 3 in 2010, the proposal therefore weakens the effectiveness of the LEZ's contribution to air quality improvement in the period 2009-2010 and has, accordingly, an <b>adverse</b> effect on air quality. Relative to not introducing Phase 3 at all, the proposal is beneficial.</li> <li>• Given the limited timeframe of such deferment and the role which natural vehicle replacement will continue to have in promoting reductions in emissions of air quality pollutants over the deferral period, this impact of the proposal is assessed to be adverse relative to the option of retaining Phase 3 introduction in 2010 and <b>minor</b> in magnitude. Under the option of not introducing Phase 3 at all, the adverse impact would be greater.</li> <li>• The severity or scale of this potential negative impact for London's air quality could, in principle, be offset by the wider suite of policies and proposals in the Draft Revised MTS and the Draft MAQS, which will have a positive impact in reducing emissions to air. The scale of such measures will need to be sufficient to compensate for the lost reduction in emissions arising from LGVs brought about by the deferral of Phase 3 during the deferral period and be effective in this early period. The measures in the emerging Draft MAQS will also be important in delivering a contribution to this compensation for the loss of reduction in PM<sub>10</sub> and NO<sub>x</sub> emissions that Phase 3 2010 would have delivered. This is significant from multiple perspectives, not least compliance with EU/UK air quality legislation and targets and meeting the Government's commitments to the European Commission.</li> </ul> </div>

IIA Assessment Framework Headline Objectives	Assessment	
<b>D – To promote safety and security for all working, travelling and using London transport services and facilities</b>		
1. Increase security and resilience to major incidents on the network	–	<ul style="list-style-type: none"> <li>• LEZ Phase 3 2010 was expected to promote the uptake of new vehicles, thereby improving reliability and reducing the potential for breakdowns and other incidents that might impair traffic flows.</li> <li>• With respect to wider incidents that might impair the network, the proposal is not anticipated to have any significant impact.</li> <li>• The effect is so small that it is assessed as <b>negligible</b> and, therefore, <b>neutral</b>. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>
2. Increase road safety for vehicular users, pedestrians and cyclists	–	<ul style="list-style-type: none"> <li>• This impact has been assessed to be neutral given the limited scope of Phase 3 to impact upon road safety. Any such influence is derived from the encouragement of the uptake of newer vehicles which may make a contribution to improved road safety by reason of the better safety specifications of newer vehicles.</li> <li>• The limited nature of the proposal – deferral only until 2012 – militates against there being any significant potential loss of benefit and the overall impact is, accordingly assessed as marginal in respect of vehicular numbers as a whole and the anticipated change in vehicular type which Phase 3 2010 would have created.</li> <li>• The overall impact is, therefore, assessed to be <b>neutral</b>. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>
<b>E – To contribute to the mitigation of and adaptation to climatic change</b>		
1. To contribute to the reduction of CO <sub>2</sub> emissions arising from within the London area  2. To reduce CO <sub>2</sub> emissions arising from operations and service provision  3. To enhance and facilitate adaptation to the impacts of climate change	X	<ul style="list-style-type: none"> <li>• The inclusion of the 90,000 vehicles captured by Phase 3 of LEZ in 2010 (and pre-compliance from 2009) would have delivered some marginal benefits in reducing CO<sub>2</sub> emissions, through the accelerated entry into the vehicle fleet of more fuel efficient vehicles. LGVs account for some 13% of London’s road transport emissions and the proposal will, therefore, result in a deferred reduction of emissions.</li> <li>• The predicted impact with respect to the attainment of this objective is assessed to be <b>adverse</b> in the context of London as a whole, but <b>minor if not marginal</b> in magnitude given the limited timeframe for deferral. Under the option of not introducing Phase 3 at all, the adverse impact would be greater.</li> <li>• The policies and proposals identified in the forthcoming MCCMES will assume a key role in tackling climate change through sources including, but extending beyond, transport.</li> </ul>



