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# Ultra Low Emission Zone

# Integrated Impact Assessment

October 2014

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# 1 Introduction

1.1.1 Transport for London (TfL) commissioned Jacobs to undertake a number of assessments, including environmental, health impact, equality impact and economic and business impact, to identify and assess impacts of the proposed Ultra Low Emission Zone (ULEZ).

1.1.2 The ULEZ is a proposal to reduce emissions specifically from road transport. The following objectives for ULEZ were proposed in line with the characteristics set out in the Mayor's Transport Strategy (MTS):

- ***reduce air pollutant emissions from road transport**, particularly those with greatest health impacts, to support Mayoral strategies and contribute to achieving compliance with European Union (EU) limit values (LV);*
- ***reduce carbon dioxide ($CO_2$) emissions from road transport**, to support Mayoral strategies and contribute to a London-wide reduction; and*
- ***stimulate the low emission vehicle market** by increasing the proportion of low emission vehicles and promoting sustainable travel.*

1.1.3 The proposal comprises the following key components:

- ***TfL buses**: a requirement that all taxis and new private hire vehicles (PHVs) presented for licensing from 2018 would need to be zero emission capable;*
- ***taxis and PHVs**: a requirement that all taxis and new PHVs presented for licensing from 1 January 2018 would need to be zero emission capable alongside an accompanying reduction in the age limit for all non zero emission capable taxis from 7 September 2020 from 15 to 10 years (irrespective of date of licensing); and*
- ***emission standards for vehicles** (the ULEZ standards): to encourage the uptake of cleaner vehicles. From 7 September 2020 vehicles that do not meet ULEZ emissions standards would be required to pay a daily ULEZ charge to drive within the ULEZ area*

## 1.2 Purpose of the Integrated Impact Assessment (IIA)

1.2.1 The Integrated Impact Assessment (IIA) considers and documents the findings of the following individual technical assessments to provide a streamlined and integrated overview of the anticipated effects of the proposed ULEZ:

- *Environmental Assessment (EA);*
- *Health Impact Assessment (HIA);*
- *Equality Impact Assessment (EqIA); and*
- *Economic and Business Impact Assessment (EBIA).*

1.2.2 Reference should be made to each technical assessment report for further detail on any of the individual topics.

## 1.3 Requirement for IIA

1.3.1 The proposed ULEZ would be implemented through existing policies covered in *The London Plan* 2011 (including revised early minor alterations to the London Plan, October 2013) and the MTS, which have both undergone Strategic Environmental Assessment (SEA).

1.3.2 Nonetheless, TfL's view is that the implications of ULEZ would be best understood through full assessments of the ULEZ in relation to the environment, health, equality and economic and business. The IIA brings together the findings of each of these assessments into one concise integrated document.

1.3.3 TfL considers that undertaking an IIA is critical to clearly articulate and identify key impacts associated with the proposed ULEZ including how identified negative impacts can be avoided, remedied or mitigated where possible, and positive impacts enhanced.

## 1.4 Structure of this report

1.4.1 The report is structured as follows:

- *Chapter 2 provides background information on the ULEZ;*
- *Chapter 3 provides information on the ULEZ and the ULEZ study area;*
- *Chapter 4 provides context on the approach of the IIA;*
- *Chapter 5 provides a summary of the assessment outcomes of the ULEZ;*
- *Chapter 6 provides a summary of the assessment against each IIA objective and whether it has been / will be met by the proposed ULEZ;*
- *Chapter 7 presents the conclusions and further recommendations;*
- *Chapter 8 provides references; and*
- *Chapter 9 provides confirmation of the acronyms used throughout this report.*

# 2 Background

## 2.1 Overview

2.1.1 In February 2013, the Mayor requested that TfL examined the feasibility of, and prepared proposals for, the introduction of the ULEZ in central London (Greater London Authority, 2013). The aim of this initiative was to contribute towards the meeting of existing $CO_2$ targets, nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$) limit values, and to reduce the high contribution to emissions and concentrations that emanate from road transport. As stated in the Greater London Authority's (GLA's) *2020 Vision: The Greatest City on Earth* (2013), the ULEZ would aim to 'restrict central London only to those vehicles that have zero or near-zero tailpipe emissions'.

2.1.2 Whilst the London Low Emission Zone (LEZ), introduced in 2008, and other Mayoral policies have improved air quality in Greater London, the challenge remains to meet the specified air quality limits set by the EU. Air pollution affects the quality of life of a large number of Londoners, especially those with respiratory and cardiovascular conditions. In 2008, an equivalent of 4,300 deaths in the Capital were attributed to long-term exposure to fine particulate matter ($PM_{2.5}$) and a permanent reduction of 1µg/m$^3$ would increase life expectancy across the population, with the expected gains differing by age (GLA, 2010).

2.1.3 A number of strategies published by the Mayor of London, including the Mayor's Air Quality Strategy 2010 (MAQS) and the MTS, aim to reduce emissions to mitigate climate change and improve London's air quality. Since the publication of the MTS, TfL has delivered a greener bus fleet, encouraged the use of electric cars and increased public transport patronage, alongside cycling and walking.

2.1.4 TfL's *Transport Emissions Roadmap* 2014 (TERM) builds on preceding strategies and policies by focussing on reducing emissions from ground-based transport in London. The TERM introduces a range of proposed measures to be considered by Government, GLA, TfL and London boroughs to help meet the challenge of reducing $CO_2$ emissions and air pollutants, particularly oxides of nitrogen ($NO_x$), $NO_2$ and $PM_{10}$, in London.

2.1.5 Implementation of the ULEZ in central London is one of the measures identified by TERM.

2.1.6 The objectives of the ULEZ are to:

- *reduce air pollutant emissions from road transport, particularly those with greatest health impacts, to support Mayoral Strategies and contribute to achieving compliance with EU limit values;*
- *reduce $CO_2$ emissions from road transport to support Mayoral strategies and contribute to London-wide reduction; and*
- *promote sustainable travel and stimulate the low emission vehicle economy by increasing the proportion of low emission vehicles in London.*

2.1.7 It is proposed that the ULEZ would take effect from 7 September 2020 and operate for 24 hours a day, seven days a week. The geographical scope of the ULEZ would be enforced within the limits of the current Congestion Charge Zone (CCZ), which covers the City of London in its entirety (aside from a small area near to Tower Hill), and partially covers to varying extents the City of Westminster and the London boroughs of Camden, Hackney, Islington, Lambeth, Southwark and Tower Hamlets. This area also experiences the highest levels and concentrations of pollution within London to which the greatest number of people are exposed.

2.1.8 The CCZ provides an existing boundary for central London, shaped by the Inner Ring Road (IRR) and well embedded in road user travel behaviour. Not only is this zone a defined area, TfL already operates a comprehensive CCZ camera enforcement network that is also planned to be utilised to manage compliance with the ULEZ.

## 2.2 Development of the ULEZ

2.2.1 The ULEZ has been developed in a way which seeks to avoid or minimise adverse impacts on the environment, health and wellbeing, population and equality groups and London's economy and Small to Medium Sized Enterprises (SMEs). Further information on the development of ULEZ including options appraisal and associated feasibility work undertaken can be found in the ULEZ Supplementary Information Report published by TfL alongside this IIA.

# 3 Details of the Proposed ULEZ

3.1.1 ULEZ would set an emissions requirement for all types of vehicles entering central London with charges for non-compliance, discouraging all but the cleanest vehicles. The proposed ULEZ covers three vehicle categories:

- *procurement requirements on TfL buses;*
- *revised licensing requirements for taxis (black cabs) and PHVs; and*
- *an emissions-based vehicle charging scheme with charges for non-compliance discouraging all but the cleanest vehicles.*

3.1.2 The proposed ULEZ requirement by vehicle type can be found in Table 3-A and a breakdown of the ULEZ emission standard for each type of vehicle is provided in Table 3-B.

| Category | Vehicle | Proposed ULEZ requirement |
|---|---|---|
| TfL buses entering ULEZ | TfL double-decker buses | • Euro VI hybrid |
| | TfL single-decker buses | • Zero emission at source |
| Revised licensing London wide | Taxis | • 10 year taxi age limit<br>• All newly licensed taxis to be zero emissions capable from 2018 |
| | PHVs | • All newly manufactured/ newly licensed PHVs to be zero emissions capable from 2018<br>• All newly licensed second hand PHVs must meet the ULEZ standards<br>• Existing licensed PHVs that do not meet the ULEZ standards must pay the charge when driving in the ULEZ. |
| Emission-based vehicle charging in ULEZ | Heavy goods vehicles (HGVs) | • Euro VI engine (or pay charge when driving in the ULEZ) |
| | Non-TfL buses and coaches | |
| | Light goods vehicles (LGVs) | • Euro 4 engine (petrol) or Euro 6 engine (diesel) (or pay charge when driving in the ULEZ) |
| | Cars and PHVs | |
| | Motorcycles and power two-wheelers | • Euro 3 engine (or pay charge when driving in the ULEZ) |

***Table 3-A ULEZ proposals by vehicle type***

| Vehicle type | Proposed emissions standard[1] | Date from when manufacturers must sell or have sold new vehicles meeting the emissions standards | Maximum age of vehicle by 2020[2] | Charge if vehicle is not compliant with the ULEZ standard[3] |
|---|---|---|---|---|
| Motorcycle, moped etc. | Euro 3 | From 1 July 2007 | 13 years | £12.50 |
| Car, PHV and small van | Euro 4 (petrol) | From 1 January 2006 | 14 years | £12.50 |
| | Euro 6 (diesel) | From 1 September 2015 | 5 years | |
| Large van and minibus | Euro 4 (petrol) | From 1 January 2007 | 13 years | £12.50 |
| | Euro 6 (diesel) | From 1 September 2016 | 4 years | |
| HGV | Euro VI | From 1 January 2014 | 6 years | £100 |
| Bus/coach | Euro VI | From 1 January 2014 | 6 years | £100 |

1 Euro standards for heavy-duty diesel engines use Roman numerals and for light-duty vehicle standards use Arabic numerals.
2 Vehicles this age or younger in 2020 will comply with the ULEZ standard and not incur a charge.
3 This is payable in addition to any applicable LEZ or CCZ charges.

***Table 3-B ULEZ standard for each type of vehicle***

3.1.3 It is proposed that a small number of vehicle types would be exempt from the ULEZ charge, including agricultural, military and historic vehicles[1] and non-road going vehicles which are allowed to drive on the highway. These vehicles typically use engines certified to different standards than road-going engines and/or are unsuitable for conversion to an alternate fuel or engine replacement. Further improvements to these vehicles, particularly non-road going vehicles, are pursued through other strategies, such as the MAQS.

3.1.4 Taxis (black cabs) that are licensed with London Taxi and Private Hire will also be exempt from the ULEZ charge. Instead, TfL proposes to reduce the age limit of all non zero emission capable taxis from 15 years to 10 years in 2020 to help reduce $NO_x$ emissions from the taxi fleet and encourage the uptake of zero emission capable taxis (which would retain a 15 year age limit).

3.1.5 TfL has committed to the following mitigation measures for the proposed ULEZ:

- *For residents in the ULEZ – all residents living in the ULEZ area will be granted a three year time limited 100% discount to recognise that they are unable to avoid the ULEZ area and may require more time to change their vehicle for one to meet ULEZ emissions standards.*
- *For taxis should a reduction in the taxi age limit be taken forward as a result of ULEZ – TfL will establish a specific fund for drivers of older taxis to help them switch to newer vehicles. It is anticipated that grants would be offered to eligible taxi owners and that the proposed scheme would be phased from 2018 to smooth the impact of a reduced age limit in 2020.*

[1] Vehicles manufactured before 1973.

3.1.6 These mitigation measures have been treated as an integral part of the ULEZ for the purposes of our assessment of the potential impacts of the proposal on the environment, health and wellbeing, population and equality groups and London's economy and SMEs.

### 3.1.7 The ULEZ study area

3.1.8 The study area for the ULEZ falls within the Greater London Administrative Area (GLAA). In some instances, areas beyond the GLAA were considered, as changes to vehicle trip patterns on London's road network brought about by implementation of the ULEZ are likely to extend beyond this boundary.

3.1.9 The study area is divided into five zones as described in Table 3-C, which correspond to those employed in the atmospheric emissions modelling that informed the development of the ULEZ.

| Zone | Extent |
|---|---|
| CCZ | Based on the existing boundary which has been in operation since 2003 |
| Inner Ring Road (IRR) | A 12 mile (19km) route formed from a number of major roads that encircle the CCZ |
| Inner Zone | Extends outwards from the CCZ to cover a number of London boroughs including Haringey to the north, Newham to the east, Lambeth to the south and Hammersmith and Fulham to the west |
| Outer Zone | Extending from the boundary of the Inner Zone to the boundary of the GLAA. Includes London boroughs such as Enfield to the north, Havering to the east, Croydon to the south and Hillingdon to the west |
| Non-GLAA | Covers the area outside the GLAA boundary |

***Table 3-C Description of the five zones making up the ULEZ study area***

3.1.10 The same study area was adopted across all assessment reports including the EA, HIA, EqIA and EBIA.

3.1.11 A map of the CCZ, inner, outer and non-GLAA zones covering the IIA study area is provided in Figure 3-A. Although not shown on the map, the IRR sits on the boundary between the CCZ and Inner Zone.

3.1.12 With the exception of the IRR (which defines the boundary of ULEZ), the four zones are consistent with the London Atmospheric Emissions Inventory (LAEI) 2010.

