Air Quality Action Plan 2013 - 2018

April 2013

City of Westminster

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This report will be available on the Westminster City Council web site at:
http://www.westminster.gov.uk/airquality

Foreword

Improving the air quality of our urban areas is one of the challenges facing our generation. Poor air quality has a direct impact upon the health and life expectancy of those who live and work in our cities and improving it is an ambition worthy of all of us. Tackling poor air quality is not something any one local authority or organisation can do alone – it requires commitment and effort at local, regional, national and international levels – but it is vital that we play our part. I am committed to ensuring that our generation meets its obligation to future generations in bringing this issue to the fore and doing something about it.

Westminster is unique – and presents unique challenges in this context. Located at the heart of London, Westminster is home to the institutions of the monarchy, government, as well as a vast array of world-class cultural and tourist attractions. With almost 250,000 residents and a daytime population that swells to over a million each day with the influx of workers and visitors, Westminster is a vital commercial centre. The mixture of land uses, high density of development, and volume of vehicle and pedestrian movement combine to create a complex and finely balanced urban environment, an environment which has an important impact in shaping the day-to-day lives and health of those who live or come in to the city.

Westminster City Council has a proud history of taking action to play its part in improving air quality, and recognising this is by no means an issue that respects borough boundaries, assisting and influence others to play their part. Westminster was the first Local Authority to declare an Air Quality Management Area in 1999 and the first to produce an Air Quality Strategy & Action Plan in 2001. We are continuing to build upon this record – the challenge posed by poor air quality to health has not gone away so we must meet it with renewed vigour.

This new Air Quality Action Plan does just that. In it we seek to lead by example in how we as a council work, work with others to take joint action as poor air quality doesn't respect borough boundaries, and to ensure that in taking the necessary steps to improve air quality we do so striking a balance with the legitimate needs of businesses and individuals to live, work and get around the city without additional onerous financial or regulatory burdens being imposed upon them. This is a living document and should not be seen as the limit of our ambition – throughout its life we will continue to explore where we can go further and make a greater difference.

I would like to thank all those involved in the production of this important document over recent months and years. Improving air quality is not something any one area or local authority can do alone so it is vital that we continue to work together in this common cause. Delivering improvements to our air quality to create a healthier city is something we must collectively achieve – it is a huge part of our responsibility to not only our own generation, but to future generations and Westminster City Council is determined to meet the challenge.

Councillor Edward Argar
Cabinet Member for City Management, Transport and the Environment

Executive Summary

Poor air quality in Westminster is the result of a very high number of vehicles, emissions from boilers used to heat buildings and a high density of roads and buildings which prevent the dispersal of pollution. The mixture of land uses, high density of development and volume of vehicle and pedestrian movement combine to create a complex urban environment and a complex air quality problem.

Air quality is not just an environmental issue, but adversely affects health and can reduce the quality of life. Evidence also suggests that exposure to pollution can reduce life expectancy. There are two pollutants of major concern, nitrogen dioxide and particulate matter. The levels of these pollutants are in excess of nationally required standards and are having adverse effects on the environment and health of the people in Westminster.

The first Westminster Air Quality Strategy and Action Plan was published in 2001 and the main focus at the time was on measures to reduce nitrogen dioxide and particulate matter emissions from road traffic. Whilst road traffic still remains the main source of particulate emissions in Westminster, gas and oil combustion (which comes principally from domestic and commercial boilers) is also a major source of nitrogen dioxide emissions. Particulate emissions resulting from tyre and brake wear during driving are also becoming an increasingly important component of total vehicle emissions. Other sources of pollution include construction and rail.

There have been many changes both locally and globally since the publication of the first strategy in 2001 and many of the actions have been successfully completed. It is now time to make a new plan for the future.

There is no single solution to the problem of air pollution, but the City Council wants to ensure that the new action plan responds to the specific challenges in Westminster and makes a real difference. The revised plan provides a robust and focused set of measures that target the most polluting sources. The wide range of planned and effective action is designed to bring about a reduction in pollutants and to minimise exposure to those pollutants.

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1 Introduction

1.1.1 The City of Westminster is located at the heart of London, a 'world city'. Westminster is the centre of many functions of the monarchy and state: Buckingham Palace, the Houses of Parliament and the Royal Courts of Justice are within its boundaries. Westminster is also an important commercial centre containing more businesses, employees and more office floor space than any other local authority in the UK. Some 577,000 people work in the City and Westminster's businesses play a key role in the economy of London and the UK as a whole. The City has an unrivalled range and combination of visitor attractions, as well as major museums, galleries, theatres and concert halls. The visitor economy is a significant contributor across the retail, hospitality, catering, and entertainment sectors.

Westminster is home to a resident population of over 250,000 swelling to more than 1 million during the day with the influx of workers and visitors.

1.1.2 Westminster has in excess of 11,000 listed buildings the most of any local authority in the country and 75% of the city is covered by Conservation Area designations. Westminster's built-up central location means that its parks and open spaces play an essential role in the quality of life for residents. Over half of Westminster's open spaces have heritage designations including 85 London Squares, 21 registered parks and gardens and 5 Royal Parks. The City is crossed by 4 important viewing corridors including ones to Westminster's World Heritage Site: the Palace of Westminster and Westminster Abbey.

1.1.3 Despites its intensely urban aspect Westminster has a diverse ecology containing 32 sites of importance for nature conservation. The 5 Royal Parks in the central area of the City comprise the majority of the parkland but there are also smaller parks and garden squares. The River Thames to the south and the Grand Union Canal and Regents Canal in the north of the city also provide valuable habitats.

1.1.4 The population swells to over 1 million every day as visitors and workers expand the residential population. This adds to the vitality of the City and contributes significantly to the United Kingdom's economy but places enormous pressure on transport and the City's public realm. Access to public transport is exceptionally high, although areas in the north of the City are less well served than elsewhere. Westminster has four mainline rail termini, 32 Underground stations and all but two tube lines run through Westminster. Additionally, some 79 bus services pass through Westminster's streets.

1.1.5 Westminster also has very high levels of traffic and congestion on its main transport routes which contribute to the problem of poor air quality. Noise pollution is a significant problem in the city; transport and construction related noise is a particular problem for residents. Finally, like most other parts of the world, climate change is a real and growing problem and because of its central location Westminster suffers

disproportionately from the effects of London's Urban Heat Island.

1.1.6 Poor air quality in Westminster is the result of the high numbers of vehicles, emissions from plant and machinery such as boilers used to heat buildings, and also the density of roads and buildings which prevents dispersal of the pollutants. The mixture of land uses, high density of development and volume of vehicle and pedestrian movement combine to create a complex urban environment and a complex air quality problem.

2 Health Effects

2.1.1 Air quality has direct implications for human health. Research shows that poor air quality can reduce the quality of life by causing health problems, especially in those who are more vulnerable such as children, the elderly and those with pre-existing conditions. There is considerable research showing a link between exposure to air pollution and effects on health. Evidence also shows that increased levels of fine particles in the air can increase risks of death.

2.1.2 Evidence[1] suggests that population life expectancy is shorter in areas of high pollution when compared to areas with less pollution. There is also evidence suggesting that exposure to pollution can reduce life expectancy in the UK by an average of 7 to 8 months[2].

2.1.3 The Committee on the Medical Effects of Air Pollutants (COMEAP) is an advisory committee of independent experts that provides advice to government departments and agencies, via the Department of Health's Chief Medical Officer, on all matters concerning the effects of air pollutants on health. COMEAP advises that health impacts associated with long and short term exposure to air pollution can include:

- Shortening of lifespan
- Worsening of respiratory diseases (such as asthma, Chronic obstructive pulmonary disease (COPD) and bronchitis),
- Acute symptoms (such as wheezing, coughing and respiratory infections),
- Increased risk of cancers

2.1.4 In 2010, the House of Commons Environmental Audit Committee published its report[3] on air quality in the UK. The report included evidence which estimated that air pollution could be contributing to as many as 50,000 deaths in the UK per year. The Committee also heard evidence during its investigation into air quality in 2010/11 that at least 3,500 people in London die prematurely each year due to poor air quality, and that this figure could be as high as 8,000.

2.1.5 Broadly in line with the estimates of the Environmental Audit Committee report are the results of a study commissioned by the Greater London Authority in 2010[4], which detailed that an estimated 4,267 premature deaths in London in 2008 could be attributed to long term exposure to fine particles ($PM_{2.5}$[5]).

2.1.6 In April 2013 the transition of National Health Services into Local Authorities will help integrate considerations of wider determinants of

[1] Long-Term Exposure to Air Pollution: Effect on Mortality, COMEAP 2009
[2] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1) - Department for Environment, Food and Rural Affairs (Defra), July 2007
[3] Air Quality (Volume 1) - House of Commons Environmental Audit Committee, March 2010
[4] Report on estimation of mortality impacts of particulate air pollution in London - Dr Brian G Miller (Institute of Occupational Medicine), June 2010
[5] $PM_{2.5}$ – Particulate matter with a diameter of less than 2.5 micrometres (1 micrometre = 1 millionth of a metre)

health into local authority services' planning and delivery. The new Public Health Outcome Framework includes an indicator for air quality which local authorities will be expected to show progress on. Improving air quality through, for example, traffic congestion reduction, will directly affect health outcomes by reducing health risk.

2.1.7 Air Quality is one of a total of 68 Public Health Outcomes Framework indicators compiled by the Department of Health to measure how each local authority is addressing health determinants. This Framework includes a benchmark tool which enables the comparison of the fraction (%) of mortality attributable to long term exposure to $PM_{2.5}$ in each local authority. The Framework details that 8.3% of mortality in Westminster is attributable to long term exposure to $PM_{2.5}$ and is shown to be 48% higher when compared to the UK average of 5.6%[6].

2.1.8 Under the Health and Social Care Act 2012, Local Authorities and local Clinical Commissioning Groups (CCGs) are required to prepare a Joint Health and Wellbeing Strategy (JHWS) reflecting the needs of the Joint Strategic Needs Assessment (JSNA). The assessment and strategies reflect the need for integrated working to deliver priorities to improve health and wellbeing outcomes for local communities. The priorities in Westminster's Health and Wellbeing Strategy represent an agreed and locally determined understanding of what the key health and wellbeing issues and needs are in Westminster. The priorities will be used to promote greater integration and collaborative working between local authority services to help ensure that available resources are targeted where they will achieve most benefit.

[6] Air Quality Information for Public Health Professionals – London Borough of Westminster – GLA, November 2012

3 Legal Framework, Policies and Consultation

3.1 European Directives

National air quality objectives are the levels of pollution that are considered to be acceptable in terms of what is known about the health and environmental effects.

3.1.1 Air quality legislation and regulation in the United Kingdom is largely shaped by a series of directives introduced at European level to control levels of the pollutants considered harmful to human health and ecosystems. In 1996, a framework directive on ambient air quality assessment and management set out the basic principles of assessing and managing air quality in European Union (EU) Member States. This directive also listed the pollutants for which air quality standards and objectives were to be developed. This was subsequently followed by daughter directives, which set limit values for each pollutant.

3.1.2 In June 2008, EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe entered into force. The Directive simplified existing EU legislation by consolidating previous air quality directives and frameworks into a single directive.

3.2 National Legislation and Strategy

3.2.1 The transposition of the EU air quality directives into UK law was first completed with Part IV of the Environment Act 1995 which required the publication of a national air quality strategy and established the system of local air quality management (LAQM), for the designation of air quality management areas. The Air Quality Regulations 2000, 2002 and 2010 provided further statutory basis for air quality objectives under local air quality management in England.

3.2.2 Air quality objectives have been set with regard to the public health impact of exposure to these pollutants, although these considerations have been balanced against other factors such as social implications and economic growth. For both PM_{10} and NO_2 these objectives are set at the same level as the limit values prescribed by European Directives. For very fine particles ($PM_{2.5}$), it is considered that there is no safe limit and that exposure presents a significant risk to health as they may be inhaled very deeply into the lungs. A detailed table of the objectives is given in Appendix 2.

3.2.3 The National Air Quality Strategy was first published in 1997 and has since been updated a number of times. The most recent was published in 2007 and sets out air quality objectives and policy options to further improve air quality in the UK from today and into the long term. The improvements are intended to give direct benefits to public health, provide important benefits to quality of life and help to protect

our environment.

3.2.4 The Environment Act 1995 required that, under the Local Air Quality Management (LAQM) regime, every local authority review the air quality within its area. Where air quality objectives are not achieved, an Air Quality Management Area (AQMA) should be designated and an Air Quality Action Plan (AQAP) implemented.

3.2.5 Not all of the objectives contained in the Air Quality Regulations are included within the local air quality management system, and this includes the new limit value for $PM_{2.5}$. Although local authorities are not currently required to work towards the achievement of the $PM_{2.5}$ objective, measures to reduce emissions and concentrations of PM_{10} can also reduce levels of $PM_{2.5}$.

