

Variation Order 1

Integrated Impact Assessment

Final Report
May 2010

Prepared for

Revision Schedule

Variation Order 1 Integrated Impact Assessment May 2010

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	20/04/2010	Draft Final	Colin Bush Principal Environmental Specialist	Jeremy Richardson Technical Director	Jeremy Richardson Technical Director
02	17/05/2010	Draft Final (v2)	Petrina Rowcroft Senior Environmental Economist	Jeremy Richardson Technical Director	Jeremy Richardson Technical Director
03	27/05/2010	Final	Evriliki Kaliakatsou Environmental Economist	Petrina Rowcroft Senior Environmental Economist	Jeremy Richardson Technical Director

This document has been prepared in accordance with the scope of Scott Wilson's appointment with its client and is subject to the terms of that appointment. It is addressed to and for the sole and confidential use and reliance of Scott Wilson's client. Scott Wilson accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of the Company Secretary of Scott Wilson Ltd. Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document do not provide legal or tax advice or opinion.

© Scott Wilson Ltd 2009

Scott Wilson
6-8 Greencoat Place
London
SW1P 1PL

Tel: 0207 798 5000
Fax: 0207 798 5001

www.scottwilson.com

Table of Contents

1	Introduction	1
1.1	Purpose of the Integrated Impact Assessment	1
1.2	Scope of the integrated impact assessment.....	1
2	Background and role of the Western Extension Zone.....	4
2.1	The creation of the Western Extension Zone	4
2.2	The geographical area & temporal scope within which WEZ operates	4
2.3	The role of congestion charging and WEZ	5
2.4	Non-statutory consultation to consider the removal of the WEZ	6
3	Setting the context: baseline conditions within the Western Extension area.....	8
3.1	Introduction.....	8
3.2	Baseline conditions	8
4	Traffic and emissions impacts.....	20
4.1	Introduction.....	20
4.2	Explanation of impacts	24
4.3	Mitigation and caveats.....	25
5	Assessment of the impact of removing WEZ on the economy.....	31
5.1	Introduction.....	31
5.2	Policy context	31
5.3	Methodology	33
5.4	Likely significant effects.....	35
5.5	Conclusions	39
5.6	Mitigation	40
5.7	Monitoring.....	40
6	Equalities Impact Assessment.....	41
6.1	Introduction.....	41
6.2	Policy context	41
6.3	Methodology	43
6.4	Likely significant effects.....	46
6.5	Conclusions	55
6.6	Mitigation	55

6.7	Monitoring.....	56
7	Health Assessment	57
7.1	Introduction.....	57
7.2	Policy context	57
7.3	Methodology	59
7.4	Likely significant effects.....	60
7.5	Conclusions	63
7.6	Mitigation	63
7.7	Monitoring.....	63
8	Safety.....	64
8.1	Introduction.....	64
8.2	Policy context	64
8.3	Methodology	65
8.4	Likely significant effects.....	66
8.5	Conclusions	66
8.6	Mitigation	66
8.7	Monitoring.....	66
9	Climate change mitigation.....	67
9.1	Introduction.....	67
9.2	Policy context	67
9.3	Methodology	67
9.4	Likely significant effects.....	68
9.5	Conclusions	69
9.6	Mitigation	69
9.7	Monitoring.....	69
10	Climate change adaptation.....	70
10.1	Introduction.....	70
10.2	Policy context	70
10.3	Methodology	70
10.4	Likely significant effects.....	71
10.1	Conclusions	71
10.2	Mitigation	72
10.3	Monitoring.....	72
11	Cultural Heritage	73
11.1	Introduction.....	73

11.2	Policy context	73
11.3	Methodology	74
11.4	Likely significant effects.....	75
11.5	Conclusions	77
11.6	Mitigation	77
11.7	Monitoring.....	77

1 Introduction

1.1 Purpose of the Integrated Impact Assessment

- 1.1.1 This integrated impact assessment (IIA) report sets out, for the purposes of public consultation, the findings from an integrated impact assessment of a Variation Order to remove the Western Extension (“WEZ”) of the central London congestion charging scheme.
- 1.1.2 The IIA report builds on an earlier IIA undertaken to support the draft revised Mayor’s Transport Strategy (MTS)¹, which reflected the requirement for, and incorporated components of, an environmental report under the Strategic Environmental Assessment (SEA) regulations².
- 1.1.3 Although there is not a requirement under these regulations for a further environmental report to address the effects of the Variation Order, this IIA has nevertheless been undertaken in the same manner both to ensure its quality and to achieve consistency with the earlier report.
- 1.1.4 The purpose of an IIA is to bring together the findings of a variety of different impact assessments, including Strategic Environmental Assessment (SEA), Health Impact Assessment (HIA), Equalities Impact Assessment (EqIA), and Habitats Regulations Assessment (HRA), as appropriate to the proposal being assessed, in a single document.

1.2 Scope of the integrated impact assessment

- 1.2.1 As this IIA builds upon the IIA of the draft revised MTS, it uses the scope and assessment objectives that were defined at that earlier stage. Six primary objectives were used to assess the impacts of the draft revised MTS. These were as follows:
 - to contribute to, and facilitate, more sustainable and efficient economic progress within London
 - to enhance equality and actively mitigate the barriers to this
 - to contribute to enhanced health and wellbeing for all within London
 - to promote safety and security for all working, travelling and using London transport services and facilities
 - to contribute to the mitigation of, and adaptation to, climate change
 - to protect and enhance the physical, historic, archaeological and socio- cultural environment and public realm
- 1.2.2 The assessment considers the extent to which the proposed change affects the achievability of these primary objectives by reference to a series of “secondary objectives” which underpin each primary objective. These secondary objectives are set out below, under the relevant primary objectives.

¹ MVA (2009) Draft Revised Mayor’s Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010.

² The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No 1633)

Primary objective A – To contribute to, and facilitate, more sustainable and efficient economic progress within London

Secondary objectives:

To promote more sustainable transport and travel patterns for all users and potential users of the London transport system

To increase the economic efficiency and environmental and social sustainability of freight transport and transfer within and around London and the south east

To facilitate and contribute to regeneration across all communities in London

To contribute to enhanced productivity and competitiveness amongst all businesses within the London area

To help facilitate and contribute to increased employment and earnings especially in low-waged areas

To contribute to the alleviation of poverty and its contributory factors

Primary objective B – To enhance equality and actively mitigate the barriers to this

Secondary objectives:

To address the key barriers to equality of access for all users and potential users of the London transport system

To give all users and potential users equal opportunity to access the London transport system and sustainable transport choices

Primary objective C - To contribute to enhanced health and wellbeing for all within London

Secondary objectives:

To address health inequalities and factors which negatively impact upon health and wellbeing

To promote enhanced health and wellbeing for all

To improve air quality and reduce noise pollution across London

Primary objective D -To promote safety and security for all working, travelling and using London transport services and facilities

Secondary objectives:

To increase security and resilience to major incidents on the network

To increase road safety for vehicles and pedestrians

To improve the safety of staff and passengers on all modes of transport

To contribute to the reduction of crime and fear of crime for all users and potential users of the London transport system

Primary objective E - To contribute to the mitigation of, and adaptation to, climate change

Secondary objectives:

To contribute to the reduction of GHG emissions arising from within the London area

To reduce GHG emissions arising from transport operations and service provision

To enhance and facilitate adaptation to the impacts of climate change

Primary objective F - To protect and enhance the physical, historic, archaeological and socio-cultural environment and public realm

Secondary objectives:

To promote more sustainable resource use and waste management

To protect and enhance the built environment and streetscape through planning and operations

To protect and enhance the historic, archaeological and cultural environment through planning and operations

To protect and enhance the natural, physical environment, including biodiversity, flora and fauna through planning and operations

To protect and enhance greenspaces, riverscapes and waterways through planning and operations

- 1.2.3 The appraisal framework used to assess the draft revised MTS was more comprehensive than is necessary to assess the likely impacts of the WEZ Variation Order, since some of the secondary objectives it sets out would clearly not be affected in any way by the removal of the WEZ.
- 1.2.4 This IIA has therefore been selective in determining which secondary objectives are considered. The relevant objectives were identified through professional judgment informed by the findings of the annex to the draft revised MTS IIA that deals specifically with the removal of the WEZ³. The objectives considered to be relevant are stated at the beginning of each assessment, and are highlighted in bold type in the tables above.

³ MVA (2009) Draft Revised Mayor's Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010.

2 Background and role of the Western Extension Zone

2.1 The creation of the Western Extension Zone

- 2.1.1 The overall benefits of the central London congestion charging scheme (which was implemented in February 2003) encouraged policy makers to investigate the application of congestion charging to other parts of central London.
- 2.1.2 The proposal to extend the central London Congestion Charging scheme to the west was first put forward in 2005. The Western Extension Zone (WEZ), as it subsequently became known, was identified as an appropriate mechanism by which to reduce congestion in an area which experienced the highest levels of traffic and congestion outside the central London charging zone.
- 2.1.3 Several studies were undertaken to guide the development of the scheme and its future implementation. Transport for London (TfL) developed proposals based on an analysis that suggested that the greatest benefits from expanding the congestion charging scheme would come from a westward extension. This area experienced higher levels of traffic congestion through the working day, compared to areas to the north, south and east of the original charging zone, where congestion is predominantly experienced at peak times. In addition, the Western Extension area had suitable diversionary routes around its boundaries enabling traffic with no need to be in the area to avoid entering the zone. The area was, and is, relatively well-served by public transport, providing alternatives to using the car, although the provision of public transport in the original charging zone area is relatively greater.
- 2.1.4 TfL subsequently consulted the public and stakeholders between May and July 2005 on a Variation Order for a western extension to the central London congestion charging scheme. The Variation Order was confirmed by the then Mayor in September 2005.
- 2.1.5 As an operational scheme, the Western Extension area was implemented in February 2007. Its primary aim was to “tackle congestion in the area by reducing the levels of traffic travelling into and through the zone”.
- 2.1.6 For clarity, in this document, the geographical area covered by the Western Extension scheme is hereafter referred to as ‘the Western Extension area’. ‘WEZ’ is used hereafter to refer to the extension scheme itself. The pre-extension area of the central London Congestion Charging scheme (which would also be the charging area that would remain after the removal of the WEZ) is referred to as “CLoCCS”, or the remaining central London charging zone.

2.2 The geographical area & temporal scope within which WEZ operates

- 2.2.1 The Western Extension covers a geographical area of inner west London of around 17 square kilometres including most of the Royal Borough of Kensington and Chelsea and part of the City of Westminster (Figure 2-1). There are approximately 230,000 residents⁴ and 200,000 employee

⁴ ONS (2001) *Census 2001: Demographic Information*. Accessed online at http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Planning/Planning_information/census_2001.htm on 20/05/2010

jobs (relative to the 4.4 million people working and 7.2 million people living in London⁵) within the Western Extension area. The Western Extension area is, therefore, a relatively small area of London as a whole (around 1%).

2.2.2 The operational hours of WEZ are limited: charging runs from 7am to 6pm, Monday to Friday only. Thus, WEZ is active at those times during the week when congestion, the relief of which is its primary focus, is most intense. This assessment has taken into account the time periods within which WEZ operates in its consideration of likely predicted effects or impacts of removing the scheme.

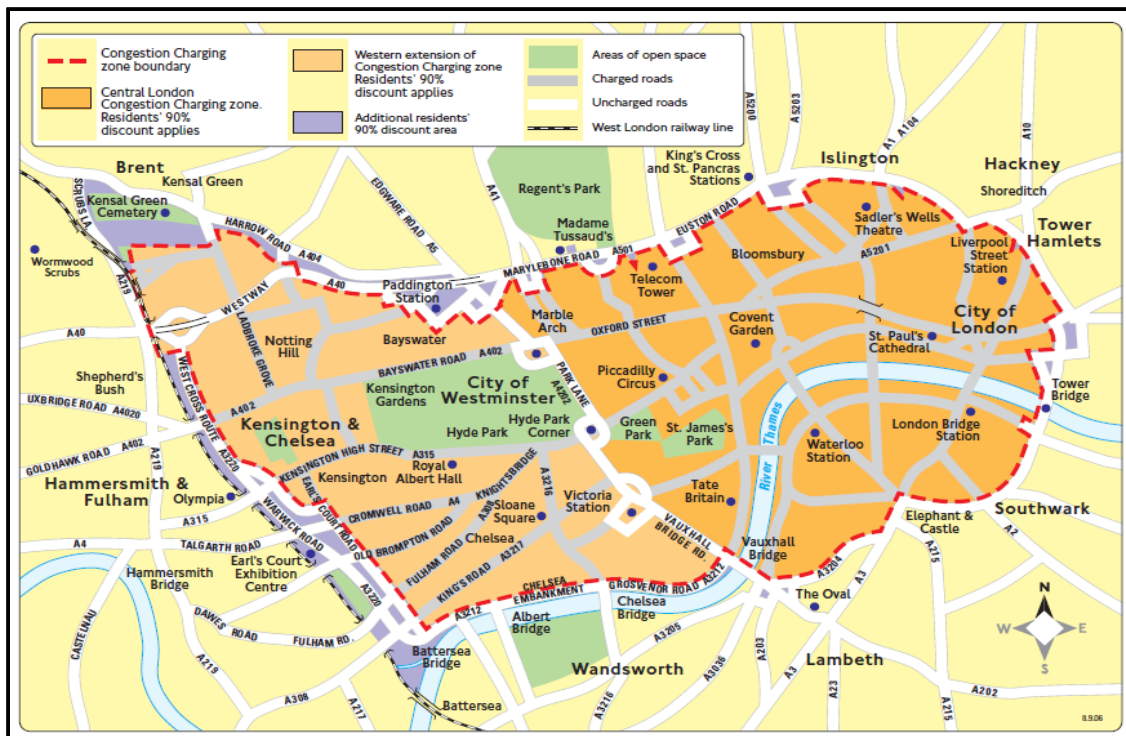


Figure 2-1: Extended central London congestion charging zone

2.3 The role of congestion charging and WEZ

2.3.1 Traffic congestion results in an inefficient use of the available road space, causing disbenefit to those using the roads. Where congestion arises as a result of inefficiently priced usage of road space, charging drivers can encourage a more selective and efficient use of available road space and should lead to overall efficiency gains as road space will be used by those who value it most.

2.3.2 A reduction in traffic levels resulting from the implementation of the central London congestion charging scheme has also been shown to have other beneficial effects including improvements to the general environment, amenity and attractiveness of central London, and improvements to

⁵ ONS (2001) *Census 2001: Demographic Information*. Accessed online at http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Planning/Planning_information/census_2001.htm on 20/05/2010

public transport – benefits which are also in part brought about by the reinvestment of net revenues from the scheme – for the benefit of all Londoners⁶.

- 2.3.3 The application of charges does however also lead to disbenefits, particularly for those who choose not to pay the charge for whom, disbenefits arise from the need to travel by less preferred modes or at less preferred times in order to avoid paying the charge. Inevitably some individuals or sections of the community may have to change their travel patterns altogether, with attendant social and economic impacts. The charge also represents an additional cost for those who pay it.
- 2.3.4 WEZ has reduced traffic inside the Western Extension area and initially achieved significant reductions in congestion. However, over the course of the first year of the scheme's operation, congestion rose, reaching levels comparable to those prevailing prior to the introduction of the scheme. TfL's analysis suggests that this increase in congestion reflects a reduction in effective road network capacity in the area, as a result of increased roadwork activity, the impact of major development work, and increased priority for sustainable modes. Without the WEZ in place, however, congestion would have been worse than it is.
- 2.3.5 Through reducing traffic levels and relative congestion levels, WEZ has also brought about some, relatively small, reductions in the quantity of harmful pollutants emitted by road transport. It has not, however, been possible to identify any discernible effect on air quality in or around the zone, owing to the variability of other factors which play a significant role in determining local air quality.
- 2.3.6 WEZ has also generated income for TfL, some of which has been set against the cost of implementing the scheme, but the balance of which has been used to fund improvements in transport in London in accordance with the Mayor's Transport Strategy.
- 2.3.7 The scheme affects individuals, businesses and organisations in and around the zone, with a mixture of positive and negative effects having been identified.

2.4 Non-statutory consultation to consider the removal of the WEZ

- 2.4.1 After the Mayoral elections in May 2008 a non-statutory consultation was held in autumn 2008 to listen to public and stakeholder views on the future of the WEZ. Overall, 69 per cent of individuals and 88 per cent of businesses responding to the informal public consultation supported the removal of WEZ, citing impacts of the scheme on the local economy and communities. The representative attitudinal survey of individuals and businesses which was carried out alongside the consultation also demonstrated a preference for the removal of WEZ, although this preference was not as strong as in the public consultation. Support for WEZ among stakeholder organisations was higher, with more in favour of keeping the scheme, although some stated that this support was conditional on changes being made to its operation or charging structure.
- 2.4.2 After reviewing the issues raised, the Mayor announced his intention to put forward formal proposals for the removal of WEZ. The Mayor's draft Transport Strategy, which was published for public and stakeholder consultation in October 2009, therefore contained a proposal to remove the scheme.
- 2.4.3 The Mayor's draft Transport Strategy, including the proposed removal of the WEZ, was the subject of an IIA which took as its primary geographical scope the greater London area, but which also looked, where considered appropriate, at more localised impacts. At a London-wide

⁶ TfL (2003-2008) Central London Congestion Charging Impacts Monitoring, Third to Sixth Annual Reports. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

level, the IIA concluded that the removal of WEZ was unlikely to have significant impacts on the assessment objectives.

- 2.4.4 Consultation on the draft Transport Strategy closed on 12 January 2010. Once again, there was strong support from public and business respondents for the removal of the WEZ, with over 58 per cent of public respondents supporting the proposal. Stakeholder views were more mixed, with many opposing the removal of the scheme. Following consideration of these issues, the Mayor published his new Transport Strategy on 10 May 2010, confirming in this document his proposal to remove the WEZ (Proposal 128).
- 2.4.5 The proposal to remove WEZ is now subject to further statutory consultation on the Variation Order to the central London Congestion Charging Scheme Order that is necessary if the WEZ is to be removed. This IIA considers the impacts of the proposal, as set out in the Variation Order, both within and around the Western Extension area.

3 Setting the context: baseline conditions within the Western Extension area

3.1 Introduction

- 3.1.1 The IIA conducted on the draft MTS was governed by the regulations for Strategic Environmental Assessment (SEA), which was incorporated in the IIA. Although this IIA on the Variation Order to remove the WEZ is not governed by these regulations, it is being undertaken to a comparable standard for completeness and consistency.
- 3.1.2 The SEA regulations specify that consideration should be given to the baseline social, economic and environmental conditions that would prevail in the absence of the proposal. In the case of the proposed removal of WEZ, the baseline conditions are those that would prevail in the event of the continued operation of WEZ.
- 3.1.3 In the context of the assessment of this proposal, the baseline is considered to comprise both conditions affecting London as a whole and a current understanding of those conditions operating within the Western Extension area.
- 3.1.4 The purpose of this section is to set out a summary of the conditions relating to London as a whole but also to establish an understanding of the baseline conditions as they relate specifically to the proposal. This understanding is based upon data pertaining to baseline conditions prior to the introduction of WEZ, to the current situation, and that which can reasonably be assumed (on the basis of current knowledge) to evolve in 2010/11, should WEZ be retained.
- 3.1.5 The current baseline is generally focused on 2007/08, a year for which there is relatively comprehensive data on all aspects of the scheme's operation and impacts – though more current information is used where it is available, notably in the case of traffic, congestion and emissions data. The future baseline is focused on 2010/11 (the earliest date that WEZ could be removed is at the end of 2010).
- 3.1.6 This section describes the current and anticipated future baseline situations, noting the key trends that might influence future conditions. Information presented in this section draws on extensive monitoring of WEZ which is used to understand as far as possible the conditions that would be expected to prevail with the WEZ remaining in place^{7,8}.

3.2 Baseline conditions

- 3.2.1 The following table summarises the current characteristics of the Western Extension area and the predicted trends with WEZ remaining in place. Data is presented relating to 'London' and the 'Western Extension area', first under the general heading of road traffic conditions, and then in respect of each of the IIA assessment framework headings.