# Figure 3-A

## Key

**LAEI 2010 Zones**

- CCZ
- Inner London
- Outer London
- External (Non-Greater London Area)

| Rev. | Date | Purpose of revision | Drawn | Check'd | Rev'd | Appr'd |
|---|---|---|---|---|---|---|
| 0 | 23/10/14 | Created to aid integrated assessment | BW | MC | RK | MB |


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Client

Transport for London

Project

Ultra Low Emission Zone - Integrated Impact Assessment

Drawing Title

The ULEZ IIA Study Area

| | | | |
|---|---|---|---|
| Drawing Status | **FINAL** | | |
| Scale @A3 | 1:200,000 | | DO NOT SCALE |
| Jacobs No. | B19930000 | Client No. | |
| Filepath | "Y:\B19930000 ULEZ\Mxds\Figure3A_IIA.mxd" | | |
| Drawing No. | Figure 3-A | | |





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# 4 Approach to the IIA

## 4.1 Overview of the IIA process

4.1.1 The IIA is a means by which the common aspects of different technical assessments are brought together in a holistic and integrated manner. An overview of the focus for the four assessments is provided in Table 4-A.

| Assessment | Focus |
|---|---|
| EA | Identifies and assesses the impacts across a range of environmental issues as a result of the ULEZ including: air quality, noise, climate change, biodiversity and nature conservation, cultural heritage, landscape, townscape and the urban realm, material resources and wastes. |
| HIA | Identifies and assesses impact on the health and wellbeing of the population of Greater London and the ability to access health-related facilities and services as a result of ULEZ. The assessment also addresses equalities issues and thus has some overlap with the EqIA. |
| EqIA | Identifies and assesses impacts on equalities issues, in particular those groups of people with protected characteristics[1] or are socio-economically disadvantaged. |
| EBIA | Identifies and assesses impacts on London's economy as a result of the ULEZ and identifies potential impacts on small to medium sized enterprises (SMEs). |

[1] people with protected characteristics are defined in the *Equality Act 2010*

***Table 4-A Overview of technical assessments undertaken for the ULEZ***

4.1.2 The requirement for the HIA is driven by emerging guidance and policy requirements, and elements of the international SEA Protocol which came into effect on 11th July 2010. The TfL *Health Action Plan* 2014 requires TfL to investigate health impacts of its work; therefore, in line with precedents set by similar transport schemes, TfL required an HIA to be completed to determine the potential health implications of the proposed ULEZ.

4.1.3 As a public body, TfL must meet certain requirements in relation to the *Equality Act 2010* when developing proposals and policy. On this basis, an EqIA has been completed to identify any potential disproportionate or differential impacts from the implementation of the ULEZ on people with protected characteristics as defined in the Act as well as socio-economically deprived communities.

4.1.4 An EBIA was considered beneficial by TfL to better understand the potential impacts on London's economy and on SMEs as a result of the ULEZ and to inform the decision making process in the development of the ULEZ.

4.1.5 There have been a number of stages involved in completion of the assessments, as shown in Figure 4-A and described in the following sections.

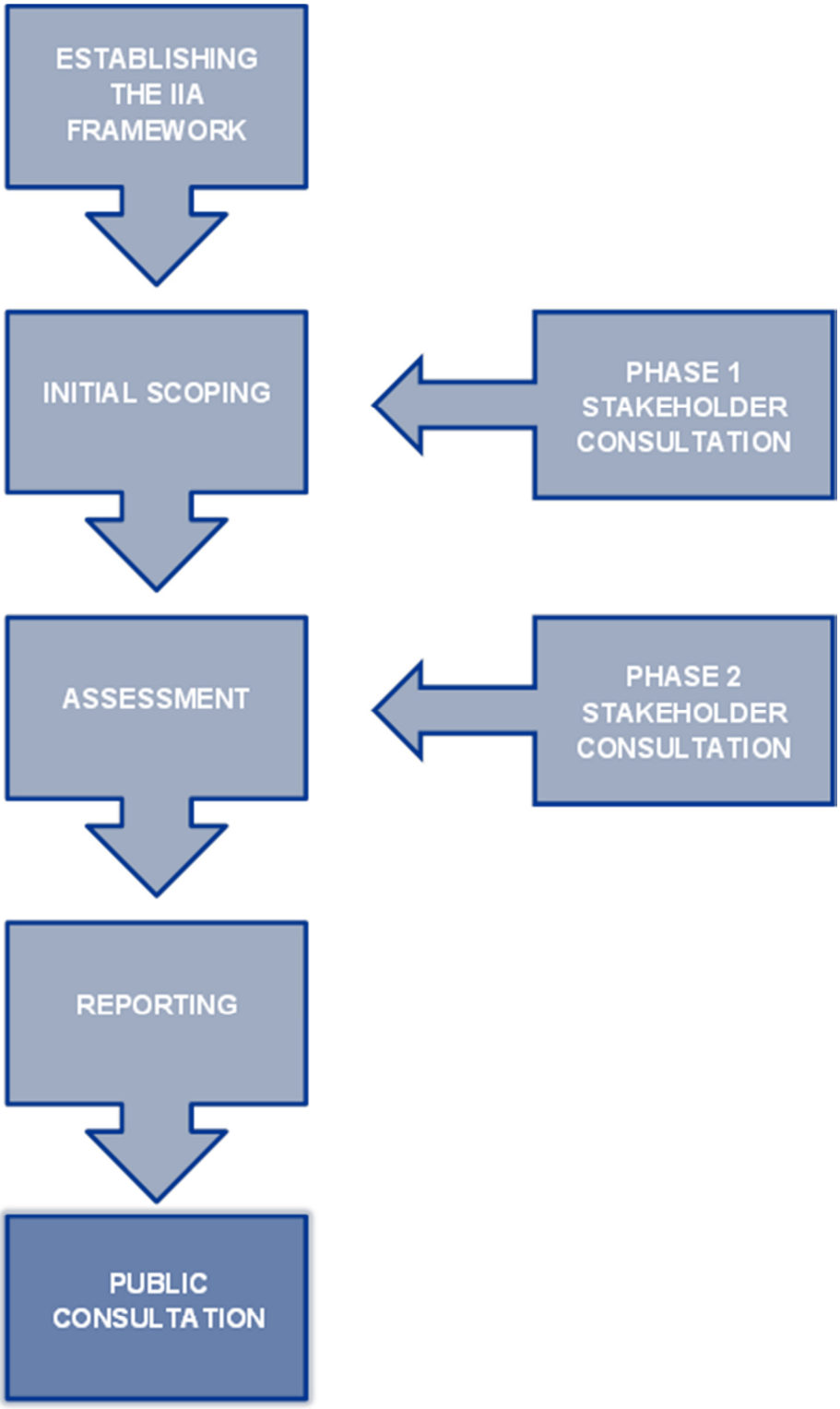


*Figure 4-A Stages of the IIA Process*

## 4.2 Establishing a framework

4.2.1 The IIA framework for the MTS has been employed as a logical starting point for the ULEZ IIA, although appropriate and necessary amendments have also been considered and adopted. The MTS IIA framework consists of the following:

- *Primary Objectives (criteria);*
- *Secondary Objectives (sub-criteria); and*
- *a set of detailed questions to guide the assessment in applying the criteria (MVA consultancy in association with ERM and Future Inclusion, 2009).*

4.2.2 Appendix 1 provides the IIA Framework for the ULEZ. This has been employed for the purposes of assessment, and to assist stakeholders in finding information under familiar headings

4.2.3 Whilst, the MTS IIA objectives and criteria have been used as a starting point, the following amendments have been made to meet the requirements of ULEZ:

- *objectives reorganised by IIA theme and topic area for greater clarity;*
- *questions have been retained which enable the identification of both potential positive and negative effects;*
- *methods (e.g. "through", "by", etc.) have been removed from objectives;*
- *some topics have been removed from objectives;*
- *sub-objectives are used to clarify any complex objectives; and*
- *the use of "sustainable" has been removed from objectives, as sustainable development is the overall objective of conducting an assessment such as an IIA (use of phrases such as "sustainable transport" and "sustainable economic progress" within objectives introduces factors across all assessment topics).*

4.2.4 Each technical assessment addressed one or more IIA topics and assessed the extent to which the ULEZ worked towards achieving the associated objective for the topic.

4.2.5 The IIA topics and objectives addressed by each assessment are identified in Table 4-B.

4.2.6 A summary of how the proposed ULEZ meets each IIA objective is provided in Chapter 6.

| Assessment | IIA Topic | IIA Objective |
|---|---|---|
| EA | Air quality | To contribute to a reduction in air pollutant emissions and compliance with EU limit values |
| | Noise | To reduce disturbance from general traffic noise |
| | Climate change | To reduce $CO_2$ emissions and contribute to the mitigation of climate change |
| | Biodiversity including flora and fauna | To protect and enhance the natural environment, including biodiversity, flora and fauna |
| | Cultural heritage | To protect and enhance historic, archaeological and socio-cultural environment |
| | Water | To protect and enhance river spaces and waterways through planning and operation |
| | Material resources and waste | To promote more sustainable resource use and waste management |
| | Landscape, townscape and urban realm | To protect and enhance the built environment and streetscape |
| HIA | Health and wellbeing | To contribute to enhanced health and wellbeing for all within London |
| EqIA | Population and equality | To enhance equality and social inclusion |
| EBIA | London's economic competitiveness | Provide an environment which will help to attract and retain internationally mobile businesses |
| | SMEs | Support the growth and creation of SMEs |

***Table 4-B IIA objectives***

## 4.3 Initial scoping and stakeholder consultation

4.3.1 Jacobs prepared an initial scoping report to identify the ULEZ study area and inform the technical assessments.

4.3.2 Two phases of consultation have been undertaken on the ULEZ:

- *Phase 1 – stakeholder workshops on proposed methodology and scoping*
- *Phase 2 – workshops to review emerging assessment and identify mitigation and enhancement opportunities*

4.3.3 Phase 1 consultation was undertaken during June and July 2014, which aligned with the scoping phase of the ULEZ and Phase 2 consultation was undertaken in late August and throughout September 2014, which aligned with the assessment phase of the ULEZ.

4.3.4 The workshops were held by TfL and included participants from a range of stakeholder groups identified in Table 4-C.

4.3.5 Key issues discussed during both phases of consultation are outlined in Table 4-D.

4.3.6 Workshop attendees were given the opportunity to provide further written responses to the assessment methodologies and scoping up until the end of Wednesday 2 July 2014.

| Group | Stakeholders |
|---|---|
| Government agencies | • Environment Agency<br>• GLA<br>• TfL<br>• Public Health England |
| Local authorities | • City of Westminster<br>• City of London<br>• London Borough of Hackney<br>• London Borough of Islington<br>• London Borough of Lambeth<br>• London Borough of Westminster<br>• London Borough of Southwark<br>• London Borough of Camden |
| Industry bodies | • Confederation of passenger transport<br>• Road Haulage Association<br>• Freight Transport Association<br>• London Transport Coach Operators<br>• Chartered Institute of Logistics and Transport in the UK<br>• Cross River Partnership<br>• Federation of Small Businesses |
| Consultants | • Jacobs<br>• Ben Cave Associates |
| Interest group | • Changing Perspectives |

***Table 4-C Stakeholders at workshops***

| Assessment | Key issues raised |
|---|---|
| EA | • More electric vehicles on the market may result in more charging points which may impact the townscape and safety.<br>• The effects of 'black carbon' (PM ≤2.5µm) should be included in the environmental assessment ($PM_{2.5}$ is already in the scope of HIA).<br>• Effects on water resources and water quality should be included within the scope of the EA.<br>• Traffic migration/displacement as a result of ULEZ (i.e. vehicles avoiding the zone) will lead to the creation of new noise climates and potential impacts on residents.<br>• Adequate road/pavement space may not be available within central London to accommodate the additional cycle parking required following an anticipated increase in the uptake of cycling.<br>• The emissions factors to be applied to the concentration modelling were questioned. |
| HIA | • Concern around the lack of stakeholder input into the option selection process. The intention of the workshop was to seek stakeholder input into the approach to the IIA/HIA process and not to gauge opinion on the options for the ULEZ.<br>• Whether the inter-relationship between health and access to work and education would be covered by the HIA.<br>• The opportunity to engage in physical activity should be considered by the HIA as a measure of health and wellbeing.<br>• A pragmatic approach should be considered for the HIA and the scope should be refined as far as possible to maintain and produce a focused |