3.2.6 The air quality objectives have been not been achieved across the whole of the UK and an application was made by the Government to the European Commission for an extension to meet air quality limits for PM_{10} for the London area. In March 2011 extra time was granted to meet the objective and the deadline for compliance extended to June 2011. Failure to achieve the air quality objectives could lead to the government facing an estimated £300 million in fines. Exceedence of the NO_2 objective is a much wider problem, with many areas of the UK failing to achieve the required concentration levels and unlikely to do so by the objective limit deadline of 2015.

3.2.7 The Localism Act 2011 provides a power for the Government to pass on European Union (EU) financial sanctions to the Mayor of London and local authorities. This would indicate that there is potential for any EU fines for failing to achieve air quality objectives to be passed down to Westminster City Council. The procedure of passing down fines would be likely to be an extended process, during which the public/local authority would be given time to take actions to avoid a fine, but would be under pressure to prove its commitment through specific actions. For London, it is not clear how the process would discriminate between air quality actions taken by the Mayor and boroughs.

3.3 Environmental Audit Committee Report

3.3.1 In March 2010, the House of Commons Environmental Audit Committee completed an investigation into air quality[7]. A number of key conclusions were reported regarding impact of air quality on health including: *'For those exposed to the worst pollution and those most sensitive to it reduction in life expectancy could be nine years'* and *'Early deaths in London could be as high as 8,000 annually'*. Some key points were also made regarding the way forward towards improvement, including: *'London has the worst air quality in the UK and the worst in Europe for particulate matter and nitrogen dioxide'; 'Air quality targets will not be met without a dramatic shift in transport policy'* and *'Local authorities need to do more to tackle poor air quality'*.

3.3.2 After the publication of the Environmental Audit Committee report, there was a change of Government in May 2010. The publication of the Government response[8] on 22nd November 2010 indicated the devolvement of air quality responsibility to a more 'local' level and for the role of local authorities on air quality to be *"maintained and enhanced".* This direction is also reflected in the Localism Act.

3.4 Regional Strategy

3.4.1 The Mayor of London is also required to produce an air quality strategy. This strategy was first published in September 2002 and has recently been revised. The latest strategy[9], published in December 2010, sets out a strategic framework for dealing with air quality problems for London and details measures to be introduced to improve air quality.

3.4.2 All London boroughs are required to have regard to this London-wide strategy when undertaking their air quality work, and to ensure their local planning documents are in conformity with the London Mayor's planning documents. Westminster's Air Quality Strategy and Action Plan both complements and conforms to the Mayor's work.

3.4.3 As well as the Mayor's Air Quality Strategy, there are other London strategic documents which set out measures for the London boroughs to take forward to improve air quality. These include the London Plan[10] and Transport and Energy Strategies.

3.4.4 The London Plan is a spatial development strategy first published in 2004, consolidated in 2008 and revised in 2011 to guide London's development and provides an integrated framework ensuring that

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[7] Air Quality, Volume I - House of Commons Environmental Audit Committee, 22nd March 2010

[8] Government response to the Environmental Audit Committee Report on Air Quality in the UK - Presented to Parliament By the Secretary of State for Environment, Food and Rural Affairs By Command of Her Majesty November 2010

[9] Cleaning the Air, The Mayor's Air Quality Strategy - The Mayor of London, December 2010

[10] The London Plan Spatial Development Strategy for Greater London - The Mayor of London, July 2011

London becomes a *"city for people, a prosperous city, a fair city, an accessible city and a green city".* London's energy strategy has also recently been revised and new strategies, published in early 2012, on 'Climate Change Mitigation and Energy' and 'Climate Change Adaptation' set out plans for reducing our emissions to limit further climate change, and adapt to the changes that are inevitable. The London Plan and the associated energy/climate change strategies all promote energy efficiency through sustainable design and increased reliance on renewable resources.

3.5 Westminster Strategies

3.5.1 Under the Local Air Quality Management regime introduced by the Environment Act 1995 and subsequent regulations, Westminster City Council was required to review and assess its air quality at regular intervals. The first round of review and assessment was in 1998 and as a result, an Air Quality Management Area (AQMA) was declared for the whole City in March 1999. The declaration was made on the basis that the levels of two pollutants, nitrogen dioxide (NO_2) and fine particulate matter (PM_{10}), would not meet national air quality objectives.

3.6 2001 Westminster Air Quality Strategy and Action Plan

3.6.1 In 2001 the Westminster Air Quality Strategy and Action Plan was published and outlined the actions to be undertaken by the City Council in order to work towards achieving the national objectives. The strategy focused on a range of potential solutions including supporting the London Low Emission Zone (LEZ), and promoting the use of alternatively fuelled vehicles and modes of sustainable transport.

3.6.2 The 2001 Air Quality Strategy and Action Plan has since reached the end of its lifespan, with many of the actions having been successfully completed. It has been several years since its publication and there have been many changes both globally and locally. These changes include the implementation of the London Low Emission Zone (LEZ), engineering improvements leading to lower emissions from engines of newer vehicles, emerging technology for electric vehicles, improved research and increased public awareness of health and environmental issues. This revised strategy builds on the successes of the previous plan and takes account of recent changes and new understanding.

3.6.3 There are many links between air quality and climate change, and our understanding between these two aspects have also developed further since 2001. The UN Framework Convention on Climate Change[11] refers to the need to reduce carbon dioxide, the most significant greenhouse gas responsible for climate change. Since carbon dioxide and some air pollutants share many common emission sources, there are great benefits to be gained from using an integrated approach for

[11] United Nations Framework Convention on Climate Change - United Nations, 1992

air and carbon policies and, where appropriate, this strategy reflects that aim. This updated Air Quality Action Plan provides robust and focused measures to lead the way in reducing air pollution.

3.7 Other Relevant Strategies and Plans

3.7.1 There are also a number of other Westminster strategies and plans that have a bearing on air quality.

Westminster City Plan
At a local level the Westminster City Plan 2006-2016 sets out some of the things the Westminster City Partnership will do to make Westminster a better place to live, work and visit. The plan describes the objective of a cleaner, greener more sustainable city where everyone can enjoy clean streets, open and green spaces and clean air. Improving air quality is recognised as a key longer term action that will help to make the City more 'liveable'.

The Local Planning Documents
The Core Strategy sets out the overall vision and objectives for spatial planning in Westminster and was adopted by the Council in January 2011. This, in conjunction with the London Plan, sets the framework for determining planning applications in Westminster. The Local Plan will provide detailed local spatial planning policies for development management purposes.

The City Council's planning policies were previously contained in the UDP (Unitary Development Plan). These policies still have weight until the Local Plan is fully adopted.

Local Implementation Plan
The City Council's current Local Implementation Plan (LIP) was approved in December 2011. The document sets out a transport strategy and delivery plan for the City of Westminster covering the next 20 years, with a more detailed three year programme of schemes to be delivered during the period 2011/12 to 2013/14, which will aim to further improve the City's transport network.

Health and Wellbeing Strategy
Westminster's Health and Wellbeing Strategy (2013-2016) is currently being drafted and sets out a long term vision for the health and wellbeing of our communities which reflects our responsibility to both our resident communities and the wider visitor and commuter populations. It also sets out where Westminster will target efforts and resources for the next three years based on chosen priorities which reflect the most critical needs set out in the Westminster Joint Strategic Needs Assessment. Through the Health and Social Act (2012) reform, there are opportunities for the Health and Wellbeing Strategy to provide further integration between the wider determinants of health such as transportation, air quality, housing and education.

Climate Change
Westminster City Council has pledged to reduce its carbon footprint, focusing on the corporate property, fleet vehicles and street furniture and lighting, and close working with partner organisation such schools and higher education establishments. .

The City Council is also engaged with reducing emissions arising from its supply chain and the 58 maintained schools in the City.

Recent estimates of CO_2 emissions provided by central Government show that almost 75% of Westminster's total CO_2 emissions arise from energy use in commercial buildings, which is significantly higher than the UK average of 50%. Reducing this energy use in commercial buildings is our main opportunity to make a positive change in Westminster. Westminster Council is working with Westminster Business Improvement Districts (BID's) to improve energy efficiency, reduce carbon emissions and improve the environmental performance of small and medium enterprises (SME's) in the City. The Council is also working with other public sector agencies to develop and deliver carbon reduction projects in the public estate and delivered carbon savings through shared experiences.

The City Council has worked to upgrade areas of Queens Park to improve energy efficiency, reduce carbon emissions and create low carbon employment and training opportunities. The City Council is also working with its partners to develop district heating and combined heat and power networks in the City.

3.8 Working in Partnership

3.8.1 Westminster works closely with a number of local authority groups, stakeholders and organisations to improve air quality and develop successful working practice.

Central London Air Quality Cluster Group - Comprises of central London local authority officers to develop good practices, respond to Government guidance and undertake air quality projects.

Central London Sub Regional Transport Partnership - Comprises of central London local authority officers to develop understanding and improve practice and management of transport in central London.

Central London Freight Quality Partnership - Aiming to address improvements to freight and delivery networks in central London by working with central London local authority officers, Transport for London (TfL) and representatives of the freight industry.
Central London Forward - The central London boroughs work alongside the private sector and third sector through advisory panels and local strategic partnerships. Set up during 2007, the initiative emerged from the growing need to promote and make a case for central London in order to influence policy on major issues affecting central London.
Cross River Partnership - Creates physical and social links between the two sides of the river in central London, focusing on transport, regeneration and employment. The transport programme aims to bring London's communities closer, improve access to jobs, healthcare and education and enhance public realm.

3.9 Consultation

3.9.1 Since Westminster is designated an Air Quality Management Area (AQMA), it is a legal requirement to have an Air Quality Action Plan and the requirements for the contents and format of such a plan are outlined in policy guidance documents[12]. Local authorities are also required to consult on the preparation of action plans (and subsequent revisions of those plans) with key stakeholders including local interest groups and local residents.

3.9.2 In keeping with this requirement, Westminster undertook a public consultation in August 2008 on an 'air quality issues' paper followed by consultation on the Draft Air Quality Action Plan. The 'air quality issues' paper[13] was the first stage in the development process and listed the proposed objectives that would form the basis of the new strategy, detailed the key issues affecting air quality and outlined possible actions to be considered for inclusion in the new action plan.

3.9.3 The final stage of public consultation for the Draft Air Quality Action Plan was undertaken for a period of eight weeks during May to July 2011 and was conducted in accordance with policy guidance requirements[14]. Responses from all consultations were reviewed and used to further develop the final action plan.

[12] Local Air Quality Management Policy Guidance (PG09) - Defra, February 2009
[13] Developing a New Air Quality Strategy and Action Plan, Consultation on Issues - Westminster City Council, August 2008
[14] Local Air Quality Management Policy Guidance (PG09) - Defra, February 2009

3.9.4 The draft plan was also reviewed by the Built Environment, Enterprise & Volunteering Policy and Scrutiny Committee (PSC) on 13th September and 6th December 2011. Council Members and their deputies also provided consultation responses and comments to the final draft in March 2012 after Members' portfolios had changed. Responses have been completed in respect to these consultation exercises and have been used to further develop the contents of the Strategy where appropriate.

3.10 Strategic Environmental Assessment (SEA)

3.10.1 The Environmental Assessment of Plans and Programmes Regulations 2004 sets out when a strategic environmental assessment of a plan or programme is required. In the case of the Westminster Air Quality Strategy and Action Plan an SEA was undertaken to ensure the environmental impacts are considered and potential adverse impacts on the environment are avoided or mitigated.

3.10.2 The first stage of the SEA required statutory consultation with the Environment Agency, English Heritage and Natural England on the scope of the environmental report. This was completed in August 2008 and the report[15] was also made available to the public for comment.

3.10.3 The Environmental Report of the SEA was published for comment alongside the Draft Air Quality Action Plan in May 2011. The Environmental Report identified, described and evaluated the likely significant effects of the proposed action plan on the environment and is available on request.

[15] Air Quality Strategy and Action Plan, Scoping Report for the Strategic Environmental Assessment - Westminster City Council, August 2008

4 Air Pollution in Westminster

4.1 Background

4.1.1 The whole of the City of Westminster was declared an Air Quality Management Area (AQMA) in 1999 as the levels of two pollutants exceeded the National Air Quality Objectives. The pollutants of concern are nitrogen dioxide (NO_2) and particulate matter of a diameter of less than 10 micrometres (PM_{10}) both of which have direct implications for health.

4.1.2 The National Objectives are the concentrations for each pollutant over a given time period that are considered to be acceptable in terms of what is known about the health effects of each pollutant and its effect on the environment. There are a number of objectives for NO_2 and PM_{10} relating to both short term and long term exposure to the pollutants. These are:

- **Long term objective:** an annual average concentration of 40 microgrammes per cubic metre cannot be exceeded for both NO_2 and PM_{10}.
- **Short term objective:** a 24 hour average concentration of 50 microgrammes of PM_{10} per cubic metre cannot be exceeded more than 35 times in one year; an hourly average of 200 microgrammes of NO_2 per cubic metre cannot be exceeded more than 18 times in one year.

4.2 Pollution Monitoring

4.2.1 Monitoring of pollution concentration has been undertaken, at various times, at several sites across Westminster. The data from these monitoring sites help us to understand the distribution of past and current concentrations of pollutants in the air.