⁷ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

⁸ TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

Baseline issue	Current characteristics	Predicted trends	Issue
Road traffic conditions	<p>London: 31.8 billion motor vehicle kms per year in 2007⁹.</p> <p>Western Extension area: Around 0.92 million vehicle kms (including cycling) during charging hours on average weekday in the Western Extension area in 2009¹⁰. This represents a 10% reduction in overall vehicle kms since charging was introduced.</p>	<p>London: Comparable levels to those in 2007.</p> <p>Western Extension area: Comparable levels of traffic to those in 2007.</p>	Congestion charge reduces traffic volumes.
Congestion	<p>London: Average speed on the road network is around 24 km/h during the morning peak (2003-2006)¹¹, equating to a travel rate of 2.5 min/km.</p> <p>Western Extension area: Average speed during charging hours is around 17 km/h, a travel rate of 3.5 min/km, in the latter part of 2007 and in 2008. This is after an initial reduction in congestion in the Western Extension area when WEZ was introduced. Since then congestion has returned to pre-congestion charging levels¹² though traffic has remained broadly at the reduced post-charging levels.</p>	<p>London: Some deterioration in travel rates as a result of interventions on the road network and growth in population.</p> <p>Western Extension area: Future travel rates depend on prevailing levels of traffic, which are predicted to be around the levels prevailing in late 2007 and early 2008, and on the extent to which capacity lost in 2007 can be recovered.</p>	<p>Effective capacity of highway network (e.g. Performance of traffic signal junctions' timings and influence of street and road works) affects congestion levels.</p> <p>Reductions in traffic and relative reductions in congestion maintained by WEZ.</p>

⁹ TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

¹⁰ *Ibid*

¹¹ *Ibid*

¹² TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

Baseline issue	Current characteristics	Predicted trends	Issue
Economic development and population growth			
Business	<p>London: 4.5 million jobs with 13% in retail and wholesale and 7% in hotels and restaurants¹³.</p> <p>Western Extension area: 200,000 jobs with 16% in retail and wholesale and 15% in hotel and restaurants¹⁴.</p> <p>Changes in variable in-vehicle transit costs are generally a relatively minor aspect of most business costs in and around the Western Extension area.</p>	<p>London: Increase in the number of jobs.</p> <p>Western Extension area: Increase in the number of jobs in line with broader growth assumptions.</p> <p>WEZ charge continues to be applied to businesses.</p> <p>Congestion levels continue to affect business efficiency.</p> <p>Perception of impact on some businesses and possible impact on rate of formation of small businesses.</p>	<p>Congestion levels affect efficiency of businesses.</p> <p>Charge is an additional (but generally a relatively minor) cost to most businesses, though some may be disproportionately affected.</p>
Retail	<p>London: In 2004, there were 398,000 workforce jobs in retail in London¹⁵.</p> <p>Western Extension area: There has been a long term background declining trend in weekly shopper footfall, predating the introduction of WEZ¹⁶.</p>	<p>London: By 2026, the number of retail jobs in London is forecast to increase to 473,000¹⁸.</p> <p>Western Extension area: Increase in the number of retail jobs in line with broader growth assumptions. Weekly shopper footfall not expected to</p>	<p>Other factors have a stronger influence on retail spend than WEZ, but there are indications that the scheme may influence business confidence.</p>

¹³ *Ibid*

¹⁴ *Ibid*

¹⁵ GLA Economics (2007). An analysis of London's employment by sector. Working Paper 24. GLA London. Accessed online at: http://legacy.london.gov.uk/mayor/economic_unit/docs/wp24-employment.rtf on 20/05/2010.

Baseline issue	Current characteristics	Predicted trends	Issue
	Survey data and retail figures suggest that overall the retail sector has not been significantly affected by WEZ. However, some individual businesses may have been adversely affected ¹⁷ .	change significantly.	
Tourism	<p>London: 14.8 million overseas visits were made to London in 2008¹⁹.</p> <p>Western Extension area: Tourism is a major economic driver within the Western Extension area with many visitor attractions including major museums, retail outlets and parks.</p> <p>Data on visitor numbers to museums show that there has been no discernible impact following the introduction of the charge²⁰.</p>	<p>London: Comparable levels of tourism in the longer term, increasing in 2012, but with shorter term drop due to economic downturn.</p> <p>Western Extension area: Visitor numbers at tourist attractions not expected to change significantly outside the period of the London Olympic Games.</p>	Tourism unlikely to be affected by the presence of WEZ.
Equality			
Services / care for London:		London:	Continuation of the current reduced levels of

¹⁶ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

¹⁷ *Ibid*

¹⁸ GLA Economics (2007). An analysis of London's employment by sector. Working Paper 24. GLA London. Accessed online at: http://legacy.london.gov.uk/mayor/economic_unit/docs/wp24-employment.rtf on 20/05/2010.

¹⁹ ONS (2009). International Travel. Accessed online at: <http://www.statistics.gov.uk/cci/nugget.asp?id=178> on 20/05/2010.

²⁰ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

Baseline issue	Current characteristics	Predicted trends	Issue
<p>elderly and disabled people</p>	<p>In 2001, disabled people made up 16% of the London resident population and 9% of people in London provide some form of regular unpaid care for someone who is disabled or unwell²¹.</p> <p>Western Extension area: In 2001, disabled people made up 14% of the Western Extension area population and 7% of residents in the Western Extension area provide some form of regular unpaid care for someone who is disabled or unwell²².</p> <p>There has been a 10% decrease in the frequency of trips made during charging hours by those visiting someone as a carer since the introduction of WEZ²³.</p> <p>Surveys of disabled people found WEZ had little impact on their daily lives and no significant impact on their ability to travel²⁴.</p>	<p>Continued level of carer visits to present.</p> <p>Western Extension area: Level of carer visits since the introduction of WEZ maintained.</p> <p>Ability of disabled people to travel no different from conditions in 2008.</p>	<p>visits. The lower level of visits by carers and family and friends to residents of WEZ may cause some people to feel isolated.</p>
<p>Economic inequalities</p>	<p>London: Information on business ownership suggests that small business owners are more vulnerable to the adverse impacts of the charge than larger businesses or chains of businesses who can more</p>	<p>London: Continued comparable profile of business ownership.</p>	<p>Small businesses may be differentially affected by WEZ.</p>

²¹ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

²² *Ibid*

²³ *Ibid*

²⁴ *Ibid*

²⁵ Beta Model (2008) The Impact of the Congestion Charge on the Dynamics of the Enterprise Population

Baseline issue	Current characteristics	Predicted trends	Issue
	readily afford the charge.		
	<p>Western Extension area: Analysis and survey responses suggest that small businesses may have been differentially affected by WEZ²⁵.</p>	<p>Western Extension area: Charge may have some differential impacts on small businesses.</p>	
Health and Well-Being			
Wellbeing	<p>London: In 2001, 71% of Londoners rated their health as 'good'²⁶.</p> <p>21% of resident weekday trips in 2007/08 were for leisure purposes and 27% for shopping and personal business²⁷.</p> <p>Western Extension area: The majority of Londoners felt that the scheme had made no difference to them; approximately 15% said they were better off and approximately 15% said they were worse off as a result of charging²⁸.</p> <p>Surveys showed that there was little evidence of a decline in frequency of trips to local services and leisure facilities, although there was evidence of respondents changing their mode of travel²⁹.</p>	<p>London: Continued use of services and facilities.</p> <p>Western Extension area: Little discernible effect on health for the residents within and around the Western Extension area.</p> <p>Changes to the determinants of health (e.g. Air quality, disposable income) will continue to be very slight and there are both positive and negative aspects to this.</p> <p>Continued use of services and facilities, although with continued greater use of public transport to access them.</p>	Continuing need for public transport provision to access services.

²⁶ ONS (2001) *Census 2001: Demographic Information*. Accessed online at http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Planning/Planning_information/census_2001.htm on 20/05/2010

²⁷ TfL (2010) *Travel in London, Report 2*. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

Baseline issue	Current characteristics	Predicted trends	Issue
Air pollution	<p>London: Road traffic accounted for around 60% of London's PM₁₀ emissions and 80% of central London's PM₁₀ emissions in 2008, and around 50% of London's NO_x emissions and 60% of central London's NO_x emissions³⁰.</p> <p>Western Extension area: Following the introduction of WEZ, emissions of NO_x from road transport has reduced by 2.5% and emissions of PM₁₀ from road transport by 4.2% inside the Western Extension area as a result of mode change and fewer vehicles³¹.</p>	<p>London: Proportionate contribution to absolute levels with progressive reductions in emissions due to fleet turnover and, in the longer term, implementation of current and future MTS and MAQS policies.</p> <p>Western Extension area: Proportionate contribution to absolute levels of emissions to present day with progressive reductions due to natural fleet turnover and implementation of new MTS and MAQS policies.</p>	<p>Numbers of vehicles in and around the Western Extension area affect the level of emissions, which in turn can have impacts on health.</p> <p>Exposure to airborne particles is associated with increased mortality and adverse health effects, in particular respiratory and cardiovascular health.</p>
Cycling	<p>London: Cycling accounts for 2% of trips across London; there is a trend of increased cycling in central and parts of inner London³².</p> <p>Western Extension area: Trend of increasing pedal cycles recorded crossing the boundary of Western Extension into the area since 2005, when counts started.</p>	<p>London: Increase in cycling trips through implementation of proposals set out in new MTS.</p> <p>Western Extension area: Increase in cycling trips through implementation of proposals set out in new MTS.</p>	<p>Forms of physical exercise, such as cycling and walking, have positive health benefits.</p> <p>Lower levels of traffic are more conducive to cycle use, and Congestion Charging would tend to encourage use of uncharged modes.</p>

²⁸ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

²⁹ *Ibid*

³⁰ GLA (2009) Clearing the Air: The Mayor's Draft air Quality Strategy, Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/sites/default/files/MAQSPublicConsultationStrategy.pdf> on 20/05/2010

³¹ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

³² TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

Baseline issue	Current characteristics	Predicted trends	Issue
Safety and security			
Road collisions	<p>London: There were 24,577 reported slight casualties and 3,784 serious casualties on London's roads in 2007³³.</p> <p>There were 10,147 reported collisions involving personal injury between March and December 2007 during weekday charging hours³⁴.</p> <p>Western Extension area: There were 339 reported collisions in the Western Extension area involving personal injury between march and December 2007 during the weekday charging hours³⁵.</p> <p>For collision statistics collected during the first ten months of charging: There was no clear difference in the aggregate number of road traffic collisions There was a decrease in collisions involving pedestrians, cars and goods vehicles There was an increase in the number of collisions involving cyclists and powered two-wheelers³⁶.</p>	<p>London: Comparable road traffic collision rates to 2007, progressively reduced by MTS policies.</p> <p>Western Extension area: Comparable road traffic collisions rates to 2007 with reductions from MTS policies in the longer term.</p> <p>The continued operation of the WEZ would have no discernable impact on road traffic accidents in and around the zone.</p>	<p>Cause and frequency of road collisions.</p> <p>Increased numbers of pedal cycles and powered two-wheelers has meant an increase in the number of collisions involving these vehicle types.</p>

³³ TfL (2009) Community Safety Plan for transport and travelling in London 2009/10. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/assets/downloads/corporate/Community-Safety-Plan.pdf> on 20/05/2010

³⁴ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

³⁵ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

³⁶ *Ibid.*

Baseline issue	Current characteristics	Predicted trends	Issue
Climate change			
Greenhouse emissions	<p>gas London: Road traffic accounts for 15% of CO₂ emissions across London³⁷.</p> <p>Western Extension area: CO₂ emissions within the Western Extension area have decreased by approximately 6.5% following the introduction of WEZ as a result of reduced traffic volume and change in fleet composition³⁸.</p>	<p>London: Progressive reductions in CO₂ emissions with natural fleet turnover, reflecting the replacement of older vehicles with newer, more efficient models and MTS policies.</p> <p>Western Extension area: Progressive reductions in CO₂ emissions with natural fleet turnover and implementation of MTS policies.</p>	CO ₂ emissions dependent on traffic volume and composition and congestion.
Car dependence	<p>London: The car mode share for average weekday trips by London residents during 2007/08 is 38%³⁹.</p> <p>Western Extension area: 107,000 cars and minicabs entered the Western Extension area on a typical day in 2007 during charging hours. This represents a 21% decrease in the number of cars and minicabs, entering the zone before WEZ was introduced. There was also an increase in pedal cycles (12%), powered two-wheelers (5%) and bus passengers (6%)⁴⁰.</p>	<p>London: The car mode share is expected to decrease slightly in the longer-term with the implementation of new MTS policies.</p> <p>Western Extension area: Maintaining of mode share since WEZ introduced in the short-term, with longer-term reduction in car mode share through the implementation of MTS policies.</p>	Mode share changes would affect CO ₂ emissions.

³⁷ TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

³⁸ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

³⁹ TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

Baseline issue	Current characteristics	Predicted trends	Issue
The physical environment and public realm			
Biodiversity	<p>London: Road traffic accounted for around 60% of London's PM₁₀ emissions and 80% of central London's PM₁₀ emissions in 2008, and around 50% of London's NO_x emissions and 60% of central London's NO_x emissions⁴¹.</p> <p>Western Extension area: It is estimated that emissions of oxides of nitrogen (NO_x) from road traffic within the Western Extension area fell by 2.5% and emissions of particulate matter (PM₁₀) by 4.2% after the introduction of</p>	<p>London: Progressive reductions in emissions with natural fleet turnover and implementation of MTS and MAQS policies.</p> <p>Western Extension area: Comparable levels of emissions to present day with progressive reductions due to natural fleet turnover and implementation of new MTS and MAQS policies.</p>	<p>Emissions can have an adverse effect on natural vegetation.</p> <p>Levels of PM₁₀ and NO_x emissions partly dependent on traffic volume and composition.</p>

⁴⁰ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

⁴¹ GLA (2009) Clearing the Air: The Mayor's Draft air Quality Strategy, Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/sites/default/files/MAQSPublicConsultationStrategy.pdf> on 20/05/2010

⁴² TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

Baseline issue	Current characteristics	Predicted trends	Issue
Damage to cultural heritage features	<p>WEZ⁴².</p> <p>London: London contains four world heritage sites, around 18,000 individual listed buildings and 165 scheduled ancient monuments⁴³.</p> <p>Western Extension area: Reduction in emissions of NO_x and PM₁₀ will have had beneficial impacts with respect to the level of soiling of buildings within and around the Western Extension area.</p>	<p>London: Comparable levels of emissions to present day, affecting the soiling of buildings, with longer-term reductions due to fleet turnover and new MTS and MAQS policies.</p> <p>Western Extension area Comparable levels of emissions to present day, affecting the soiling of buildings, with longer-term reductions due to fleet turnover and new MTS and MAQS policies.</p>	Buildings of architectural or historical importance are more vulnerable to the long-term damage from air pollution.
Changes to the urban realm	<p>London: TfL has produced a streetscape guidance report for 2009, which gives advice and information to TfL staff who, look after the design, appearance and upkeep of London's streets and roads.</p> <p>Western Extension area: Additional street furniture implemented for WEZ, including automatic number plate recognition (ANPR) cameras being installed at all entry and exit points to the zone, and signs informing drivers of the location of the charging area.</p>	<p>London: Street furniture associated with the scheme remains in place.</p> <p>Western Extension area: Street furniture continues to be in place.</p>	Street furniture adds “clutter” to the street environment.

⁴³ English Heritage (2008)

- 3.2.2 Whilst not specific to the baseline environmental and socio-economic conditions within the Western Extension area, it should be noted that there are other economic issues, in particular, impacts on TfL revenue, as a consequence of the operation of WEZ that ought to be considered. After the scheme's operating costs are covered, the net revenue generated by WEZ contributes to the funding of the operation and improvement of the transport network across London as a whole, for which TfL is responsible. This is considered a 'transfer payment' from those paying the charge to TfL.

Summary of characteristics of the future baseline: with WEZ remaining in place

- 3.2.3 The future baseline is the situation with WEZ remaining in place. In the short-term, traffic conditions and their related impacts are expected to remain comparable to conditions in 2008. Following the introduction of WEZ, there was a decrease in traffic and congestion. Despite sustaining the reduction in traffic seen following the introduction of the scheme, congestion has since returned to levels broadly comparable to pre-charging conditions. This is thought to be related to highway network capacity changes as a result of, for example, the timings of traffic signals (to allow more capacity to other road users), road works that were associated with a major development in Knightsbridge (now completed), and the increased incidence of road and street works in the Western Extension area related to utilities such as gas and water.
- 3.2.4 Assuming the continued operation of the WEZ, the general level of road traffic in the Western Extension area is unlikely to change significantly in the short-term, though some additional traffic associated with the new shopping centre at White City, which opened in late 2008, might pass through the area.
- 3.2.5 It is anticipated that over the coming years, effective road capacity for vehicular traffic will increase somewhat from the levels currently experienced, as some capacity that was lost is recovered through the natural completion of activities such as extensive utilities works that have contributed to reductions in network capacity over the past months and years. This could have the effect of both inducing additional traffic onto the network and of increasing the volume of traffic that could be accommodated at a given average speed. This increase in capacity would be expected both with the WEZ remaining in place and with its removal, although if the WEZ were removed, then additional measures (such as the expedited implementation of computer-optimised traffic signalling systems) would be implemented in mitigation.
- 3.2.6 While the Mayor's Transport Strategy anticipates that population and employment growth will cause traffic and congestion to increase over the longer term, the relative stability in traffic conditions in the short to medium term is expected to result in relatively static conditions in respect of both the composition and volume of emissions affecting air quality, and road vehicle collision rates. The background trends that are expected to continue are emissions reductions as the vehicle stock evolves towards more fuel efficient and greener technologies, accelerated in part by schemes such as the London Low Emission Zone, and a decline in collision rates.
- 3.2.7 In the longer-term, the application of the policies in the new MTS and new draft Mayor's Air Quality Strategy (MAQS) is expected to take effect and to affect conditions in the Western Extension area. In particular, policies to encourage cycling, and policies aimed at reducing PM₁₀ and NO_x emissions, will have beneficial impacts on health and the physical environment, and will cause a further modal shift to non-car modes. The MAQS baseline assumes that the WEZ is removed.

4 Traffic and emissions impacts

4.1 Introduction

- 4.1.1 TfL's current estimates of the impacts of removing WEZ are informed by the results of the impacts monitoring programmes of the Congestion Charging scheme; and by the modelling of traffic to evaluate the London-wide strategic traffic implications and more localised impacts.
- 4.1.2 The assessment of London-wide impacts is based on data taken over the 365 days of the year, and interpreted in the context of conditions across Greater London, taking into account that the central London congestion charging scheme only operates between Monday and Friday, from 7.00am to 6.00pm. The main traffic effects of congestion charging are confined to charging hours only, though the social and economic effects of charging may have implications which carry over beyond charging hours. Baseline conditions used in the assessment are those prevailing in 2008.
- 4.1.3 Compared to the conditions reported in TfL's Congestion Charging Sixth Annual Monitoring Report (2008), there is today less traffic in the Western Extension area⁴⁴. Average speeds inside the Western Extension area are comparable with those reported in the second half of 2007, being around 17 kilometres per hour (10-11 miles per hour).
- 4.1.4 Table 4-1 below, shows how the traffic flows have changed across the boundary of the Western Extension area since 2005 when surveys commenced. This shows the effect of WEZ implementation in February 2007.

Table 4-1: Vehicle flows across boundary of the Western Extension area during charging hours (thousands)

	Cars incl. Minicabs	Vans	Lorries, others	Taxis	Buses, coaches	Sub total 4+ wheels	Motor cycles	Pedal cycles	Total
Inbound									
Spring 2005	134	35	9	37	10	225	13	10	248
Autumn 2005	136	35	8	38	9	226	13	11	252
Spring 2006	139	35	9	36	10	229	13	12	255
Autumn 2006	136	36	9	34	9	224	13	12	250
Spring 2007	107	32	9	38	10	196	14	13	222
Autumn 2007	108	34	9	34	10	195	14	13	220
Spring 2008	102	32	9	34	11	188	13	14	214
Autumn 2008	95	32	9	35	10	181	13	13	206

⁴⁴TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

	Cars incl. Minicabs	Vans	Lorries, others	Taxis	Buses, coaches	Sub total 4+ wheels	Motor cycles	Pedal cycles	Total
Spring 2009	106	32	8	35	11	192	13	15	220
Autumn 2009	89	29	7	31	10	166	11	14	191
Outbound									
Spring 2005	139	36	10	39	10	234	12	9	255
Autumn 2005	137	35	9	40	10	231	13	10	254
Spring 2006	141	35	9	40	10	235	13	10	258
Autumn 2006	136	38	9	39	10	232	12	11	256
Spring 2007	111	33	9	38	11	202	13	11	225
Autumn 2007	108	34	9	37	10	198	12	11	223
Spring 2008	102	31	9	33	11	186	12	12	209
Autumn 2008	98	33	9	36	11	187	12	11	209
Spring 2009	110	32	8	36	11	197	13	14	224
Autumn 2009	94	30	8	33	10	176	11	12	199

4.1.5 The assessment of the predicted change in traffic conditions if WEZ were removed in 2010 has to take account of a number of uncertainties, in addition to the effects of the implementation of other policies and proposals in the revised MTS. The main factors of relevance, and assumptions made in the assessment (which are provided in Tables 4-2 to 4-5, later in this section), are as follows⁴⁵:

- **London-wide changes in transport demand and supply:** there are many influences on travel and transport in London, some of which could interact with the impacts of the removal of the WEZ; for example, changes in economic conditions. However, the estimates in Tables 4-2 to 4-5 below, assume that such influences are constant.
- **Driver responses:** how individual drivers will respond to the removal of the charge or the residents' charge, and the timescales of responses, cannot be known with certainty. This means that there is a range of aggregate responses, reflected in the conditions set out in scenarios 1 and 2 in Table 4-2. This uncertainty has much less influence at the London-wide strategic level but is a relatively significant influence on WEZ itself.
- **Bus operations:** at the time the WEZ was introduced in early 2007 a major review of bus services in this part of London was introduced. The estimates in Tables 4-2 to 4-5 assume that the post-2007 revised bus service arrangements would be retained. This means that

⁴⁵ The following information on key assumptions has been provided by TfL

removing the WEZ would not represent a simple reversion to previous travel conditions in this part of London.