| Assessment | Key issues raised |
|---|---|
| | assessment.<br>• As it is one of the objectives of the ULEZ, health should be at the core of the IIA.<br>• Concerns regarding health service provision and the impacts of ULEZ:<br>- there are a number of 'just-in-time' deliveries associated with delivering healthcare;<br>- there is a National Health Service (NHS) policy to move towards 'community-based' care (i.e. local) where the staff have rotating shifts which mean they are required to travel between different hospital sites and some hospital sites may span the CCZ;<br>- the concept of social capital was criticised as being dominated by an economic focus. For some people the quality of life is not determined by whether it is possible to get employment. The assessment should ensure that the focus is on having a good quality life. |
| EqIA | • Displacement of traffic may be an issue in relation to impacts e.g. air quality surrounding ULEZ boundary, effects on socio-economically deprived areas.<br>• Perception of community safety in relation to different travel/transport modes.<br>• Effect on groups that rely on community vehicles or similar, modes of transport.<br>• Potential impact on availability of wheelchair accessible taxis, PHVs, coaches and minibuses.<br>• Impact on availability of taxis and PHVs at night and the impact on safe/use of unlicensed cabs.<br>• Disabled drivers require specific vehicles adjusted to their needs. Will such compliant vehicles be available to purchase?<br>• Black, Asian and Minority Ethnic (BAME) groups represent a high proportion of the SMEs within central London, including market traders within ULEZ and minicab drivers, many using their own vehicle.<br>• Socio-economically deprived groups could be unable to afford compliant vehicles, be unable to pay the charge for a non-compliant vehicle, and be unable to pay the fine for not paying the charge, potentially leading to debt enforcement action. These groups are also potentially more likely to work 'unsociable' hours, when there is more of a reliance on travel by car.<br>• Early and proactive communication of the proposed ULEZ to residents is considered to be important.<br>• Impacts relating to coach companies transporting pupils to schools within and outsidethe ULEZ were raised.<br>• Concern about the cost of mobility adapted vehicles that will need replacing to meet ULEZ standards.<br>• Impacts on people travelling into Central London by car or minibus to attend faith services are only likely to be an issue on the edge of ULEZ. Example cited of a large Pentecostal ministry in Elephant and Castle which uses a fleet of minibuses to transport worshippers.<br>• Noted that many religious services are held in non-religious buildings in inner and outer London – but not likely to be prevalent in central London.<br>• Are there particular safety issues for the Lesbian, Gay, Bisexual and Transgender (LGBT) community? Are they more likely to use cabs? Highest clusters are Westminster and Lambeth. |

| Assessment | Key issues raised |
|---|---|
| EBIA | • The ULEZ is seen as a potential benefit to restaurants and cafes within the ULEZ boundary, as improvements in air quality may encourage customers to use on-street seating.<br>• Concerns surrounding the potential wider impact on tourist economy in London and a perception that London is becoming too expensive.<br>• Impact will be felt outside central area, as well as in central London. Concerns were expressed about SMEs, in particular, for sectors of the economy which typically have very small fleets, including: breweries/micro-breweries; meat suppliers; farms which deliver produce direct to high-end hotels/restaurants; and, personal services (e.g. plumbers, massage therapists). Margins will be squeezed.<br>• Concern that a loss of small independent businesses would impact on the diversity of London's offer to tourism.<br>• Concerns that there may be impacts on local authority budgets (e.g. contracted out refuse collection vehicles).<br>• Concerns that a reduction in black cabs may impact on the night time economy (e.g. through perceptions of personal travel safety), although this may be overcome by technology (e.g. taxi apps).<br>• The impact on motorcycle couriers was also raised, although this is unlikely to be an issue due to the present rate of compliance. |

***Table 4-D Summary of consultation***

## 4.4 Assessment

4.4.1 The scope and content of each of the assessments were informed by stakeholder workshops.

4.4.2 All assessments recommend actions to mitigate possible negative impacts as well as enhancements to maximise positive impacts.

### (a) EA

4.4.3 The scope of the EA comprised the assessment of air quality, noise, climate change, biodiversity & nature conservation, cultural heritage, landscape, townscape & urban realm, material resources and wastes.

4.4.4 Soil and water were not considered relevant to the EA of the ULEZ and were not included in the scope. Soil can be a sensitive receptor for air pollution deposition. In the context of the urbanised London study area, and given the likely level of air quality changes anticipated, it was deemed that effects to soil would be insignificant. Given the nature of the proposed ULEZ, no measureable effects on the water environment are expected.

### (b) HIA

4.4.5 The assessment considered impacts associated with air quality, noise and neighbourhood amenity, accessibility and active travel, crime reduction and community safety, social cohesion and lifetime neighbourhoods, climate change, access to healthcare services and other social infrastructure.

4.4.6 The assessment did not include impacts from housing quality and design, access to open space and nature, access to healthy food, access to work and training and minimising the use of resources as none of these would be affected by the proposed ULEZ.

### (c) EqIA

4.4.7 The EqIA assessed the effects of the implementation of the ULEZ on people with protected characteristics as defined in the Equality Act. Specifically the following equality groups were considered in the EqIA: age, disability, sex, race, pregnancy and maternity, gender reassignment, religion or belief, sexual orientation, socio-economically deprived.

4.4.8 In relation to the assessment of impacts on equality groups resulting from traffic, noise and air quality, the scope included young and old and socio-economically deprived as there is potential for differential effects. No differential or disproportionate effect is anticipated on Lesbian, Gay, Bisexual and Transgender (LGBT), sex, disability, religion or belief, pregnancy and maternity and as such they have been excluded from the scope of the assessment.

4.4.9 In relation to the assessment of impacts on equality groups resulting from access to transport systems and sustainable modes of travel, all equality groups were included in the scope, however public sector employees (or contractors) who travel during the course of their work to deliver education, social and health care services to people with protected characteristics were not. It was assumed that the cost associated with compliance with the ULEZ will be incurred by the employer.

### (d) EBIA

4.4.10 The EBIA was undertaken by vehicle type, examining the potential impacts that the ULEZ may have on vehicle use and then on the relevant sectors of the economy (e.g. retail, construction, catering, markets, care sector, home bases services, night time economy, tourism) as well as on SMEs.

4.4.11 The assessment looked at those sectors in the ULEZ study area that have significant dependence on road transport such as construction, retail and the evening economy. It also identified and assessed impacts for those SMEs providing niche services that are dependent on road transport.

4.4.12 Most sectors of the economy such as financial and business services which have little dependency on road transport to operate successfully were not assessed. Similarly, SMEs in sectors such as financial and business services that have little dependency on road transport to operate successfully were not assessed.

## 4.5 Reporting

4.5.1 The IIA is supported by individual technical reports for each of the four assessments. The technical reports provide greater detail on baseline conditions and the assessment of likely impacts of the ULEZ. Each report contains the following:

- *overview of ULEZ;*
- *policy and legislative context;*
- *methodology;*
- *baseline;*
- *assessment;*
- *mitigation; and*
- *conclusions.*

## 4.6 Public consultation

4.6.1 The IIA will be made available as part of the public consultation, which runs from 27th October 2014 to 9th January 2015.

# 5 Assessment Outcomes

## 5.1 Key findings

5.1.1 The key findings from each technical assessment including the impacts and mitigation measures are presented in Table 5-A and broken down into IIA topics.

5.1.2 For the purposes of the IIA, each impact has been scaled as minor, moderate or major. The legend to assist with interpreting the scale of impacts from ULEZ (whether positive or negative impacts, minor, moderate or major) is provided in Figure 5-A.

5.1.3 Each impact has also been assigned a duration which correlate with the timeframes of the proposed ULEZ: short-medium term (being less than 5 years i.e. impact has disappeared by 2025) or long term (being greater than 5 years i.e. impact is still prevalent after 2025).

| Legend | |
|---|---|
| Positive minor | |
| Positive moderate | |
| Positive major | |
| Neutral | |
| Negative minor | |
| Negative moderate | |
| Negative major | |

***Figure 5-A Legend for summary assessment table***

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Air quality (in relation to environmental sensitive receptors[1])** | • The baseline data for the air quality assessment was forecasted pollutant emissions in central London between 2020 and 2025 and showed that without ULEZ:<br>- In 2020 approximately 34,000 sensitive receptors (including residential properties, care homes, health facilities and schools) across London would be exposed to $NO_2$ concentrations which exceed the annual mean Air Quality Objective (AQO).<br>- In 2020 approximately 34 sensitive receptors in London would be exposed to $PM_{10}$ concentrations which exceed AQO.<br>• The baseline forecasts suggest that cars, buses and taxis would be the three main contributors to total road traffic emissions of $NO_x$, $NO_2$ and $PM_{2.5}$ in 2020 and 2025. Together these three vehicle types would account for 76% of total $NO_2$ emissions in central London in both 2020 and 2025. | ULEZ would result in improvement in $NO_2$ concentrations as follows:<br>• An improvement in annual average mean concentration of 4.6 µg/$m^3$ in 2020 and a further 2.3 µg /$m^3$ in 2025 in the CCZ with a reduction towards the Outer Zone with the improvement potentially lessening to 0.6ug/$m^3$ in 2020 and a further 0.3 µg /$m^3$ in 2025.<br>• In 2020, 18,000 sensitive receptors across London are forecast to no longer be exposed to concentrations exceeding the annual mean $NO_2$ AQO, compared to the without ULEZ– a reduction of approximately 52%. A further 2,000 properties would no longer experience exceedances by 2025 (a further 13% reduction).<br>• The largest percentage reduction in properties exceeding the AQOs in 2020 would be in central London (approx. 4,500 or 86%), followed by Inner Zone (approx. 10,500 or 52%) and Outer Zone (approx. 2,800 or 33%).<br><br>*Note: air quality impacts relating to other sensitive receptors such as care homes, hospitals and schools is provided in the IIA topic health and wellbeing.* | Positive long term | Major | • The Mayor has outlined a strategy of measures to tackle pollution:<br>- Making London's bus fleet cleaner.<br>- Capping the age of London's taxi and private hire fleet.<br>- Setting new and tighter standards for the London LEZ.<br>- Encouraging the uptake of electric and other low emission vehicles.<br>- Investing record amounts in cycling (TfL, 2014).<br>• The Mayor's 2050 Infrastructure Investment Plan details significant investment in public transport and urban realm.<br>• The Mayor is also supportive of:<br>- The Government to help replace the most polluting diesel cars with lower emission vehicles and giving drivers incentives to switch to cleaner vehicles.<br>- A new public awareness programme called Breathe Better Together to tackle air pollution at schools and an ambitious public awareness campaign to be launched late mid-year (GLA, 2014). | • TfL should use ULEZ as a benchmark for its wider transport policy-making e.g. the Congestion Charge, their role in planning applications and for TfL fleet.<br>• TfL should investigate the potential expansion of ULEZ / raising of ULEZ standards in the future (i.e. post 2025) or the introduction of complementary adjacent zones for low emissions neighbourhoods. This could result in further air quality benefits. Dependent on vehicle market, infrastructure, opportunity and compliance costs at the time of investigation and public consultation. |

[1] Environmental sensitive receptors are defined as 'all relevant receptors within 200m of the London road network including residential properties, schools, care homes and health care facilities', being any location where members of the public may be present for the duration of the averaging period of the objective; for an annual mean objective - this includes receptors where members of the public may be present for 6 months or more.