4.2.2 PM_{10} levels across London declined slowly in the 1990's but have remained stable since 2001[16]. Westminster monitoring data indicate that Westminster's Marylebone Road PM_{10} levels are roughly similar to the annual long term objective but still exceed the short term objective limit. See Appendix 3 for further details on air quality monitoring in Westminster.

[16] The Mayor's Draft Air Quality Strategy – Mayor of London, October 2009

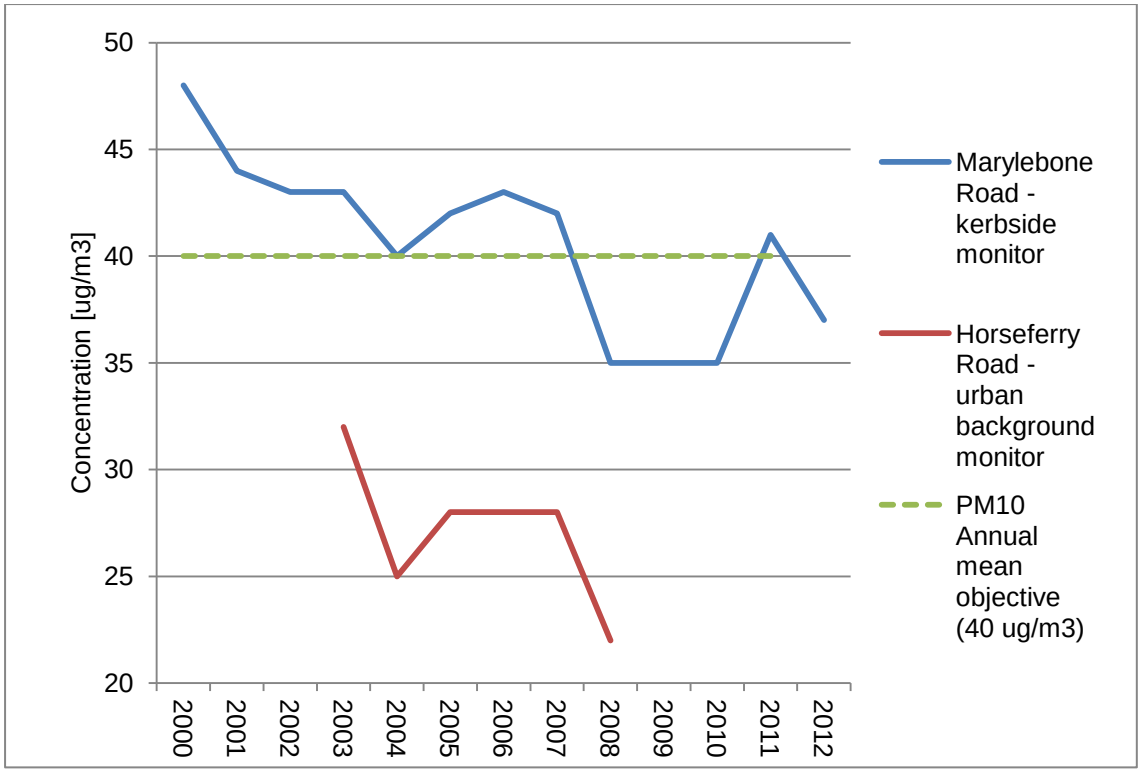


Figure 4-1: PM_{10} annual mean concentrations

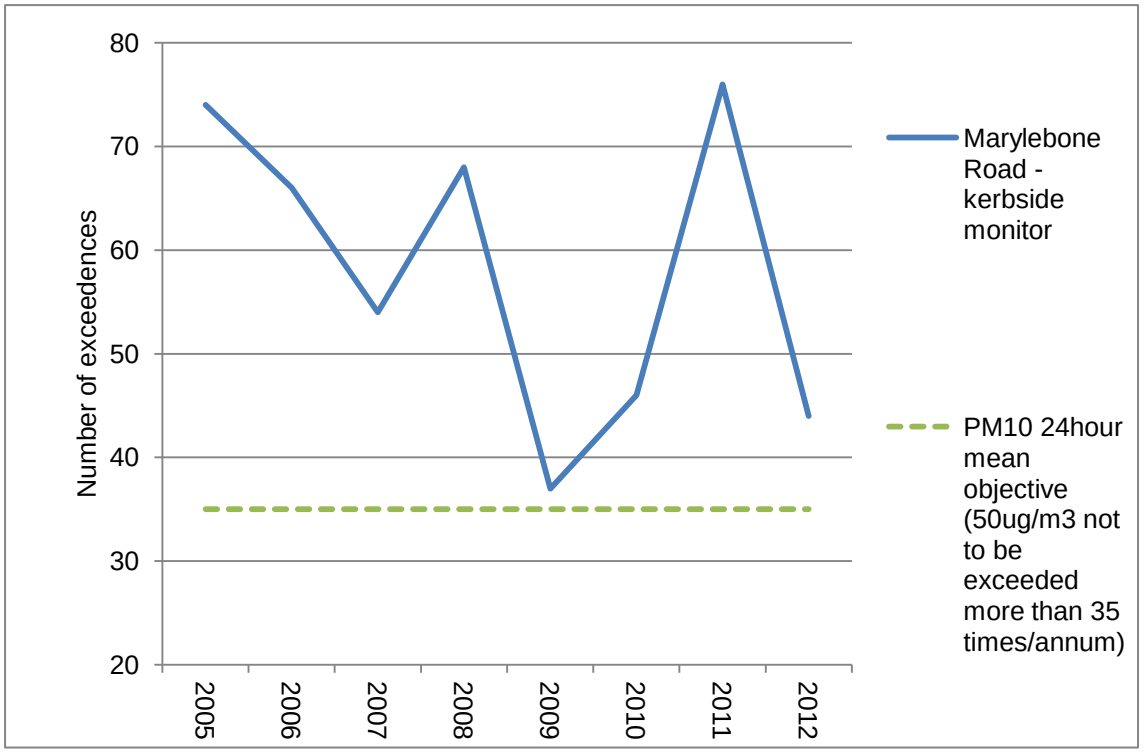


Figure 4-2: Number of PM_{10} daily mean exceedences at Marylebone Road

4.2.3 For NO_2, the picture is worse. Although levels initially declined, the trend did not continue and in some places began to rise. We regularly exceed both short and long term objectives for NO_2 at Marylebone Road monitoring station. Westminster's Horseferry Road monitoring data shows that the annual mean objective for NO_2 is only just being exceeded. Figures have not been provided to demonstrate the number

of days that exceed the PM_{10} and NO_2 short-term mean objectives for Westminster's Horseferry Road monitoring site. This site measures urban background pollution levels and the short-term mean measurements have been below the objectives for several years.

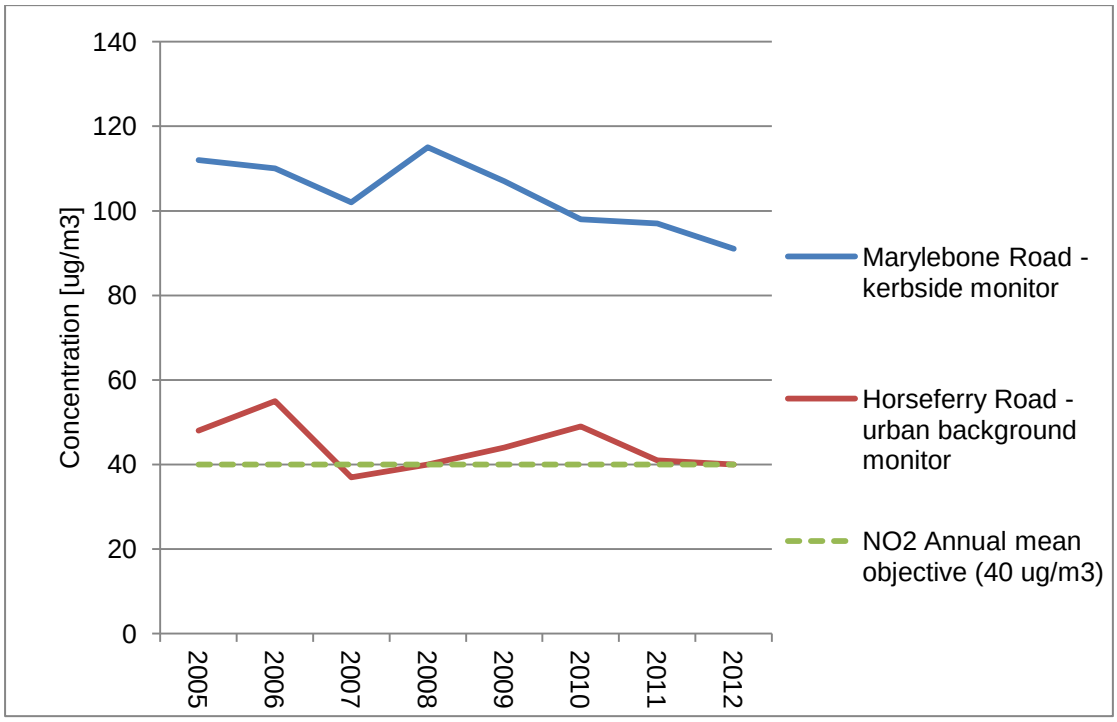


Figure 4-3: NO_2 annual mean concentrations

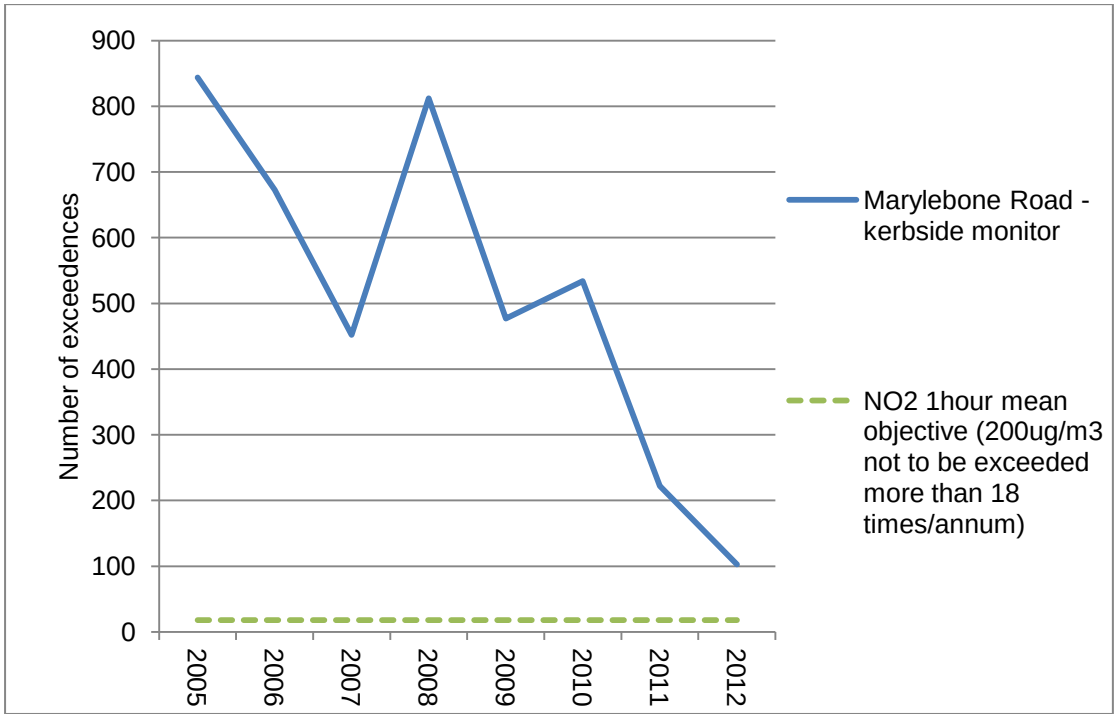


Figure 4-4: Number of NO_2 hourly mean exceedences at Marylebone Road

4.2.4 It is still not fully understood why levels of NO_2 have in some places continued to rise but there is some evidence[17] to suggest that it could be related to the steadily increasing fraction of diesel vehicles in urban traffic, due in part to a significant increase in the number of buses. The number of London buses in operation has increased from approximately 6000[18] in 2001 to 8,000[19]. Also, the potential impact of certain pollution control technologies, such as catalytically regenerative particle traps for diesel vehicles, may be having an effect. The continued exceedence of certain objectives indicates that air quality in Westminster is potentially having a detrimental effect on people's health and the environment.

4.3 Population

4.3.1 Westminster has a population of some 250,000 residents which swells to over one million every weekday, due to the influx of workers, visitors and tourists. The increase in population over the last decade will have impacted both on energy use and transport services with more people making more journeys and using more energy to heat their homes and water than before. Actions to improve air quality may have helped mitigate some of the impact that population growth may have caused, but there has been only very little improvement to overall air quality during this time and, given the predicted increases in population, much more needs to be done in order to meet the national objectives.