- **Changes in road network capacity:** reallocations and reductions in effective vehicular capacity (typically the maximum vehicle throughput at junctions) have occurred since congestion charging was introduced⁴⁶. In the Western Extension area during the second half of 2007, there was a loss of effective vehicular road capacity of about 15 to 20%, owing to road works and alterations to traffic signals. There is uncertainty over the amount of that capacity which might be recovered and hence its effects on traffic congestion and emissions. Monitoring of traffic and congestion levels suggested at spring 2009 that some 30 to 40% of the lost effective capacity had been recovered. However, this recovery was short lived, and by the second half of 2009 observations suggested that capacity had returned to its lower level. The scenarios in Table 4-2 assume a fixed network capacity.
- **Traffic management mitigation measures:** TfL recognises that removal of the WEZ could produce an increase in congestion within the Western Extension area and so is considering a number of possible measures to try to mitigate (prevent, reduce or offset) this as far as possible. The details of some of the measures have yet to be determined, so the effects are uncertain. The scenarios in Table 4-2 assume no measures in mitigation.
- **Background traffic trends:** there has been a slow reduction in motor vehicle traffic in inner London for many years while outer London traffic levels are relatively stable. The estimates in Tables 4-2 to 4-5 are based on an assumption of no material change in background traffic levels from 2009 to 2010.
- **Westfield shopping centre:** this opened on 30 October 2008. TfL has looked at traffic data and although some increase was observed around the time it opened, it did not occur in locations that indicated that Westfield was the cause. There has since been a decline in traffic in WEZ so any increase due to Westfield would be negated by other causes, perhaps the recession, and TfL is still processing data to assess the traffic effects of this development; there are indications of localised increases in traffic.
- **Scheme policy:** these analyses assume no change in scheme policy (e.g. hours of operation, charge level, payment methods, discounts and exemption classes all remain the same). The changes to the Congestion Charging scheme which are currently being consulted on are described in the IIA of Variation Order 2, and in the Supplementary Information document accompanying the consultation. The impacts of any changes that are introduced would be in addition to those outlined in Tables 4-2 to 4-5.
- **Pedal cyclists:** there has been a trend of increasing pedal cycling activity across the boundary of the Western Extension area since 2003. This is part of a wider trend within central London. The revised MTS includes proposals to provide a cycle hire scheme in central London in 2010 and to develop other measures to encourage an increase in pedal cycling as a mode of transport. The estimates in Tables 4-2 to 4-5 reflect current levels of cycling in and around the Western Extension area and their effects on traffic conditions; no specific allowance has been made for any further increase in pedal cyclists in 2010 for the purposes of this assessment.
- **Secondary travel impacts:** there are numerous potential secondary impacts which could affect traffic conditions. TfL's assessments have considered the broad strategic implications

⁴⁶ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

of the removal of the WEZ in terms of the impact of additional traffic on overall demands for road travel and more localised effects.

- 4.1.6 The assessment of the effects on road vehicle emissions necessarily takes into account an additional factor: the general trend of improvement in vehicle technology. There are likely to be more 'cleaner' vehicles on the road in 2010 than there were in the period covered by the sixth annual monitoring report, or the baseline year. The air quality and CO₂ estimates in Tables 4-3 to 4-5 take these changes into account.
- 4.1.7 Taking all these factors together and having due regard to the outputs of the monitoring and modelling studies, TfL's current estimates of the traffic, congestion and emissions impacts in 2011 of removing the WEZ are as set out in Tables 4-2 to 4-5.

Table 4-2: Impacts of removing WEZ, 2010 conditions

	Baseline: existing conditions	Scenario 1: WEZ removed 2010	Scenario 2: WEZ removed 2010
	WEZ remains 2010	No capacity change	No capacity change
		100% return of deterred traffic	80% return of deterred traffic
Traffic (000s of vehicle-kms per charge day, and % change in veh-kms compared to Base)			
WEZ	650	+8% to +12%	+6% to +10%
CLoCCS	950	-1% to -2%	-1% to -2%
Western Inner Ring Road (charge-free through-route)	150	+2% to +3%	+1% to +2%
Rest of inner London	12,600	+~1%	+~1%
Rest of London	34,700	+0% to +0.5%	+0% to +0.5%
Congestion (minutes/km above night rate, and % change in minutes/km above night-time travel rate)			
WEZ	2.3	+17% to +21%	+15% to +17%
CLoCCS	2.4	-2% to -3%	-2% to -3%
Western Inner Ring Road (charge-free through-route)	2.3	+4% to +6%	+3% to +4%
Rest of inner London	1.0	+4% to +6%	+3% to +5%
Rest of London	0.8	+3% to +4%	+3% to +4%

Table 4-3: Impacts of removing WEZ in 2011 on road transport emissions of PM₁₀

Emissions of PM ₁₀ from road transport (tonnes/year)	Base case 2011 with WEZ	2011 without WEZ scenario
WEZ	40	+3% to +4%
CLoCCS	50	0% to -1%
Inner ring road	25	0%
Inner London	450	0% to +1%
Whole GLA area	1350	0% to +1%

Table 4-4: Impacts of removing WEZ in 2011 on road transport emissions of NO_x

Emissions of NO _x from road transport (tonnes/year)	Base case 2011 with WEZ	2011 without WEZ scenario
WEZ	550	+2% to +3%
CLoCCS	950	0% to -2%
Inner ring road	350	0% to -2%
Inner London	6200	0% to +1%
London as a whole	18400	0% to +1%

Table 4-5: Impacts of removing WEZ in 2011 on road transport emissions of CO₂

Emissions of CO ₂ from road transport (kTonnes)	Base – 2011 with WEZ	2011 WEZ removed
CCZ	275	0% to -1%
WEZ	200	+4% to +6%
Inner London	2350	0% to +1%
Inner Ring Road	100	0% to +1%
Outer London	4200	0% to +1%
GLA total	7100	0% to +1%

4.2 Explanation of impacts

- 4.2.1 Traffic impacts Scenarios 1 and 2 show how the proportion of deterred traffic that returns could influence the impact of removing the scheme (as noted above, not all traffic is thought likely to return if the WEZ is removed). Scenario 1 represents the extreme “worst case”, while Scenario 2 estimates the impact of the return of 80% of presently deterred traffic. It is important to note that no mitigation is assumed in either scenario.
- 4.2.2 Modelling of these scenarios suggests that there would be an increase in traffic and congestion in the Western Extension area if the WEZ were removed, as traffic returned to the area, while there would be a small decrease in traffic and congestion in the remaining central London Congestion Charging zone, due in part to the impacts of the removal of the Residents’ discount from the residents of the former Western Extension.
- 4.2.3 Estimates of the impacts of these traffic and congestion changes on emissions of air quality pollutants and climate change gases have been made using traffic and congestion changes that broadly correspond to a scenario in which around half of the effective road network capacity that is estimated to have been lost in the Western Extension area has been recovered. They therefore give a relatively pessimistic view of the likely changes because additional traffic would be induced in these circumstances, though congestion would be lower than shown in Scenarios 1 and 2.
- 4.2.4 The assessments of the impact of removing the WEZ on the IIA objectives are set out in the following sections. The assessment is based upon the modelled impacts on traffic, congestion and emissions as set out above.

4.3 Mitigation and caveats

- 4.3.1 In circumstances in which significant levels of mitigation and a substantial recovery of effective network capacity are achieved, the increase in traffic flows would be greater than in the scenarios presented above, as the additional capacity induces more traffic onto the network – with increases in flows up to perhaps 15% on current levels within the Western Extension area. However, in these circumstances increases in congestion would be less than in the Scenarios 1 and 2 because of the greater capacity of the network to accommodate traffic (congestion might increase by up to 5% in the Western Extension area). Assuming the increase in capacity applied also to the remaining central London charging zone, congestion there could fall – by around 20% compared to current levels. TfL considers it unlikely that a recovery of network capacity on a scale sufficient to give rise to these impacts would take place, but these estimates nonetheless provide a reference point for considering the implications of removing the WEZ under alternative conditions.
- 4.3.2 The measures TfL proposes that should help to mitigate the removal of the WEZ are set out below. Some critical measures would be put in place ahead of the removal of the Western Extension while others would be developed, following the removal of the scheme in response to resultant network conditions, or require a longer implementation timescale. Some of these measures could also be implemented without removing the Western Extension. Some measures may also be developed in collaboration with local boroughs.

Improving traffic operations - improving the efficiency of operation of the network

- 4.3.3 There are some 240 junctions in the Western Extension area which are controlled by traffic signals. The operation of these can be improved by the use of Split Cycle Offset Optimisation Technique (SCOOT) which allows signal timings to adapt automatically to changes in traffic demand. The benefits available from the conversion of a junction to SCOOT are on average a 12% reduction in delay. Of the 240 signal-controlled junctions in the Western Extension, 187 already have SCOOT control, and two are not suited to SCOOT technology. The remaining 46 sites are programmed for conversion to SCOOT – with the majority of sites being complete by the time of the removal of the Western Extension. This would help to reduce congestion, and thereby improve the fuel-efficiency and reduce the environmental impact of road traffic in the zone.
- 4.3.4 Meanwhile, traffic signal location and timing reviews are being undertaken as part of existing programmes and would be prioritised in and around the Western Extension. There may be opportunities to increase vehicular throughput capacity further (perhaps by up to 10%) at some traffic signals in the Western Extension if they would be expected to be congested at the time of scheme removal, subject to there being no detriment to pedestrians, and subject to consultation with the relevant highway authority. Each junction would need to be examined individually before these benefits can be confirmed and delivered.
- 4.3.5 CCTV can be used for remote observation of the operation of the road network by the London Traffic Control Centre (LTCC) and facilitate intervention when problems occur. There is currently limited coverage of non-TfL roads in the Western Extension area, but five new cameras should be installed in the area by autumn 2009. Further CCTV coverage is being planned as part of the installation of additional SCOOT control systems outlined above.
- 4.3.6 The LTCC's team of traffic controllers proactively plan and coordinate integrated responses to planned events. LTCC controllers, working with the Metropolitan Police Service Traffic Operations Control Unit (MPS TOCU) are also centrally involved in detecting incidents,

congestion and potential problems as they develop and coordinating responses to reduce the impact of unexpected incidents in real time. Following the TOCU five year review this year, a new “Road Response Team” is being created to help keep London moving safely and smooth traffic flow by more efficiently removing obstructions that cause congestion on the Transport for London road network,

- 4.3.7 Action to tackle road works will also enable effective road network capacity to be regained and maintained. This work will make use of information shared in the TfL-led LondonWorks register of planned works and the discussions this data exchange facilitates. The road works permit scheme under the Traffic Management Act will enhance the management of works. The scheme requires a permit to be sought for specified works and enables TfL and the boroughs, as the highway authorities, to apply conditions to the grant of a permit. Work is also underway with Thames Water focused on reducing the impact of the works to repair and replace the miles of Victorian water mains in the capital. TfL is now working closely with them on the use of steel plating to cover excavations when work is not in progress and a joint project team has been formed to work on its implementation.

Improving journey information – helping road users make informed choices

- 4.3.8 Keeping people informed of planned and unexpected transport events so they can change their journey plans and save time helps smooth traffic flow and make the most efficient use of the road network, and TfL is looking at ways of improving information quality and delivery. For example, working in partnership with the Highways Agency, TfL launched Traffic Radio in July 2007 providing a dedicated digital radio station giving frequent traffic updates, general information and roadwork alerts to help people plan their journeys better.
- 4.3.9 TfL is also rolling out of the second phase of the Countdown system; the new and improved system will enable passengers to access bus arrival time predictions for all bus stops and bus routes in London via the internet and mobile phones. This will be complemented by an additional 500 on-street displays at key bus stops, bringing the total to 2,500.
- 4.3.10 Variable Message Signs can also assist in the provision of information, enabling the LTCC to provide targeted up to the minute messages to influence the flow of traffic - seven new signs are planned for installation in and around the Western Extension during 2009.

Freight

- 4.3.11 The strategy being employed for freight is based around ensuring that freight is delivered to the right location, at the right time, with the right vehicle, according to the right procedure. This strategy has been translated into four key strands of work that could help to ease congestion in the Western Extension area:
- Delivery and Servicing Plans – which can reduce the demand for transport and also shift the requirement for deliveries and services to less congested times of the day
 - Construction Logistics Plans – these are similar approaches for construction activity, which is a transient activity and actually different from the actual operation of a location
 - Freight Operator Recognition Scheme – a programme to improve the sustainable activities of freight operators serving London
 - Freight Information Portal – a means to inform all parties involved in freight, with the ability to understand the wider implications of deliveries. For example, route maps could be

provided highlighting routes which are congested in the Western Extension area, thereby enabling vehicles to be scheduled away from such areas.

Electric vehicles

4.3.12 The Mayor's Electric Vehicle Delivery Plan (EVDP) was published in May 2009. Under the EVDP it is expected that TfL and its partners will:

- Procure and install 500 chargepoints for electric vehicles on street
- Procure a further 2,000 chargepoints for installation off-street on publicly or privately owned land which is publicly accessible
- Develop and implement a pan-London scheme that will provide members of the Scheme with access to all chargepoints above
- Procure and utilise 120 electric vehicles within the TfL fleet and assist with the procurement of 1,000 within the GLA group fleet
- Run a range of marketing and other initiatives to stimulate the market for EVs aiming to achieve:
 - 22,500 charging points in workplaces by 2015; and
 - 100,000 EVs in London as soon as possible
- Obtain up to £8 million of government funds, from the Office of Low Emission Vehicles, to assist with the delivery of the above that will be match-funded by TfL from its Project Authority and its partners
- Initially, provide free electricity to TfL owned chargepoints within the scheme.

4.3.13 The electric vehicle programme will help to reduce emissions of CO₂ and harmful pollutants throughout London.

Improving the road network – a fit for purpose road network

4.3.14 Almost all the funded schemes on the Transport for London Road Network in Kensington & Chelsea are located either within the WEZ or in the vicinity. Implementation of these schemes has been adjusted in anticipation that WEZ removal would create different traffic patterns from those currently observed in the zone. All planned junction and carriageway improvements will take into account these potential new traffic flows in order to minimise adverse impacts or actively improve conditions.

4.3.15 TfL annual funding to boroughs for transport improvements through the Local Implementation Plan process includes substantial sums for road renewal in addition to amounts to promote walking and cycling. TfL has also developed and is using a strategic framework to assess each TfL Road Network project to ensure that the specific goals of each project are met whilst safeguarding the commitment to maintaining an efficient and smoothly flowing road network.

Encourage mode shift – encourage shift to most efficient modes

4.3.16 **Cycling:** The proposed removal of the Western Extension in December 2010 would follow the launch of the Mayor's Cycle Hire Scheme and two Cycle Superhighways in summer 2010. The Cycle Hire scheme aims to provide some 6,000 bicycles across central London with cycle stations approximately every 300m and 24 hour availability.

- 4.3.17 Around 150 stations are presently expected to be located within the City of Westminster, and at least 50 in the Royal Borough of Kensington and Chelsea. Cycle Superhighways are direct radial routes from outer London into central London that provide a series of benefits and priority to cyclists. Four more Superhighways are expected by 2012 of which two will pass through the Western Extension zone. These measures in support of this sustainable mode of transport should contribute to reduced congestion and emissions of both environmental pollutants and climate change gases.
- 4.3.18 **Travel planning:** TfL is engaged with schools and workplaces across the Western Extension area through the Smarter Travel Programme. It works with these stakeholders and the relevant boroughs to help cut car use (and thereby congestion) wherever possible, and to encourage walking and cycling through the development of travel plans. TfL works with all schools in the Western Extension zone to ensure that they have effective travel plans in place and to improve the quality of existing plans. All schools in the Western Extension area now have a School Travel Plan in place. On average, these reduce the car mode share for school journeys by six percentage points.
- 4.3.19 TfL is also working with a number of businesses in the Western Extension to develop Workplace Travel Plans. These deliver an average 13 percentage point reduction in car mode share for commuter journeys, a 17 percentage point increase in public transport use and other positive benefits in encouraging more people to cycle to work.
- 4.3.20 **Car clubs:** TfL is also funding the provision of car club bays in the Western Extension which will result in greater opportunity for expansion of car clubs in the area. Car clubs help reduce the number of vehicles on London's roads, ease pressure on parking, and reduce congestion and pollution in the capital. TfL research shows car club members typically reduce the distance they travel by car by 36% per annum after joining. In addition, 19% of members sell a car upon becoming a car club member and a further 29% claim to defer purchasing a car as a result of becoming a member. This equates to a minimum of eight privately owned vehicles being removed for each car club vehicle in London.
- 4.3.21 Through travel planning, support of car clubs and other Smarter Travel programmes, there is potential to retain the mode shift away from cars to walking, cycling and public transport that is attributable to WEZ, as well as to encourage new trips by these more sustainable means. The TfL Business Plan includes a wide range of public transport improvements to the Tube and to bus services, for example by the provision of updated countdown arrival time information at bus stops.
- 4.3.22 **Bus services:** In addition to the above mitigation measures, there will be a review of bus services in and around the Western Extension. Although this is not in direct mitigation of the removal of the Western Extension, an efficient and effective bus network is important to maintaining the levels of bus use currently observed.
- 4.3.23 Additionally, although it is not under TfL's control it should also be noted that changes to parking policy in the area could go some way to mitigating the traffic and emissions impacts of removing the WEZ, although such changes could themselves pose concerns – for retail viability for example. The Royal Borough of Kensington & Chelsea's graduated parking permit charges, including a supplement for diesel cars, would also contribute to air quality improvement in the area.

Limitations on traffic impacts mitigation

- 4.3.24 It is important to note that full mitigation or offsetting of the congestion impacts of the removal of the Western Extension would be likely to require roadspace to be allocated away from other worthwhile schemes – including for example the Mayor’s Cycle Hire scheme – and there is a need to strike a balance between this and other priorities.

Specific air quality action

- 4.3.25 The Mayor has a duty to produce an Air Quality Strategy setting out the measures London will take to improve its air quality. A draft new Air Quality Strategy is currently the subject of consultation. This Strategy aims to tackle local air quality issues and reduce emissions of air pollutants through a number of measures including the use of new/cleaner technology such as electric vehicles, behavioural changes and broader levers such as regulation via the planning system. Sources other than transport will also be addressed by the Air Quality Strategy bringing an improvement to London’s air quality.
- 4.3.26 Over time, a range of measures will deliver emissions reductions in the Western Extension area greater than those that the WEZ would have brought, for example the planned introduction of the age-limit for taxis, and the deployment of cleaner buses.
- 4.3.27 The Mayor’s Air Quality Strategy (MAQS) also includes a series of London wide policies which will serve to reduce emissions of NO_x, PM₁₀ and CO₂, some examples are as follows:
- Introduce new hybrid buses into the fleet between now and 2012 and from 2012, all new buses will be hybrid
 - By 2015 all buses in London meet the Euro 4 standard for NO_x, through the specification of new buses and retrofitting of any older non-compliant buses, thereby delivering significant reductions in NO_x emissions across the capital
 - Accelerate the take up of cleaner, new vehicles into the taxi fleet including introducing age-based limits for taxis. From 2012 vehicles will not be re-licensed on a rolling twelve year age limit so that no licensed taxis over twelve years old would be operating in London, unless by a special exemption
 - All new taxis entering the fleet to meet a minimum Euro 4 standard from 2012.
 - Age based limits for private hire vehicles (PHVs). A ten year rolling age limit will be applied for vehicles being re-licensed from 2012 onwards
 - All new PHVs entering the fleet to meet a minimum Euro 4 standard from 2012.

Safety

- 4.3.28 In addition to TfL’s ongoing work to promote road safety, the recently published Cycle Safety Action Plan will help to reduce the incidences of cyclist collisions.

Specific mitigation at the time of removal

- 4.3.29 If the Western Extension is removed, TfL would anticipate a period during which people become accustomed to the new arrangements and adjust their journeys accordingly.
- 4.3.30 There would be an additional focus on the micro-management of road and street works around the removal of the Western Extension.