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Air quality** | *Refer to text on previous page.* | ULEZ would result in a decrease in $PM_{10}$ emissions:<br>• Relevant receptor weighted average annual mean $PM_{10}$ concentrations reduce by a small amount in the CCZ (0.2µg/$m^3$). Moving away from the influence of the ULEZ this reduction is anticipated to be negligible in the Inner Zone and beyond.<br>• The City of London would have the largest reduction in relevant receptor weighted average annual mean $PM_{10}$ concentration in both 2020 and 2025 – average reduction of 0.1 µg/$m^3$ per relevant receptor.<br>• A single sensitive receptor would change from being exposed to concentrations exceeding the annual mean $PM_{10}$ to no longer being exposed to exceedances in 2020. This receptor is in the London Borough of Tower Hamlets.<br>• In 2025, no sensitive receptors are anticipated to change from being exposed to concentrations exceeding the AQO to no longer being exposed to exceedances. | Positive long term | Minor | *Refer to text on previous page.* | *Refer to text on previous page.* |
| | | ULEZ would result in small reductions in $PM_{2.5}$ concentrations:<br>• $PM_{2.5}$ concentrations may reduce by 0.1µg/$m^3$ in both the CCZ and IRR in 2020. This declines over time, such that by 2025 the reduction in each zone is negligible.<br>• No projected change in the number of sensitive receptors exposed to concentrations exceeding the annual mean $PM_{10}$ objective without ULEZ baseline for both 2020 and 2025. | Positive short-medium term | Minor | | |
| **Noise** | • The main source of ambient noise in London is roads.<br>• In urban areas, most vehicle noise comes from engines, because at low speed, engine noise dominates over the noise generated by tyres and road surfaces.<br>• 41% of Londoners are disturbed by road traffic noise.<br>• Studies have found that the use of hybrid buses can offer a reduction in noise levels of around 3dB(A) or 30% compared to conventional diesel based engines.<br>• Fully electric buses can offer even greater reductions in noise and vibration. | ULEZ would result in an overall minor reduction in noise levels generated from introduction of zero emission single-decked electric and hydrogen buses and low emission hybrid double-decker buses by around 3dB(A) or 30% compared to conventional diesel based engine buses. | Positive long term | Moderate | • TfL has existing policies to assist with noise reduction from road traffic including policies around smoother driving and no idling for buses. | • Opportunity for positive publicity campaign to promote public awareness of the benefits of noise for the ULEZ.<br>• Engage in early and proactive communication of the ULEZ about noise related safety impacts e.g. any concerns around potential residual impacts of reduced traffic noise levels on personal road safety. |
| | | ULEZ may result in additional noise reductions through the phasing out of older taxis and through mandating all newly licensed taxis and PHVs to be zero emissions capable from 2018. | Positive long term | Minor | | |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Climate change** | • $CO_2$ is the Greenhouse Gas (GHG) of most relevance to this assessment.<br>• Greater London is responsible for approximately 10% of the UK's total $CO_2$ emissions (2012), of which 17 % is attributable to road traffic. Central London accounts for about 1% of Greater London's total $CO_2$ emission.<br>• Without ULEZ London's transport emissions would be expected to reduce to 8.02 million tonnes $CO_2$ per annum by 2025, a 15% decrease of 1990 levels, despite projected population and employment growth in excess of 10%.<br>• ULEZ would result in an increased uptake of low and zero emission vehicles and greater compliance with more stringent EURO fuel standards. | ULEZ would result in further reductions in total road traffic $CO_2$ emissions by 123,000 tonnes per annum in 2020 and 169,000 tonnes per annum in 2025 in central London. This equates to overall reductions of 2% in 2020 and 3% in 2025.<br><br>In central London this will be experienced predominantly within the existing CCZ and to a lesser extent in the IRR and Inner Zone: the local authorities likely to see greatest reductions in $CO_2$ emissions as a result of the ULEZ are the City of London, City of Westminster and Kensington and Chelsea.<br><br>Boroughs on the edge of the GLAA boundary would experience smaller reductions. | Positive Long term | Minor | • The Mayor has committed to reducing emissions of $CO_2$ in London by 60% overall, relative to 1990 levels and across all sectors, by 2025.<br>• The Mayor has published strategies on climate change adaptation including the Climate Change Mitigation and Energy Strategy and Climate Change Adaptation Strategy.<br>• Other policies relating to climate change include:<br>- The TERM which sets out proposals to reduce emissions.<br>- The MTS which details policies to reduce transport's contribution to climate change and improve its resilience.<br>• The Mayor has also implemented a series of measures in response to climate change such as the CCZ discount for low emission vehicles. | • Opportunity for positive publicity campaign to promote public awareness of the benefits for climate change. |
| **Biodiversity including flora and fauna** | • Increased nitrogen deposition in the form of $NO_x$ and $NO_2$ and elevated $NO_x$ emissions pose a risk to biodiversity through:<br>- increased nitrogen deposition and overloading by nitrogen favourable species, reducing plant diversity in natural and semi natural ecosystems.<br>- increased acidity in soils, limiting species that can survive in such conditions.<br>• ULEZ would result in improvement in $NO_2$ concentrations of 4.6 ug/$m^3$ in 2020 and of 2.3 ug/$m^3$ in 2025 in the CCZ and less towards the Outer Zone.<br>• ULEZ would also result in a reduction of $NO_x$ emissions by just over 50% in the CCZ by 2020 lessening over time and towards the Outer Zone. | ULEZ would result in a positive effect on nature conservation sites across London (specifically sites in the Hampstead Heath Woods in Camden, Hainault Forest in Redbridge and in Hillingdon) as a result of anticipated borough level decreases in $NO_x$ emissions. | Positive short-medium term | Moderate | • TfL's TERM identifies opportunities for positive impacts on biodiversity as a result of a reduction in air pollution.<br>• The Mayor also has broader policies about biodiversity to make London greener, working to promote living roofs and walls across London. | • Opportunity for positive publicity campaign to promote public awareness of the biodiversity benefits for the ULEZ<br>• Opportunity to promote implementation of complementary policies relating to improving London's air quality. |
| **Cultural heritage** | • Levels of $NO_x$ emissions in London pose a threat to cultural heritage assets as a result of pollutants that are principally responsible for causing acid rain. Almost all materials are affected by the deposition of acid, but the degree of damage tends to vary.<br>• ULEZ would result in a reduction of $NO_x$ emissions by just over 50% in the CCZ by 2020 lessening over time and towards the Outer Zone. | ULEZ would reduce the risk of acid rain on cultural heritage assets as a result of $NO_x$ reductions (particularly within the CCZ)<br>The greatest reductions of $NO_x$ would be experienced in central London, specifically in the boroughs of City of Westminster and Camden, which together contain a combined total of 3,730 listed buildings, 61 scheduled monuments and 1 World Heritage site. Of these listed buildings, over 350 are categorised as having the highest level of heritage value represented by the Grade 1 status. | Positive long term | Major | • TfL's TERM identifies opportunities for positive impacts on the built environment from a reduction in particulates that can cause discolouration of buildings and $NO_x$ deposits that leave some building materials more vulnerable to weathering. | • Opportunities to promote implementation of complementary policies relating to improving London's air quality. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Cultural heritage** | • Soiling is also a threat to cultural heritage assets which is a visual darkening of exposed surfaces by deposition of atmospheric particles.<br>• The major contributor to all processes of soiling on buildings is the deposition of PM.<br>• The ULEZ would result in reductions in $PM_{10}$ emissions between 2020 and 2025 of 16% or 17 tonnes per annum and reductions of $PM_{2.5}$ emissions by 19% or 7 tonnes per annum between 2020 and 2025. | ULEZ would result in a reduced risk of degradation of cultural heritage assets as a result of reduced $PM_{10}$ emissions. Most significant in the CCZ (9% or 10tpa in 2020 and 3% or 3tpa in 2025). | Positive long term | Minor | *Refer to text on previous page.* | *Refer to text on previous page.* |
| **Water** | Not within scope of assessment | | | | | |
| **Material resources and waste** | • ULEZ would result in a 'phasing-out' of the existing vehicle fleets such as buses and taxis which will result in hazardous vehicle wastes such as:<br>- Vehicle and other oils.<br>- Interceptor Wastes.<br>- Fuels, brake and anti-freeze fluids.<br>- Components, including oil filters.<br>- Air bags.<br>- Brake pad.<br>- Batteries.<br>• Some of these components may be recyclable or recoverable using available technologies at existing facilities. For example, materials such as rare earth elements and precious metals may have economic value that can be realised through resale following recovery.<br>• Components that cannot be reused, recycled or recovered will need to be stored at landfill.<br>• It is estimated that London will need to identify capacity to manage around 82,000 tonnes of hazardous waste it currently sends to landfill each year plus any increases in arising requiring management in order to achieve the London Plan target of net self-sufficiency. | ULEZ may result in risk of environmental harm resulting from disposal of hazardous vehicle components from the replaced fleets e.g. batteries.<br><br>While this risk is considered to be neutral (i.e. the likely scale of impact unable to be determined), it is included in this impact table because of the challenges and opportunities that waste presents. '*While London is recycling more than ever before, more can and should be done for the capital to catch up with the other UK regions and European cities*' (GLA, 2014). | Short-medium term | Neutral | • The Mayor's Business Waste Management Strategy sets out plans to help London's businesses manage their waste more efficiently and effectively. Key parts include:<br>- Facilitating business support programmes that help businesses understand the financial and commercial opportunities in waste reduction, reuse, recycling and reclaimed materials.<br>- Helping businesses to increase their access to recycling services and reducing barriers to waste for reuse, recycling, composting and energy recovery.<br>- Providing strategic investment to stimulate the development of new waste management infrastructure within London.<br>- Using the planning process in London to drive resource efficiency improvements in the construction and demolition sector.<br>(Source: GLA, 2014) | • TfL should consult with the GLA, the Department for Environment, Food and Rural Affairs, the Environment Agency and waste management facility operators on waste management strategies to ensure any TfL policies encourage safe storage, reuse and disposal of hazardous vehicle components as already specified in EU regulations.<br>• Investigate and adopt recycling options for vehicle components from replaced existing fleet and encourage private vehicles owners to do the same.<br>• For TfL vehicles, utilise existing facilities for disassembling batteries. |
| | | ULEZ would result in increased pressure on waste management facilities and landfill from replacement of existing vehicle fleets (approximately 22,000 taxis and 50,000 licensed private vehicles operating in London in 2011 and 8,500 buses operating in 2014). | Short-medium term | Minor | | • Opportunity to improve and provide innovative ways of how the industry deals with waste.<br>• Undertake ongoing monitoring of waste management facilities to assess potential for increased demand on waste/ recycling facilities and landfills and ways of recovering value and reducing amounts of waste sent to landfill.<br>• Opportunities to recover rare earth elements from the batteries of single deck buses and zero emission taxis.<br>• Lobby government to assist with encouraging operators of TfL buses to sell and redeploy replaced vehicle fleet to other locations where there are lower concentrations of air pollutants rather than disposal. |
| | | ULEZ may result in increased demand on electricity and fuel to produce new vehicles (embodied carbon). | Short-medium term | Minor | | • Opportunity to promote enhancement of existing Climate Chance Mitigation and Energy Strategy which includes lobbying for and encouraging sustainable energy sources |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Landscape, townscape and urban realm** | • TfL is proposing to utilise their existing comprehensive camera enforcement network along the CCZ boundary to remove the requirement for new cameras for ULEZ.<br>• TfL is looking into the ability to alter existing CCZ signs to include information about the ULEZ rather than implement new signs.<br>• Londoners' satisfaction with the condition of the local urban realm remains relatively good with the mean rating for satisfaction standing at 74 out of 100. | ULEZ may result in increased visual clutter (street level) as a result of additional street furniture required for new commercial vehicle rapid charging points. | Short-medium term | Minor | • TfL's *Streetscape Guidance 2009* provides information on high quality streetscape design including design principles and palette of materials.<br>• The Roads Task Force was set up by the Mayor in 2012 to tackle the challenges facing London's streets and roads. The Roads Task Force report, published in July 2013, sets out the vision and direction for London's streets and roads. | • TfL to support further research in relation to the use of wireless charging technologies (e.g. at bus depots and taxi ranks).<br>• Identify optimal charge point locations taking account of the need for sensitive placement of infrastructure to minimise impact on streetscape.<br>• Opportunity to work closely with technology providers to ensure new infrastructure meets London's needs and is in keeping with existing streetscape where possible. |
| **Health and wellbeing** | **Air pollution**<br>• Studies of air pollution have shown that high levels of ambient air pollution are associated with strong increases in adverse health effects.<br>• Although ULEZ would operate in central London, it is expected that the air quality and health benefits would extend into London more generally as drivers switch to cleaner vehicles.<br>• Without ULEZ, in 2020 63% of people in central London would be living in areas above the $NO_2$ annual limit value, 12.7% in the Inner Zone and 1.7% in the Outer Zone. While this would reduce in 2025 17.1% of people in central London would still be living in areas above the $NO_2$ annual limit value, 2.2% in the Inner Zone and 0.2% in the Outer Zone.<br>• Key receptors include road users, pedestrian, residential properties, schools, hospitals, the elderly / children, care homes, open spaces, public rights of way and nature conservation sites.<br>• Without ULEZ, in 2020 the number of care homes in central London exposed to concentrations exceeding the annual mean $NO_2$ is 1.<br>• Without ULEZ, in 2020 the number of schools in central London exposed to concentrations exceeding the annual mean $NO_2$ is 27.<br>• Without ULEZ, in 2020 the number of hospitals in central London exposed to concentrations exceeding the annual mean $NO_2$ is 29.<br>• The health effects associated with short-term (acute) exposure to ambient air pollution include premature mortality (deaths brought forward), respiratory and cardio-vascular hospital admissions, exacerbation of asthma and other respiratory symptoms.<br>• Without ULEZ in 2020, 1,448 respiratory admissions would be attributable to particulate exposure. | ULEZ would result in increased personal health and wellbeing as a result of improvements to air quality as people switch to less polluting vehicles and other modes of transport e.g. public transport, walking and cycling. | Positive long term | Major | • Health benefits from reductions in air pollution and noise as a result of the proposed ULEZ can be enhanced by encouraging the use of public transport, cycling and walking.<br>• The MTS promotes walking and cycling and is supported by a number of investments in public transport and walking and cycling including:<br>- Developing Crossrail to provide a high speed rail service between the east and west of the city.<br>- Improving the Tube with extended services, new trains and stations which are easier to navigate.<br>- Making London's transport more accessible for people with disabilities and connecting up the city's more deprived areas.<br>- 1,700 hybrid double deck buses by 2016, including 600 New Routemasters.<br>- Revolutionising railways with more routes and faster journeys.<br>- Making the most of the River Thames with more pier capacity, more services and a ticketing system which is integrated with the rest of London's transport.<br>- Promoting a Cycling Revolution to encourage more journeys to be made by bicycle in London.<br>- Making Walking Count, making London an easier city to travel around by foot (GLA, 2014).<br>• TfL's Business Plan 2013 confirms investment in public transport, walking and cycling infrastructure and the Mayor's 2050 Infrastructure Investment Plan details significant investment in public transport and urban realm. | • TfL should investigate the potential expansion of ULEZ / raising of ULEZ standards in the future (i.e. post 2025) or the introduction of complementary adjacent zones for low emissions neighbourhoods. This could result in further air quality benefits. Dependent on vehicle market, infrastructure, opportunity and compliance costs at the time of investigation and public consultation. |
| | | ULEZ would result in reductions in the number of people living in areas above the $NO_2$ annual limit value in 2020 and 2025. Specifically in 2020 ULEZ would result in the following reductions of people living in areas above the $NO_2$ annual limit value:<br>• Central Zone – reduction of 74%.<br>• Inner Zone – reduction of 50%.<br>• Outer Zone – reduction of 42%. | Positive long term | Major | | |
| | | A large reduction in the number of care homes, hospitals and schools in areas exceeding the $NO_2$ AQO is projected across London compared to without ULEZ. This fall is greatest in central London and is as follows:<br>• Care homes – decrease from 1 (without ULEZ) to 0 (with ULEZ).<br>• Hospitals – decrease from 29 (without ULEZ) to 10 (with ULEZ).<br>• Schools – decrease from 27 (without ULEZ) to 4 (with ULEZ). | Positive long term | Major | | |
| | | In 2020 ULEZ would, as a result of positive health benefits (from the reduction in $NO_X$, $PM_{10}$ and $PM_{2.5}$ under the ULEZ for the GLA area), result in reductions of 4,123 life-years lost across Greater London. However this reduces in 2025.<br><br>This improved health outcome is estimated to have a total monetised benefit of £101m in 2020 and £32m in 2025. | Positive long term | Moderate | | |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Health and wellbeing** | **Noise**<br>• ULEZ would result in increased usage of low and zero emission vehicles, particularly the introduction of zero emission single-decker electric and hydrogen buses and low emission hybrid double-decker buses.<br>• The EA concluded that use of hybrid buses can offer a reduction in noise levels of around 3dB(A) or 30% compared to conventional, diesel based engines. Fully electric buses are likely to offer even greater reductions in noise and vibration.<br>• Initially, the greatest proportion of routes running low and zero emission buses will be in central London.<br>• Additional noise reductions are likely to be achieved through phasing out older taxis, with the ULEZ setting the age limit at 10 years. All newly licensed taxis and private hire vehicles are proposed to be zero emissions capable by 2018. | ULEZ would result in small health benefits as a result of reduction in noise and vibration annoyance and disruption for some receptors and communities (where overall road traffic noise along some roads decreases as a result of increased usage of low and zero emission vehicles). | Positive short-medium term | Minor | *Refer to text on previous page.* | • Reductions in noise levels could be enhanced through encouraging increased usage of hybrid, electric and hydrogen buses. Initially the greatest proportion of routes running these buses will be in central London. This could be extended into the inner and outer zones. |
| | **Active travel**<br>• The ULEZ would levy a toll on private vehicular traffic that does not meet the required low emission vehicle status.<br>• TfL expect ULEZ to reduce car use, promote sustainable travel / mode shift, increase the proportion of ultra-low or zero emission vehicles and stimulate the uptake / development of low emission vehicles.<br>• Data from a London Councils poll was used to understand residents' attitudes towards walking in London. It revealed they wanted: better road safety, better condition of pavements, a safe urban environment, a less polluted environment, a quieter urban environment, better information and way finding, more information on health benefits. | ULEZ may contribute towards the promotion of active travel by providing a less polluted urban environment and therefore creating a better environment for active travel.<br><br>For those entering the ULEZ who do not have compliant vehicles, the ULEZ may also deter them from entering the zone or result in a modal shift to greener transport modes (e.g. bus, tube, train, cycling). | Positive long term | Likely scale of impact could not be quantified with data available – expected to be minor | | None proposed. |
| | **Crime reduction and community safety**<br>• Newer vehicles tend to be safer, and are part of the reason why road safety in the UK has improved.<br>• CCTV does not have a large effect on reducing the fear of crime and therefore any increased surveillance of the ULEZ will unlikely deter the occurrence of illegal driving or street crime. Regardless, TfL are proposing to use existing CCZ infrastructure where possible.<br>• The crime rate per million passenger journeys on TfL's public transport network has decreased between 2004/2005 and 2012/2013 for all transport types (bus, London Underground / Docklands Light Rail (DLR), tramlink and overground). | ULEZ would result in small improvements in road safety as a result of an increase in newer vehicles on the road. | Short-medium term | Neutral | • The MTS provides proposals to improve safety and security including for improving public transport safety and road safety and reducing crime, fear of crime and antisocial behaviour.<br>• Additionally the Mayor has the Safe Streets for London – the Road Safety Action Plan for London 2010 and TfL continues to do a lot of work to encourage newer and safer lorries with, for example, cyclist safety features like side guards. TfL is currently consulting on a Safer Lorries scheme to require all HGVs in London to have side guards and extended view mirrors. | None proposed. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
|---|---|---|---|---|---|---|
| **Population and equality** | **Traffic, air and noise**<br>• The baseline for assessing potential impact on equality groups from ULEZ in terms of traffic noise and air quality draws heavily on the EA and HIA.<br>• The EA concluded that at a zonal level there would be overall reductions in traffic volume across London in 2020 and 2025 as a result of ULEZ.<br>• Any changes in daily traffic flows caused by a greater proportion of travellers changing mode or no longer travelling or re-routing as a result of ULEZ would likely to be extremely minor.<br>• In all groupings of Lower Super Output Areas (i.e. at all levels of deprivation) ULEZ would bring about a reduction in $NO_2$ concentrations.<br>• Over 26% of London falls within the most deprived 20% of England.<br>• Without ULEZ those in the most deprived parts of London are expected to live in areas with higher annual mean $NO_2$ concentration in both 2020 and 2025.<br>• Schools, hospitals and care homes are considered to be particularly sensitive as they house a high density of potentially vulnerable people.<br>• In central London in 2020, without ULEZ, it is forecast that 20% of care homes, over 50% of hospitals and 34% of schools will be in areas which experience exceedances of $NO_2$ AQOs. | ULEZ would result in a minor long term beneficial reduction in the average exposure to $NO_2$ for all people in 2020 and 2025 however this would be greater for those in deprived areas as the average level of reduction on $NO_2$ concentrations is higher in the most deprived areas. | Positive long term | Minor | • The Mayor has outlined a strategy of measures to tackle pollution:<br>- Cleaning up London's bus fleet.<br>- Capping the age of London's taxi and private hire fleet.<br>- Setting new and tighter standards for the London LEZ.<br>- Encouraging the update of electric and other low emission vehicles.<br>- Investing record amount in cycling (TfL, 2014).<br>• The Mayor is also supportive of:<br>- The Government to help replace the most polluting diesel cars with lower emission vehicles and giving drivers cash incentives to switch to cleaner vehicles.<br>- A new public awareness programme called Breathe Better Together to tackle air pollution at schools and an ambitious public awareness campaign to be launched in October (GLA, 2014). | None proposed. |
| | | ULEZ would have a positive differential impact on school age children, older people and pregnant women. This is as a result of the reduction of sensitive receptors (schools, care homes and hospitals) that would be in areas which experience exceedances in $NO_2$ emissions. Specifically, in central London, ULEZ would result in<br>• 0% of care homes being in areas of exceedance (compared with 20% without ULEZ)<br>• 17.5% of hospitals being in areas of exceedance (compared with 50% without ULEZ)<br>• 5% of schools being in areas of exceedance (compared with 34% without ULEZ)<br><br>The positive impacts would be major in central London, moderate in inner London and minor in outer London. | Positive long term | Moderate | | |