4.4 Predictive Modelling

4.4.1 The London Atmospheric Emissions Inventory (LAEI) is produced annually by the Greater London Authority (GLA) and is a database with information on emissions from all sources of air pollutants in the Greater London area. It uses datasets for London emission sources such as road transport, rail and industry and also includes location information, rates of emission, traffic count data and estimates of the quantity of pollutants emitted. Data from the latest LAEI[20] was used to predict the pollution levels in 2015 using dispersion modelling.

4.4.2 The following maps show the 2015 predicted NO_2 and PM_{10} concentrations across the City. Areas coloured blue are below the objective level and areas coloured yellow through to dark red show where the objective levels are exceeded, with the darker areas having the highest levels of pollution. In all scenarios, the areas of the highest levels of pollution are along main roads and at major traffic junctions. Higher levels of pollution also relate to areas of high development density such as the West End. Areas which indicate the lowest levels

[17] Trends in Primary Nitrogen Dioxide in the UK - Air Quality Expert Group, 2007
[18] The Mayor's Transport Strategy - The Mayor of London , July 2001
[19] The Mayor's Draft Air Quality Strategy - The Mayor of London, October 2009
[20] London Atmospheric Emissions Inventory 2008 – Mayor of London August 2010

of pollution relate to areas of low density development or open spaces such as Hyde Park.

4.4.3 Key areas of high pollution are:

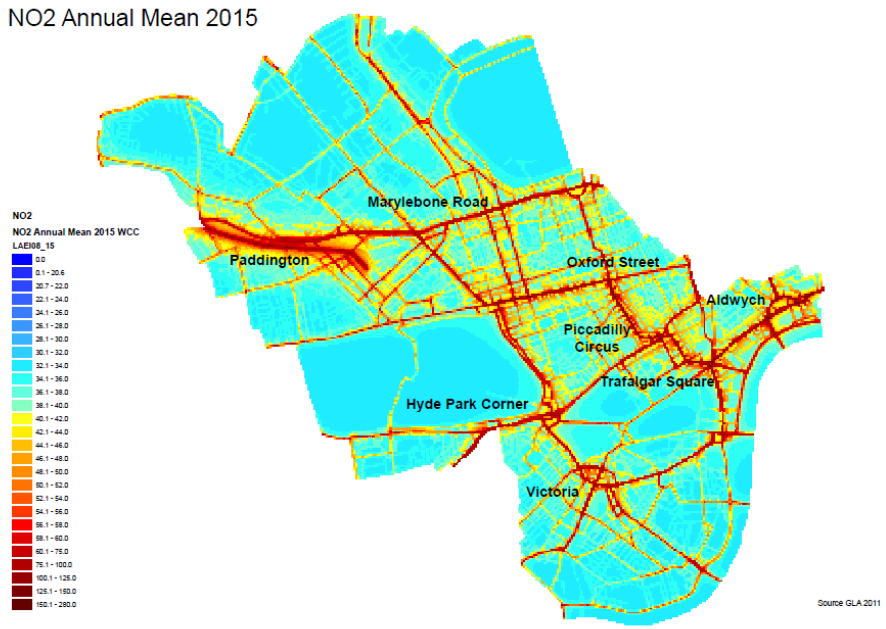
- The A40 (Marylebone Road and the Westway);
- The route comprising Edgware Road, Marble Arch, Grosvenor Place and Hyde Park Corner;
- Oxford Street and Regent Street;
- Trafalgar Square to Aldwych;
- Victoria Embankment

While the City Council currently operates three automatic monitoring stations in differing locations of the City which are commonly found at the kerbside, the City Council will proactively seek new funding streams to increase the number of monitoring stations across the city and the level of detail on pollutants. This greater level of information will give the City Council a more informed and strategic picture of local air quality.

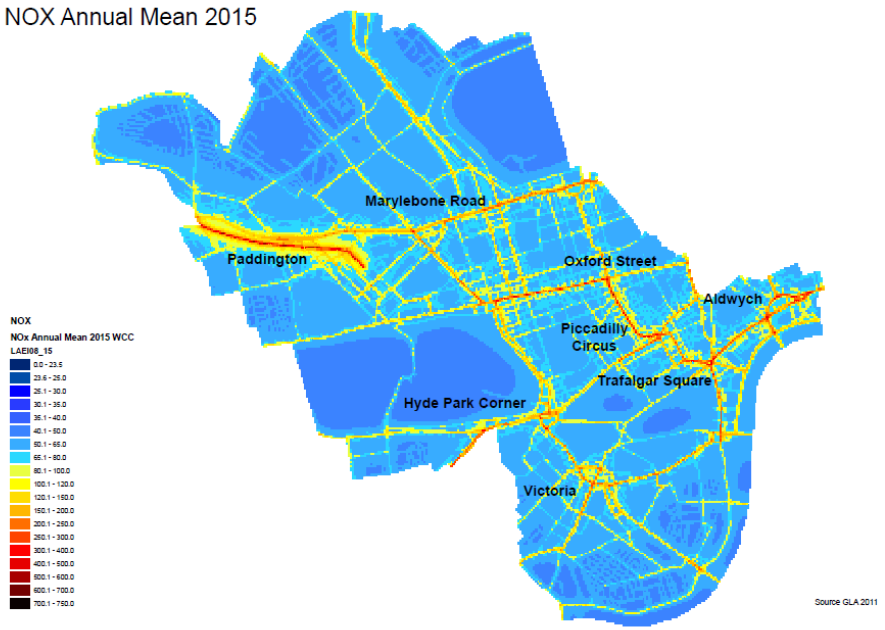
4.5 Nitrogen Dioxide

4.5.1 Map 1 shows that annual average NO_2 concentrations are predicted to exceed the air quality objective of 40µg/m³ over large areas of the City in 2015, particularly in very densely populated areas, along several of the busiest roads and at major junctions.

4.5.2 Map 2 shows the annual average NO_X concentrations over the City in 2015, again showing high levels along some of the busiest roads and at some major junctions in the City.



Map 1 Annual NO_2, predicted for 2015

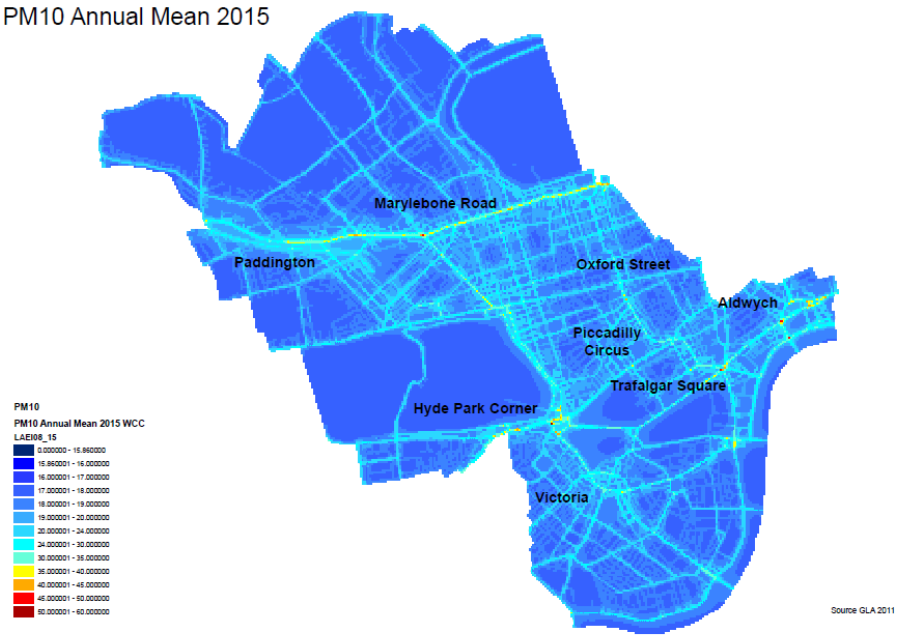


Map 2 Annual NO_X, predicted for 2015

4.6 Particulate Matter

4.6.1 Map 3 shows that annual average PM_{10} concentrations are predicted to exceed the air quality objective of 40µg/m³ at several of the busiest junctions in the City.

4.6.2 Map 4 shows that the 90.41st percentile of 24-hour average PM_{10} concentrations (equivalent to exceedence of 24-hour objective if above 50µg/m³) is predicted to exceed the air quality objective of 50µg/m³ along some of the major roads and at some busy junctions in the City.



Map 3 Annual PM_{10}, predicted for 2015

Map 4 Daily PM_{10}, predicted for 2015

4.7 Sources of Air Pollution

4.7.1 Since the first Westminster Air Quality Strategy was written, pollution monitoring and the understanding of pollution dispersion across London have improved. This has meant that the information base for identification of sources of individual pollutants has become broader and information about sources of pollutants is now obtained from central Government and increasingly from the Mayor and TfL.

4.7.2 Many changes have occurred in London since the last Westminster Strategy, the more notable of which include the introduction of Congestion Charging in February 2003 and the London Low Emission Zone (LEZ) in February 2008. The LEZ was developed specifically to reduce PM_{10} throughout Greater London by requiring the use of improved vehicle technology. The Congestion Charge was not developed specifically to reduce air pollution but to reduce congestion and improve traffic flow in central London by discouraging driving into the centre and therefore reducing vehicle numbers. However, air quality may have benefited from the introduction of the Congestion Charge since the reduction in vehicle numbers will reduce tail pipe and tyre and brake wear emissions, improve average speeds and may improve engine efficiency if vehicles run at or close to optimal speed.

4.7.3 The London Atmospheric Emissions Inventory (LAEI) contains information on emissions from sources of air pollutants in the Greater London area and aims to provide an up to date picture of emissions, taking into account any relevant changes to air emissions behaviour. The latest LAEI shows that for PM_{10} pollution, road traffic remains the main source of emissions from within Westminster. For NO_x, in addition to traffic emissions, gas combustion (which comes principally from domestic and commercial boilers) is a very significant source in Westminster.

4.7.4 PM_{10} resulting from tyre and brake wear during driving is becoming an increasingly important component of total vehicle emissions as improvements to engine efficiency and technology have led to reductions in exhaust emissions. Research and studies undertaken during that last decade have led to a better understanding of air pollution and its characteristics and have shown that wear of vehicle components such as brake pads, clutch linings and tyres contribute to almost half of the total PM_{10} emissions from vehicles.

4.7.5 The concentration of a pollutant at a given point is made up of contributions from numerous sources of different types and, in the case of NO_2, is also affected by chemical reactions in the atmosphere. The contribution of different source groups to the total NO_2 concentration cannot be determined directly due to the complexity of chemical reactions. Using data from the LAEI[21], the contribution to the total NO_x

[21] London Atmospheric Emissions Inventory 2008 – Mayor of London August 2010

concentration can be calculated and these contributions are presented in this section. The figures below show the predicted contribution of each major source group to the total PM_{10} and NO_x emissions from within Westminster in 2015.

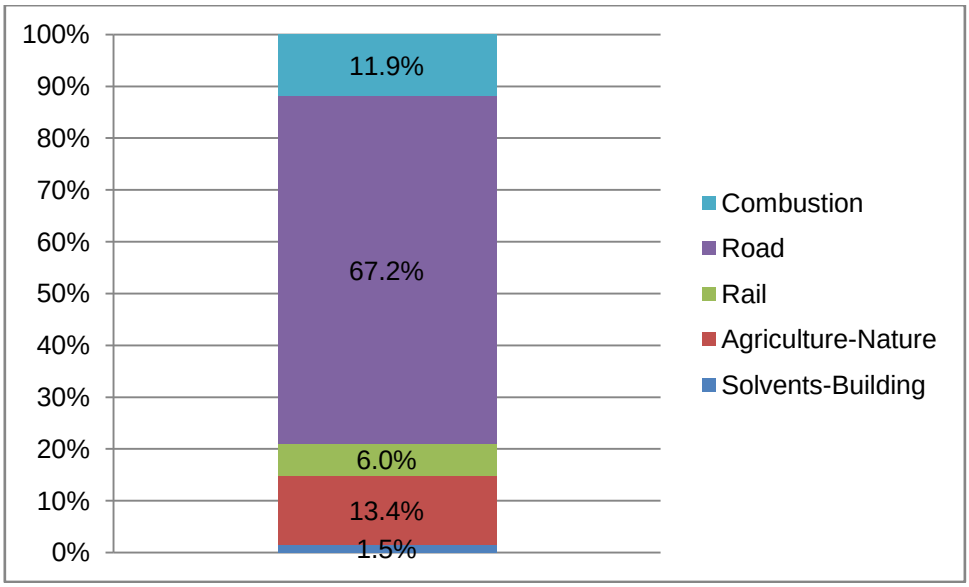


Figure 2-3 Predicted 2015 PM_{10} emissions

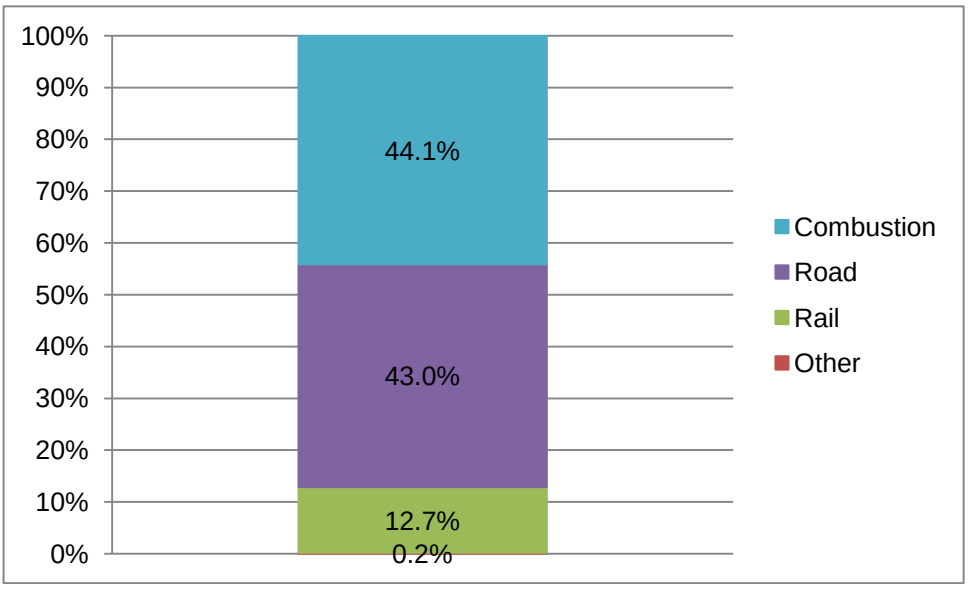


Figure 2-4 Predicted 2015 NO_X emissions

4.7.6 It can easily be seen that traffic emissions from road vehicles such as heavy goods vehicles (HGV's), light goods vehicles (LGV's), buses and coaches, cars and taxis are the major contributor to PM_{10} pollution across Westminster. The emissions from road sources account for 67% of all PM_{10} emissions in Westminster.