- 4.3.31 At the time of the scheme's removal, the ongoing effort of the LTCC in controlling the flow of traffic in London would likely be reinforced by the short term deployment of significant additional resources on the ground. Such initiatives would mirror the successful efforts made when the Western Extension was introduced. As most roads inside the zone are not TfL roads, this would require close collaboration with boroughs.

5 Assessment of the impact of removing WEZ on the economy

5.1 Introduction

5.1.1 This section of the IIA examines the impacts of the removal of the WEZ on the Mayor's objectives for improving the sustainability and efficiency of economic growth and development within London. More specifically, the objectives of the economic assessment are to:

- Assess the aggregate impact of the removal of the WEZ on the sustainability and efficiency of business and economic activity, both within the Western Extension area and more widely, taking into account wider economic and behavioural trends;
- Understand how businesses within the WEZ would be likely to respond to WEZ removal;
- Measure (in quantitative terms where possible) the significance of impacts on economic activity within the WEZ and more generally for London.

5.2 Policy context

5.2.1 Strategic transport networks play an important role in London's economy. As in other areas, radial connections into central London are important for commuters and other travellers as are radial connections into, and out of, metropolitan town centres, growth and opportunity areas, employment and service hubs and residential areas.

5.2.2 The revised Mayor's Transport Strategy (MTS) sets out the Mayor's vision for transport in the capital over the next 20 years. It prepares for London's predicted growth of 1.3 million people and 0.75 million jobs between 2010 and 2031 and supports sustainable growth across central, inner and outer London, recognising that the provision of reliable and efficient transport, with the capacity and connectivity to accommodate this growth sustainably, is crucial to the continued success of the London and UK economies.

5.2.3 The revised MTS sets out 12 policies in support of economic development and population growth. These focus primarily on enhancing the capacity and efficiency of the existing transport network in order to:

- expand and improve access to business and employment markets, as well as to wider social and economic opportunities, recognising that improving the speed and reliability of passenger and freight movements will maximise the efficiency of business operations and improve productivity (Policies 1, 2, 3, 4)
- improve connectivity and capacity for people and goods in central London, along corridors and in town centres (Policy 5, 6, 7)
- maintain the vitality and economic viability of London's town centres by providing better access for people and freight to jobs, services and leisure opportunities and by improving the public realm and security and making them more attractive to both existing and prospective residents and businesses (Policy 8)
- reduce the costs to businesses by reducing congestion on strategic transport routes (Policy 9) Bring transport assets to a good state of repair and maintain them (Policy 10)

- make the best use of London's limited road space by encouraging modal shift through investment in infrastructure, service improvements and the implementation of appropriate demand management measures (Policy 11)
 - improve the efficiency of freight distribution to increase the operational efficiency of the road network, reduce congestion and ultimately to allow London to function as a dynamic world city (Policy 12).
- 5.2.4 The Mayor's Economic Development Strategy (EDS) (in draft) sets out the Mayor's ambitions for the economic development of London⁴⁷. The Mayor's overall objectives are to:
- Make London the undisputed business capital of the world;
 - Ensure that it has the most competitive business environment in the world;
 - Drive London's transition to a low carbon economy and maximise the opportunities that this creates;
 - Give all Londoners the opportunity to share in London's economic success; and
 - Maximize the benefits to London from investment to support growth and regeneration.
- 5.2.5 An efficient and reliable transport network not only supports economic growth but is also essential to London's competitiveness by making London an attractive place for business with good access to markets, suppliers and a workforce. Proposal 5G of the draft EDS therefore specifically states the Mayor's intention to "work with the LDA, TfL and partners to achieve the full economic development benefits of London's transport schemes and to bring forward the necessary further investment in London's infrastructure".
- 5.2.6 The extant London Plan ('The Spatial Development Strategy for Greater London') provides the overarching strategic framework for the development of London over the next 20–25 years and integrates aspects contained in other Mayoral strategies⁴⁸.
- 5.2.7 Policy 2.7 of the extant London Plan sets out the Mayor's vision for achieving sustained renewal of designated areas for regeneration. This includes a requirement for boroughs in their Development Plan Documents (DPDs), community strategies, and neighbourhood renewal strategies, to identify areas for regeneration and set out integrated spatial policies that bring together regeneration, development and transport proposals with improvements in learning and skills, health, safety, access, employment, environment and housing.
- 5.2.8 Policy 6.11 of the extant London Plan deals specifically with traffic flows and congestion and the measures that must be considered in DPDs and Local Implementation Plans (LIPs) to smooth traffic flows and tackle congestion. These include promoting services that reduce the need to travel, improving the extent and quality of pedestrian and cycle routes and public transport, smoothing traffic flow and promoting sustainable and efficient arrangements for the transportation and delivery of freight.

⁴⁷ GLA (2009) Rising to the Challenge: The Mayor's Economic Development Strategy for Greater London. Public Consultation Draft. Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/priorities/business-economy/vision-strategy/strategy-eds> on 20/05/2010

⁴⁸ Note that a draft replacement London Plan was published for consultation alongside the draft new MTS. The Examination in Public (EiP) of the Replacement London Plan will take place over the summer of 2010.)

5.3 Methodology

- 5.3.1 The economic assessment of the proposed removal of the WEZ has been undertaken using an “objectives-led” approach which is consistent with the overall approach to both this IIA and that of the draft revised Mayor’s Transport Strategy (MTS). It examines how the Variation Order impacts upon the objectives set out in the revised MTS insofar as these relate to supporting economic growth, productivity, competitiveness and regeneration within the congestion charging zone and within London as a whole.
- 5.3.2 The economic assessment considers the extent to which the proposal contributes towards achieving the primary IIA objective of contributing to and facilitating more sustainable and efficient economic progress within London, when considered against the baseline. This primary objective is comprised of six secondary objectives (set out in Table 5-1 below). To assess the impact of the Variation Order on the primary objective, its effects are assessed against these secondary objectives.

Table 5-1: Relevant IIA objectives

Primary objective A – to contribute to, and facilitate, more sustainable and efficient economic progress within London

Relevant secondary objectives:

To promote more sustainable transport and travel patterns for all users and potential users of the London transport system

To increase the economic efficiency and environmental and social sustainability of freight transport and transfer within and around London and the south east

To facilitate and contribute to regeneration across all communities in London

To contribute to enhanced productivity and competitiveness amongst all businesses within the London area

To help facilitate and contribute to increased employment and earnings especially in low-waged areas

To contribute to the alleviation of poverty and its contributory factors

- 5.3.3 Where possible, and within the limitations of the available data, the impacts identified have been quantified in accordance with Department for Transport (DfT) guidance on economic valuation⁴⁹ and the Treasury Green Book on Appraisal and Evaluation in Central Government⁵⁰. The quantitative assessment is intended to support the qualitative assessment and is not intended as a cost-benefit analysis of WEZ removal.
- 5.3.4 Quantitative assessments of business impacts are limited by the quality and quantity of the available input data. Where quantification is not possible, or where levels of uncertainty would impact upon the reliability of the assessment, a qualitative description of the impacts has been provided.

Scope of the assessment

- 5.3.5 The assessment considers the distribution of economic impacts insofar as they affect:

⁴⁹ DfT (2009) Transport Analysis Guidance: Values of Time and Operating Costs. TAG Unit 3.5.6. Accessed online at: <http://www.dft.gov.uk/webtag/documents/expert/pdf/unit3.5.6.pdf> on 20/05/2010

⁵⁰ HMT (2003) The Green Book: Appraisal and Evaluation in Central Government. TSO: London. Accessed online at: http://www.hm-treasury.gov.uk/d/green_book_complete.pdf on 20/05/2010

- businesses within the Western Extension area – in terms of productivity, profitability and competitiveness as a result of changes in road traffic levels and congestion, including access to markets and suppliers, the removal of the deterrent effect of the charge, as well as the direct cost savings of removal of the WEZ charge;
 - residents within the Western Extension area – in terms of cost savings from removal of the WEZ congestion charge, potential disbenefit to those residents who lose the 90% discount to enter the central London congestion charging zone, and changes in access to employment through changes to journey times and transport reliability;
 - tourism within the Western Extension area – in terms of number of visitors entering the WEZ in order to access tourist attractions
 - TfL – in terms of both lost revenue from congestion charge payments and the potential for cost savings as a result of reduced administrative and infrastructural costs (e.g. Monitoring and traffic management measures) and implications for investment transport in London; and
 - road users in the Western Extension area – in terms of changes in journey time reliability and disposable income
 - road users in the remaining central London Congestion Charging zone – would experience reductions in traffic and congestion as a result of fewer WEZ residents travelling in the area, improving journey times and journey time reliability
 - those using roads around the Western Extension area – could experience more traffic and congestion, increasing journey times and reducing journey time reliability
- 5.3.6 The temporal effects of the proposal to remove the WEZ have been considered in the assessment where relevant. For the purposes of the assessment the timescales may be defined as follows:
- short term: this may be taken to refer to the effects that occur within the first 1-2 years following removal of the WEZ;
 - medium term: this may be taken to refer to the effects occurring between 2-5 years following removal of the WEZ; and
 - long term: this may be taken to refer to the effects occurring beyond 5 years.
- 5.3.7 The quantitative assessment measures the economic impacts of WEZ removal against a 2008 baseline (the most recent year for which complete information is available). Where possible, it calculates the monetary impacts of the proposal in terms of:
- journey time savings
 - user charges
 - business costs
 - changes to the net revenue earned by TfL
- 5.3.8 For the purposes of the assessment, a significant effect is defined as one that results in a significant change from baseline conditions.

5.4 Likely significant effects

Objective – to facilitate sustainable transport and travel patterns

- 5.4.1 In the short-term, the removal of WEZ would be expected to induce additional trips on the road network within the WEZ (see Table 4-2), and hence the impact in terms of this objective is assessed as negative.
- 5.4.2 A survey of WEZ residents who travel by car suggested that 10% of respondents had substantially increased the number of trips they made to the original central zone for shopping, leisure and social purposes since they registered for the residents' discount. It can reasonably be expected that removal of the WEZ would deter at least some of these trips because it would also entail the removal of the residents' discount for these residents.
- 5.4.3 This accords with TfL modelling which suggests that total vehicle kilometres travelled in the remaining central London charging zone would be expected to decrease by around 1% to 2% as some of the residents who previously benefited from the discount switch to alternative forms of transport for travel into the central charging zone or choose alternative destinations.
- 5.4.4 TfL estimates the one-off cost of removing the scheme as up to £5m, and forecasts an ongoing net reduction in scheme revenue of around £55m per year⁵¹. This would equate to a reduction of around 40% of the finance generated by the Congestion Charging scheme. Both of these impacts would reduce the money available to TfL to fund improvements to the transport network there and elsewhere in London.
- 5.4.5 Any increase in congestion would also be likely to affect bus journey times and bus journey time reliability adversely, reducing the attractiveness of this mode of transport. However, assuming this impact was experienced equally by private transport in the zone the relative attractiveness of this sustainable mode would not be significantly altered. That said, the most likely alternative modes for many bus users would be Underground or rail services, against which there would be some deterioration of service because these modes are not affected by road traffic congestion. Existing bus priority measures should mitigate this impact to some extent.
- 5.4.6 It is therefore concluded that removal of the WEZ would have a moderate negative impact on achieving this secondary objective within the Western Extension area.
- 5.4.7 However, the removal of the WEZ itself could have some positive (though minor) effects on the sustainability of travel patterns in the remaining central London Congestion Charging zone by deterring the number of visits made by car to the central charging zone by Western Extension residents. It is possible though that the gain in the remaining charging zone would be at the expense of increases in car use elsewhere, particularly in the Western Extension area, as people altered their trips away from the remaining charging zone to other areas.

Economic objective – to increase the efficiency and sustainability of freight transport

- 5.4.8 The proposal to remove the WEZ would be likely to result in an increase in congestion levels which would adversely impact freight users with consequent negative implications for business productivity.
- 5.4.9 Although an increase in congestion levels might in the case of some private car users cause a shift to more sustainable modes, there are fewer alternatives for freight and it is considered

⁵¹ TfL (2009) Supplementary information on the proposal to remove the Western Extension of the Congestion Charging scheme.

unlikely that an increase in congestion would induce a significant modal shift for freight to more sustainable forms of transport.

5.4.10 Freight-dependent businesses and smaller businesses would benefit from the cost-savings incurred through no longer having to pay the charge.

5.4.11 It is, however, difficult to determine which effect (i.e. the cost-savings or congestion disbenefit) is likely to be strongest. The impact of the proposal to remove the WEZ on attainment of this objective is therefore assessed as being uncertain.

Economic objective – to facilitate and contribute to regeneration

5.4.12 Insofar as the proposal makes some travel by car more affordable, this would promote access to more and better employment opportunities, especially amongst low-income workers who are less able to afford the charge.

5.4.13 The potential positive impacts on business in terms of cost savings and potentially higher sales resulting from higher disposable income of customers who also no longer have to pay a charge could also play a positive role in facilitating development and regeneration within the WEZ.

5.4.14 Kensington and Chelsea is the most densely populated local authority area in the country, and a uniquely diverse area. It is also a borough of extremes with some of the wealthiest neighbourhoods in the country as well as some of the most deprived.

5.4.15 There is an area of deprivation in North Kensington (north of the Westway) and also in the south of the borough at World's End. There is also a large area suffering high levels of deprivation north of the zone, in Brent, and a smaller area in Hammersmith around the North End Road. Since people living in these latter areas would not have been eligible for the 90% Congestion Charging Residents discount they could be expected to gain the most from the removal of the WEZ.

5.4.16 However, car ownership in these areas is extremely low, especially amongst those on low income or who are unemployed, and TfL's monitoring work did not uncover any specific negative impact here.

5.4.17 Bearing the above in mind, the Variation Order is therefore assessed as having a possible, but very minor benefit.

Economic objective – to improve productivity and competitiveness

5.4.18 TfL modelling indicates an increase in traffic and hence congestion in the Western Extension area following removal of the WEZ. This would impact negatively on journey times, journey time reliability and hence to some extent on productivity and competitiveness. As noted in Section 4.3, measures such as the expedited deployment of SCOOT at junctions in the Western Extension area could somewhat mitigate these impacts by enhancing the performance of the road network, and the extent of the impact would also be influenced by what proportion of deterred traffic returns.

5.4.19 Over half (53%) of businesses located in the WEZ operate vehicles during charging hours in either zone or both. 31% of all businesses located in the WEZ operate vehicles during charging hours in the original charging zone. Some of the indirect costs (in terms of profitability and competitiveness) to businesses within the Western Extension area as a result of increased

congestion would be offset by the direct cost savings arising from no longer having to pay the charge.

- 5.4.20 The results of an attitudinal survey of London businesses⁵² showed that around 10% of all London businesses, and 50% of businesses within the Western Extension area, perceived the introduction of the WEZ to be the primary cause of reduced profitability, while businesses outside of the Western Extension area attributed reduced profitability primarily to the credit crunch.
- 5.4.21 This could suggest that the introduction of congestion charging within the WEZ has impacted directly upon business costs and confidence. Removal of the WEZ could therefore boost business and investor confidence, particularly amongst small enterprises, with positive implications for economic and employment growth in future. It is likely, however, that at least some of the reported loss in business profitability relates to a perceived reduction in custom and since the same surveys also revealed that most business customers, clients and visitors travel by modes other than car, the significance of this effect should not be overstated.
- 5.4.22 It is also worth noting that, in general, transport accounts for a relatively minor proportion of business costs and the broad effects of congestion charging on the cost of business operations and on customer disposable income are marginal (though the congestion charge might represent a significant proportion of the overall cost on a per-trip basis), and that many users of businesses and services in the Western Extension area have switched to public transport modes to avoid the charge, rather than paying it or avoiding the area altogether. While it is possible – indeed likely – that removing the WEZ would affect different types and sizes of businesses in different ways, it is difficult to assess the level of impact that can be attributed specifically to removal of the charge.
- 5.4.23 Estimates produced by TfL suggest that the removal of the WEZ under Scenario 1 and 2 would result in disbenefits (measured by the value of time lost as a result of congestion) in the order of £70m to £50m per year, including some time savings in the remaining central London Congestion Charging zone as a result of the reduced number of trips from WEZ residents, depending on the proportion of deterred traffic that returns.
- 5.4.24 The effects of the proposal on the attainment of this objective are assessed as being uncertain as it is not clear to what degree the cost-savings to businesses and their customers would offset the likely increase in congestion. However, as noted above, both effects are relatively minor in relation to overall business costs.

Economic objective – to facilitate and contribute to increased employment and earnings

- 5.4.25 Around 25% of all respondents to a TfL survey of WEZ residents registered for the Residents' discount reported that they found the charge difficult to afford – though it should be noted that these residents pay a reduced charge of £4 per week, compared to the standard charge of £8 per day. This figure rose to over 50% for those who stated a household income of £20,000 or less.
- 5.4.26 The removal of WEZ would adversely affect those residents of the Western Extension area who drive in the CLoCCS because they would lose their 90% discount to enter that zone. This impact would affect most heavily those residents who are dependent upon a car to access employment within the CLoCCS as an increase in the costs of accessing employment are equivalent to a loss of earnings, though it should be noted that public transport access to the CLoCCS area is very

⁵² TfL (2008) Consultation on the Future of the Western Extension – Report on Attitudinal Survey of London Businesses. Report prepared by Accent. Accessed online at: <http://www.tfl.gov.uk/tfl/roadusers/congestioncharging/westernextension/pdf/Annex-3-Report-on-attitudinal-survey-of-London-businesses.pdf> on 20/05/2010

good, and there are discounts available for those who are dependent on their car because of certain health conditions or disability. Those who drive in the Western Extension area would gain through no longer having to pay the charge.

- 5.4.27 It is also worth considering that those on very low incomes are unlikely to own a car and therefore unlikely to be affected by additional costs. Similarly, these individuals, and all others using public transport, would have benefited from the reinvestment in transport of the additional net revenues delivered by the WEZ.
- 5.4.28 In a survey undertaken following the introduction of WEZ, almost half of key workers reported that they had been adversely affected by the introduction of the charge⁵³. Around 75% of those who usually travelled to work by car as their main mode said that they felt disadvantaged by the scheme. However, 30 to 40% of those travelling by public transport bicycle or on foot also stated that they were worse off. The effect of WEZ removal on key workers is therefore ambiguous.
- 5.4.29 Additional and more lucrative employment opportunities might be created within the Western Extension area if business profitability and business confidence is improved as a result of removal of the congestion charge. No longer having to pay the charge to drive in the zone could also benefit those who travel to work by car who reported that they had been disadvantaged by the introduction of the scheme. Such opportunities may improve employment and income-earning prospects among the low-waged within the Western Extension area.
- 5.4.30 People living outside the Western Extension area who use the car to access employment within it or travel through it to access work elsewhere might also benefit from no longer having to pay the charge. Those who travel in the zone three times a week at a cost of £8 per trip could save somewhere in the order of £1,248 per car per year. This would represent a substantial increase in disposable income, particularly for low-waged households, though it should be noted that many of these people (and particularly those from lower income households) would either have switched to public transport to avoid the charge or be systematically less likely to own and drive a car. Based on origin and destination data, it is estimated that around 60% of all trips in the WEZ (including 'through' trips) originate from outside the Western Extension area⁵⁴.
- 5.4.31 Concerns have repeatedly been raised by traders at Portobello Road market that the WEZ is affecting their businesses by deterring customers and increasing their costs. The removal of the WEZ should alleviate these concerns, though it should be noted that there may also be wider economic factors at play which would not be addressed by the Variation Order.
- 5.4.32 The impact of the proposal to remove the WEZ on the attainment of this objective is assessed as being positive. The magnitude of this impact is, however, considered to be minor as some of the benefits of a potential increase in accessibility of income-earning opportunities are offset to some extent by the loss in disposable income from WEZ residents who travel to work within the CLoCCS.

Economic objective – to contribute to the alleviation of poverty

- 5.4.33 Analysis of the effects of the introduction of charging in the Western Extension area suggests that charging may have had an adverse impact on some low-skilled workers, who are also likely to be low-paid. As noted above, surveys undertaken in 2007 found that 40% of WEZ users reported that the congestion charge was easily affordable; while around 30% reported that they

⁵³ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

⁵⁴ *Ibid*

had difficulties in affording the charge, particularly those who came from lower income or economically inactive households, disabled people and those with young children, though it should be noted that disabled people in receipt of a Blue Badge are eligible for a 100% discount on the charge.