| | **Cars / motorcycles**<br>• The ULEZ will require some operators of cars and motorcycles to upgrade their vehicles to comply with the ULEZ emission standards or otherwise will be required to pay the ULEZ charge.<br>• Those residents within the proposed ULEZ will benefit from TfL's committed mitigation.<br>***TfL has committed to providing mitigation of the impact on all residents living in the ULEZ area, who will be granted a three year time limited 100% discount to recognise that they are unable to avoid the ULEZ area and may require more time to change their vehicle for one to meet ULEZ emissions standards.***<br>• People on lower incomes are potentially more likely to work unsocial hours with more reliance on travel by car.<br>• As noted in the EBIA, more cars enter the proposed ULEZ between 19:00 and 22:00 than between 7:00 and 10:00. While there is no breakdown of journey purpose by time of day it can be assumed that some of these people will be working in the night time economy and benefiting from no Congestion Charge.<br>• Unlike the Congestion Charge which is only payable between 7:00 and 18:00 the ULEZ charge is payable 24 hours. | ULEZ may have differential impact on low income workers who work more unsocial hours and travel to work in central London by car. This is because they may be unable to afford a ULEZ compliant vehicle or pay the charge.<br><br>This impact would be offset by complementary policies which work towards improved night time services for London's public transport system. | Short-medium term | Minor | • The MTS promotes alternative modes of travel (to the car) by a number of investments in public transport and walking and cycling.<br>• Some of these relate to improving the Tube with extended services (including 24 hours services on some lines) and new trains and stations.<br>• TfL also provide good coverage and frequency of night bus services. | • TfL should undertake targeted communication and awareness raising with affected groups.<br>• TfL should continue existing work on improvements to the coverage and frequency of night bus services and later London underground services. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Population and equality** | **Cars / motorcycles (continued)**<br>• For the CCZ, disabled people in the UK meeting the qualification criteria are eligible for the Blue Badge scheme which helps the holder park (on-street) close to a destination as a driver or passenger. Some organisations also qualify e.g. charities on a discretionary basis if they transport people with such disabilities.<br>• 3.1% of the London population are Blue Badge holders. These vehicles represent 5-7% of all movements into / out of the CCZ.<br>• In 2011, the average age of a blue badge registered petrol vehicle entering the CCZ was eight years. Assuming the age profile of vehicles is the same in 2020, approximately 16% of all petrol blue badge registered vehicles could be non-compliant when ULEZ comes into operation.<br>• In 2011, the average age of a blue badge diesel vehicle was 5 years. Assuming the age profile of vehicles is the same in 2020, approximately 45% of all diesel blue badge registered vehicles could be non-compliant.<br>• CCZ monitoring data indicates approximately 90% of Blue Badge holders who enter the zone do so less than once per month and therefore are less likely to be affected by the proposed ULEZ. The average number of trips into the CCZ (curing charging hours) is 2 per month for vehicles that do enter the zone.<br>• A proportion of Blue Badge holders will require vehicles adapted for wheelchair use. It is expected that the absolute number of non-compliant adapted vehicles will be lower than in the population as a whole, as the majority of wheelchair users rely on vehicles supplied through the Mobility scheme through which they receive VAT relief on substantially and permanently adapted vehicles.<br>• Disable residents within the proposed ULEZ will benefit from TfL's committed mitigation.<br>***TfL has committed to providing mitigation of the impact on all residents living in the ULEZ area, who will be granted a three year time limited 100% discount to recognise that they are unable to avoid the ULEZ area and may require more time to change their vehicle for one to meet ULEZ emissions standards.*** | It is not anticipated that there will be a disproportionate effect on disabled car drivers. However, it may be more difficult for disabled persons to find alternative modes of accessible transport to central London.<br><br>This impact may be offset by TfL's research and work to improve accessibility for all to London's transport. | Short-medium term | Minor | • Recent improvements across the London transport network (as identified in TfL's *Understanding the travel needs of London's diverse communities*) include:<br>- 'Turn up and go' on all London Overground stations, so that disabled people needing assistance can arrive at stations and have staff help them without needing to book.<br>- Roll out of accessible boarding ramps at many Tube stations.<br>- Staff training, particularly for bus drivers to address concerns raised by stakeholders such as wheelchair users.<br>- Programmes to improve safety and security when travelling in London, such as Project Guardian which aims to reduce incidents of unwanted sexual behaviour across the transport network (TfL, 2014).<br>• TfL's Single Equalities Scheme sets out goals and activity to remove barriers to travel in London wherever possible. It focuses on delivering:<br>- A transport system that is safe and reliable for all.<br>- Improved physical accessibility across the network.<br>- Affordable transport.<br>- Engagement with passengers and stakeholders from London's communities.<br>- Accessible information.<br>- A workspace that is representative of London's diverse communities (TfL, 2014). | None proposed. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Population and equality** | **Non-TfL buses and coaches**<br>• The EqIA focused on those services or journey types which are specifically provided for people with protected characteristics or socio-economically deprived communities including:<br>- School buses for pupils who reside outside the ULEZ but attend a school located in the ULEZ (on a daily basis).<br>- School trips for pupils in schools outside of the ULEZ who travel into the ULEZ for educational purposes (likely to be very infrequent in most cases).<br>• There would be a financial cost to vehicle operators in adapting to use ULEZ compliant vehicles from 2020 or from the need to pay the ULEZ charge if the vehicles are non-compliant.<br>• It is assumed larger operators would have the ability to move vehicles within their fleets so that only compliant vehicles operate in the ULEZ.<br>• Coaches will be used for educational and leisure trips into London by schools from across the UK and additional costs associated with complying with the ULEZ could at a worse case be passed onto local authorities and/or to individual children travelling.<br>• Most schools would hire coaches rather than own them and it is anticipated that schools will have the option of hiring from coach operators that operate ULEZ emissions compliant vehicles to avoid incurring charges from using non-compliant vehicles. | Any increase of the costs of school trips by private hire bus or coach to central London would have a differential effect on those children from low income families.<br><br>This impact may be offset by complementary policies which work towards improvements to London's public transport system. Schools could use alternative modes of transport for school trips. | Short-medium term | Minor | • School children receive free transport on TfL services (bus, underground, overground, DLR, Tramlink).<br>• The MTS identifies a number of investments in public transport (which may be used as an alternative mode of transport for school trips including):<br>- Developing Crossrail to provide a high speed rail service between the east and west of the city.<br>- Improving the Tube with extended services, new trains and stations which are easier to navigate.<br>- Making London's transport more accessible for people with disabilities and connecting up the city's more deprived areas.<br>- 1,700 hybrid double deck buses by 2016, including 600 New Routemasters.<br>- Revolutionising railways with more routes and faster journeys.<br>- Making the most of the River Thames with more pier capacity, more services and a ticketing system which is integrated with the rest of London's transport (GLA, 2014).<br>• TfL's Business Plan 2013 confirms investment in public transport infrastructure and the Mayor's 2050 Infrastructure Investment Plan details significant investment in public transport and urban realm. | • Engage in early and proactive communication of the ULEZ.<br>• TfL to work with manufacturers and government to identify ways of retrofitting coaches and provide financial support to operators for adoption of the technology. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Population and equality** | **Taxis and PHVs**<br>• ULEZ introduces a requirement for all newly licensed taxis from 2018 to be zero emission capable.<br>• The rolling age limit for conventional non zero emission capable diesel taxis will be reduced from 15 years to 10 years. TfL has committed to the following mitigation should this reduction in the rolling age limit be taken forward.<br>***TfL will establish a specific fund for drivers of older taxis to help them switch to newer vehicles. It is anticipated that grants would be offered to eligible taxi owners and that the proposed scheme would be phased from 2018 to smooth the impact of a reduced age limit in 2020.***<br>• The age profile of the taxi fleet indicates that about one-third will require replacement (many with zero emission vehicles from 2018).<br>• ULEZ will require operators of PHVs to upgrade their vehicles to comply with the ULEZ emission standards or otherwise they will be required to pay the ULEZ charge.<br>• From 2018 new PHV licences will no longer be granted to non-ULEZ compliant vehicles (i.e. Euro 6 diesel, Euro 4 petrol); and any newly licensed PHV under 18 months old will need to be zero emissions capable.<br>• Generally taxis operate predominantly in inner London, whereas PHVs trips are evenly distributed across Greater London.<br>• 40% of PHV fleet never enters central London.<br>• 65% of PHV fleet turnover are second hand vehicles.<br>• Taxis are principally a central London transport mode with 84% of all taxi trips taking place within, to or from central London and 30% beginning and ending within it.<br>• The driver profiles of taxis and PHVs are very different both in terms of age and ethnicity.<br>• Taxi drivers are older and predominantly white males; PHV drivers tend to be younger and the majority are of BAME origin.<br>• The impact of ULEZ will depend on the extent to which it will change the overall supply and geographical patterns of operation by both modes.<br>• Although a large part of the PHV market is comprised of minicabs services there are a number of other sectors e.g. executive / chauffer services community transport, school runs etc. that are licensed as PHV services in London. | Lowering the taxi age limit may have a disproportionate effect on the third of licensed taxi drivers who are older (60+) who may choose to retire early rather than upgrade to a ULEZ compliant vehicle.<br><br>This impact would be offset by TfL's committed mitigation to establish a specific fund for drivers of older taxis to help them switch to newer vehicles as well as the plug-in car and van grants from the Office for Low Emission Vehicles (OLEV), however the take up of the fund is unknown. | Short-medium term | Minor | • The plug-in car and van grants from the OLEV provides a financial incentive for businesses with a UK address that need to replace vehicles to become compliant with ULEZ standards. For a car, this is a grant of 25% towards the cost of the vehicle up to a maximum of £5,000. However, this grant is only guaranteed until 2020 and OLEV have reserved the option to review the car grant value in 2017 or once 50,000 cars have been sold, whichever comes sooner. | • TfL should continue to lobby for the extension of the existing OLEV grant beyond 2017.<br>• TfL has submitted a bid to OLEV towards grants for the purchase of new ZEC taxis and PHVs.<br>• TfL is also seeking support from OLEV for investment in supporting infrastructure (e.g. taxi charging points).<br>• TfL to continue working with the taxi industry to establish likely take up rates of a proposed financial incentive scheme for taxi replacement. |
| | | BAME are disproportionately represented as PHV drivers and therefore any additional costs from ULEZ may impact upon this group disproportionately.<br><br>This impact would be offset by the plug-in car and van grants from the OLEV, however the take up of the fund is unknown. | Short-medium term | Minor | | • Prepare easy to understand information on the likely cost of compliance for different types of PHV vehicles; this would be helpful as a means of engaging with PHV companies and licenced drivers to enable them to plan for the introduction of ULEZ.<br>• Engage in early and proactive communication with industry and ongoing monitoring of compliance in run up to 2020. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Population and equality** | **Taxis and PHVs (continued from previous page)**<br>• Although a large part of the PHV market is comprised of minicabs services there are a number of other sectors e.g. executive / chauffer services community transport, school runs etc. that are licensed as PHV services in London.<br>• The TfL report *Understanding the travel needs of London's diverse communities* (August 2014) found that in comparison with men, London's women had concerns over crime/antisocial behaviour on public transport. Further personal safety 'fear of intimation or abuse' is a barrier to travel for Lesbian, Gay, Bisexual and Transgendered (LGBT) community. | ULEZ may result in a reduction in supply of fully accessible taxis / adapted PHVs.<br><br>This impact would be offset by complementary policies which work towards improvements to London's public transport system. | Short-medium term | Minor | • There is a subsidised taxi service, funded by TfL and London boroughs (Taxicard) for people who have mobility impairments or who cannot easily use other public transport modes. The number of London Taxicards currently in circulation is 75,545 members and there were 350,000 Taxi card trips during 2012/13.<br>• The Mayor has a 3 year strategy, *The Right Direction*, to improve transport safety and security including increasing confidence in the safety and security of travelling in London.<br>• The MTS promotes measures to improve the physical accessibility of the transport system, including streets, bus stops, stations and vehicles. It also provides proposals to improve safety and security including for:<br>- Improving public transport safety.<br>- Improving road safety.<br>- Reducing crime, fear of crime and antisocial behaviour.<br>• Recent improvements across the London transport network (as identified in TfL's *Understanding the travel needs of London's diverse communities*) include:<br>- 'Turn up and go' on all London Overground stations, so that disabled people needing assistance can arrive at stations and have staff help them without needing to book.<br>- Roll out of accessible boarding ramps at many Tube stations.<br>- Staff training, particularly for bus drivers to address concerns raised by stakeholders such as wheelchair users.<br>- Programmes to improve safety and security when travelling in London, such as Project Guardian which aims to reduce incidents of unwanted sexual behaviour across the transport network (TfL, 2014).<br>• TfL's Single Equalities Scheme sets out goals and activity to remove barriers to travel in London wherever possible. It focuses on delivering:<br>- A transport system that is safe and reliable for all.<br>- Improved physical accessibility across the network.<br>- Affordable transport.<br>- Engagement with passengers and stakeholders from London's communities.<br>- Accessible information.<br>- A workspace that is representative of London's diverse communities (TfL, 2014). | • Monitor likely impact of the ULEZ on supply of taxis and adapted PHVs to anticipate any constraints on the availability of vehicles for disabled passengers. |
| | | ULEZ may have a differential effect on women and the LGBT community arising from increased fear for personal safety in central London and other town centres in Greater London at night as a result of a potential decrease of available taxis.<br><br>This impact would be offset by complementary policies which work towards safety improvements to London's public transport system. | Short-medium term | Minor | | • Continue improvements to the coverage and frequency of night bus services and later London underground services.<br>• Continue work on safer travel at night campaign.<br>• TfL should continue to lobby for the extension of the existing OLEV grant beyond 2017.<br>• TfL has submitted a bid to OLEV towards grants for the purchase of new Zero Emissions Capable (ZEC) taxis and PHVs. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Population and equality** | **Vans and minibuses**<br>• Around 900 minibuses enter the CCZ 50 times a year or more and account for nearly 60% of all entries into the zone for this vehicle type.<br>• The ULEZ will require operators of vans to upgrade their vehicles to comply with the ULEZ emission standards or otherwise will be required to pay the ULEZ charge.<br>• Euro 6 diesel vans and minibuses will not be available until 1 September 2016, four years prior to operation of ULEZ.<br>• The ULEZ charge is £12.50 which is lower than the equivalent charge for LEZ which is £100 in order to mitigate costs of compliance.<br>• Van ownership is broadly split 50:50 between companies and private owners showing the importance of vans to owner run businesses.<br>• Evidence indicates that London's BAME community are disproportionately represented as business owners in the wholesale and retail business; a sector which has high levels of van use.<br>• The total BAME population in the ULEZ area is predicted to increase from 30% in 2011 to 33% in 2025, together with a corresponding decrease in white ethnicity.<br>• 'Dial a Ride' is a service directly operated by TfL providing door to door transport for older and disabled people in London who cannot always use buses, trains or the Tube. It mainly uses minibuses of eight seats, with a few larger vehicles. Costs associated with compliance will be borne by TfL. | The costs of compliance associated with ULEZ may have a disproportionate impact on BAME businesses using vans in central London due to their disproportionate representation in the retail and wholesale industry in Greater London; a sector which makes high use of this type of vehicle.<br><br>This impact would be offset by the plug-in car and van grants from the OLEV, however the take up of the fund is unknown. | Short-medium term | Minor | • The plug-in car and van grants from the OLEV provides a financial incentive for businesses with a UK address that need to replace vehicles to become compliant with ULEZ proposals. For a van this is a grant of 20% towards the cost of the vehicle up to a maximum of £8,000. However, this grant is only guaranteed until 2020 and OLEV have reserved the option to review the car grant value in 2017 or once 50,000 cars have been sold, whichever comes sooner.<br>• TfL commissioned some research to investigate the likely impact of the ULEZ on independent businesses, particularly BAME owned/managed businesses. This research found that the introduction of ULEZ would not have a greater impact on establishments that are BAME owned/managed. | • TfL should continue to lobby for the extension of the existing OLEV grant beyond 2017.<br>• Opportunity for TfL to work with SME business representatives in retail and wholesale sectors in order to identify potential measures which could help to mitigate the anticipated impact.<br>• Investigate the feasibility of establishing consolidation centres on the edge of the proposed ULEZ with goods being transferred to low emission vehicles for onward movement into the ULEZ.<br>• Engage in early and proactive communication of the ULEZ.<br>• TfL should secure money in their business plan to assist dial-a-ride fleet where necessary. |
| | | Increased cost of access to central London by minibus may have differential impact on those groups reliant on charitable or voluntary services (e.g. disabled, older people, faith groups). | Short-medium term | Minor | • There is a subsidised taxi service, funded by TfL and London boroughs (Taxicard) for people who have mobility impairments or who cannot easily use other public transport modes. The number of London Taxicards currently in circulation is 75,545 members and there were 350,000 Taxi card trips during 2012/13. | |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **London's economic competitive-ness** | **Air quality**<br>• There is a health 'burden' associated with absolute levels of pollutant concentrations including for chronic mortality, respiratory and cardiovascular hospital admissions.<br>• The central value of these 'burdens' are £35,000 for chronic mortality, £2,600-£10,700 for respiratory hospital admission and £3,000-£9,900 for cardiovascular admissions.<br>**HGVs**<br>• Retail and wholesale distribution, and construction are the main sectors served by HGVs.<br>• It is anticipated that the vast majority of businesses that have HGVs regularly entering the proposed ULEZ will continue to do so with minimal impact on the sector or on London's economy as a whole.<br>**LGVs**<br>• LGVs are used across all sectors of London's economy, from servicing financial and business service companies to supporting independent retailers and food outlets.<br>• A relatively small proportion of LGVs will be compliant without further investment by operators.<br>**Cars**<br>• People who travel to work by car usually do so outside of normal commuting hours. It is assumed that some of these people benefit from free parking and no Congestion Charge.<br>**Non-TfL buses, coaches and minibuses**<br>• 15,000 vehicles entering the proposed ULEZ in 2014 were minibus type vehicles operating: scheduled services; inter-company shuttles for multi-site operators and airport-hotel link services; and services relating to private hire and private uses (by schools, and clubs).<br>• 25,000 vehicles entering the proposed ULEZ in 2014 were buses and larger coaches.<br>**Taxis**<br>• There are more than 22,000 licensed taxis in London and nearly 25,000 taxi drivers, the vast majority of which operate within central London.<br>• 84% of all taxi trips take place within, to or from central London; 30% beginning and ending within it. On an average day, about 185,000 passenger-carrying taxi journeys are made carrying 278,000 passengers.<br>• It is estimated that around a fifth of taxi passenger trips are made by overseas visitors and a further fifth by domestic visitors to London.<br>**PHVs**<br>• PHVs are split into minicab operators and chauffeur / executive services.<br>• Minicabs are estimated to carry around 230,000 passengers a day and chauffeur/executive services a further 50,000 a day.<br>• Minicabs are mostly used in outer London and executive services are more dispersed, although there is a high proportion of airport related trips. | ULEZ may provide for London to become a more attractive city for business and tourists as a result of improvements to air quality and subsequent health impacts. | Positive long term | Minor | • The Mayor's Economic Development Strategy sets out his vision with respect to the London economy and how it can be realised. | • Opportunity for positive publicity campaign to promote public awareness of the benefits for the ULEZ. |
| | | The health benefits from ULEZ will result in an economic benefit associated with reductions in air pollution. The valuation of health improvement captures a number of economic impacts, including direct impact on the utility of the affected individual, reduction in medical costs and increase in productivity.<br><br>The improved health outcomes arising from the reduction in $NO_X$, $PM_{10}$ and $PM_{2.5}$ under the ULEZ for the GLA area are estimated to have a total monetised benefit of £101m in 2020 and £32m in 2025. | Positive long term | Moderate | | None proposed. |
| | | In the first year of operation, ULEZ may result in a loss of 0.03-0.08% to the London economy broken down as follows:<br>• 0.4% to the retail sector<br>• 0.05% to the construction sector<br>• 0.4% to the accommodation / catering sector<br>• 1-2% to the night time economy<br>• 1% to the coach sector<br>• 0.2% to the tourist sector<br><br>This impact will decline quickly as levels of compliance increase. Further some of the cost of compliance (e.g. vehicle replacement and retrofitting) will be spent with other London businesses so it is not a total loss to the London economy while some operators impacted are not based in London so the net impact on London's economy will be less than this figure. In addition operators that purchase new vehicles should experience reduced operating and maintenance costs. In future years the cost will fall as a higher proportion of vehicles become compliant, so that by 2025 the cost will reduce to virtually zero with the exception of LGV operators. | Short-medium term | Minor | • The Mayor's Transport Strategy is supported by a number of investments in public transport and walking and cycling.<br>• The plug-in car and van grants from the OLEV provides a financial incentive for businesses with a UK address that need to replace vehicles to become compliant with ULEZ proposals. For a car, this is a grant of 25% towards the cost of the vehicle up to a maximum of £5,000 and for a van this is a grant of 20% towards the cost of the vehicle up to a maximum of £8,000. However, this grant is only guaranteed until 2020 and OLEV have reserved the option to review the car grant value in 2017 or once 50,000 cars have been sold, whichever comes sooner. | • TfL to work with manufacturers and government to identify ways of retrofitting coaches and provide financial support to operators for adoption of the technology.<br>• Investigate further ways of working with the Government to provide financial assistance to operators of vehicles to replace non-compliant vehicles with compliant vehicles, including support for the Mayor's call for a diesel scrappage scheme and investigation of its application to HGVs. |
| | | | | | | • Continue improvements to the coverage and frequency of night bus services and later London underground services throughout the week.<br>• Raise awareness of the availability of night time public transport services.<br>• TfL should lobby for the extension of the existing OLEV grant beyond 2017/2018. |