IIA Assessment Framework Headline Objectives	Assessment
<b>F – To protect and enhance the physical, historic, archaeological and socio- cultural environment and public realm?</b>	
1. To promote more sustainable resource use and waste management	<ul style="list-style-type: none"> <li>The proposal is not predicted to give rise to any significant impact in respect of resource use and waste management, relative to either option. The implementation of Phase 3 in 2010 may have resulted in some LGVs being scrapped by this date, thereby giving rise to considerable vehicular waste. The manner within which such vehicles are disposed and the need to acquire new vehicles have variable sustainability impacts. With the deferral of Phase 3 to 2012, an increased level of natural vehicle replacement would result in a reduction to the number of LGVs and minibuses being scrapped. Under the option not to introduce Phase 3 at all, there would be an avoidance of the need to scrap vehicles (arising from a compliance perspective).</li> <li>Nonetheless, this remains speculative and the overall impact of the proposal in this respect is not expected to give rise to any significant effect. The predicted impact of both options is therefore, <b>neutral</b> with regard to the achievement of this objective. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>
2. To protect and enhance the built environment and streetscape through planning and operations	<ul style="list-style-type: none"> <li>The predicted impacts of the implementation of Phase 3 in 2010, in respect of the built environment in its many forms, is not expected to be significant – as recorded in the EIR. The proposal to defer the introduction of Phase 3 to 2012 is therefore, predicted to be <b>marginal</b> to <b>negligible</b> in magnitude, as is the option not to introduce Phase 3 at all. It is nonetheless, important that traffic management plans are alert to the potential negative impacts on such environments. This is particularly important with respect to both designated and non-designated sites of historic interest.</li> </ul>
3. To protect and enhance the historic, archaeological and cultural environment through planning and operations	<ul style="list-style-type: none"> <li>The scale of this impact is, in the context of London as a whole, <b>neutral</b> in magnitude. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>
4. To protect and enhance the natural, physical environment, including biodiversity, flora and fauna through planning and operations	<ul style="list-style-type: none"> <li>As previously noted, the vast majority of the benefit, in terms of reducing emissions of air quality pollutants, which would have been delivered under Phase 3's introduction in 2010 (with pre-compliance benefits in 2009), should materialise in 2012 (with pre-compliance benefits in 2011). Taking into account the pre-compliance benefits anticipated to accrue from 2011 (under the deferral) and the combination of other measures within the Draft Revised MTS and emerging Draft MAQS aimed at achieving similar benefits in terms of reducing emissions of air quality pollutants, it is not anticipated that there will be any significant effect to European sites across London caused by the deferral.</li> </ul>

IIA Assessment Framework Headline Objectives	Assessment
	<ul style="list-style-type: none"> <li>• Policies and proposals within the Draft Revised MTS to encourage a modal shift towards more sustainable forms of transport and reduce emissions to air, have the potential to offset any negative impacts arising from the deferred benefit of the proposal between 2010 and 2012. The Draft Revised MTS's explicit commitment to ensuring its policies and proposals do not adversely impact upon the integrity of Natura 2000 sites, also mitigates the risk of any significant adverse effects on biodiversity.</li> <li>• The overall impact of the proposal in respect of the attainment of this objective, in the context of London as a whole, is <b>neutral</b>. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>
5. To protect and enhance greenscapes, riverscapes and waterways through planning and operations	<ul style="list-style-type: none"> <li>• The proposal will give rise to the postponement only of the receipt of a benefit to greenscapes, riverscapes and waterways through the reduction of pollutant emissions. The scale of such lost benefit is assessed as of minor to negligible significance and cannot be stated, in any event, to have a definitive negative impact.</li> <li>• The impact of this proposal upon greenscapes, riverscapes and waterways is therefore assessed to be <b>neutral</b>, in the context of London as a whole. Under the option of not introducing Phase 3 at all, the impact is also neutral.</li> </ul>

### Summary of the LEZ Phase 3 assessment

- 4.5.4 TfL analysis indicates that the greatest benefits of the LEZ scheme are expected to occur in 2008 and 2012 with the introduction of Phases 1 and 4. Overall, the impact of Phase 3 is expected to be less than the combined impacts of Phases 1, 2 and 4 as these target the most individually polluting vehicles, i.e. HGVs, buses and coaches.
- 4.5.5 The assessment identifies that there are both predicted benefits and disbenefits under the proposal i.e. the impacts of deferral from 2010 to 2012, relative to the options of retaining the introduction of Phase 3 in 2010 or not introducing Phase 3 at all. As previously noted, the nature of these impacts stem from both the delay in introduction and the impacts of the consequently reduced aggregate effect on emissions of air quality pollutants in 2012. The predicted disbenefits arise in relation to the delayed and slightly reduced aggregate benefit to air quality across London, and the minor adverse impacts this has in terms of the environment and health and wellbeing.
- 4.5.6 Conversely, economic benefits are predicted to emerge through the deferment of the costs of both pre-compliance and potential charges for non-compliance, particularly in the context of the current adverse economic conditions. As previously noted, the proposal will result in postponing pre-compliance and compliance costs and their impact on businesses, from 2009/10 to 2011/12. Relatively speaking, the same level of compliance costs have a larger



impact on businesses when margins are tight and profitability is low; the impact of such costs is, therefore, relatively greater.