- 5.4.34 Those paying the charge are disproportionately likely to have a high household income, and since revenues from the scheme are spent on improvements to public transport services which are used by those with, typically, lower incomes, the removal of the WEZ would be likely to benefit most those on higher incomes, while there would be smaller disbenefits to many who benefit from the funding it raises.
- 5.4.35 Given low levels of car ownership and use in the WEZ by those on a low income, and the significant gain for those no longer paying the charge, the removal of the WEZ is therefore assessed as being likely to have an overall neutral impact on levels of disposable income amongst people in these categories who travel by car to or within the Western Extension area.
- 5.4.36 Removal of the charge, and any resulting potential for increased business profitability and business confidence, might also give rise to opportunities for training and up-skilling of low-skilled workers, thereby enhancing future income prospects. However, as noted above, the impacts of removal of the WEZ on business profitability are uncertain because of the disbenefits to business efficiency incurred as a result of increased congestion.
- 5.4.37 The proposal to remove WEZ is predicted to have a minor positive impact on the attainment of this objective.

5.5 Conclusions

- 5.5.1 The impacts of the Variation Order on the relevant IIA secondary objectives contributing to the primary objective, have been assessed as follows:

- **To promote more sustainable transport and travel patterns for all users and potential users of the London transport system:** removal of the WEZ would have a moderate negative impact on achieving this objective within the Western Extension and remaining charging zone
- **To increase the economic efficiency and environmental and social sustainability of freight transport and transfer within and around London and the south east:** the impact of the proposal to remove the WEZ on attainment of this objective is assessed as being uncertain
- **To facilitate and contribute to regeneration across all communities in London:** the proposal to remove WEZ is assessed as having a small positive impact
- **To contribute to enhanced productivity and competitiveness amongst all businesses within the London area:** the effects of the proposal on attainment of this objective are assessed as being uncertain
- **To help facilitate and contribute to increased employment and earnings especially in low-waged areas:** the impact of the proposal to remove the WEZ on attainment of this objective is assessed as being positive; the magnitude of this impact is, however, considered to be minor

- **To contribute to the alleviation of poverty and its contributory factors:** the proposal to remove WEZ is predicted to have a minor positive impact

5.6 Mitigation

- 5.6.1 A number of the measures outlined in Section 4.3 should help to offset some of the potential adverse impacts of the removal of the WEZ on businesses and car-users within the Western Extension area. Broadly, these measures focus on improving network capacity and encouraging a modal shift away from cars in order to prevent significant increases in congestion within the Western Extension area once the charging scheme is removed.
- 5.6.2 As noted in Chapter 4, a large increase in network capacity as part of wider mitigation of traffic congestion could induce a substantial amount of additional traffic, which would constitute a negative impact, so care would need to be taken to avoid unintended impacts in this regard. It is important to note that this increase would be principally attributable to the increase in capacity and would occur even in the absence of removing the WEZ if the same improvements were made to network capacity.

5.7 Monitoring

- 5.7.1 TfL will monitor the performance of the central London economy and traffic and congestion patterns as part of its ongoing programming of monitoring and research.

6 Equalities Impact Assessment

6.1 Introduction

- 6.1.1 The removal of the WEZ could potentially affect people from a range of social groups who live inside, near the boundaries of, or outside the Western Extension area.
- 6.1.2 This type of assessment is conducted because policymakers recognise that members of certain groups may be affected differentially by any proposal because, for example, of their gender, ethnicity, sexual orientation, religious beliefs or because they have a physical or mental illness or disability.
- 6.1.3 Certain groups might also be considered to be particularly sensitive to the potential impacts of this specific proposal. For instance, young children, or people with asthma or other respiratory and pulmonary diseases would be particularly vulnerable to any impacts on air quality arising from the removal of the WEZ. Conversely, people on lower incomes might benefit more than others from no longer having to pay a charge to drive within the Western Extension area (which they would have found more difficult to afford than others).
- 6.1.4 This chapter of the IIA sets out the results of a review of the potential equalities considerations and issues linked to this proposal. In many cases, it has not been possible to quantify the impacts beyond indicating whether they are likely to be positive or negative.

6.2 Policy context

- 6.2.1 The proposed removal of the WEZ has been assessed within the context of relevant national, regional and local equality policy and legislation. The principal policy elements have been identified below.

Equalities assessment – national legislation and policy

- 6.2.2 TfL has statutory duties to promote equal treatment as well as to tackle discrimination in three areas – race, disability and gender. The statutory duties are defined by the following legislation:
- Race Relations (Amendment) Act 2000;
 - Disability Discrimination Act 2005; and
 - Equality Act 2010.
- 6.2.3 Equality legislation places a duty on all public bodies to have regard to the need to promote equal treatment on the grounds of race, disability and gender, as well as the need to eliminate discrimination and to promote good relations between different racial groups.
- 6.2.4 The Single Equality Act 2010, a new streamlined public sector equality duty, has replaced existing duties and will be extended to cover all strands of discrimination, including measures to eliminate discrimination against transgender people and those suffering socio-economic disadvantage. In line with best practice and in recognition of the future intent to promote equal treatment across all equality strands in draft equality legislation, this assessment recognises the connections between socio-demographic circumstances and other equalities issues.

Equalities assessment – regional policy

- 6.2.5 In addition to this legislation, the London Plan also includes policies of direct relevance to the proposal in relation to the issue of equality⁵⁵. The London Plan recognises a number of equality priority groups: disabled and deaf people, older people, younger people, children, women, black, Asian and minority ethnic groups (BAME), gay men, lesbians, bisexuals and transgender people. The extant London Plan also recognises the differing spatial needs of immigrants, refugees and asylum seekers, travellers and gypsies and people belonging to particular faith groups.
- 6.2.6 The London Plan is supplemented by further guidance on planning for equality and diversity⁵⁶. This sets out in detail how to implement policies from the London Plan intended to address the needs of different communities in London.

Equalities assessment – local policy

- 6.2.7 With the exception of the City of London – which has a very small resident population – all boroughs have large and diverse resident populations. All boroughs have equality schemes which aim to meet the needs of these communities.

Equalities assessment – transport, air quality and equalities policy

- 6.2.8 The proposal to remove the WEZ is intended to contribute towards the attainment of objectives and targets of the Mayor of London's Transport Strategy. These strategies are in turn embedded in international and European legislation. The contents of these documents are examined in relation to the objectives of the proposal and the extent to which they address any impacts on equality priority groups (EPGs).

National air quality policy

- 6.2.9 The objectives of the UK's National Air Quality Strategy (NAQS) are to 'provide the best practicable protection to human health by setting health-based objectives for eight main air pollutants'. The Strategy states that 'everyone, regardless of their age, health or where they live has the right to clean air and not to suffer from the air that they breathe'.
- 6.2.10 The NAQS recognises that 'certain groups within society' are more susceptible to the impacts of poor air quality upon both life expectancy and quality of life. Older people and people who suffer from certain pre-existing medical conditions are seen as being the most vulnerable. Members of these groups would therefore be expected to benefit the most from improvements to air quality, or to suffer the most from any changes for the worse.
- 6.2.11 The NAQS does not itself state whether these 'more susceptible' groups include people from other EPGs, such as those from black, Asian and other minority ethnic (BAME) groups or those who live in areas characterised by high levels of deprivation. However, the government has acknowledged that there is inequality in the distribution of air pollution and tackling this inequality has become part of its social exclusion, equality and deprivation agenda.
- 6.2.12 The NAQS highlights the need for an improved understanding of the social issues relating to air quality and an acknowledgement that certain groups are more susceptible to the impacts of poor

⁵⁵ Mayor of London (2008) The London Plan (Consolidated with Alterations since 2004). Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/thelondonplan/> on 20/05/2010

⁵⁶ GLA (2007) Planning for Equality and Diversity in London – Supplementary Planning Guidance to the London Plan. GLA: London. Accessed online at <http://www.london.gov.uk/mayor/strategies/sds/spg-planning-for-diversity.jsp> on 20/05/2010

air quality. The NAQS also states that proposals to improve air quality must not cause 'unacceptable economic and social costs'.

London air quality policy

- 6.2.13 The Mayor of London's Air Quality Strategy (MAQS 2002) sets out policies, which sit within the framework established by the NAQS and describes the actions that the Mayor will take to eliminate that the significant risk that air quality currently poses to human health. (A new draft MAQS is currently the subject of consultation with stakeholders and the public, the strategy assumes the removal of the WEZ in its baseline.) The MAQS states that it has taken equality implications into consideration, noting that economically deprived groups currently suffer poor air quality to a greater extent than others because they are more likely to live in areas which experience poor air quality.
- 6.2.14 The new Draft MAQS finds that concentrations of nitrogen dioxide (NO₂) and small particles (PM₁₀) were highest in central and inner London and along major roads. The study concluded that inequality could be reduced by targeting areas where air pollutant exceedences were highest, thereby having the most positive impact upon the most deprived groups, comprising a range of EPGs.
- 6.2.15 The MAQS also states that the very young, older people and those with health problems would be affected to a greater extent by poor air quality.

6.3 Methodology

- 6.3.1 The EqIA process is based principally on the Equality and Human Rights Commission (EHRC) equality impact assessment guidelines⁵⁷.
- 6.3.2 The EqIA has been conducted in two key stages:
- Stage 1 involved screening the Variation Order to assess its relevance to (or implications for) equality. The conclusion of this stage of the assessment was that the Variation Order could have implications that should be assessed fully.
 - Stage 2 involved fully assessing the proposal to ensure it does not have negative or adverse effects on different sections of the impacted communities. Specific steps included:
 - Identifying the aims of the proposal;
 - Gathering evidence and facilitating involvement;
 - Assessing impact, including the potential to cause unlawful direct or indirect discrimination, or whether any opportunities to promote equality have been missed;
 - Establishing what practical actions are required to mitigate any adverse or negative impact and what actions would help promote equality;
 - Making arrangements to monitor and review the proposal; and
 - Publishing the results of the EqIA.

⁵⁷ Equality and Human Rights Commission (EHRC) (undated) Equality Impact Assessment guidelines. Accessed online at: <http://www.equalityhumanrights.com/our-job/our-equality-impact-assessments/> on 20/05/2010

6.3.3 The EqIA approach also meets the requirements of the guidance set out in Transport for London's 'Equalities Impact Assessments: How To Do Them'⁵⁸.

6.3.4 The assessment of potential impacts was based on the systematic evaluation of whether any immediate or direct impact of the proposal was likely to have a consequent effect on any equality priority group that was different in scope or scale from those experienced by the population at large. The scope of the assessment covers:

- people living in the WEZ;
- people travelling into the WEZ on a regular basis for work; and
- people living in or frequenting areas of London where air quality is likely to change, as a result of removing the WEZ.

6.3.5 Figure 6-1 shows the geographic location of the WEZ in relation to borough boundaries in central London.

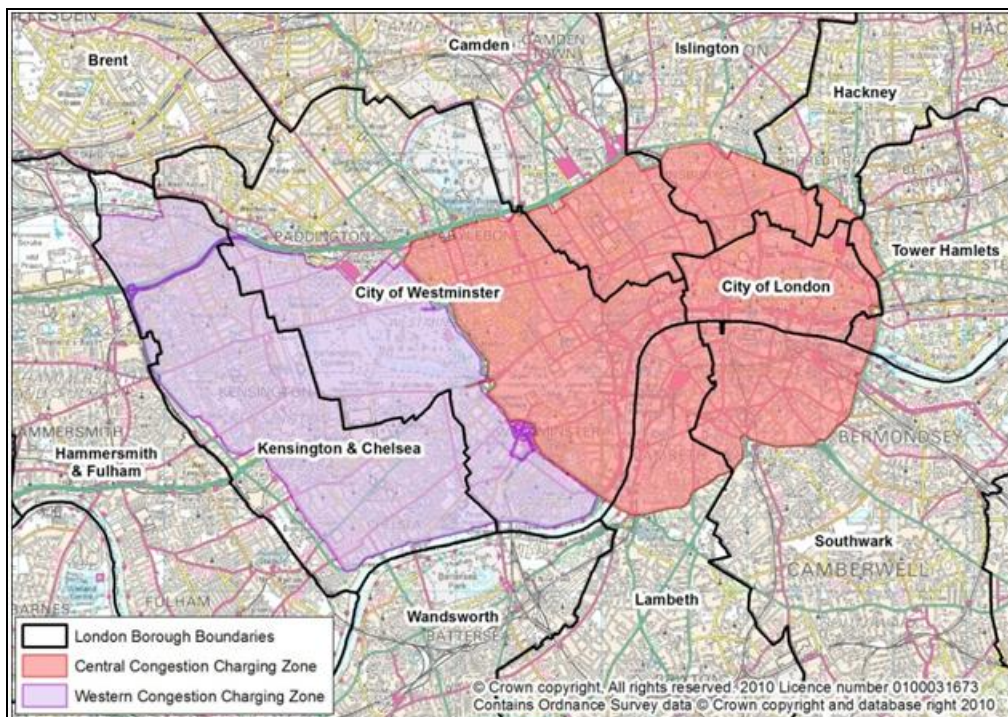


Figure 6-1: Location of the Western Extension area

6.3.6 The analysis considered in turn:

- The locations in which equality priority groups might be affected, using maps to support this analysis;
- Evidence indicating whether people from equality priority groups might be more sensitive to the effects of any changes than the rest of the population; and

⁵⁸ TfL (2004) Equality Impact Assessments: How to do them. Transport for London: London. Accessed online at: <http://www.TfL.gov.uk/assets/downloads/corporate/eia-06-04.pdf> on 20/05/2010

- The secondary (consequential or indirect) impacts that might result for equality priority groups.
- 6.3.7 The significance of any equalities impacts is based on an assessment of:
- Differential effects: these are defined as impacts that potentially affect an equality priority group more than the rest of the population as opposed to an impact that affects everyone equally;
 - Geographically distributive effects: these are defined as effects which would lead to a geographical area experiencing a different change in impact from that experienced by another area;
 - Disproportionate representation: this relates to the prevalence of members of specific groups in a given location. Where a particular equality priority group makes up 10% of the local population, or where it makes up a greater proportion of the local population than it does of London as a whole, it is considered to be disproportionately represented;
 - Sensitivity to differential effects: these reflect the fact that members of a particular equality priority group could be more sensitive than other people to particular impacts of a proposal, because, for example, of their circumstances, their age, or their social or economic position; and
 - Indirect second round impacts: some impacts may not yet have been identified or might exist as secondary effects. Impacts on economic activity as a result of a reduced bus service would constitute 'indirect impacts'. Second round impacts could include wider productivity effects or deepening levels of deprivation;
 - Cumulative impacts: an equality priority group might be affected by more than one positive or adverse impact. Cumulative impacts are identified in the following ways:
 - Where more than one direct impact of the proposal is found to have an effect on the same equality priority group(s);
 - Through the greater sensitivity of equality priority groups to the effects; or
 - When a number of impacts affect the same geographical area within which an equality priority group is over-represented.
- 6.3.8 The conclusions in this report were prepared following completion of the above analysis and are based on consideration of the findings that indicated potential differential impacts.
- 6.3.9 This EqIA considers the following eight equality priority groups (EPGs):
- Women;
 - Black, Asian and minority ethnic people;
 - Young people;
 - Older people;
 - Disabled and sick people;
 - Lesbian, gay, and bisexual (LGB) people and transgender people;
 - Faith and belief groups; and

- People with low incomes.
- 6.3.10 The EqIA considers the extent to which the proposal contributes to the enhancement of equality and actively mitigating barriers towards achieving it, when considered against the baseline. The primary IIA objective is comprised of two relevant secondary objectives (which are set out in Table 6-1 below). The impact of the Variation Order on the primary objective is assessed against the effects on these secondary objectives⁵⁹.

Table 6-1: Relevant IIA objectives

Primary objective B – To enhance equality and actively mitigate the barriers to this
Relevant secondary objectives:
To address the key barriers to equality of access for all users and potential users of the London transport system
To give all users and potential users equal opportunity to access the London transport system and sustainable transport choices

6.4 Likely significant effects

- 6.4.1 The assessment of potential impacts is based on a systematic evaluation of whether an impact was likely to have a differential effect on any EPG.

Equalities assessment – emissions and air quality impacts

- 6.4.2 Modelling undertaken by TfL suggests that emissions of air quality pollutants from road transport within the Western Extension area would increase by a small amount following the removal of the WEZ (refer to Table 4-3 and 4-4) and that, all other things being equal and assuming no measures in mitigation, air quality could reduce very marginally within the Western Extension area as a result, with the greatest impact occurring on and very close to the carriageway of major roads. However, it is unlikely that it would be possible to discern an impact on measured air quality owing to the variability of other factors which significantly influence air quality.
- 6.4.3 In recent years, a number of studies have established the link between poor air quality and health in urban areas. In particular, it is clear that long term exposure (that is, exposure to particles across the entire life span of an individual) can contribute to the development of chronic diseases and can increase the risk of respiratory illness.
- 6.4.4 Research shows that particles with a diameter of ten microns and smaller (PM₁₀) are likely to be inhaled deep into the respiratory tract. Research in 2004 suggested that about five per cent of emergency hospital attendances for asthma would be avoided by meeting the PM₁₀ annual mean limit value. As smaller particles can penetrate deeper in the respiratory tract, the health impacts of PM_{2.5} are also significant.
- 6.4.5 At high levels NO₂ causes inflammation of the airways and long term exposure can affect lung function and cause respiratory symptoms. It can also increase asthma symptoms. The health impacts of NO₂ are however less well understood than those of PM₁₀. Nevertheless, research has shown that people living in deprived areas are disproportionately exposed to air pollution, in

⁵⁹ MVA (2009) Draft Revised Mayor's Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010.

part because these areas tend to be near busy roads which have higher levels of pollution caused by road traffic.

- 6.4.6 Over recent years, a number of approaches have been taken to estimating the health impacts of poor air quality. In particular, there were uncertainties about the impacts of different types of pollution, the impacts of previous exposure to high concentrations, and the duration of exposure required to have an effect on health. In 2009, the Government's advisory group, the Committee on the Medical Effects of Air Pollutants (COMEAP), published a report into long term exposure to PM_{2.5} and its impact on mortality. The report examines evidence from cohort studies in the US and other emerging research, and concludes that air pollution has a greater effect on mortality in the UK than previously thought. However, there is still considerable uncertainty around the precise link between concentrations and mortality.
- 6.4.7 The House of Commons Environmental Audit Committee recently published a report on air quality in the UK, which included evidence that estimated that air pollution could be contributing to as many as 50,000 deaths in the UK per year. This is broadly in line with results of a study commissioned by the Mayor, which suggested that around 4,300 deaths per year in London are partly caused by long term exposure to PM_{2.5}.
- 6.4.8 This assessment focuses on identifying which EPGs might be more sensitive to air quality changes than the general population. The existing literature provided some evidence that changes in pollutant concentrations could potentially disproportionately affect children, older people, disabled people and those on low incomes:
- Increased morbidity and mortality from acute lower respiratory infections in children is attributable to outdoor air pollution⁶⁰, which could potentially be exacerbated by increased road traffic due to additional traffic. Several studies undertaken by the World Health Organisation (WHO) indicate that children living in the proximity of busy roads have an increased risk of around 50% of suffering from respiratory diseases⁶¹;
 - A WHO report notes that air pollution has been associated with asthma and allergies in children, rates of infection in smaller children, deficits in neurobehavioural development and development of lung function⁶²;
 - Another WHO report identifies the contribution of NO₂ to increased reports of adverse respiratory symptoms (e.g. cough, phlegm and wheeze), with effects most evident among children, particularly girls⁶³;
 - In 1996 the then Department of the Environment's expert panel on nitrogen dioxide acknowledged the existence of evidence of increased sensitivity amongst asthma sufferers to NO₂. This acknowledgement formed the basis for their recommendations of the hourly limit for NO₂⁶⁴.
- 6.4.9 TfL has modelled the changes in air quality emissions likely to arise from the removal of the WEZ, projecting a small increase in PM₁₀ and NO_x emissions from road transport within the

⁶⁰ Valent et al (2004) Burden of disease attributable to selected environmental factors and injuries among Europe's children and adolescents. Geneva, World Health Organisation (WHO Environmental Burden of Disease Series, No. 8)

⁶¹ Tamburini, von Ehrenstein and Bertolini (2002) Children's health and environment: A review of evidence. A joint report from the European Environment Agency and the WHO Regional Office for Europe Experts' corner. WHO Regional Office for Europe.

⁶² World Health Organisation (2005) Effects of Air Pollution on Children's Health and Development. World Health Organisation Special Programme on Health and Environment, Bonn Office.

⁶³ WHO (2008) Chapter 7.1: Nitrogen Dioxide.

⁶⁴ Department of the Environment (1996) Extract from Department of the Environment Expert Panel on Air Quality Standards – Nitrogen Dioxide. The Effects of Nitrogen Dioxide on Human Health. London.

Western Extension area (see Tables 4-3 and 4-4). These projections of an aggregate change for the Western Extension area as a whole do not fully characterise the extent to which increases in emissions from road transport would be likely to vary across different areas in the WEZ and on different roads.