| IIA topic | Baseline for assessment | Positive and negative impacts of the ULEZ | Duration of impact | Scale of impact | Complementary policies (in additional to ULEZ) | Opportunities for enhancement or mitigation suggested for further investigation by TfL |
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| **Small to medium sized enterprises** | **HGVs**<br>• It is envisaged that between 10-20% of non-compliant HGVs that regularly enter London will be replaced by bringing forward purchase decisions by 12 months.<br>• Increased costs would be incurred by businesses across London, the South East and, to a lesser extent, the rest of the UK.<br>• The ability of operators to pass on costs to customers would depend on the proportion of compliance within the sector and the degree of competition between operators.<br>• It is estimated that 95% of fleet operators with more than 10 vehicles registered may be able to reallocate vehicles to ensure that only compliant vehicles enter the ULEZ. For smaller fleet operators, it is estimated that this falls to around 75%.<br>**LGVs**<br>• It will not be possible to retrofit non-compliant LGVs to meet the proposed ULEZ requirements. LGV operators can either buy new vehicles or switch to second hand petrol vehicles.<br>• A proportion of local commuter services, sight-seeing vehicles and tourist coaches will not be compliant by 2020.<br>• 10-30% of non-compliant vehicles that regularly enter the proposed ULEZ may be replaced by bringing forward purchase decisions by up to 24 months.<br>• Given the high proportion of non-compliant LGVs, thereby reducing competition between operators, operators may be able to pass additional costs on to customers.<br>**Coaches**<br>• A proportion of local commuter services, sight-seeing vehicles and tourist coaches will not be compliant by 2020.<br>• 10-30% of non-compliant vehicles that regularly enter the proposed ULEZ may be replaced by bringing forward purchase decisions by up to 24 months.<br>• Some fleet operators will also be able to reallocate vehicles to ensure compliance.<br>**Taxis**<br>• If the reduction in the maximum age of non zero emission capable taxis from 15 to 10 years, is taken forward with ULEZ, around a third of taxis will need to be replaced sooner than required.<br>**PHVs**<br>• The majority of minicab trips do not enter the proposed ULEZ and large fleet operators may have some flexibility in moving vehicles around.<br>• Other PHV operators, in particular tour guides and those who operate contracts for local authorities, may use different types of vehicles to those commonly used for minicab purposes given the nature of the work they do. | The total costs to businesses of either complying with the proposed ULEZ or paying the charge is expected to be around £120-250m in the first year which will fall disproportionately on SMEs but will diminish over time as the proportion of vehicles becoming compliant increases. | Short-medium term | Minor | • The plug-in car and van grants from the OLEV provides a financial incentive for businesses with a UK address that need to replace vehicles to become compliant with ULEZ proposals. For a car, this is a grant of 25% towards the cost of the vehicle up to a maximum of £5,000 and for a van this is a grant of 20% towards the cost of the vehicle up to a maximum of £8,000. However, this grant is only guaranteed until 2020 and OLEV have reserved the option to review the car grant value in 2017 or once 50,000 cars have been sold, whichever comes sooner.<br>• The Mayor's TERM provides details on the Mayor's Air Quality Fund, an initial fund of £6m from 2013/2014 to 2015/2016 with expectations for this to continue to £20m. It provides for local boroughs to apply to become Cleaner Air Boroughs and use funding towards delivering innovative air quality improvement projects. One example could be to help establish consolidation centres and promote alternative vehicles. | • TfL should continue to lobby for the extension of the existing OLEV grant beyond 2017/2018.<br>• Opportunity to identify and work with representatives (e.g. BIDs) of SMEs in those sectors of the economy which are most likely to be impacted in order to identify potential measures to help mitigate this impact.<br>• Examine the feasibility of establishing consolidation centres on the edge of the proposed ULEZ with goods being transferred to low emission vehicles for onward movement into the ULEZ.<br>• TfL could support more initiatives like Plugged in Fleets Initiatives (PiFi) which provided consultancy advice to businesses on switching to low emission electric or PHEVs.<br>• TfL could raise awareness of options other than vehicle ownership such as other forms of freight transport and van sharing clubs. |
| | | ULEZ may result in a reduction in competition between, and diversity of, SMEs as a result of the cost of around 0.03-0.08% of the annual value of London's economy of £300bn in the first year of operation. | Short-medium term | Minor | | |