4.7.7 The first Westminster Air Quality Strategy and Action Plan in 2001 focused its actions primarily on traffic emissions. The significance of contributions from gas combustion including both commercial and domestic sources is now more of a concern, to the point where emissions from this source are now slightly greater than those from road traffic. Commercial and domestic gas combustion together accounts for 44% of the NO_x emissions. This change has led to a shift in emphasis of the new action plan.

4.7.8 There is a significant difference in the magnitude of contributions from the different sources to the total emissions and this difference is important when designing strategies to improve air quality. Actions to reduce the individual pollutants, NO_2 and PM_{10}, need to be targeted at their most significant emission sources if the maximum benefit is to be achieved. Measures to reduce NO_x and NO_2 levels will now focus increasingly on emissions from buildings and development sources.

4.7.9 Even though emissions from aviation do not directly or significantly affect local pollution levels due to distances from airports and dispersion, there are many public transportation routes servicing airports which either pass through or terminate in Westminster (for example, Victoria Train Station and Coach Station service Gatwick Airport, Paddington Train Station services Heathrow, and Crossrail will also provide services to Heathrow Airport). Changes in national or regional aviation could potentially increase the number of passengers transferring to, or using, Westminster public transportation routes. This could lead to more road journeys made by passengers and could increase local air pollution on the road network and at transportation hubs. The City of Westminster will strategically asses any national or regional aviation proposals which could indirectly affect local air quality and will respond to all relevant aviation consultations appropriately.

5 Strategy

5.1 Goals

5.1.1 Within the air quality legislative regime there is only one simple objective for an action plan: to reduce levels of air pollution in order to revoke the Air Quality Management Area. This means reducing the levels of NO_2 and PM_{10} in Westminster to below the national objective levels in order to protect health and wellbeing. However, for some pollutants, there is no safe limit and we should aim to look beyond the requirements of legislation. There are no easy answers to these problems but the City Council wants to ensure that the strategy responds to the specific challenges in the City and makes a real difference. The City Council has identified three interlinked goals (illustrated below).

Figure 5-1 Air Quality Strategy goals

5.1.2 Westminster has a large and complex air pollution problem due to the high levels of pollutants, large population and development density and a very high traffic count - a robust and focused action plan is therefore needed which targets the most polluting sources. A wide range of planned and effective actions are required to bring about a reduction in pollution levels and to minimise exposure to pollutants.

5.2 Key Areas of Focus

5.2.1 The main sources of pollution and therefore the major elements of this plan can be simplified into three key areas of focus. The key objectives are shown schematically below and are developed in more detail in the following sections.

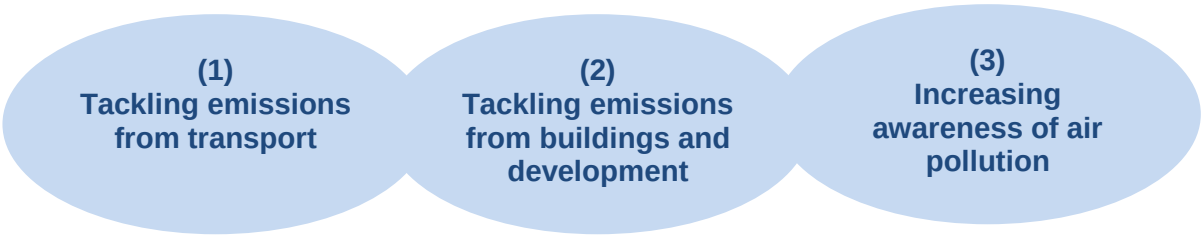


Figure 5-2 Air Quality Strategy objectives

5.3 Integrating with Carbon Reduction

5.3.1 There are many links and common goals between air pollution and carbon emissions reduction since carbon dioxide has common emission sources with air pollutants, notably fossil fuel combustion for transport, heating and power. Any reduction in emissions from these common sources will, therefore, facilitate both air quality and carbon reduction objectives.

5.3.2 Air pollutants can also cause changes to the chemical and physical properties of the atmosphere. The resulting effects are difficult to predict but both cooling and warming effects can occur through different mechanisms. In turn, climate change can affect the levels of air pollutants. Increases in temperature may lead to more ground level ozone being produced and an increase of photochemical smog and high pollution levels on hot days when the dispersion is low. There is some concern that warmer weather can also make vulnerable people more likely to suffer from the impacts of poor air quality.

5.3.3 Some renewable energy policies support the increased uptake of alternative energy technologies which will negatively affect air quality. The generation of renewable heat energy by biomass (solid wood) combustion is considered highly attractive in terms of its net carbon dioxide savings but produces particulate matter and nitrogen oxide emissions as a combustion by-product. This renewable energy policy conflicts with air quality policy and requires specific control to ensure that air quality is not adversely affected. There are great benefits to

using an integrated approach for air and carbon policies and, where appropriate, this strategy reflects that aim.

5.4 Carbon Reduction within Westminster

5.4.1 The Council's Carbon Management Plan focuses on corporate property, fleet vehicles, street furniture and lighting. The City Council has direct control over these emissions and can therefore implement technology and behaviour change programmes. The Council is reducing its carbon emissions through improving energy equipment and improving energy efficiency of its key buildings. The City Council is also engaged with reducing emissions arising from its supply chain and the 58 maintained schools in the City, which is a priority in addressing the Council's Carbon Reduction Commitment Energy Efficiency Scheme requirements, a mandatory emissions trading scheme that the Government launched in April 2010. Through the government scheme, these emissions cost the Council £287k in the financial year of 2011-2012.

5.4.2 Recent estimates of CO_2 emissions provided by the Department of Energy and Climate Change show that almost 75% of Westminster's total CO_2 emissions arise from energy use in non-residential buildings, which is significantly higher than the UK average of 50%. Reducing this energy use in commercial buildings is our main opportunity to make a positive change in Westminster.

5.4.3 Westminster City Council is working with Westminster Business Improvement Districts (BID's) to improve the environmental performance of small and medium enterprises (SME's) in the City. The core focus of this three year EU funded project will be the improved energy efficiency and reduced carbon emissions of commercial enterprise. The Council is also working with public sector agencies (including central government stock and the health sector) to develop and deliver carbon reduction projects in the public realm. Other work with city stakeholders includes carbon reduction projects with the creative industries, the voluntary sector and environmental health professionals. This work is also contributing to the development of a baseline for City-wide CO_2 emissions to enable better delivery of reduction measures.

5.4.4 Westminster City Council led a successful bid to the Mayor of London's Low Carbon Zone programme, which aims to deliver a 20%+ reduction in CO_2 emissions by 2012. This project, delivered in Queen's Park, has been developed by officers of the City Council working in partnership with Groundwork, Paddington Development Trust, CityWest Homes and the Queen's Park Forum. Following project implementation, it was seen that the local carbon emissions of Queen's Park reduced by approximately 1.6ktCO_2 per annum. This reduction is equivalent to the carbon emissions associated to approximately 350

(average Westminster) houses per annum.

5.4.5 Westminster City Council is updating the supplementary planning guidance on ‘Sustainable Buildings’ and has also recently published a ‘Guide to Retrofitting Historic Buildings’ to encourage and support the use of energy efficiency measures in development.

5.4.6 Westminster City Council is also working with the support of the Greater London Authority to develop district heating and combined heat and power networks in the City. This involves the production of a heat demand map which will identify network development and expansion opportunities and also function as an evidence base for policy development.

5.5 Actions

5.5.1 Developing solutions to poor air quality requires a complex balance between national, regional and local measures, with local authority air quality actions being an important part of the solution.

5.5.2 However, action can be taken on a number of levels, from lobbying Government and influencing regional policy to direct local action, and this is reflected in the Air Quality Action Plan. Where is it considered that a source of air quality emissions can be or is best affected by national or regional actions, ‘Position Statements’ have been given. Position Statements will not form part of the formally reported Air Quality Action Plan since the air quality impacts of such actions are not measurable in any quantitative way.

5.5.3 The City Council will support these Position Statements through actively responding to national/regional consultations and/or through other appropriate mechanisms.

6 Tackling Emissions from Transport

6.1 Background

6.1.1 Although Westminster has an estimated resident population of over 250,000 it is also home to several thousand businesses requiring servicing, and more than 290,000 vehicles enter the central London Congestion Charging Zone every day. There are also now 22,000[22] licensed taxis with the majority of activity concentrated in central London and over 8,300[23] buses. This results in very heavy traffic flows, congestion and competition for access to the kerbside.

6.1.2 The pressure on the streets of Westminster means that road transport emissions remain a key source of air pollution and CO_2 emissions, although emissions from transport sources have somewhat reduced in the last decade as engines become cleaner, and initiatives such as the London Low Emission Zone contribute to a faster upgrading of fleets. However, emissions from major roads remain the main contributor to NO_x concentrations in close proximity to roads. It should be noted that the City Council has only limited control over many of the main transport routes in Westminster as these roads form part of the Transport for London Road Network (TLRN) which is managed by Transport for London (TfL).

6.1.3 The specific contributions from the individual vehicle types to NO_x levels in Westminster have been calculated from the data available in the 2008 London Atmospheric Emissions Inventory (LAEI)[24], published by the Greater London Authority. They are shown in the chart below, where it can be seen that buses and coaches are the most significant sources of NO_x.

[22] The Mayor's Transport Strategy - The Mayor of London, May 2010
[23] The Mayor's Air Quality Strategy - The Mayor of London, December 2010
[24] London Atmospheric Emissions Inventory 2008 – Mayor of London August 2010

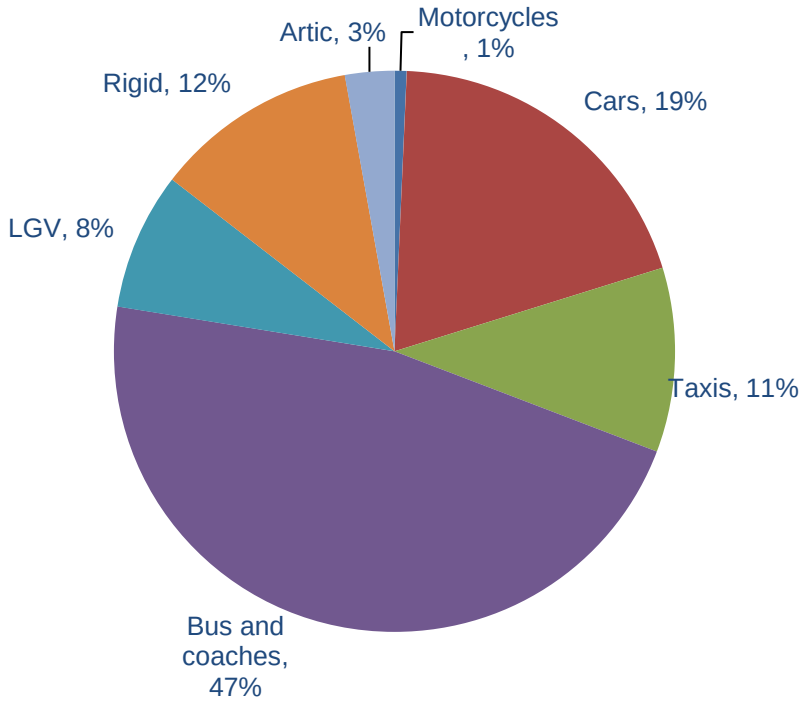


Figure 6-1 Percentage contributions of individual vehicle types to total predicted NO_x emissions in 2015

6.1.4 Emissions of particles from road sources are the largest contributor to PM_{10} concentrations. As with NO_x, emissions come from many types of vehicles, but it is also produced from tyre and brake wear.