- 6.4.10 There could however be small improvements on some roads outside the Western Extension area and within the remaining central London charging zone, where emissions from road transport would be expected to fall somewhat. This potentially includes some locations which are at risk of exceeding the EU limit values for PM₁₀ in 2011. These limits are determined by reference to evidence of the harmfulness of particulates to human health, and addressing locations where they may be exceeded is a high priority.
- 6.4.11 Some stakeholders have raised concerns over the impact of removing WEZ on particular roads. It is important to appreciate that where these changes occur along individual roads the changes in concentrations of pollutants is highest on and close to the road carriageway itself. Further away from the road edge, pollutant concentrations rapidly decline and approach the general background levels of pollution that affect central London as a whole.
- 6.4.12 This effect is demonstrated in the following detailed map of PM₁₀ concentrations along Cromwell Road (Figure 6-2).



Figure 6-2: Annual mean PM₁₀ concentrations along Cromwell Road, 2011, WEZ removed

- 6.4.13 The map shows a red contour line outside of which an annual mean PM₁₀ concentration of 31.4ug/m³ or less is achieved in 2011. This concentration is considered equivalent to the 35 exceedence days allowed by the EU limit values. The map has been produced for TfL by Kings College Environmental Research Group (ERG). The map shows that the highest predicted concentrations occur within the road and not on pavements. Most of the contour lines are circular and closed at various locations within the main road. TfL's analysis, taking into account contours which lie along the road surface and close to the kerb, and the grid spacing of the modelling methodology, lead to the conclusion that the EU limit values are expected to be met along Knightsbridge, Brompton Road, Thurloe Place, and Cromwell Road when considered in the context of WEZ removal.
- 6.4.14 It should be noted that the modelling used by TfL is based on a 5m² grid. Were a finer grid to be used this would likely place the red contour line further from the kerbside nearer the centre of the road. It should also be noted that the Mayor's draft Air Quality Strategy provides for further policies to reduce emissions of PM₁₀ from sources across London, including LEZ Phase 3 which will come into effect from January 2012 (subject to consultation) with important pre-compliance benefits in 2011.
- 6.4.15 These measures are not included in the maps so the likely position in 2011 will be better than shown. Please note: the brown markings are part of the MapInfo base layer and are not related to the air quality modelling.
- 6.4.16 Exposure to the higher levels of pollution on the road itself is very limited and health consequences are determined by long term exposure to the background levels of pollution.
- 6.4.17 Overall, it is projected that despite the removal of the WEZ in December 2010, the EU daily limit value for concentrations of PM₁₀ would be met in the area in 2011. Nonetheless, additional measures which could further improve air quality are provided for within the Mayor's draft Air Quality Strategy, and targeted local air quality improvement measures that are being developed for use in other locations could be applied in the area if particular issues were to arise.
- 6.4.18 Over time, a range of measures that TfL is introducing will deliver emissions reductions in the Western Extension area greater than those that the WEZ alone would have brought through, for example the planned introduction of age-limits for taxis, and the deployment of cleaner buses, and the inclusion within the London Low Emission zone scheme of categories of vehicles which are currently not in scope such as vans and minibuses.
- 6.4.19 Therefore, although it is recognised that certain equality groups may be more sensitive than the population at large, it does not appear likely that the change in concentrations would be sufficient to exacerbate existing health problems.

Equalities assessment – travel conditions, congestion and road safety

- 6.4.20 TfL's analysis suggests an increase in vehicle-kilometres within the Western Extension area following the removal of the scheme, accompanied by a potentially substantial increase in congestion (see Table 4-2).
- 6.4.21 Data on road traffic accidents have shown declining trends across London over the longer term and accidents dropped 5-6% in Westminster and the Royal Borough of Kensington and Chelsea in 2007-08⁶⁵. Though a beneficial impact on accidents was discernible from the introduction of

⁶⁵TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

the original central London Congestion Charging zone, it is unclear, as noted in the Safety assessment which follows, whether Congestion Charging in the Western Extension area has had any impact on accidents there so it is not possible to predict the impact on accidents of the removal of the WEZ.

- 6.4.22 Bus passenger numbers might fall during the charging day as people who had previously been deterred from using their cars return to using them. Bus speeds would also be likely to reduce as a result of increased congestion.
- 6.4.23 The effects of travel conditions, congestion and road safety as a result of removing the WEZ have been divided into two thematic groups: the effects on people within the Western Extension area who are dependent on public transport, and effects on socially isolated people and those who are dependent on care from others.
- 6.4.24 There is no evidence to show that removing the WEZ would have a differential impact on LGB and transgender people, or people of faith groups other than Christianity, through its impacts on travel conditions, congestion or road safety.

People within the WEZ who are dependent on public transport

- 6.4.25 A review of relevant literature indicates that:
- women are more likely to use public transport than men⁶⁶;
 - declining ability to drive, and financial constraints mean that a high proportion of the older population will be dependent on public transport⁶⁷;
 - in spite of increasing numbers of disabled drivers, a high proportion of disabled people will still be dependent on public transport. A Disabled Persons Transport Advisory Committee (DPTAC) study shows that 60% of disabled people have no car in their household. However, disabled people drive cars less often than the general public but use buses, taxis and minicabs more often⁶⁸;
 - young people tend to rely on public transport for travel and are also less likely to accompany others or be escorted on their trips⁶⁹.
 - available indicators of the performance of buses in the Western Extension area (excess waiting times and average bus speeds) suggest that no overall benefit to bus passengers has arisen from the substantial traffic reductions brought about by the WEZ, and in fact performance has deteriorated slightly, mirroring available indicators of general traffic conditions⁷⁰.
- 6.4.26 EPGs likely to be more dependent on public transport than average would include women, older people, disabled people and young people, as well as people on low incomes. Members of these groups would be more likely to continue to use public transport even after the removal of the

⁶⁶ Department of Transport/Government Statistical Service (1996) *National Travel Survey 1993/95: Transport Statistics Report*, London: HMSO.

⁶⁷ Dunbar, Holland and Maylor (2004) *Older Pedestrians: A Critical Review of the Literature*, "Road Safety Research Report No. 37", Department for Transport, London

⁶⁸ Disabled Persons Transport Advisory Committee (2001) *Attitudes of Disabled People to Public Transport*. Accessed online at: <http://dptac.independent.gov.uk/pubs/research/apt/index.htm> on 20/05/2010

⁶⁹ DfT (2006) *Young people and transport: Their needs and requirements*. Accessed online at: <http://www.dft.gov.uk/adobe/pdf/socialinclusion/youngpeopleandtransport> on 20/05/2010

⁷⁰ TfL (July 2008) *Central London Congestion Charging Impacts Monitoring, Sixth Annual Report*. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

WEZ. The potential effects of increased congestion, such as longer journey times and waiting times at bus stops as a result of increased congestion, might differentially affect these groups. They could also be differentially affected if the reduction in charging income for TfL led to reductions in investment in the services they use.

- 6.4.27 The overall number of public transport passengers could go down as a result of removing the WEZ as some current passengers are likely to revert to using their cars. This might benefit members of the groups identified above (should they continue to use public transport) if it resulted in more comfortable travelling conditions.
- 6.4.28 Reduced usage of public transport could potentially adversely affect the personal safety of those using these services, and some EPG members may be somewhat more vulnerable to attack than non-EPG members, as well as being more sensitive to perceived danger and potentially more likely to make alternative plans to avoid it. It should be noted that TfL does not intend to reduce the provision of bus services to the Western Extension following the removal of the scheme, and that mitigation measures outlined in Section 4.3 such as increased SCOOT coverage and bus priority measures should benefit all bus users in the zone.

Vulnerable, dependent and socially isolated road users

- 6.4.29 Great Britain is one of the safest countries in the world in terms of road deaths, which have fallen by 18% since the mid-1990s, while road traffic increased by 16%. Despite this improvement, pedestrians and pedal cyclists remain vulnerable, having little or no physical protection, and over 30,000 pedestrians and 16,000 cyclists were injured in Great Britain in 2007, with 646 pedestrians and 136 cyclists killed⁷¹. Children are amongst the most vulnerable road users⁷², and road accidents are one of the major causes of death and injury for children and young people. One in ten road casualties are older people, of whom a quarter are pedestrians, and 50% of all pedestrian deaths in Great Britain involve people aged 60 years and over.
- 6.4.30 Although there is no indication that overall accident rates would change as a result of the removal of WEZ, it is likely that people within the Western Extension area who are dependent on public transport would also be more likely to use the road as pedestrians, so any increase in road accidents that did occur could disproportionately affect these groups. Moreover, children and older people, due to their differential vulnerability to road accidents as noted above, would be at higher risk than others. This might apply in particular to the northern and western parts of the Western Extension area where the proportion of the local population made up by children is greatest.
- 6.4.31 Heavy traffic can cause people to feel disorientated and intimidated. This is likely to be particularly true of older people, who are known to worry more about their safety because they are likely to be more severely injured in the event of an accident, to take longer to recover and to suffer greater psychological impact than a younger person in a similar incident⁷³. Road users with certain types of disability – restricted movement, vision problems and functional disability – are also likely to experience this.

⁷¹ House of Commons Public Accounts Committee (2009). Improving road safety for pedestrians and cyclists in Great Britain. Accessed online at: <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmpublicacc/665/665.pdf> on 20/05/2010

⁷² DfT (2007) Child Road Safety Strategy. Accessed online at: <http://www.dft.gov.uk/pgr/roadsafety/child/childsafetystrategy2007?page=1#a1000> on 20/05/2010

⁷³ DfT (2001) Older people: Their transport needs and requirements. Accessed online at: <http://www.dft.gov.uk/pgr/inclusion/older/> on 20/05/2010

- 6.4.32 Research has shown that a lack of mobility can prevent older people from participating in social activities and lead to low morale, depression and loneliness⁷⁴. Older people and people with certain disabilities who live within the Western Extension area might choose to forego non-essential journeys to avoid confronting the potentially slightly more challenging traffic conditions that could arise as a result of removing the WEZ. This avoidance could in turn lead to social isolation and might present a hurdle to their engagement in civic, social or recreational activities.
- 6.4.33 It should be noted, however, that some of these same people might currently not be driving in order to avoid the charge, so removing the WEZ could benefit them.
- 6.4.34 The removal of the WEZ would also remove a barrier that has caused some carers to reduce the frequency of their visits to people resident in the Western Extension area during charging hours⁷⁵. This could potentially benefit this group by encouraging more frequent visits.

Equalities assessment – access to services and economic implications

- 6.4.35 This topic has been divided into two thematic sections: effects on people in the WEZ dependent on travelling by car to access services in the WEZ or in the original central London charging zone; and effects on people with low incomes living in the WEZ.
- 6.4.36 There is no evidence to show that removing the WEZ would have a differential impact on LGB and transgender people, or people of faith groups other than Christianity, through its impacts on travel conditions, congestion or road safety.

People in the Western Extension area dependent on travelling by car to access services in WEZ or CLoCCS

- 6.4.37 A quarter of Western Extension area residents appear to have increased their car travel to the original charging zone, particularly for shopping and leisure purposes since the introduction of the WEZ⁷⁶. While there is no breakdown available to show which if any EPGs resident in the Western Extension area might be, or might have become, dependent on facilities in the original central London charging zone, it is notable that women are more likely than men to be responsible for shopping. They are also more likely to have responsibilities for caring for young children, and to be travelling with children. Leisure opportunities are especially abundant in the original central London charging zone and are particularly important for children and young people.
- 6.4.38 Existing research into travel behaviour also shows that:
- people with disabilities or those with health problems that make it difficult for them to travel, feel particularly dependent on their cars⁷⁷;
 - travelling on public transport with children presents particular challenges for parents and carers⁷⁸; and
 - shift workers tend to undertake at least one of their journeys to work by car⁷⁹.

⁷⁴ *Ibid*

⁷⁵ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010

⁷⁶ *Ibid*.

⁷⁷ National Centre for Social Research (2009) The Travel Choices and Needs of Low Income Households: the Role of the Car. Accessed online at: <http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/scienceresearch/social/theroleofthecar/roleofthecarreport.pdf> on 20/05/2010

⁷⁸ *Ibid*

- 6.4.39 Given the above, the Variation Order might impact particularly on women resident in the Western Extension area, especially those with young children, who currently travel to the original central London charging zone for their shopping needs. However, as the majority of Western Extension area residents appear to use supermarkets within the Western Extension area or outside the charging zones for grocery shopping⁸⁰, the effect on essential shopping trips is likely to be small. There could also be positive impacts on those living within or outside the area who drive in the Western Extension area.
- 6.4.40 Car trips made by young people resident in the Western Extension area into the remaining central London charging zone might be expected to decrease as a result of their trips being subject to the full congestion charge upon removal of the WEZ. However, young people of school age are more likely to use public transport than to travel by car. Moreover, young people who are escorted into the original zone to avail of leisure and cultural opportunities would be likely to make such trips on weekends, when the congestion charge does not apply. Any young people resident in the Western Extension area who do drive might still be affected, and their opportunities for leisure limited to areas outside the charging zone, unless they choose a new transport mode. Again these impacts would be balanced by those on young people living outside or within the Western Extension area who would no longer have to pay to make trips into that area.
- 6.4.41 Some sick people, people with certain types of disabilities, and older people who prefer cars due to mobility problems make car trips into the central London charging zone. Having to pay a full charge to make these trips might limit shopping or leisure opportunities for these people, especially as across London, households with sick, disabled or older people are often also households with lower incomes.
- 6.4.42 As there are relatively large concentrations of people with limiting long-term illnesses resident in the Western Extension area, this could potentially constitute a significant adverse impact for those dependent on services in CLoCCS. Two of these concentrations, one in the north-eastern corner of the Western Extension area and one adjoining its southern boundary, are in close proximity to the original central London charging zone, suggesting the possibility of dependency on original zone facilities.
- 6.4.43 However, the availability of the 100% Blue Badge discount should ensure that those in most need are unaffected by the proposal, and any impact that would occur would be balanced to some extent by the fact that there would be a reduction in the cost of driving in the Western Extension area following the removal of the WEZ.

People on low incomes living in the Western Extension area

- 6.4.44 About 40 percent of Western Extension users report that they find it easy to afford to pay the charge; around one in three Western Extension users say it is difficult to afford to pay the charge, particularly those who pay the charge from lower income or economically inactive households, disabled people and those with young children⁸¹.

⁷⁹ Transport for London (2005) Proposed Western Extension to the Central London Congestion Charging Scheme: Assessment of Equalities and Inclusion impacts. Prepared by Entec UK. Accessed online available at: http://www.tfl.gov.uk/assets/downloads/wez_SustainableDevelopment/A.pdf on 20/05/2010

⁸⁰ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

⁸¹ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

- 6.4.45 As low income households in general are also more likely to have sick, disabled or older people in them, as well as lone parent families, a change in transport mode may not always be feasible.
- 6.4.46 Low income households which have access to a car would be expected to gain in terms of their travel in WEZ but lose out in terms of their travel to CLOCCS. So the overall impact for any household will be dependent on where they want to travel. Furthermore, it should be emphasised that this group represents the minority of those on a low income, who generally do not own a car or drive in either zone.
- 6.4.47 In the Western Extension area, there is a noticeable correlation between geographical concentrations of people with limiting long-term illnesses and households with low incomes; other correlations have not been found. Car owning households in these concentrations – one in the northern wedge of the WEZ boundary and one near its south west – could be significantly impacted, while those in these groups who live outside the Western Extension area but drive in it would be better off through no longer having to pay the daily charge.
- 6.4.48 However, the removal of the WEZ would address the concerns raised over the severance effects of the boundary on communities around the zone, particularly around the northern boundary of the scheme, as there would no longer be any penalty for crossing into the Western Extension area.

6.5 Conclusions

- 6.5.1 The impact of the Variation Order on the relevant IIA secondary objectives is assessed as follows:

- **To address the key barriers to equality of access for all users and potential users of the London transport system:** Those paying the charge are disproportionately likely to have a high household income, and since revenues from the scheme are spent on improvements to public transport services which are used by those with, typically, lower incomes, the removal of the WEZ could have a moderate negative impact on equality of access because of the numbers of people using public transport.
- **To give all users and potential users equal opportunity to access the London transport system and sustainable transport choices:** People on low incomes who are reliant on the car as a means of transport into the CLoCCS could be adversely impacted as a result of the removal of the WEZ. Those needing to use the car to access the Western Extension area would gain by no longer having to pay the charge. However, considering both the low levels of car ownership and use in the WEZ by those on a low income, and the significant gain for those on lower incomes no longer paying the charge, the removal of the WEZ is assessed as being likely to have an overall neutral impact and the greater number of those using WEZ would find themselves better off – particularly those living outside WEZ who are not in receipt of a residents' discount.

6.6 Mitigation

- 6.6.1 No specific mitigation measures are recommended.

6.7 Monitoring

- 6.7.1 Data are available that would allow an appraisal of the impact of the removal of WEZ on EPGs should the need arise. However, no specific monitoring of the impacts of the removal of the WEZ is proposed.

7 Health Assessment

7.1 Introduction

7.1.1 The health and wellbeing of an individual is affected by many factors including characteristics of the individual, lifestyle factors and the nature of the external environment, or an individual's living and working conditions. Factors affecting health and wellbeing include⁸²:

- Socio-economic – income and poverty, employment and social exclusion;
- Physical environment – air and water quality, housing, regeneration, crime, noise, infectious disease and toxic hazards and transport;
- Social and community environment – social and community networks, access to services such as education, health and leisure;
- Individual or family lifestyles – diet, physical activity, smoking, alcohol, sexual behaviour, drugs and mental health; and
- Fixed/constitutional – age, sex and genes.

7.1.2 The Health Impact Assessment (HIA) process provides an opportunity to consider the health effects of a proposed plan or policy and to make adjustments which will maximise beneficial effects and minimise adverse effects. HIA examines whether a plan or policy might damage people's health but also whether it could reinforce existing health inequalities. Health inequalities are differences in health status between different groups. Some inequalities are attributed to fixed/constitutional differences and lifestyle factors while others may be due to the external environment.

7.2 Policy context

Health inequalities

7.2.1 The genetic conditions with which people are born, and the circumstances in which people grow, live, work, and age can give rise to health inequalities⁸³. Inequalities in access to transport can affect people's ability to reach services, engage in physical activity or sustain social networks⁸⁴.

7.2.2 According to the Department for Communities and Local Government, good transport is the key to attracting investment and to connecting communities, including the most deprived, to economic

⁸² NHS Health Development Agency (2002) Introducing Health Impact Assessment (HIA): Informing the Decision Making Process. Accessed online at: <http://www.nice.org.uk/niceMedia/documents/hia.pdf> on 20/05/2010

⁸³ Marmot Review (2009) Strategic Review of Health Inequalities in England Post 2010, Fair Society, Healthy Lives. Accessed online at: <http://www.ucl.ac.uk/ghcg/marmotreview/Documents/finalreport> 20/05/2010

⁸⁴ Department of Health (2009) Tackling Health Inequalities: 10 Years On. A review of developments in tackling health inequalities in England over the last 10 years. Department of Health: London. Accessed online at http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_098934.pdf on 20/05/2010.

opportunities and areas of economic growth⁸⁵. Problems with transport provision and the location of services can reinforce social exclusion⁸⁶.

- 7.2.3 The Equalities Impact Assessment undertaken for the original LEZ scheme found that poor air quality is more likely to affect deprived communities which tend to be located in central and inner London, where air pollution concentrations are higher, and in locations where they are more likely to be exposed to air pollution (e.g. next to major roads). Deprived communities are also more likely to live in poorer quality buildings (with single glazed windows for example) and may have fewer opportunities to access open green spaces for recreational activities with the result that children play more frequently near busy roads, where air pollution concentrations are higher. Furthermore, the demographic influence on deprivation and housing means that members of minority ethnic groups may be more likely to experience the effects of air pollution in London.
- 7.2.4 With this in mind, any deterioration in air quality would have a greater negative impact on deprived communities, including ethnic minorities and, particularly, more vulnerable people such as the young, old or those with pre-existing medical conditions.

Enhanced health and wellbeing

- 7.2.5 Transport plays a role in determining the quality of life of Londoners in many ways: it affects the urban realm and people's health and wellbeing, and travel experiences can influence people's state of mind⁸⁷. However modern urban systems can also discourage physical activity. A lack of physical activity contributes to excessive weight also increases the risk of Type 2 Diabetes independent of the effects on body weight⁸⁸. Living in a safer environment extends opportunities for people to be physically active and develop social networks⁸⁹.

Air quality

- 7.2.6 Poor air quality can cause serious health problems and reduces quality of life⁹⁰. To address this issue the European Union has set standards for concentrations for a variety of pollutants that are considered harmful to human health and the environment. These standards have been consolidated in the 2008 European Union directive on air quality⁹¹. The directive sets limit values that are currently reflected in the UK's National Air Quality Strategy and Air Quality Regulations. The limit values for PM₁₀ (small particles) and NO₂ (nitrogen dioxide) are given in Table 7-1, below.