***Table 5-A Summary assessment table***

# 6 Meeting IIA Objectives

6.1.1 Table 6-A summarises how the impacts of the proposed ULEZ will contribute towards each of the IIA objectives.

| IIA Topic | IIA Objective | How is it met? |
|---|---|---|
| Air quality | To contribute to a reduction in air pollutant emissions and compliance with EU limit values | ULEZ would result in a reduction of the number of sensitive receptors currently exposed to $NO_2$ exceedances with almost 18,000 properties no longer being exposed. The majority of these (almost 10,000) are in the ULEZ area. |
| Noise | To reduce disturbance from general traffic noise | ULEZ would result in a reduction in noise levels. This is mainly as a result of the introduction of zero emission single-decked electric and hydrogen buses and low emission hybrid double-decker buses. Noise from these vehicles will reduce by approximately 3dB(A) or 30% compared to conventional diesel based engine buses. This will be supported through replacement of old taxi fleet with zero emission capable vehicles.<br>On its own a reduction of 3dB(A) for every hybrid bus would not represent a major improvement in noise across London. However, the cumulative impact of all the buses on these routes put together (anticipated to be 1,700 hybrid buses by 2016) could be substantial. |
| Climate change | To reduce $CO_2$ emissions and contribute to the mitigation of climate change | With ULEZ the total road traffic $CO_2$ emissions in London would reduce by 123,000 tonnes per annum in 2020 (from the baseline of 6.4 million tonnes per annum) and 169,000 tonnes per annum in 2025 (from the baseline of 6.37 million tonnes per annum). This equates to overall reductions of 2 per cent in 2020 and 3 per cent in 2025.<br>Whilst reductions of 2 per cent of total transport emissions in 2020, and 3 per cent in 2025, are relatively small when compared to London's forecast total transport $CO_2$ emissions, the primary objective of the ULEZ is to improve air quality. Therefore, any contribution towards the Mayor's target of reducing total emissions in London by 60% against 1990 levels by 2025 should be regarded as positive.<br>It is anticipated that total transport sector $CO_2$ emissions will need to be in the range of 5.3 to 4.6m tonnes in 2025 to meet the Mayor's target. |

| IIA Topic | IIA Objective | How is it met? |
|---|---|---|
| Biodiversity including flora and fauna | To protect and enhance the natural environment, including biodiversity, flora and fauna | ULEZ would result in a positive effect on a variety of habitats and nature conservation sites, and subsequently habitats residing in conservation sites across London (specifically sites in the Hampstead Heath Woods in Camden, Hainault Forest in Redbridge and in Hillingdon). This is as a result of decrease in $NO_x$ emissions (by tonnage and percentage).<br>Decreases in $NO_x$ emissions can help to reduce dominance by species which favour nitrogen overloading. It can also help lower rates of acidification which limits the number and type of species which can survive in such conditions. |
| Cultural heritage | To protect and enhance historic, archaeological and socio-cultural environment | There will be a reduced risk of acid rain on cultural heritage assets as a result of $NO_x$ reductions (particularly within the CCZ). |
| Water | To protect and enhance river spaces and waterways through planning and operation | Not applicable – outside of scope |
| Material resources and waste | To promote more sustainable resource use and waste management | ULEZ could help to achieve the IIA objective of promoting more sustainable resource use and waste management if the material inputs of the new fleets are sourced from recycled or recovered materials where possible. This could help to support development of waste management and recycling facilities in London which may resolve any future issues surrounding the management of waste products from the replaced vehicle fleets. |
| Landscape, townscape and urban realm | To protect and enhance the built environment and streetscape | ULEZ would result in some change to London's landscape and streetscape due to:<br>• the implementation of infrastructure required to support changing vehicle fleet composition; and<br>• the supporting transition to low and zero emission vehicles through introduction of new commercial vehicle rapid charging points.<br>These changes are likely to be minimal as wireless charging technology becomes available. Any potential negative streetscape impacts of new signage can be mitigated through sensitive design and integration of signage with CCZ. |
| Health and wellbeing | To contribute to enhanced health and wellbeing for all within London | ULEZ would promote improved personal health and wellbeing as a result of:<br>• improvements to air quality as people switch to less polluting vehicles;<br>• increased use of public transport and walking and cycling as an alternative mode of transport (mode shift from car as a result of the ULEZ); and<br>• decrease in the use of private cars for short journey trips in central London.<br>Additionally, a large reduction in the number of care homes, hospitals and schools in exceedance areas for $NO_2$ is projected across London as a result of ULEZ. This fall is greatest in the central Zone and is as follows: |

| IIA Topic | IIA Objective | How is it met? |
|---|---|---|
| | | • Care homes – decrease from 1 (without ULEZ) to 0 (with ULEZ).<br>• Hospitals – decrease from 29 (without ULEZ) to 10 (with ULEZ).<br>• Schools – decrease from 27 (without ULEZ) to 4 (with ULEZ). |
| Population and equality | To enhance equality and social inclusion | ULEZ promotes equality and social inclusion through the significant improvements in air quality it will provide across London's communities, as well as reductions in noise in central and inner London through the introduction of quieter vehicles.<br>In terms of its effect on access to the transport network ULEZ will have a largely neutral impact, on most people. However, there are a small number of potential differential or disproportionate impacts on particular equality groups within London. TfL would address these impacts through their extensive surveys, research and consultation that they undertake to understand the way people travel, what the barriers to travel are and what they can do to address any issues raised. TfL has developed a Single Equality Scheme which sets out their goals and activity to remove barriers to travel in London wherever possible for all (TfL, 2014). |
| London's economic competitiveness | Provide an environment which will help to attract and retain internationally mobile businesses | ULEZ would result in improvements to air quality and subsequent health benefits (refer to HIA and EA for detail). Offsetting the cost on businesses and consumers are the economic benefits arising from improved health and reduced impacts on the NHS. The improved health outcomes arising from the reduction in $NO_X$, $PM_{10}$ and $PM_{2.5}$ under the ULEZ for the GLA area are estimated to have a total monetised benefit of £101m in 2020 and £32m in 2025.<br>Improved air quality would also make central London a pleasanter place to work, live and visit. The impact on visitor numbers of this benefit cannot be quantified but it is notable that Beijing (albeit with far greater problems than London) reported last year a significant decline in tourist numbers due to poor air quality (Associated Press, 2013) and shows that air quality is a factor for people deciding which locations to visit |
| SMEs | Support the growth and creation of SMEs | ULEZ may result in a reduction in competition between, and diversity of, SMEs as a result of the cost of around 0.03-0.08% of the annual value of London's economy of £300bn in the first year of operation. This impact will be offset by costs of compliance being spent with other London businesses so it is not a total loss to the London economy. Additionally some operators impacted are not based in London so the net impact on London's economy will be less than this figure.<br>TfL can further offset impacts on SMEs and achieve this IIA objective through existing complementary policies and suggested mitigation measures (refer to Table 5-A). |

***Table 6-A Summary of ULEZ against IIA objectives***

# 7 Summary and Further Recommendations

7.1.1 As shown in Table 5-A the assessment results also show the ULEZ will result in many positive impacts, particularly in terms of the ULEZ contribution towards environmental and health objectives. There are no major or moderate negative impacts identified. Some minor negative impacts have been identified, however these can be appropriately mitigated as detailed above.

## 7.2 Positive impacts of ULEZ

7.2.1 Overall the assessment concludes that the ULEZ will make a strong and lasting positive contribution to London's environment and the health and wellbeing of those who live, work and visit it. Without ULEZ, London (and central London in particular) is forecast to experience an ongoing decline in air quality, primarily as a result of vehicle emissions and the associated implications for public health.

7.2.2 The positive impacts resulting from ULEZ are in contrast to the do-nothing scenario and are summarised as follows.

### (a) Environment

7.2.3 ULEZ would lead to improvements in air quality particularly in central London.

7.2.4 A substantial number of sensitive receptors would no longer be exposed to exceedances of the $NO_2$ Air Quality Objective as a result of the ULEZ.

7.2.5 ULEZ would result in direct reductions in $CO_2$ emissions through increased uptake of low and zero emission vehicles and greater compliance with more stringent EURO fuel standards.

7.2.6 There may be further indirect reductions of $CO_2$ through increased use of other transport modes such as public and non-motorised transport.

7.2.7 ULEZ, through the introduction of hybrid buses, can offer reductions in noise levels where compared to conventional petroleum-based engines.

7.2.8 ULEZ would have a positive impact on a variety of habitats and nature conservation sites in London, particularly woodland, grassland, heathland and wetland habitats.