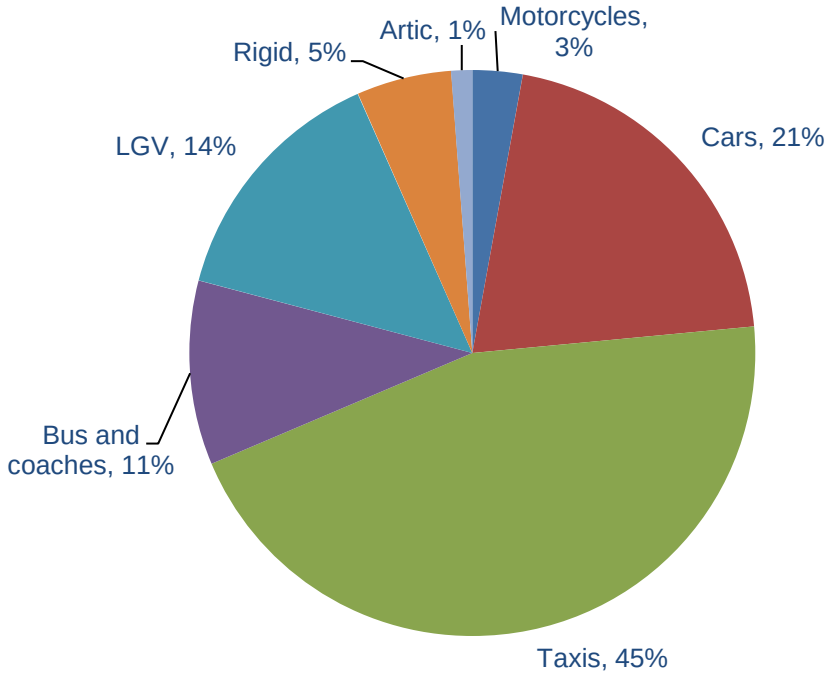


Figure 6-2 Percentage contributions of individual vehicle types to total predicted PM_{10} <u>exhaust emissions</u> in 2015

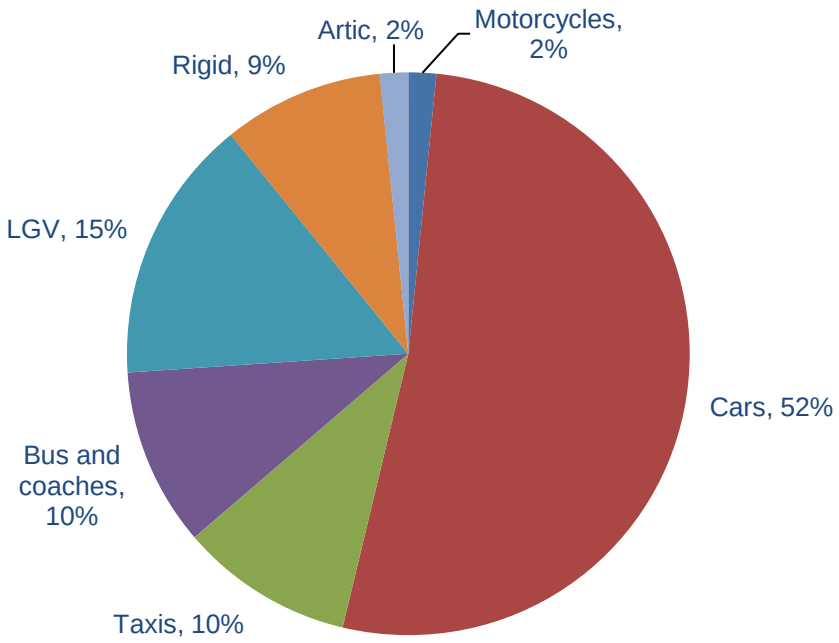


Figure 6-3 Percentage contributions of individual vehicle types to total predicted PM_{10} brake and tyre wear emissions in 2015

6.1.5 Road transport is made up from a multitude of vehicle types with journeys not necessarily starting and ending in Westminster, but passing through the City en route. Whilst there are a number of controls already in place to limit traffic travelling into London including the Low Emission Zone and the Congestion Charging Zone, there is still only limited control over what traffic enters Westminster and therefore the pollution emitted from traffic travelling though the City.

6.1.6 The specific contributions from the individual vehicle types in Westminster, calculated from the data available in the London Atmospheric Emissions Inventory (LAEI)[25], show a large proportion of the road pollution comes from London taxis and buses which are the remit of the Mayor of London and any action taken regarding these vehicles is taken via Transport for London and the Public Carriage Office. The City Council can have some influence on taxis and buses by lobbying and working with the Mayor towards common goals.

6.1.7 Despite these limitations, the City Council is undertaking many measures to improve emissions from road transport and has undertaken the following:

[25] London Atmospheric Emissions Inventory 2008 – Mayor of London August 2010

- Pioneered the initial concept of a Low Emission Zone for London and promoted it, following commissioning of a technical appraisal in 1999. The first phase of the London Low Emission Zone was implemented in February 2008.

- Encouraged the use of alternative fuels through the development and promotion of electric vehicle infrastructure via the installation of on-street recharging points, the Westminster Electric Vehicle Recharging Scheme and incentivised resident parking charges.

- Significantly improved the Westminster fleet including LPG, hybrid and electric vehicles. Targets set to reduce NO_X, PM_{10} and CO_2 emissions. Safe and Fuel Efficient Driving Training (SAFED) has been rolled out for City Council drivers.

- Provided around 7,700 cycle parking facilities, on-street and in car parks, which is the highest number out of all the London boroughs. Worked in partnership with the Mayor to provide 43 cycle hire docking stations in Westminster and additional complementary measures including cycle training and cycle route improvement.

- Developed a Walking Strategy, 'Walking for All', seeking to encourage walking and change existing attitudes to walking. Piloted and then rolled out the established 'Legible London' wayfinding scheme to now include over 400 posts. Public realm enhancements to improve the pedestrian environment were also implemented, e.g. Leicester Square, and the Leicester Square to Holborn walking corridor.

- Worked with businesses and schools to produce travel plans.

- Established residential Coach Ban Areas to protect local residents from the impact of through coaches.

- Supporting the provision of a Car Club in Westminster

- Removal of traffic lights to enhance and improve traffic flow, e.g. Great Queen Street.

- Provision of 'loading pads' and support for freight consolidation to reduce congestion.

Planned Measures

Objectives - Tackling emissions from road transport

The following key objectives have been identified:

- Support initiatives to reduce transport emissions across London.
- Target pollution hot-spots and routes.
- Promote the use of low emission forms of transport.
- Promote the use of low emission deliveries.
- Encourage changes in driver behaviour.
- Reduce emissions from the Westminster City Council fleet.
- Reduce exhaust emissions from road transport.
- Support representation of air quality factors within local and national schemes.
- Support low emission rail transport and electrification of the rail network in London.

6.2 Objective 1 - Support initiatives to reduce transport emissions across London

London Low Emission Zone

6.2.1 The City Council's previous Air Quality Strategy and Action Plan focused on predicted reductions in pollution which would result from the introduction of the London Low Emission Zone. A feasibility study[26] for a low emission zone was undertaken by consultants on behalf of Westminster City Council in 2000 and concluded that a London-wide low emission zone would bring background concentrations in most of Westminster to within the national air quality objective standards, but would still leave exceedences at the kerbside and in parts of the West End. It was envisaged that there would be many impacts of the scheme; primarily changes to emissions performance of vehicles operating in Greater London, positive impacts on air quality and improved public health.

[26] A low emission zone for London - Transport Research Laboratory (TRL), 2000

6.2.2 The London Low Emission Zone has been operational since February 2008 and it is noted that the scheme will not solve all of London's air quality problems. The LEZ was set up to reduce PM_{10} emissions from vehicles entering into Greater London by requiring specific vehicle emission standards (Euro standards). The Council continues to be supportive of the LEZ, and its future planned phases, as London's most significant measure for reducing PM_{10} concentrations.

6.2.3 The LEZ controls currently focus on PM_{10} pollution only but have the potential to significantly benefit NO_2 as well if the scheme could be extended to cover these emissions. Our studies indicate that emissions from road transport contributes to a significant amount of NO_x emissions within Westminster and the introduction of an LEZ governing NO_x/NO_2 emissions could have significant benefits for local air quality. The Mayor's Air Quality Strategy 2010 proposes the introduction of a London wide Euro IV vehicle standard for NO_x emissions in 2015, pending an appropriate national NO_x certification system. The City Council welcomes this planned phase as NOx concentration levels are a significant issue in central London and particularly in Westminster.

6.2.4 An appropriate national certification and testing scheme was not available for NO_x emissions at the time the LEZ commenced operating which meant there would be uncertainty around the retrofitting of NO_x abatement equipment to vehicles. For this reason, NO_x was not included in the original LEZ scheme. As stated in the Mayor's Air Quality Strategy 2010, support from the Government is required in the form of a national certification and testing scheme for NO_x abatement equipment as well as funding to implement the scheme. Without this certification scheme, operators would have no certainty that equipment they buy and install will be effective, and TfL, which operates the LEZ, would have no easy way of establishing the efficiency of particular NO_x abatement equipment. The Council is supportive of including NO_x in the remit of the LEZ and we support the Mayor in pressing the Government to implement the required certification scheme.

Inner Lower Emission Zone

6.2.5 There is some stakeholder support in Westminster for more specific actions to improve air quality, such as introducing a central London 'inner' LEZ and/or one localised around key hotspot areas such as Marylebone or the West End.

6.2.6 The worst areas for air quality in Westminster are routes where particulate pollution remains an issue such as: Marylebone Road, Park Lane, Knightsbridge and Embankment. There are also issues in Oxford Street and Piccadilly. For nitrogen dioxide, a large area of London fails to meet regulatory standards and Defra expect some roads to take until 2025 to achieve compliance. If an inner low emission zone is to be considered, there would be a strong case for this being a broad area of central London and possibly as wide as Inner London or out to the North and South Circular. If only the West End or the Congestion Charge area were covered, this would

leave some of the most polluted routes outside the zone and air quality at these boundary locations potentially made worse by vehicles unable to meet the inner LEZ emissions standards being forced along these routes.

6.2.7 In hotspot areas there is also a high level of public and stakeholder concern over the very high levels of traffic, congestion, noise and potential nuisance, as well as concern over polluting emissions, particularly from buses, coaches, taxis and HGV's. In key central areas, mainly the West End and Oxford Street, the very high numbers of buses using the roads are a major concern, particularly as buses are a key contributor to NO_x emissions.

6.2.8 In June 2011, TfL published the report 'Stricter emission standards for central or inner London: a provisional assessment of potential feasibility and effectiveness' which concluded that the planned implementation of the Greater London LEZ phases already in the pipeline should contribute significantly to addressing the nitrogen dioxide problem. The report also concluded that, for an inner or central London Low Emission Zone, high compliance costs for owners and operators of vehicles would far outweigh the environmental benefits.

6.2.9 TfL are committed to introducing requirements in Phase 5 of the London LEZ to reduce NO_2 emissions, from 2015, subject to the Government setting up a registration scheme for retrofitting of abatement. This leads to the likely focus of any potential additional LEZ phase or inner LEZ applying to a central London being either tighter emission standards for a specific inner zone or standards for vehicles not already included in the remit of the LEZ. Such vehicles could include private diesel cars, including taxis and PHVs, and powered two wheelers.

6.2.10 The Council would welcome discussion with GLA/TfL on the options for focusing air quality improvements in inner or targeted areas. Major roads in London are managed by TfL and it is likely that any inner or targeted LEZ could cover a number of boroughs and potentially focus on bus and taxi fleets managed by the Mayor. It is therefore important for the Mayor to lead on this issue and the Council would welcome working with the Mayor to revisit further options associated with implementing an inner or targeted Low Emission Zone and undertaking further assessment of feasibly. Any study should also take account of socio-economic impacts and also assess appropriate boundaries.

6.2.11 Additionally, the use of grants for scrapping older vehicles could have air quality benefits since it would encourage the renewal of older, more polluting vehicles to cleaner, more efficient ones. Such a scheme needs to be Government funded and led, and the Council urges the Mayor to support and lobby central Government for a national vehicle scrappage scheme similar to that conducted during 2009-2010.