Table 7-1: Selected air quality limit values

Pollutant	Objective	Measured as	Date in force
-----------	-----------	-------------	---------------

⁸⁵ CLG (2006) Strong and Prosperous Communities: The Local Government White Paper. Department of Communities and Local Government: London. Accessed online at http://www.communities.gov.uk/publications/localgovernment/strongprosperous_on_20/05/2010.

⁸⁶ ODPM (2003) Making the Connections: Final Report on Transport and Social Exclusion. Report by the Social Exclusion Unit within the Office of the Deputy Prime Minister. Accessed online at http://www.cabinetoffice.gov.uk/media/cabinetoffice/social_exclusion_task_force/assets/publications_1997_to_2006/making_transport_2003.pdf on 20/05/2010.

⁸⁷ MVA (2009) Draft Revised Mayor's Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010

⁸⁸ Department of Health and the Department of Children, Schools and Families (2008) Health Weight, Healthy Lives: A Cross Government Strategy for England. Accessed online at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082378 on 20/05/2010

⁸⁹ HM Government, Department of Health and NHS (2004) Choosing Health: Making Healthy Choices Easier. Accessed online at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094550 on 20/05/2010

⁹⁰ GLA (2009) Clearing the Air: The Mayor's Draft Air Quality Strategy, Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/sites/default/files/MAQSPublicConsultationStrategy.pdf> on 20/05/2010

⁹¹ Clean Air for Europe (CAFE) Directive 2008/50/EC

Nitrogen dioxide (NO ₂)	200µg/m ³ Not to be exceeded more than 18 times per year	1 hour mean	January 2010
	40µg/m ³	Annual mean	January 2010
Small particles (PM ₁₀)	50µg/m ³ Not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40µg/m ³	Annual mean	31 December 2004

- 7.2.7 In April 2009 the UK Government submitted its time extension notification to the European Commission, seeking to extend the deadline for complying with the PM₁₀ EU limit values to 2011. The Commission rejected the Government's notification in December 2009. The Government has now submitted further information to the Commission and is awaiting its response.
- 7.2.8 The UK Government is expected to submit a time extension notification seeking to extend the deadline for complying with the NO₂ EU limit values to 2015 later this year.
- 7.2.9 Poor levels of air quality deter people from visiting the city and discourage outdoor sporting and recreational activities⁹². This suggests improved air quality would have beneficial effects beyond direct improvements in respiratory health. It may indirectly lead to people taking more exercise.
- 7.2.10 As suggested in Tables 4-3 and 4-4, the removal of the WEZ would lead to some increases in the emissions of PM₁₀ and NO_x from road transport in the zone. The air quality pollutant concentrations map in chapter six show the impact of these anticipated changes in and around the Western Extension area.

7.3 Methodology

- 7.3.1 There is no statutory requirement to carry out an HIA in the UK. As such there are no specific requirements for how the process should be undertaken or what should be included. However good practice guidance has been prepared by the London Health Commission⁹³ and HIA resources are provided by the Association of Public Health Observatories⁹⁴. These resources have been used in the preparation of this HIA.
- 7.3.2 There are five sequential core steps in HIA⁹⁵:
- screening;
 - scoping;
 - appraisal;
 - decision making; and
 - monitoring and evaluation.

⁹² London Development Agency (2002) Visit London: The Mayor's Plan for Tourism in London. Accessed online at http://legacy.london.gov.uk/gla/publications/visit_london/summary.pdf on 20/05/2010.

⁹³ London Health Commission (2000) A Short Guide to Health Impact Assessment: Informing Health Decisions

⁹⁴ Association of Public Health Observatories, the HIA Gateway. Accessed online at: <http://www.apho.org.uk/default.aspx?RID=40141> on 20/05/2010

⁹⁵ London Health Commission (2000) A Short Guide to Health Impact Assessment: Informing Health Decisions. Accessed online at: http://www.who.int/hia/examples/en/HIA_londonHealth.pdf on 20/05/2010

Screening and scoping

- 7.3.3 Due to the body of work previously undertaken including an integrated impact assessment of the draft revised Mayor's Transport Strategy⁹⁶ which included an examination of the effects of the removal of the WEZ on health it was felt that it would be inappropriate to repeat the screening and scoping exercises.

Appraisal

- 7.3.4 An assessment framework was established for the integrated impact assessment of the draft revised Mayor's Transport Strategy. The primary objective of relevance to this appraisal is Objective C – To contribute to enhanced health and wellbeing for all within London. The secondary objectives underpinning this objective, and against which the Variation Order has been assessed, are as shown in Table 7-2.

Table 7-2: Relevant IIA objectives

Primary objective C: To contribute to enhanced health and wellbeing for all within London
Relevant secondary objectives:
To address health inequalities and factors which negatively impact upon health and wellbeing
To promote enhanced health and wellbeing for all
To improve air quality and the noise climate across London

Decision making

- 7.3.5 Undertaking HIA prior to policy implementation provides information which can be used to minimise adverse effects and maximise beneficial effects of a policy. This may be achieved by making changes to the policy, by making amendments to the proposed means of implementation or putting in place suitable mitigation measures. This HIA appraisal report is a tool which can be used by decision makers.

Monitoring and evaluation

- 7.3.6 Where appropriate, potential indicators which could be used to monitor effects are proposed in this IIA report. The process of monitoring and evaluation of the policy will be undertaken by TfL in the period following its implementation.

7.4 Likely significant effects

- 7.4.1 The consequences for health of the removal of the WEZ would depend on how drivers, users of public transport, pedestrians and cyclists respond and also on the extent to which behavioural change introduced due to the scheme has been locked in.
- 7.4.2 The effects on health identified below have been informed by the assessment of predicted changes to traffic conditions set out in chapter four, above. As set out in Tables 4-2 to 4-5, above, the removal of the WEZ is thought likely to lead to an increase in traffic, congestion and emissions of both PM₁₀ and NO_x from road transport within the WEZ.

⁹⁶ MVA (2009) Draft Revised Mayor's Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010.

Health assessment – health inequalities

- 7.4.3 As noted in Chapter 6, the effect of the removal of the WEZ on the cost of motoring and its impact on low-income groups is likely to be mixed. For those on a low income where cost is the key determining factor on access to private transport, the lower costs associated with the removal of the congestion charge in the area may be beneficial for those seeking to access services, facilities and employment within the Western Extension area by car but increased congestion would make access less convenient for bus users. However for those resident in the Western Extension area who wish to enter the original central London charging zone by car, the costs of doing so would increase because the residents' discount to which they were previously entitled to would no longer apply.
- 7.4.4 The removal of the WEZ would reduce net scheme revenues by some £55 million each year⁹⁷. This money is used for improving transport across London and has been used to fund improvements to roads, public transport and walking and cycling, benefiting people who travel in London. The overall budget of TfL for 2009/2010 is close to £10billion, in comparison to which, the effects of removing the WEZ would be minor.
- 7.4.5 The increase in congestion that would be likely if the WEZ were removed could potentially adversely affect the response time of emergency service vehicles compared to the baseline position with the WEZ in place. This could have consequences for health inequality by affecting survival rates from conditions such as heart disease and stroke where the speed of response following an incident may be a factor, although this is not a problem particular to the WEZ⁹⁸, and the extent is uncertain.
- 7.4.6 As noted above, lower income households are for several reasons systematically more likely to be exposed to poorer air quality, with consequent implications for health inequality if air pollution worsens as a result of removing the WEZ.
- 7.4.7 Surveys of disabled people found that the scheme had had little impact on their daily lives and no significant impact on their ability to travel⁹⁹. It seems unlikely therefore that there would be any significant effects on disabled people's ability to travel arising from the removal of the WEZ.
- 7.4.8 As residents living in the WEZ are entitled to a discount on the congestion charge it could be that the removal would have an effect on journeys made by WEZ-resident carers into CLoCCS. Currently they would not pay the charge when entering CLoCCS; however they will have to do so in future. That said, this would merely restore the status quo prior to the introduction of the WEZ and given that the number of carers living in the WEZ and visiting CLoCCS would be a relatively small number of the overall total living in central London, the effect is not likely to be significant, while the situation for carers from outside the Congestion Charging zone wishing to enter the Western Extension area would be improved.
- 7.4.9 The WEZ was perceived by some to have introduced a form of severance, particularly for poorer communities in the north-western area of the zone. The number of visits to friends and family

⁹⁷ TfL (2008) Non Statutory Consultation on the Removal of the Western Extension, Report to the Mayor. Accessed online at: <http://www.tfl.gov.uk/tfl/roadusers/congestioncharging/westernextension/pdf/TFL-Report-to-Mayor-on-Non-statutory-consultation-on-the-future-of-the-western-extension-of-the-congestion-charging-zone.pdf> on 20/05/2010

⁹⁸ Emergency admission for heart disease and stroke are not expected to rise in Kensington & Chelsea; The Royal Borough of Kensington and Chelsea and NHS Kensington and Chelsea (2009) Planning for the Future: the Kensington and Chelsea Joint Strategic Needs Assessment. Accessed online at: <http://www.rbkc.gov.uk/voluntaryandpartnerships/healthandwell-being.aspx> on 20/05/2010

⁹⁹ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

during charging hours fell by 16%, while visits made by carers fell 10% during charging hours¹⁰⁰. While overall levels of social interaction may not have fallen, some vulnerable people may feel isolated or need help during the week and prefer a daily 'drop in' visit of half an hour to a longer visit at the weekend, for example. The removal of the WEZ might reasonably be expected to reverse this effect.

Injuries and deaths

- 7.4.10 As shown in chapter eight of this assessment, analysis of the pattern of accidents on major routes through the Western Extension area before and after the introduction of congestion charging shows no statistically significant change in the numbers killed or seriously injured. It is therefore concluded that the removal of the WEZ is unlikely to make a significant difference to the numbers of people killed or seriously injured on these routes. The effect of removing the WEZ on injuries and deaths is explained more fully in the Safety assessment.

Walking and cycling

- 7.4.11 Before the introduction of the WEZ, TfL expected that it would have a broadly beneficial impact on the attractiveness of walking as a mode due to the reductions in traffic, emissions and accidents that it was anticipated to deliver. The removal of the WEZ could therefore be expected to have a broadly negative effect on the attractiveness of walking and cycling. Among those who sometimes use non-car modes of transport, walking increased by 4% and cycling by 15% following the introduction of the WEZ¹⁰¹. This might imply that a similar proportion of residents might stop making any journeys on foot or by bicycle, though the increase in cycling since the WEZ was introduced may also reflect wider trends and the impact of other measures.
- 7.4.12 If the removal of the WEZ decreases the attractiveness of walking and cycling this could reduce the number of people travelling by these modes. This would have an undesirable impact on levels of physical activity and obesity although the numbers concerned are not high.
- 7.4.13 The effect of the removal of the WEZ on traffic volumes would be likely to vary across the zone and areas outside of the zone. Reductions in traffic, anticipated on the some roads around the WEZ and in some locations within CLoCCS, would increase the attractiveness of these areas for walking and cycling.

Health assessment – air quality

- 7.4.14 As noted in Tables 4-3 and 4-4, TfL anticipates that the removal of the WEZ would lead to increases in the emissions of PM₁₀ and NO_x from road transport in the zone within the Western Extension area during the Monday to Friday former charging period. Over the WEZ as a whole the impact is minor, although certain major routes would experience more significant changes in air quality emissions from transport. However there would be some improvements on roads around and outside the Western Extension area boundary, where traffic levels should decrease.
- 7.4.15 It is important to appreciate that where these changes occur along individual roads the increased (or decreased) concentrations of pollutants would occur principally on and at the kerbside of the road itself. Further away from the road the concentrations rapidly decline to the point where the impacts are no longer discernible and conform to the general background levels of pollution that affect central London as a whole. Exposure to the higher levels of pollution on the road itself will

¹⁰⁰ TfL (July 2008) Central London Congestion Charging Impacts Monitoring, Sixth Annual Report. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/roadusers/congestioncharging/6722.aspx> on 20/05/2010.

¹⁰¹ *ibid.*

be very limited and health consequences will be determined by long term exposure to the background levels of pollution.

7.4.16 Furthermore, it is projected that, even with the removal of the WEZ in December 2010, the EU limit values for concentrations of PM₁₀, set with regard to human health, would be met in the area. Nonetheless, local measures that are being developed for use in other locations could be applied in the area if particular issues were to arise.

7.4.17 Over time, a range of measures will deliver emissions reductions in the Western Extension area commensurate with those that the WEZ would have brought, for example the planned introduction of the age-limit for taxis, and the deployment of cleaner buses.

7.5 Conclusions

7.5.1 The impact of the Variation Order on the relevant IIA secondary objectives are as follows:

- **To address health inequalities and factors which negatively impact upon health and wellbeing:** no significant effects on health inequalities are expected as a result of the removal of the WEZ.
- **To promote enhanced health and wellbeing for all:** although there may be a trend towards fewer journeys made on foot or by bicycle within the WEZ, this is not expected to lead to significant adverse effects on health and is likely to be counteracted by other measures such as the Mayor's Cycle Hire scheme, Cycle Superhighways, and the ongoing smarter travel programme. The removal of the WEZ would alleviate concerns over the severance impact of the scheme on communities in the north of the area.
- **To improve air quality and the noise climate across London:** while some increase in emissions of pollutants from road transport in some locations as a result of removing the WEZ, there are unlikely to be any significant health effects from any changes to air quality as a result. Noise has not been considered in this assessment.

7.6 Mitigation

7.6.1 No significant health effects are likely as a result of the removal of the WEZ and therefore no mitigation measures are proposed, and any adverse impacts that do occur in some locations would be likely to be balanced by positive impacts elsewhere. If air quality were to deteriorate more than expected further action should be taken. The Draft MAQS contains provision for greater and wider use of local measures. These provide a mechanism by which further action may be taken in response to monitoring data, allowing the Mayor to respond proactively to any potential adverse effects of removing the WEZ.

7.7 Monitoring

7.7.1 No specific monitoring of the health effects of the removal of the WEZ is proposed.

8 Safety

8.1 Introduction

8.1.1 This section considers the potential impacts of removal of the WEZ on transport safety which is measured in terms of the number of reported accidents.

8.1.2 Personal injury accident data was provided by TfL, covering an approximate three year period before the implementation of the WEZ, and approximate three year period after the WEZ was introduced on 19th February 2007. The data provided includes details concerning the location, severity, number of casualties, vehicle type and brief description of each reported accident.

8.2 Policy context

8.2.1 In March 2000, the government published its road safety strategy and casualty reduction targets for 2010 in a report entitled "Tomorrow's roads: safer for everyone". The targets, compared with the average for the period 1994-1998 are:

- A 40% reduction in the number of people killed or seriously injured in road collisions
- A 50% reduction in the number of children killed or seriously injured
- A 10% reduction in the slight casualty rate, expressed as the number of people slightly injured per 100 million vehicle kilometres

8.2.2 Following this, TfL produced "London's road safety plan" (November 2001), which recognised the national targets, and also recognised the particular issues for vulnerable road users. Consequently, the 40% reduction target for fatal or serious casualties was applied to these vulnerable road users (including pedestrians, pedal cycles and powered two wheelers).

8.2.3 By 2004, these targets had been achieved in London and in March 2006 the then Mayor therefore announced more challenging targets to be achieved by 2010. These include:

- A 50% reduction in the number of people killed or seriously injured
- A 50% reduction in the number of cyclists and pedestrians killed or seriously injured
- A 40% reduction in the number of powered two wheeler users killed or seriously injured (unchanged)
- A 60% reduction in the number of children killed or seriously injured
- A 25% reduction in the slight casualty rate, expressed as the number of people slightly injured per 100 million kilometres

8.2.4 In April 2009, the DfT published "A safer way: consultation on making Britain's roads the safest in the world", which seeks views on the vision, targets and measures for improving road safety in great Britain for the period beyond 2010. The document provides an overview of the proposed methodologies for improving road safety, with the consultation covering seven key areas, including the context, the vision for the future, the approach to road safety, the road network, safer vehicles, road user behaviour and targets and ensuring success.

8.3 Methodology

- 8.3.1 Accident data provided by TfL was refined and entered into a GIS software package for further analysis. This has allowed for an analysis of the impact of the introduction of the WEZ on reported road safety accidents and hence a consideration of the potential effects on reported road safety accidents of removing the scheme.
- 8.3.2 Due to the volume of reported accidents within the WEZ, this analysis focused on eight key corridors providing access both into and within the WEZ and along its boundary. These eight corridors have been selected as it is considered that they represent the most likely routes along which commuters and visitors to London would travel, and on which traffic conditions are therefore most likely to be influenced by the removal of the WEZ charging zone. Although it is recognised that there may also be changes in the residential related traffic on the minor roads within the WEZ, it is not anticipated that this will be as significant in scale as changes to commuter and visitor traffic on the more major roads.

Table 8-1: Selected routes through the WEZ

Corridor	Description
A40 Westway	A40 Westway between the junction of Old Oak road and A41 Baker street
A402	A402 from the b408 Paddenswick road junction to the A5 Edgware road junction
A315	A315 from Hammersmith flyover to the A4 and A3216 junction at Knightsbridge
A4	A4 from the Hammersmith flyover to Hyde park corner
A3218	A3218 from the A3219 Dawes road junction to the junction with the A4
A308	A308 from the A3220 junction to the A4
A308 / A3217	A308 / A3217 from the Parsons Green junction to the A302 Grosvenor Place
A3220 / A3212	A3220 / A3212 from the A40 Westway to Vauxhall Bridge

- 8.3.3 Analysis of the data indicates no apparent trend in terms of the level of accidents reported, year-on-year, within the identified corridors in the study period. It is therefore not possible to clearly identify any impact between the 'before' and 'after' WEZ implementation scenarios, and relate this to the potential future situation.
- 8.3.4 The baseline for this assessment therefore assumes that the continued operation of the WEZ would have no discernable impact on road traffic accidents in and around the zone.
- 8.3.5 The Primary objective from the IIA of the draft revised MTS that is relevant to the IIA for the Variation Order is Primary objective D – To promote safety and security for all working, travelling and using London transport services and facilities. The relevant secondary objective, against which the Variation Order was assessed, is to increase road safety for vehicles and pedestrians

Table 8-2: Relevant IIA objectives

Primary objective D –To promote safety and security for all working, travelling and using London transport services and facilities
Relevant secondary objective:
To increase road safety for vehicles and pedestrians

8.4 Likely significant effects

- 8.4.1 Since no specific impact on accidents is discernible from the implementation of the WEZ, it is not anticipated that there would be any discernable changes following its removal.

8.5 Conclusions

- 8.5.1 The impact of the Variation Order on the relevant IIA secondary objective is assessed as follows:

- **Increase road safety for vehicular and pedestrians:** The IIA does not find any evidence that the removal of the WEZ would have any significant effect on road safety.

8.6 Mitigation

- 8.6.1 As no significant effect on safety is anticipated as a result of the removal of the WEZ no mitigation measures are recommended. It is anticipated that TfL will continue to take appropriate measures to promote transport safety in the WEZ and elsewhere.

8.7 Monitoring

- 8.7.1 TfL will continue to monitor accident data across the transport network as part of its ongoing programme of monitoring of road safety in London.

9 Climate change mitigation

9.1 Introduction

9.1.1 Climate change mitigation refers to measures that will reduce emissions of greenhouse gases (GHG) in the atmosphere. It is achieved through the implementation of low carbon technologies, improvements in the energy efficiency of the various operations, as well as changes in people's behaviour to support reductions in GHG emissions. This assessment examines the likely significant impacts of the proposal on the Mayor's objectives for climate change mitigation.

9.2 Policy context

9.2.1 The Climate Change Act 2008 set a target for the year 2050 that the net UK carbon account should be at least 80% lower than the 1990 baseline.

9.2.2 Under the GLA Act 2007, the Mayor is obliged to take action to address both the causes and the consequences of climate change and ensure that all GLA strategies consider climate change mitigation and adapting to climate change.

9.2.3 The Mayor's draft London Climate Change Mitigation and Energy Strategy, sets out a number of policy commitments or requirements to achieve a 60% reduction in London's CO₂ emissions by 2025 from a 1990 base. One of these commitments is to reduce transport's contribution to climate change and improve the transport system's resilience to the effects of change. The Mayor proposes to structure his approach to achieving the contribution of the transport sector to this target around three key themes:

- Improved operational efficiency – to minimise unnecessary CO₂ emissions;
- Supporting and encouraging the development and use of low carbon vehicle technology; energy and design principles, including working with third parties;
- Encouraging and facilitating low-carbon travel behaviour. This includes the activities underway and planned to increase cycling, walking and the use of public transport.