- 4.5.7 Social benefits are also anticipated to arise, in particular for community groups who will equally not be subject to such charges until later and better positioned to continue serving their target communities.
- 4.5.8 The effect of deferring the introduction of Phase 3 by two years, in terms of the emissions of air quality pollutants, is to reduce the magnitude of this deferred benefit somewhat. This is because there will be a replacement of vehicles in the fleet regardless of LEZ, as the non compliant vehicles reach the end of their useful life and are replaced by new vehicles. (New vehicles registered prior to 2006 are almost certainly compliant with the Euro III emission standard). Likewise the compliance costs, and consequent economic impacts are expected by TfL to be overall somewhat lower. Natural turnover of vehicles means that deferral of Phase 3 reduces both air quality benefits and compliance costs, the former by around 10-20%.
- 4.5.9 Relative to other sources in Greater London of PM<sub>10</sub> and NO<sub>x</sub>, reductions in LGV emissions under Phase 3 would be limited, with the emissions of PM<sub>10</sub> and NO<sub>x</sub> amounting to around 1% of Greater London's transport emissions for these pollutants. It is unlikely that this or have more than a marginal effect on health outcomes. This is not to detract from the legitimacy of tackling these sources and the important role that LEZ Phase 3 plays but to provide an understanding of the extent to which this phase of LEZ by itself contributes to solving London's air quality problems – and the limited nature of the negative impact of a two year deferral of the scheme.
- 4.5.10 The policies and proposals in the Draft Revised MTS and the emerging Draft MAQS, also provide a range of measures specifically designed to achieve reductions in or offset pollutant emissions and their impacts to the environment and human health. These measures are important because they provide a positive policy context during the two year period of the deferral that would provide opportunities for making up any loss of benefit to air quality caused by deferral. They also provide a mechanism through which the Mayor can demonstrate to DEFRA that the deferral of Phase 3 does not compromise the attainment of limit values for PM<sub>10</sub> in 2011.
- 4.5.11 Taking into account the predicted balance of benefits and disbenefits identified by the assessment, the short timeframe for deferment of benefit and the limited scope of Phase 3, the **overall impact is assessed to be uncertain**. The origin of this neutrality resides in the fact that the overall, cumulative, impact of this proposal will be negative – as impacting upon the environment and human health – and positive – as impacting upon socio-economic factors. In either scenario, it is anticipated that both benefits and disbenefits will be **minor in magnitude**, given the relatively small contribution that Phase 3 makes to the reduction in London-wide emissions and the short timeframe of the deferral.
- 4.5.12 Under the option of not introducing Phase 3 at all, the environmental (and health and wellbeing) disbenefits are likely to be greater than with the option of deferral of Phase 3 until 2012 i.e. the envisaged benefits of Phase 3 will simply not materialise. With respect to economic impacts, the benefits created under deferral of Phase 3 will potentially be greater if Phase 3 is not introduced as a consequence of removing of compliance costs i.e. the costs of



either retro-fitting solutions or vehicle replacement would be avoided. Such costs are, however, as previously discussed, predicted to reduce in future years.

- 4.5.13 The LEZ cannot, in and of itself, be the solution to all of London's air quality problems: but it is an important part of the solution. Not only does it succeed in reducing emissions of PM<sub>10</sub> and NO<sub>x</sub>, but also it demonstrates clear intent to improve air quality. The scheme is, therefore, a positive instrument in reducing emissions in London. LEZ remains a useful mechanism for the Mayor to use to improve air quality within London. Its role in assisting the UK in meeting EU limit values is also important, for both London and the UK. LEZ retains its value, in these respects whether Phase 3 is introduced in 2010 or 2012.