Position Statement 1 – Low Emission Zones

- **Continue to be supportive of the LEZ and its future planned phases.**
- **Continue to lobby the GLA for the inclusion of NO_x in the remit of LEZ Phase 5 and support the Mayor in pressing the Government to implement an abatement certification scheme.**
- **Urge the Mayor to revisit further options associated with implementing an inner or targeted Low Emission Zone and undertake further assessment of feasibly.**
- **Continue to lobby the Mayor to request central Government introduce a national vehicle scrappage scheme.**

Taxis

6.2.12 There are 22,000[27] licensed taxis operating in London, with the majority of activity concentrated in the central area and contributing to large amounts of both PM_{10} and NO_2 emissions in Westminster. They are regulated by the Mayor and the Public Carriage Office.

6.2.13 The Mayor's Air Quality Strategy 2010 supports the implementation of a scrappage scheme to target taxis as well as introducing a grant scheme for retrofitting vehicles with pollution abatement equipment. This would benefit air quality since older vehicles would be replaced by newer, cleaner and more carbon efficient vehicles which cause less PM_{10} and NO_x pollution. According to London Atmospheric Emissions Inventory (LAEI) data, taxis emit significant levels of pollution and are present in large numbers in areas of central London where there are high levels of congestion and air pollution. They also have access to areas where private transport is restricted, such as the West End and Oxford Street. As significant polluters, a reduction in their emissions would have a positive impact for air quality across the whole of London and the City Council will support the Mayor in his aims to bring about this improvement.

6.2.14 The Mayor's Air Quality Strategy includes a number of measures to combat and reduce emissions from taxis and private hire vehicles (PVH's) by accelerating the deployment of more fuel-efficient and environmentally-friendly vehicles into London's taxi fleet. These include:

- Acceleration of the uptake of cleaner, newer vehicles into the taxi fleet by introducing age-based limits for taxis and PHV's. From 1 January 2012, no licence will be issued for a taxi over 15 years old. The age limit will be introduced on a rolling basis throughout the year as affected taxi licence plates expire. The impact of the age limit is to be monitored and may be subject to review in the future. Age-based limits for PHV's will also be introduced based on a 10 year rolling age limit applied for vehicles being re-licensed from 2012 onwards.

[27] The Mayor's Transport Strategy - The Mayor of London, May 2010

- Introduction of a requirement for all new taxis entering the fleet to meet a minimum Euro 5 standard from 1 April 2012 and for all new PHVs entering the fleet to meet a minimum Euro 4 standard from 2012 and be five years old or newer.

- Collaboration with the taxi manufacturing industry to develop an affordable taxi capable of zero-emission operation by 2020 and ensure that all new taxis available by 2015 have 60 per cent better fuel economy than vehicles produced in 2010.

- Establishment of a financial incentive scheme that will offer a reduction on the purchase price of qualifying vehicles to London's taxi drivers.

- Working with the taxi industry and boroughs, to reduce idling and empty running, facilitate additional taxi ranks and suspend stopping and waiting restrictions where possible. The Mayor will also support the development of new technologies which encourage taxi sharing and enable electronic hailing (e.g. via smart phone apps).

- Introduction of a requirement that all new taxi drivers must undertake a mandatory eco driving course before becoming licensed. The Mayor will work with the taxi trade to encourage and incentivise existing drivers to take such courses and promote efficiency driving techniques to reduce emissions. The Mayor will also work with the PHV industry to introduce eco-driving training from 2012 to promote efficient driving techniques to reduce emissions.

- Updating of the annual taxi inspection regime as soon as possible but no later than April 2013. It will change from its current form of one combined mechanical and licensing inspection to two MOTs per annum with a basic annual taxi-related inspection undertaken by TfL, covering taxi specific areas such as taximeter and vehicle interior and signage requirements not covered by MOT tests.

- Working with the taxi manufacturing industry to identify tyre and brake pads that will reduce emissions of PM_{10}. These components will be mandated for all London taxis and will significantly reduce tyre and brake wear emissions.

6.2.15 The City Council welcomes the Mayor's ambitions to improve the taxi fleet but urges him to do more to reduce emission from taxis and PHV's. The Mayor is responsible for licensing of black cabs in London and with such large numbers operating in the central area, black cab emissions are a significant source of pollution in Westminster and one which the Council has only limited control over. We urge the Mayor to utilise the taxi licensing process to further reduce emissions and to find ways to facilitate and promote the use of low emission fuels and technologies, such as electric or hybrid technology, in the taxi fleet. Westminster will work closely with the

Mayor of London and TfL, to improve the environmental performance of taxis in central London, and will work to tackle the air quality issue in line with the Mayor's Air Quality Strategy policies which recognise that where possible, compliance costs for individuals and businesses should be minimised with disincentives balanced with incentives

Position Statement 2 – Taxis

- **Support the Mayor in his aims to bring about improvements to the taxi and PHV fleet**
- **Support the Mayor in pressing central Government to introduce scrappage schemes for taxis**
- **Support and urge the Mayor to further reduce emissions and to find ways to facilitate and promote the use of low emission fuels and technologies, such as electric or hybrid technology, in the taxi fleet.**

Buses

6.2.16 There are over 8,300 buses in operation in London, with many routes running through Westminster. The bus fleet has achieved dramatic improvements with respect to emissions, particularly in relation to PM_{10} emissions since the start of the bus retrofit programme in the late 1990s. However, buses and coaches continue to account for a significant amount of all NO_x emissions within central London and there is significant potential to reduce NO_x emissions by targeting buses.

6.2.17 The Mayor's Air Quality Strategy details the action already underway to further reduce the emission of air quality pollutants from the London Bus fleet. TfL plans to deliver 300 hybrid buses by the end of 2012 and will work closely with bus operators and manufacturers to maximise the number of hybrids introduced after 2012. In addition, the Mayor has stated he will continue exploring the potential of new technologies, such as hydrogen, which may deliver further emissions improvements and other benefits. Through the London Hydrogen Transport Plan, five hydrogen fuel cell hybrid buses joined the London buses fleet in 2010/11. These buses emit nothing but water vapour from their exhausts. The Council supports the Mayor in his measures to introduce hybrid and hydrogen buses to the fleet but urges him to look further at the use of other forms of low emission technologies, such as pure electric or compressed natural gas, in the bus fleet.

6.2.18 Buses are already covered by the remit of the LEZ, with a further tightening of emission standards for HGVs, buses and coaches in January 2012 driving the delivery of further benefits for air quality. As detailed previously, in 2015 the Mayor is aiming to introduce an emissions standard for NO_x (Euro IV for NO_x across London) into the Low Emission Zone for buses. TfL expects that all buses will meet the Euro IV standard for NO_x by 2015. This will involve the retrofitting of approximately 2,800 buses with abatement equipment. The

Council supports the Mayor in his measures to reduce emissions from the bus fleet.

6.2.19 Focusing the lowest emission buses onto routes which travel through areas where air quality is poorest is likely to have a positive impact on air quality in those areas. A number of lower emission buses with pollution abatement technology are now operating on routes (including bus routes No. 25, 205 and 10) which travel through a number of Westminster's hotspots including Marylebone Road and Park Lane. The Council supports the Mayor in his measures to place the lowest emission buses on the most polluted routes and urges him to continue with this action.

6.2.20 In many of Westminster's hotspot areas there are a very high number of buses and there is an associated high level of public and stakeholder concern over the very high levels of traffic, congestion, noise and polluting emissions, particularly as many of the buses are perceived as operating as empty or almost empty during non-peak times of the day. Of particularly concern is the West End and Oxford Street. It is understood that the operation of the bus route network in London is a complex issue, with many different operating companies involved; however, the Council urges the Mayor to undertake a thorough review of the current bus route network and explore and assess options for change or rerouting with the aim of reducing congestion in key areas such as Oxford Street.

Position Statement 3 – Buses

- **Support the Mayor in his measures to introduce hybrid and hydrogen buses to the fleet and urge him to look further at the use of other forms of low emission technologies, such as pure electric or compressed natural gas, in the bus fleet.**
- **Support the Mayor in his measures to reduce emissions from the bus fleet.**
- **Support the Mayor in his measures to place the lowest emission buses of the most polluted routes and urge him to continue with this action.**
- **Urge the Mayor to undertake a thorough review of the current bus route network and explore and assess options for change or rerouting with the aim of reducing congestion in key areas such as Oxford Street.**

6.3 Objective 2 - Target pollution hotspots and routes

6.3.1 Some locations and transport routes in Westminster have very high levels of pollutants and are referred to as hotspots or routes. The pollution is high due to numerous factors including high traffic levels, local geography and the type of vehicles that tend to use the routes. Many hotspots and routes are also areas where there is a high concentration of pedestrian movement. It is these areas which will be prioritised for targeted short-term actions.

Hotspots suffer very poor air quality due to high levels of traffic and congestion, large amounts of heavy polluting vehicles and poor dispersion.

6.3.2 The map below shows the predicted levels of PM_{10} daily exceedence and effectively highlights the areas of concern.

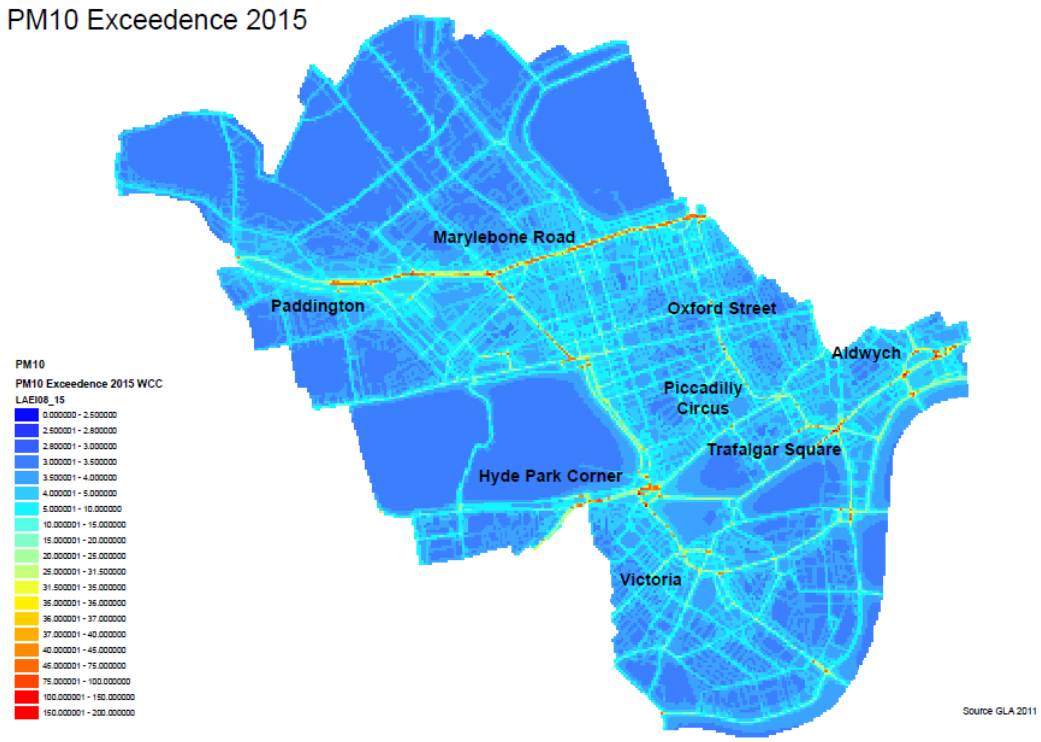


Figure 6-4 Map highlighting areas of high pollution

6.3.3 Higher levels of pollution tend to relate to areas of high development density such as the West End. Areas which indicate the lowest levels of pollution relate to areas of low density development or open spaces such as Hyde Park or Regent's Park.

6.3.4 The majority of these roads form part of the Transport for London Road Network (TLRN) which is managed by Transport for London (TfL). A list of hotspots and routes in Westminster are detailed in the table below.

Table 1 Hot-spots and hot-routes in Westminster

Hot-spots and hot-routes in Westminster	Managing organisation
Westway/Marylebone Road (A40/A501)	TfL
Edgware Road (A5)	TfL
Marble Arch	TfL
Park Lane (A4202)	TfL
Hyde Park Corner	TfL
Knightsbridge (A4)	TfL
Grosvenor Place (A302)	TfL
Victoria Embankment (A3211)	TfL
Oxford Street	WCC
Regent Street	WCC
Piccadilly (A4)	WCC
Trafalgar Square	WCC
Aldwych /Strand (A4200/A4)	WCC

6.3.5 The City Council has only limited control over the routes in the Transport for London Road Network and it could be argued that a large number of vehicles on these routes do not commence or end their journeys in Westminster but are traversing through the City and perhaps the whole centre of London. The situation could be improved if through-traffic was directed away from areas of denser populations more effectively.

6.3.6 Alongside the Mayor's Air Quality Strategy, the Mayor has also received Government funding – know as the Clean Air Fund – and has implemented a set of actions and measures focused specifically on improving air quality in key areas where pollution is the poorest. The Clean Air Fund has helped deliver a wide range of different action including: local measures to reduce idling of stationary vehicles through communication and marshalling and taxi management at rail termini; targeted cleaning and use of dust suppressants; targeted use of low emission buses on highly polluted routes; installing green infrastructure; and working with businesses to reduce their air quality footprint. The Mayor's Road Task Force is also strategically reviewing London's road network which seeks to find alternative ameliorating options for traffic flow and congestion in the city. Furthermore, the Mayor recently announced at the beginning of 2013 a new funding stream for local authorities, the Mayor's Air Quality Fund, through which the City of

Westminster shall be applying for funds, both on a sub-regional partnership and individual basis.