9.2.4 The Mayor's Transport Strategy sets out the Mayor's vision for transport in the capital over the next 20 years including the policies and the necessary actions to reduce emissions from transport. Policy 24 states that the Mayor, through TfL and a range of other delivery partners will take the necessary steps to deliver the required contribution from ground-based transport to achieve a 60% reduction in London's CO₂ emissions by 2025 from a 1990 base, and to contribute to any additional targets that may be set by the Mayor from time to time. The aim is to reduce emissions through changing travel patterns, efficient use of resources, energy and fuel and promoting the use of new fuels and technologies and thereby making an appropriate contribution toward the 2025 target.

9.3 Methodology

9.3.1 To establish the likely impact of the removal of the WEZ on GHG emissions within the Western Extension area and for London as a whole, the assessment used outputs from TfL's modelling of the traffic and environmental impacts of the Variation Order.

- 9.3.2 The modelled traffic and congestion impacts scenarios vary in their assumptions regarding the proportion of deterred traffic which would revert to driving in the Western Extension area following the removal of the scheme (see Table 4-2).
- 9.3.3 Estimates of the impacts of these traffic and congestion changes on emissions of air quality pollutants and climate change gases (see Tables 4-3 to 4-6) have been made using traffic and congestion changes that broadly correspond to a scenario in which around half of the effective road network capacity that is estimated to have been lost in the Western Extension area has been recovered. They therefore give a relatively pessimistic view of the likely changes because additional traffic would be induced in these circumstances, though congestion would be lower than shown in Scenarios 1 and 2.

Table 9-1: Relevant IIA objectives

Primary objective E – to contribute to the mitigation of and adaptation to climatic change
Relevant secondary objectives:
To contribute to the reduction of GHG emissions arising from within the London area
To reduce GHG emissions arising from operations and service provision

9.4 Likely significant effects

Effects on traffic flows and congestion

- 9.4.1 TfL's modelling indicates increases in traffic flows within the Western Extension area following the removal of the WEZ. The traffic scenarios developed by TfL suggest that the removal of the WEZ would increase both traffic flows and congestion levels across London marginally, though there would be some small decreases in traffic and congestion in the remaining central London charging zone (see Table 4-3).

Effects on greenhouse gas emissions

- 9.4.2 All other things being equal, the removal of the WEZ would cause a small increase in traffic within the Western Extension area, increasing emissions of CO₂ broadly in accordance with the additional travel undertaken by returning traffic. In addition, assuming no increase in network capacity, rising traffic volumes would lead to increased congestion. As average speeds in the area were reduced through increased congestion the relative fuel efficiency of vehicles in the Western Extension area would fall, leading to raised relative fuel consumption and thus CO₂ emissions within the Western Extension area.
- 9.4.3 Levels of bus activity would be expected to remain at broadly similar levels following the removal of the WEZ. However CO₂ emissions arising from their operation would increase slightly as a result of increased congestion and reduced fuel efficiency.
- 9.4.4 Taking these issues into account, TfL projects an increase in CO₂ emissions from road transport in the zone of around 5% in 2011.
- 9.4.5 However, it should be noted that the WEZ covers only a small proportion of the overall area of London and the London-wide impact in terms of CO₂ emissions following the removal of the WEZ is expected to be marginal. TfL estimates a slight increase in London's total CO₂ emissions from

road transport as a result of the removal of WEZ (see Table 4-5). This represents an insignificant impact considering the scale of CO₂ emissions across London, from many different sources.

9.5 Conclusions

9.5.1 The impact of the Variation Order on the relevant IIA secondary objectives are as follows:

- **To contribute to the reduction of GHG emissions arising from within the London area:** the impact within the WEZ to the attainment of this objective is predicted to be negative and of minor significance
- **To reduce GHG emissions arising from operations and service provision:** the impact on CO₂ emissions across London is likely to be negligible. Given the increased bus fleet turnover rate proposed in the Mayor's Transport Strategy which will contribute to reductions in GHG emissions over and above those delivered by the WEZ, the impact across London to the attainment of this objective is not considered to be significant.

9.6 Mitigation

9.6.1 Measures in the Mayor's Climate Change Mitigation and Energy Strategy would tackle CO₂ emissions on a London-wide basis across all sectors of GLA influence.

9.6.2 In addition, as noted in the chapter four, TfL proposes a number of measures that would mitigate the impact of removing the WEZ on levels of traffic, congestion and CO₂ emissions.

9.6.3 While TfL proposes to adopt these measures whether or not the WEZ is removed, they will tend to ameliorate the adverse effects identified in this chapter and some activities would be intensified, accelerated or focused within the Western Extension area.

9.6.4 The extent of the increase in traffic would depend on behavioural response to the removal of the charge, which is not certain.

9.7 Monitoring

9.7.1 TfL will continue to monitor traffic flows and congestion levels within the Western Extension area, and in the remaining Congestion Charging zone and across London as a whole, enabling future assessments of the contribution of road transport to London's overall CO₂ emissions.

10 Climate change adaptation

10.1 Introduction

10.1.1 The Department for Environment, Food and Rural Affairs (Defra) defines climate change adaptation as “changing our behaviour to respond to the impacts of climate change¹⁰².” In practice, adaptation is concerned with changes (including to infrastructure and processes) that are made in order to cope with future climatic conditions. This section of the IIA considers how the removal of the WEZ might affect London’s ability to adapt to climate change.

10.2 Policy context

10.2.1 The Climate Change Act 2008 creates a framework for building the UK’s ability to adapt to climate change and requires adaptation measures to be embedded in all policies and activities. The Act identifies transport as one of the sectors that is most likely to be affected by climate change.

10.2.2 At the London-wide level, the Mayor is obliged under the revised GLA Act 2007 to ensure that all GLA plans and strategies consider adapting to, and further mitigating, climate change. As one of the four GLA functional bodies¹⁰³, TfL’s proposals must also consider climate change adaptation.

10.2.3 The draft Mayor’s Climate Change Adaptation Strategy¹⁰⁴ identifies the following relevant action targeted at reducing the impacts of climate change on London’s transport:

- Action 33: TfL will undertake a climate risk assessment of their assets and operations and develop prioritised action plans for key climate risks.

10.3 Methodology

10.3.1 The Variation Order (including decommissioning activities) was assessed using the same objectives as those used for the IIA of the draft revised Mayor’s Transport Strategy and as shown in Table 10-1 below.

Table 10-1: Relevant IIA objectives

Primary objective E – to contribute to the mitigation of and adaptation to climatic change

Relevant secondary objective:

To enhance and facilitate adaptation to the impacts of climate change

10.3.2 All significant effects (including direct, indirect, cumulative and synergistic effects) were considered. A significant effect is determined to be one that would result in a significant change in the baseline conditions for climate change adaptation.

¹⁰² Defra (2008) Consultation on the Adaptation Reporting Power in the Climate Change Act 2008. Accessed online at <http://www.defra.gov.uk/corporate/consult/climate-change-adapting/index.htm> on 20/05/2010.

¹⁰³ The GLA’s four functional bodies are: London Development Agency (LDA); London Fire and Emergency Planning Authority (LFEPA); Metropolitan Police Authority (MPA); and Transport for London (TfL)

¹⁰⁴ GLA (2010) Draft Mayor’s Climate Change Adaptation Strategy. Greater London Authority: London. Accessed online at: <http://www.london.gov.uk/priorities/environment/climate-change/climate-change-adaptation-strategy> on 20/05/2010

10.4 Likely significant effects

Impact of changing journey patterns on climate change adaptation

- 10.4.1 The removal of the WEZ would lead to an increase in the number of journeys made into or through the Western Extension area as some or all of the traffic currently deterred by the charge returns. In turn, this additional traffic would be likely to lead to some increase in the wear and tear on the roads in the Western Extension area which could potentially exacerbate maintenance costs and potentially lead to a slight reduction in the ability of the road surface to withstand inclement weather conditions such as heavy rainfall.
- 10.4.2 Slight reductions in traffic in the remaining central London Congestion Charging zone, also an anticipated result of the removal of the WEZ, might contribute to a small reduction in wear on the roads there.
- 10.4.3 However, while it is difficult to assess these effects quantitatively it seems unlikely that the change in journey patterns which would result from the removal of the WEZ would have any more than a marginal effect on the state of repair of the road network.
- 10.4.4 The assessment of the Variation Order to remove the WEZ finds no likely significant effects on climate change adaptation in this regard.

Infrastructure changes

- 10.4.5 Decommissioning of the WEZ scheme is currently scheduled to begin following the removal of the WEZ in December 2010. The on-street infrastructure to be decommissioned includes:
- 452 Signs
 - 197 Road Markings
- 10.4.6 All WEZ-specific signs and road markings are planned to be removed, with some additional signage installations also being made over a 6-week programme of works. All decommissioned infrastructure is to be recycled.
- 10.4.7 All WEZ cameras, poles, cabinets and electrical pillars are planned to be removed from all sites through a phased 3-month programme of works (although some equipment might be retained in situ for ongoing monitoring purposes should arrangements be made for their retention by TfL or local boroughs). Decommissioned cameras would be retained for future reuse by TfL, whilst the poles and cabinets would be appropriately disposed of.
- 10.4.8 The proposal involves the removal of infrastructure that is not especially sensitive to the likely impacts of the changing climate outlined in the baseline section (above). Thus it is assessed as being unlikely to lead to any significant effect (either beneficial or adverse) on the likely ability of London to adapt to the impacts of climate change.

10.1 Conclusions

- 10.1.1 The impact of the Variation Order on the relevant IIA secondary objective is assessed as follows:

- **To enhance and facilitate adaptation to the impacts of climate change:** The proposals are not considered likely to lead to any significant effects (either beneficial or adverse) on

the ability of London, TfL, residents or infrastructure to adapt to the impacts of climate change. These findings apply to the Western Extension area, to the central London congesting charging zone, and to London as a whole.

10.2 Mitigation

10.2.1 No significant effects have been identified and therefore no mitigation measures are necessary.

10.3 Monitoring

10.3.1 No specific monitoring in respect of the impact of the removal of the WEZ on climate change mitigation is proposed.

11 Cultural Heritage

11.1 Introduction

11.1.1 In the context of this assessment, heritage assets are taken to be those aspects of the historic environment that are important because of their historic, archaeological, architectural or artistic interest and they can include visible, buried or submerged objects, and also landscaped and planted or managed flora¹⁰⁵.

11.1.2 The objective of the assessment has been to undertake a review of the area covered by the WEZ and in close proximity to its boundaries (hereafter referred to as the 'study area') in order to identify and characterise heritage assets located within that area¹⁰⁶. The importance of the heritage assets has been determined and the likely impact of the decommissioning of the WEZ upon this resource assessed. Mitigation measures have also been considered where appropriate.

11.2 Policy context

11.2.1 In addition to the planning policy framework established in the Mayor's Transport Strategy, the national, regional and local legislative background, planning policy framework and guidance relevant to this assessment of heritage assets is set by the following:

Legislative background

- The Planning (Listed Buildings and Conservation Areas) Act 1990; and
- The Ancient Monuments and Archaeological Areas Act 1979

National planning policy

- PPS5 – Planning for the Historic Environment
- Regional planning policy

Local planning policy

- The London Plan (2009)
- The City of London Unitary Development Plan (UDP) (2002);
- The City of Westminster UDP (2007);
- Kensington and Chelsea UDP (2002);
- Hammersmith and Fulham UDP (2003);
- Southwark Plan (2007);
- Lambeth UDP (2007);
- Tower Hamlets UDP (1998);
- Camden UDP (2006); and

¹⁰⁵ DCLG (2010). Planning Policy Statement 5: Planning for the Historic Environment, Communities and Local Government.

¹⁰⁶ The area beyond the WEZ was not considered in the assessment because none of the infrastructure to be removed is located there

- Islington UDP (2002).
- 11.2.2 Following the Planning and Compulsory Purchase Act 2004, policies within the borough UDPs had to be saved for a period of three years by a direction from the Secretary of State. Some of these policies were saved again in September 2007, but some of the earlier saved policies were allowed to expire. Only policies saved in this way continue to be used in the determination of planning decisions by the boroughs and all will be superseded by emerging local development frameworks (LDF) that are currently in preparation by each council.

English Heritage guidance

- 11.2.3 English Heritage has published a number of guidance and best practice documents in respect of conservation of the historic environment and development within conservation areas and listed buildings. Of particular relevance to this assessment are: Guidance on the Management of Conservation Areas (2006); Streets for All – South East (2005); Conservation Principles, Policies and Guidance (2008).
- 11.2.4 These documents collectively provide guidance for the management of the historic environment, particularly with regard to conservation areas and the public realm, but also provide guidelines for assessing the importance of heritage assets and the likely impact of development and other proposals upon them. They establish best practice for the assessment and management of cultural heritage resources and demonstrate opportunities for balancing the need to protect the historic environment alongside opportunities for enhancement and the need for development.

11.3 Methodology

- 11.3.1 Within the IIA framework, the relevant objective for heritage is “to protect and enhance the physical, historic, archaeological and socio-cultural environment and physical realm”. The methodology in this assessment addresses any likely significant effects upon the historic built environment and archaeology.
- 11.3.2 Heritage assets located within the study area have been identified by reference to information obtained from the National Monuments Record (NMR), the Greater London Sites and Monuments Record (SMR) and from individual London boroughs.
- 11.3.3 The importance of identified heritage assets was determined using guidance set out in PPS5 which states that some heritage assets have a level of interest which justifies a statutory designation and therefore particular procedures apply to decisions that involve them.
- 11.3.4 However, there are other heritage assets which are not statutorily designated but which are of heritage interest and are thus a material planning consideration. This is qualified further in Policy HE9.1 of PPS5 which establishes a hierarchy to be attributed to the importance of individual assets on the basis of their designated or non-designated status. Scheduled monuments, protected wreck sites, registered battlefields, world heritage sites and Grade I and II* listed buildings and registered parks and gardens are accorded the highest importance. Grade II listed buildings and Grade II registered parks and gardens of special historic interest are accorded a slightly lower importance. By implication, non-designated heritage assets may be considered of even lesser importance. It is useful to consider this hierarchy against guidance set out in the

Design Manual for Roads and Bridges¹⁰⁷ which identifies a number of value indicators with regard to different types of designated and non-designated heritage assets.

11.3.5 Accordingly, the following levels of importance for different types of heritage asset can be established, and were used as the basis of this assessment:

- High importance – scheduled monuments; protected wreck sites; registered battlefields; Grade I and II* listed buildings; Grade I and II* registered parks and gardens; and world heritage sites.
- Medium importance – Grade II listed buildings; and Grade II registered parks and gardens.
- Low importance – non-statutory designated heritage assets such as locally listed buildings or areas of archaeological importance. Other undesignated features of the historic environment that may be considered to have some importance could also be included in this category; these would be assessed on a case by case basis.

11.3.6 The hierarchy of importance established in PPS5 does not specifically include conservation areas. Conservation areas are nationally designated assets which can contain a number of historic buildings and features which may or may not be designated. The importance of a conservation area will therefore be defined by the heritage assets within the designated area and as a result the importance of the conservation area as a whole will require a case-by-case assessment. Conservation areas could therefore be considered of either high or medium heritage importance.

11.3.7 The impact of the proposal to remove the WEZ on the primary objective to protect and enhance the physical, historic, archaeological and socio-cultural environment and public realm is assessed against its relevant secondary objective, as set out below.

Table 11-1: Relevant IIA objectives

Primary objective F – To protect and enhance the physical, historic, archaeological and socio-cultural environment and public realm
Relevant secondary objective:
To protect and enhance the historic, archaeological and cultural environment through planning and operations

11.4 Likely significant effects

Removal of on street infrastructure

11.4.1 The proposed plan is for all specifically WEZ-related infrastructure to be decommissioned through a phased programme of work commencing at the point the scheme is revoked. Decommissioning of the WEZ would involve the removal of some on-street infrastructure including enforcement cameras, signage and road markings. This on street infrastructure is located on and around the boundary of the WEZ and also within it; some new signage would be erected within the Western Extension area in order to signal the boundary of the remaining central London charging zone. Should an alternative use be identified for some of the infrastructure, however, it could be retained.

¹⁰⁷ Highways Agency (2008). DMRB Volume II, Section 3, Part 2.

- 11.4.2 The decommissioning of the WEZ has the potential to enhance the setting of the heritage assets within the study area since it would involve the removal of a certain amount of on street equipment. This process of partial de-cluttering would not degrade the setting of any of the heritage assets and could potentially be considered to improve the setting of some heritage assets.
- 11.4.3 This aspect of the decommissioning of the WEZ is therefore consistent with the aims of national, regional and local planning policy for the protection and enhancement of heritage assets as well as English Heritage's Streets for All guidance (2005) which promotes good practice for street management and the enhancement of the historic environment. It is also consistent with English Heritage guidance on the management of conservation areas (2006) and the need to protect and enhance the character and appearance of conservation areas, which are found across the Western Extension area.
- 11.4.4 Existing studies have indicated that people within the WEZ consider that features of the built environment (such as parks and open spaces, which are represented in the heritage assets through registered parks and gardens and parts of conservation areas) add to public satisfaction with the public realm (including streets, pavements and public spaces)¹⁰⁸. Removal of on street infrastructure through decommissioning of the WEZ has the potential to improve the public realm, thereby increasing amenity value and overall appreciation of the urban realm by public users.
- 11.4.5 Predicted increases in emissions of pollutants from road transport in the zone as a result of the removal of the WEZ are considered unlikely to have a measureable effect on air quality within or around the WEZ as this is also influenced by a variety factors external to the WEZ scheme.

Introduction of new signage

- 11.4.6 The introduction of some new signage within the Western Extension area to signal the entry to the remaining central London Congestion Charging zone is unlikely to have a significant effect upon the heritage assets within the study area because the extent of the new signage will not be greater than the existing on street infrastructure and because the setting of the heritage assets in the Western Extension area is already characterised by a busy road network with an existing collection of on street infrastructure, much of which is unrelated to Congestion Charging.

Groundworks

- 11.4.7 The decommissioning of the WEZ would not be likely to result in a physical impact upon any archaeological priority areas or archaeological sites. Where removal of the on street infrastructure involves groundworks, these areas would already have experienced disturbance when the same equipment was installed. Furthermore, where new signage is introduced to signal entry into the central London congestion charging zone, groundworks would be limited and may be assumed to be located in places where there has already been disturbance as a result of the WEZ on street infrastructure and infrastructure associated with the existing road network and street infrastructure. The archaeological resource will therefore be unaffected.
- 11.4.8 Work undertaken to decommission the WEZ will be associated with a potential temporary increase in noise and disturbance of the streetscape as a result of groundworks. Although this has the potential to impact upon the setting of the heritage assets, this will constitute a temporary negative impact and following completion of the decommissioning works, the impact will be neutral.

¹⁰⁸ TfL (2010) Travel in London, Report 2. Transport for London: London. Accessed online at: <http://www.tfl.gov.uk/corporate/about-tfl/publications/1482.aspx> on 20/05/2010

Increased congestion

- 11.4.9 The removal of the WEZ is likely to lead to an increase in congestion within the area and it has been recognised in existing studies¹⁰⁹ that an increase traffic, congestion and noise from road traffic can reduce the amenity value of the historic environment and the public realm. As the setting of the heritage assets identified within the study area is already largely defined by their relationship to a busy road infrastructure, the projected increase in congestion is unlikely to result in a significant effect upon their amenity value.
- 11.4.10 Proposed measures to manage traffic within the Western Extension area in order to reduce congestion have the potential to improve and enhance the setting of the heritage assets. In particular, encouraging the use of bicycles and other shifts in the mode of transport used by travellers could contribute to this enhancement. However, the introduction of new infrastructure relating to traffic management methods should be carefully considered as this could in itself result in a negative impact upon the heritage assets, reducing the otherwise positive aspects of the decommissioning of the scheme.

11.5 Conclusions

- 11.5.1 The impact of the Variation Order on the relevant IIA secondary objective is assessed as follows:

- **To protect and enhance the historic, archaeological and cultural environment through planning and operations:** The scale of change brought about by the introduction of new signage for the original central London charging zone within the Western Extension area is unlikely to be significant. Overall, it is considered that decommissioning of the WEZ is not likely to result in a significant adverse impact upon any heritage assets within the study area, and that there is some potential for positive impacts.

11.6 Mitigation

- 11.6.1 Although this assessment considers no significant adverse effects are likely, it is possible that the introduction of new signage and possible traffic management infrastructure within the Western Extension area could result in a negative impact, potentially somewhat offsetting the more positive impacts of removing the scheme.
- 11.6.2 The design of new signs should take account of the setting of heritage locations and aim to avoid degradation of the setting and minimise any potentially negative impacts as far as practicable.

11.7 Monitoring

- 11.7.1 No monitoring of the impact of the removal of the WEZ is proposed in respect of this objective.

¹⁰⁹ MVA (2009) Draft Revised Mayor's Transport Strategy Integrated Impact Assessment. Report prepared by MVA in association with ERM and Future Inclusion for TfL, October 2009. Accessed online at: <http://www.tfl.gov.uk/corporate/13980.aspx> on 20/05/2010.