7.2.9 ULEZ would have positive impacts upon cultural heritage features in London through reductions in $NO_x$ emissions, which can cause acid rain, and reductions in $PM_{10}$ which can cause soiling and discolouration of historic buildings.

### (b) Health and wellbeing

7.2.10 Improved air quality would make central London a more pleasant place to work, live and visit and would encourage personal health and wellbeing (e.g. increased use of public transport, walking and cycling as alternative modes of travel).

### (c) Population and equality

7.2.11 ULEZ would have a positive differential impact on school age children, older people and pregnant women due to a reduction in the number of sensitive receptors (e.g. residential properties, hospitals and schools) which are located in areas that experience exceedances of $NO_2$ AQO.

### (d) Economic

7.2.12 ULEZ would result in positive impacts on the economy arising from improved health and reduced impacts on the NHS. The improved health outcomes arising from the reduction in $NO_X$, $PM_{10}$ and $PM_{2.5}$ under the ULEZ for the GLA area are estimated to have a total monetised benefit of £101m in 2020 and £32m in 2025.

## 7.3 Other impacts of ULEZ

7.3.1 This IIA acknowledges that there are likely to be some potentially negative consequences of ULEZ as follows.

### (a) Environment

7.3.2 An increase in demand for low and zero emission vehicles as a result of the ULEZ could have environmental impacts in terms of the material inputs required to manufacture them and the waste materials that would be produced from disposal of existing vehicle fleets.

7.3.3 Introduction of new low and zero emission bus, taxi and PHV fleets may have a negative impact on the landscape and urban realm as it would create demand for electric charging facilities and associated infrastructure across London. New infrastructure may also be required to support hydrogen vehicles, as these would need to be refuelled. Sensitive design of this infrastructure would be important in minimising any impact on London's landscape and streetscape.

### (b) Population and equality

7.3.4 ULEZ may have a differential impact on some equality groups, including:

- *female night workers in central London who currently drive to work by car and would be unable to afford a ULEZ compliant vehicle or pay the charge;*
- *school children from low income families as a result of increased costs in school trips by coach;*
- *disabled persons who might have difficulties finding an alternative mode of accessible transport to central London;*
- *women and the LGBT community who fear for personal safety as a result of potential decrease in available taxis;*
- *older taxi drivers who may choose to retire early rather than upgrade to a ULEZ compliant vehicle;*
- *BAME PHV drivers where the PHV is registered to a SME; and*
- *those groups that rely on charitable or voluntary services to access central London.*

### (c) Economic

7.3.5 ULEZ would result in an economic cost felt by SMEs as well as the tourism sector due to the financial implications for coach operators. A number of mitigation measures have been identified that would help minimise these.

## 7.4 Mitigation and enhancement

7.4.1 TfL are already proactively seeking ways to mitigate potential impacts of ULEZ (in addition to those mitigation measures they have already committed to and that were embedded into the assessment of the ULEZ), these include:

- *investment in public transport, walking and cycling infrastructure including (but not limited to) increasing the coverage and frequency of night bus services, 24 hour London underground services on some lines and promoting a cycling revolution;*
- *utilising existing CCZ infrastructure (e.g. cameras and signs);*
- *promotion of the grant from the OLEV which provides a financial incentive for businesses with a UK address that need to replace vehicles to become compliant with ULEZ proposals; and*
- *promotion of the Mayor's Air Quality Fund which provides for local boroughs to apply to become Cleaner Air Boroughs and use funding towards delivering innovative air quality improvement projects.*

7.4.2 In addition, we recommend TfL take the following actions to ensure that any negative impacts identified in this report are fully understood and mitigated.

### (a) Early and proactive engagement and research:

7.4.3 TfL should engage in early and proactive communication of the ULEZ. In particular, TfL should:

- *consult with the GLA, the Department for Environment, Food and Rural Affairs, the Environment Agency and waste management facility operators on waste management strategies to ensure any TfL policies encourage safe storage, reuse and disposal of hazardous vehicle components as already specified in EU regulations;*
- *work closely with technology providers to ensure new infrastructure (e.g. charge point locations) meets London's needs and is in keeping with existing streetscape where possible;*
- *work with the taxi industry to establish likely take up rates of a proposed financial incentive scheme for taxi replacement;*
- *consult with charitable organisations to understand type and age of vehicle fleet and frequency of trips in CCZ;*
- *work with SME business representatives in retail and wholesale sectors to identify potential measures to help mitigate impacts on them;*
- *conduct stated preference research to understand likely mode shift response of different groups to a reduction in availability of taxis in central London;*
- *promote environmental benefits of ULEZ and implementation of complementary policies (e.g. relating to improving London's air quality) to residents of Greater London and visitors;*
- *undertake further work to fully assess and understand the implications for taxi fares as a result of any change in purchase price of taxis; and*

- *investigate further ways of working with the Government to provide financial assistance to operators of vehicles to replace non-compliant vehicles including support for the Mayor's call for a diesel scrappage scheme and investigation of its application to HGVs.*

**(b) Recommendations for enhancement:**

7.4.4 TfL should also consider the following as ways to enhance the benefits of ULEZ:

- *investigate the potential expansion of ULEZ / raising of ULEZ standards in the future (i.e. post 2025). This could result in further air quality benefits;*
- *investigate and adopt recycling options for vehicle components from replaced existing fleets and encourage private vehicle owners to do the same;*
- *for TfL vehicles, utilise existing facilities for disassembling batteries and recovering valuable materials such as cobalt and copper;*
- *examine ways of providing financial assistance at a national level for small businesses to replace non-compliant vehicles with compliant vehicles; and*
- *lobby for an extension of the existing OLEV grant should it expire. While guaranteed until 2020, OLEV has reserved the option to review the car grant value in 2017 or once 50,000 cars have been sold, whichever comes sooner.*

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# 9 Acronyms

| | |
|---|---|
| AQO | Air Quality Objective |
| BAME | Black, Asian, Minority Ethnic |
| CAZ | Central Area Zone |
| CCZ | Congestion Charging Zone |
| $CO_2$ | Carbon Dioxide |
| EA | Environmental Assessment |
| EBIA | Economic and Business Impact Assessment |
| EqIA | Equalities Impact Assessment |
| EU | European Union |
| GLA | Greater London Authority |
| GLAA | Greater London Administrative Area |
| HGV | Heavy Good Vehicle |
| HIA | Health Impact Assessment |
| IIA | Integrated Impact Assessment |
| IRR | Inner Ring Road |
| LAEI | London Atmospheric Emissions Inventory |
| LGBT | Lesbian, Gay, Bisexual and Transgender |
| LGV | Light Goods Vehicle |
| LV | Limit Value |
| MAQS | Mayor's Air Quality Strategy |
| MTS | Mayor's Transport Strategy |
| NHS | National Health Service |
| $NO_2$ | Nitrogen Dioxide |
| OLEV | Office for Low Emission Vehicles |
| PHV | Private Hire Vehicle |
| PM | Particulate Matter |
| SEA | Strategic Environmental Assessment |
| SME | Small to Medium Sized Enterprise |
| TERM | Transport Emissions Roadmap |
| TfL | Transport for London |
| ULEZ | Ultra Low Emission Zone |

# Appendix 1 – IIA framework for the ULEZ

| Assessment | IIA Topic | IIA Objective | IIA Sub-Objective | Assessment Guiding Questions |
|---|---|---|---|---|
| Environmental | Air quality | To contribute to a reduction in air pollutant emissions and compliance with EU limit values (from Scoping Report). | | • Reduce emissions to air?<br>• Reduce exposure to air pollution across London and address the disproportionate impacts felt by socio-economically disadvantaged communities?<br>• Contribute to effective traffic management to reduce local air pollutant emissions? |
| | Noise | To reduce disturbance from general traffic noise (from Scoping Report). | | • Reduce noise levels?<br>• Contribute to effective traffic management to reduce local noise emissions? |
| | Climate Change | To reduce CO2 emissions and contribute to the mitigation of climate change (from Scoping Report). | | • Promote the use of cleaner technologies and renewable energy?<br>• Promote smart travel options for all, promoting more sustainable modes of travel?<br>• Help develop more efficient and sustainable freight transportation?<br>• Encourage more efficient business and commercial supply patterns?<br>• Encourage uptake of green/cleaner fuels and energy sources? |
| | Biodiversity including flora and fauna | To protect and enhance the natural environment, including biodiversity, flora and fauna (MTS IIA Objective F4). | | • Protect and enhance local biodiversity?<br>• Protect local flora and fauna? |
| | Cultural Heritage | To protect and enhance the historic, archaeological and socio-cultural environment (MTS IIA Objective F / F3). | | • Protect designated and non-designated key historic, archaeological and cultural features or assets of value through inclusive design and management?<br>• Improve the use of the urban public realm by improving its attractiveness and access for all? |
| | Water | To protect and enhance riverscapes and waterways through planning and operations (MTS IIA). | | • Seek to minimise new development in areas prone to flood risk or mitigate the potential for such risk?<br>• Protect and enhance the character and use of London's riverscapes and waterways?<br>• Contribute to the sustainable use of waterways for passenger and freight transport? |
| | Material Assets | To promote more sustainable resource use and waste management (MTS IIA Objective F1). | | • Promote smart travel options for all, including reducing distance travelled and the need to travel, as well as promoting more sustainable modes of travel? |

| Assessment | IIA Topic | IIA Objective | IIA Sub-Objective | Assessment Guiding Questions |
|---|---|---|---|---|
| | Townscape/Landscape | To protect and enhance the built environment and streetscape (MTS IIA Objective F2). | | • Protect and enhance the built environment around key transport facilities, including removing barriers to use?<br>• Protect and enhance the character, integrity and liveability of key streetscapes, including removing barriers to use?<br>• Promote integrated, improved access for all within existing built environments and their landscapes through inclusive design and management?<br>• Protect and enhance valued/important built environment and streetscape settings through inclusive design and management?<br>• To promote active travel within streetscapes and surrounding environments? |
| Health | Health and Wellbeing | To contribute to enhanced health and wellbeing for all within London | To address health inequalities and factors which negatively impact upon health and wellbeing | • Help to reduce health inequalities and key contributory factors to this?<br>• Support the physical and mental health and wellbeing of communities, particularly those disproportionately affected by inequality?<br>• Address factors which can negatively impact upon health and wellbeing, including:<br>  ○ Reduce annoyance caused by transport noise (air, rail, underground and road traffic)?<br>  ○ Reduce exposure to air pollution?<br>  ○ Improve the quality of the travelling experience for all users and potential users of the London transport system?<br>  ○ Reduce or mitigate community severance through sustainable transport planning? |

| Assessment | IIA Topic | IIA Objective | IIA Sub-Objective | Assessment Guiding Questions |
|---|---|---|---|---|
| | | | To promote enhanced health and wellbeing for all | • Help promote enhanced health and wellbeing through addressing key influences of health, including:<br>  ○ Access to healthier and sustainable travel options including walking and cycling?<br>  ○ Access to safe transport facilities and services?<br>  ○ Access to employment and training?<br>  ○ Access to local/community facilities?<br>  ○ Access to leisure, sporting and cultural facilities?<br>  ○ Access to open space and green space?<br>  ○ Access to liveable streets and neighbourhoods?<br>  ○ Enhancing the social capital of areas/communities?<br>• Improve access for all, in particular, Deaf, disabled and older people, through the use of inclusive design to support sustainability?<br>• Encourage the use of public transport by all sections of the community – including actions to promote access to |
| | | | Improve air quality and the noise climate across London | • Reduce exposure to air pollution across London and address the disproportionate impacts felt by socio-economically disadvantaged communities?<br>• Contribute to effective traffic management to reduce local air pollutant emissions and noise levels?<br>• Encourage the use of more sustainable travel options and modes of transport such as public transport, walking and cycling and reduce car dependency and use, across all London's communities?<br>• Promote uptake of greener/clean technologies and renewable energy provision across all transport providers and private car users? |
| Equalities | Population and Equality | To enhance equality and social inclusion | To ensure no protected and disadvantaged residents of London receive disproportionate or differential adverse impacts from traffic, emissions and noise as a result of the scheme. | • Reduce emissions to air and noise, experienced by protected and disadvantaged residents of London?<br>• Facilitate social inclusion through the removal of barriers?<br>• Minimise the adverse impact of freight transport on protected groups and disadvantaged communities |

| Assessment | IIA Topic | IIA Objective | IIA Sub-Objective | Assessment Guiding Questions |
|---|---|---|---|---|
| | | | To give all users and potential users equal opportunity to access the London transport system and sustainable transport choices | • Encourage the use of public transport, walking and cycling by all sections of the community?<br>• Improve the accessibility of communities/areas across London, in particular, those experiencing exclusion?<br>• Enhance access for individuals to employment and training opportunities, in particular for those protected and disadvantaged?<br>• Take into account the different experiences of all users and potential users of London's transport system when planning, designing and delivering services?<br>• Reduce the barriers for Small and Medium Enterprises owned by those protected and disadvantaged groups?<br>• Increase accessibility to key services and facilities for all? |
| Economic and Business | London's economic competitiveness | Provide an environment that is conducive to economic growth | Provide high quality environment will help to attract and retain internationally mobile businesses | • Provide an environment that will help to attract and retain internationally mobile businesses<br>• Control costs to doing business in central London<br>• Encourage the use of innovative ways to deliver goods and services in central London<br>• Attract employees from across the city |
| | Small to Medium sized Enterprises (SMEs) | Support the growth and creation of SMEs | Encourage the development of new businesses in new and growth sectors | • Reduce the barriers for Small and Medium Enterprises<br>• Attract entrepreneurs through a high quality environment |