### 4.6 Mitigation and Enhancement Recommendations

- 4.6.1 The assessment has identified that there is a minor adverse impact in terms of air quality, and as per the SEA Regulations, measures to mitigate this impact are subsequently identified. It is important to recognise however that the primary means of achieving this mitigation will be through implementation of the measures described in the MAQS and the wider suite of policies and proposals within the Draft Revised MTS.
- 4.6.2 There are two generic approaches to providing mitigation or compensatory measures to offset the negative impacts of the deferral of Phase 3 until 2012. These are, reducing emissions by the same quantity on a London-wide basis through targeting all vehicular sources through the imposition of compensatory emissions standards, or reducing particular vehicular emission sources through alternative policy interventions. The opportunity also exists for other geographical areas or zones to be targeted, including 'hotspots' where emissions are highest. This will not have the specific impact on LGV emissions which the implementation of Phase 3 in 2010 would have delivered but could contribute to the goal of LEZ, to reduce vehicular emissions to air and their associated negative impacts on environmental sustainability and health.
- 4.6.3 The Draft Revised MTS provides a general policy context for the reduction of transport-related emissions, primarily through the commitment to Low Emission Zones and also targeting particular sections of the public transport fleet such as taxis. The nature and scale of either extensions/tightening of current emissions standards under LEZ, or the introduction of new Low Emissions Zone are both allowed for.

### 4.7 Embedded Mitigation

- 4.7.1 A range of mitigation measures have been identified and are incorporated within the policies and proposals of the Draft Revised MTS. These measures collectively aiming to improve air quality and provide a basis to seek to compensate for the lost reduction in emissions which would have been achieved under Phase 3 2010. These include:
- Promoting behavioural change to reduce vehicle emissions; for example through encouraging smarter driving techniques and eco driving training;
  - Reducing emissions from public transport and the public service fleet; for example through cleaner buses, taxis and PHVs; rail electrification; cleaner river vessels and cleaner public service and local authority vehicles.





- Reducing emissions from the private vehicle fleet; for example by supporting the uptake of low emission vehicles, such as electric cars and vans;
- Working with the London Boroughs and other stakeholders to introduce targeted local measures at air quality hotspots; and
- Smoothing traffic flow to increase the reliability and predictability of journeys, including tackling “stop-start” traffic conditions, which have a particularly detrimental impact on air quality.

4.7.2 The Draft Revised MTS and the emerging Draft MAQS contain a suite of policies and proposals intended to improve standards in London regarding air quality, health and wellbeing, and environmental sustainability; the Draft Revised MTS focussing on the role of reducing polluting emissions to air from transport.

4.7.3 The Draft MAQS includes a number of measures which will help to reduce emissions in the period up to 2011 and beyond. In terms of emission from road transport, the Draft MAQS (including planned and additional measures and natural turnover of the fleet) expects to deliver a 25% - 30% reduction in PM<sub>10</sub> emissions by 2012 (compared to the 2006 baseline) and around 60% - 65% reduction in NO<sub>x</sub> by 2015 (compared to the 2006 baseline)<sup>38</sup>.

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<sup>38</sup> GLA (2009) Draft Mayor's Air Quality Strategy. Note: The Draft Revised MTS document quotes a figure of 50-55% reduction in NO<sub>x</sub>, which is compared against a 2009 baseline

# 5 Monitoring Provision

## 5.1 Introduction

- 5.1.1 Monitoring of any predicted significant impacts arising from a strategy, plan or programme, is an important element of an impact assessment. In the context of the predicted impacts assessed to potentially arise under the current proposal, it is recommended that such monitoring focuses on assessing air quality and the impacts this will have on health and wellbeing, and the integrity of Natura 2000 sites.

## 5.2 Monitoring Air Quality

- 5.2.1 Air quality across London, and progression towards the EU limit values, will continued to be monitored at specific locations across London. It is challenging to quantify emissions and air quality changes. Outdoor air quality is affected by a wide range of factors, and the contribution by LGVs and minibuses may not be measurable through air quality monitoring equipment. TfL have developed some modelling methods to calculate pollutants in the air, based on volumes of vehicles by type.

## 5.3 Indicators to Monitor the effect of the Proposal

- 5.3.1 It is recommended that the air quality modelling work continues as the mitigation measures are implemented, to understand whether the extent to which they work towards meeting EU limit values.
- 5.3.2 The measurements of pollutants at air quality monitoring sites across London should also be continued though it is recognised that it would be difficult to discern such subtle changes as Phase 3 would have delivered during the deferral period.
- 5.3.3 Monitoring provision should ideally be integrated into the monitoring framework proposed in the emerging MAQS.