6.3.7 Westminster City Council has worked in collaboration with TfL to enable trials in the application dust suppressant sprays at hotspot areas. The City Council will continue to work together with TfL and neighbouring boroughs to investigate the possibilities of other such measures.

6.3.8 It is often difficult to find solutions that do not involve compromising the time given to either traffic or pedestrians. The City Council supports the Mayor's plans to implement measures to smooth the flow of traffic, which will reduce emissions caused by vehicles stopping and starting, and will work with TfL to identity any benefits from local traffic management and will examine the potential options available from emerging technologies and traffic management techniques (such as road crossing timings).

6.3.9 All traffic light signals in London are managed by TfL. As part of the Mayor's Smoothing Traffic Flow Programme, locations are reviewed on a rolling basis every three to five years and in response to changes to the network. In 2009/10 TfL completed over 1,000 signal timing reviews achieving approximately a six per cent reduction in stop/start delays for traffic at traffic signals. TfL keep under review the traffic light timings in order to capture potential air quality benefits through reducing traffic congestion and queuing. TfL and the City Council are in regular contact regarding reviews of traffic light timings.

6.3.10 Many of the hotspot areas are also areas of high pedestrian movement. Work has recently been undertaken in areas across the City to improve pedestrian access; notably the Oxford Circus diagonal crossing, Piccadilly Two-Way and the Marble Arch Pedestrian Improvement Scheme which has included new pedestrian/cycle crossings, improved footway and carriageway surfacing and landscaping around this iconic Westminster monument to further open up public spaces for all to enjoy. The emerging Edgware and Baker Street Business Improvement Districts (BIDS) may also provide some opportunities for initiatives to improve air quality in these areas and to lobby TfL for improvement of road crossings with a view to reducing exposure to pollution. However, care needs to be taken to ensure that any delivery of air quality measures is appropriately balanced against the need for open and accessible areas for pedestrian use and public access.

Action TRAN 1 - Work with TfL to investigate options for reducing through-traffic in specific parts of Westminster, such as Oxford Street and Marylebone Road, and to examine the options for reducing air pollution at hotspots.

Action TRAN 2 - Examine potential options and implement actions to minimise pedestrian exposure to high levels of pollution.

6.4 Objective 3 - Promote the use of low emission forms of transport

Car Clubs

6.4.1 Emissions from cars and other vehicles on our roads contribute to air pollution and carbon emissions. To reduce these emissions and improve the local environment, Westminster is promoting more sustainable forms of transport and alternatively fuelled vehicles which produce the lowest emission levels on the road. Car clubs aim to reduce car ownership and usage amongst their users. Members of the car club have access to a number of vehicles which can be booked for use as required therefore reducing the need for each individual to own a car. By selecting electric and hybrid vehicles for part of the car club fleet, emissions on the streets are further reduced.

6.4.2 Westminster's Car Club went live in April 2009, and has expanded to 10,000 members and 185 vehicles, including two electric hybrid plug-in Vauxhall Amperas. The club has positively contributed to the original scheme objectives such as offering residents a choice on car ownership, encouraging more people to sell off their cars, reducing demand for kerbside parking and contributing to the Council's green agenda. 29% of Westminster members say that they have sold at least one private vehicle since joining the car club, taking 2,288 vehicles off the road and an additional 1,996 potential vehicle purchases were deferred or cancelled. Subject to car clubs achieving reductions in car usage and pollution emissions, the City Council will continue to support car clubs in the City with particular emphasis on the inclusion of low emission vehicles in the fleet.

Action TRAN 3 - Support car clubs with particular emphasis on the inclusion of low emission vehicles in the fleet.

Low Emissions Vehicles

Electric vehicles are virtually silent and can help reduce city noise levels.

6.4.3 Vehicles which do not use petrol or diesel, but instead use other cleaner fuels, can produce less pollution and help improve poor air quality. Cleaner fuels include electricity, liquid petroleum gas (LPG), compressed natural gas (CNG) and certain biofuels including biomethane. Lower emissions can also be achieved by using alternative technology such as electric, hybrid and hydrogen fuel cell vehicles. The City Council is keen to support the uptake of low emission vehicles because of the benefits to local air quality and carbon reduction.

6.4.4 Different types of low emission technologies and fuels offer different benefits in terms of reducing air pollution emissions. Electric vehicles run on batteries and have zero emissions at the point of use. Hybrids are vehicles which have more than one source of power; in commercially available cars this is

usually an electric battery and a petrol engine. Both sources may operate in parallel to simultaneously provide power or in series where one source is used to provide drive and the second being used to augment the first's power reserve. A plug-in hybrid is a hybrid vehicle with rechargeable batteries that can be restored to full charge by connecting a plug to an external source – usually a wall socket or specifically designed charging point. All hybrid technologies lead to lower emissions of carbon dioxide and air pollutants than from ordinary petrol or diesel vehicles but are more polluting than a fully electric vehicle.

6.4.5 The City Council has introduced a range of incentives for low emission and electric vehicles. Anyone with an electric vehicle who either lives or works in Westminster can use the Council's recharging bays once they have registered to our membership scheme (at the current cost of £75 per annum). Scheme members then benefit from free recharging at all recharging bays on the public Westminster network.

6.4.6 The provision of electric vehicle (EV) charging infrastructure in Westminster has been in response to the aim to achieve a transition from petrol and diesel powered vehicles to vehicles that are responsible for less carbon emissions and which reduce air polluting emissions and noise. With the objective to improve air quality through enabling uptake of electric vehicles, the EV charging network in Westminster provides charging infrastructure for a variety of vehicles, both private and commercial, and incorporates many different aspects including on and off-street recharging, both public and privately accessed networks and different charging technologies.

6.4.7 The first EV recharging bay was installed on Westminster streets in 2006. Since then, the provision of bays has been rolled out at a steady rate. The scheme infrastructure is projected to grow considerable and currently includes 39 recharging bays over 17 locations and 2 recharging bays for Powered Two Wheelers (PTW) at 1 location.

6.4.8 Members of the EV scheme can park and recharge for free at any of the recharging points in Westminster. The Council also offers concessions for electric vehicles including: free parking charge during controlled hours on paid for parking bays and a free resident parking permit – although an administration fee has recently been introduced.

6.4.9 Additionally, there are in the region of 140 known EV recharging bays located within Westminster's car parks, to which there is public access. These points are managed by the car park operators such as Q-Park and NCP. EV users recharge for free and additionally benefit from discounted rates on parking season tickets. There are also likely to be other privately managed off street charging bays in private resident developments. Westminster's emerging City Management Plan requires all new developments with car parking to include EV charging points for all spaces. There are also two on-street 'fast' rate recharging points for use by commercial vehicles in Old Cavendish Street, near Oxford Street.

6.4.10 At present, the Westminster network is the largest borough recharging network in London. National and regional policy is encouraging councils to install electric vehicle recharging infrastructure, with the Mayor's 'Electric Vehicle Delivery Plan'[28] published in May 2009 setting out plans for recharging points across London.

6.4.11 Infrastructure aims of the London Delivery Plan include working with the boroughs and other partners to deliver a total of 25,000 charge points across London by 2015, with 500 points on-street, 2,000 in off-street public car parks and station car parks and 22,500 provided in partnership with businesses - to be located in employers' car parks and at retail/leisure sites.

6.4.12 In March 2013, Cabinet Member decision was taken to implement the Source London electric vehicle recharging scheme within Westminster. The Mayor of London's Source London Scheme is designed to be a convenient and accessible way of charging your vehicle whilst travelling across and around London. It is planned that any vehicle that is licensed with the DVLA as a pure electric or a plug-in hybrid vehicle will be able to join the scheme and have access to over 1,300 public charging points that will be installed across the capital, and there will be one system and therefore one process to recharge across the capital.

6.4.13 Improving infrastructure for low emission vehicles is key to encouraging the uptake of alternatively fuelled vehicles. The more options there are for recharging or refuelling low emission vehicles in central London the more attractive they will become to purchasers. We are developing a Low Emissions Vehicle Strategy to improve the existing electric vehicle recharging infrastructure. The strategy will include the City Council's detailed plans for expansion of the network of recharging points both on-street and off-street.

6.4.14 Liquid Petroleum Gas (LPG) is an alternative fuel most suited to use in cars and light vans, rather than heavy vehicles. It is generally accepted that LPG gives a 10-15% carbon dioxide reduction in comparison to petrol and is on a par with diesel. LPG also delivers 80% lower NO_x emissions than diesel, along with zero particulate emissions. Because natural gas engines are far quieter than diesel engines, they are a useful option for vehicles that are used in noise-sensitive locations and for overnight deliveries. The City Council has a number of LPG vehicles in its own fleet.

6.4.15 Hydrogen-fuelled vehicles have so far been limited to a small number of demonstration fuel cell projects made by various vehicle manufacturers. Currently such vehicles can cost up to 20 times more to produce than their petrol equivalents. There are minimal hydrogen refuelling stations across London and this poses a significant obstacle to the creation of a London hydrogen economy. The Mayor has a 'London Hydrogen Action Plan' which has the ambition to deliver a series of interconnecting hydrogen refuelling facilities in London by 2012 and also deliver demonstration & deployment projects of early commercial Hydrogen powered vehicles.

[28] 'Electric Vehicle Delivery Plan', Mayor of London, 2009.

6.4.16 Westminster supports the aims of the Mayor and has undertaken an investigation into the options for installation of appropriate hydrogen refuelling infrastructure in the City as well as other options to introduce hydrogen into Westminster.

6.4.17 Additionally, policy in the emerging City Management Plan states that the council will promote the availability of alternative lower emission fuel at filling stations, such as hydrogen refuelling or electric recharging points. For low emission vehicles, adequate re-fuelling facilities will be required throughout Westminster to encourage the take up these emerging technologies.

Action TRAN 4 - Continue to promote and provide infrastructure for electric and low emission vehicles.

6.5 Objective 4 - Promote the use of low emission deliveries

6.5.1 Making changes in the way goods are delivered across the city could have significant beneficial effects on local pollution levels. The City Council welcomes the Mayor's plans *to 'support modal shift of freight'* and work with boroughs to *'support the retention and development of appropriate logistics facilities in suitable locations which can reduce the mileage and potential congestion associated with long delivery trips, act as delivery hubs and provide more suitable sustainable onward delivery such as by waterways, electric vehicles, cycle or by foot'*[29].

6.5.2 A number of studies have been undertaken in conjunction with the London Borough of Camden and the City of London to investigate options and feasibility for consolidation of freight, which could reduce heavy goods vehicle movements in the central area. The studies were based on there being central points from which goods can be delivered utilising low emission vehicles and effective delivery routes. There would be major benefits if a successful scheme could be developed and further work will be needed if this is to happen.

6.5.3 The Council will work with developers, the freight logistics industry, other London Boroughs, TfL and other stakeholders towards the development of Freight Consolidation Centres. However, the set up and operating costs of any new centre should ideally be met by the private sector without the need for ongoing public sector subsidy. In the meantime, the Council supports the Regent Street freight consolidation scheme implemented by the Crown Estate.

6.5.4 The Council will continue to support the Central London Freight Quality Partnership that is chaired by the University of Westminster and attended by other central London Boroughs, TfL and the freight and logistics industry.

[29] Clearing the Air, The Mayor's Air Quality Strategy 2010 – Mayor of London, December 2010

6.5.5 ‘Loading pads’ are being developed on street. These are areas of footway which at set times are to be used by vehicles loading and unloading, and at others are for pedestrian use. This contributes to a reduction in congestion as delivery vehicles do not block the carriageway, which in turn reduces pollution emissions by reducing queuing traffic.

6.5.6 Also, Delivery and Servicing Plans are required for new developments to ensure that the servicing needs of a development are met, any negative impacts minimised and that electric vehicle recharging points be provided in the service areas of the developments to encourage the use of low emission vehicles in servicing and deliveries.

Action TRAN 5 - Continue to investigate ways in which freight consolidation can be developed and investigate and develop ways to reduce congestion from delivery vehicles.

6.6 Objective 5 - Encourage changes in driver behaviour

Eco-Driving Behaviour

6.6.1 Driving skills and behaviour can be learnt and modified to substantially improve fuel efficiency and reduce wear on tyres and brakes. Improved fuel efficiency means there is an overall reduction in pollution emissions for a journey and also financial benefits. Smoother driving (less extreme acceleration and braking) leads to less tyre and brake wear, which reduces PM_{10} emissions, and can also help to maintain smoother traffic flow which helps cut congestion and improves air quality. Improved efficiency of drivers of all vehicles including vans and cars would be of great benefit to air quality and the communication of these skills to people who drive within Westminster would be advantageous. The City Council intends to investigate the best methods for communicating fuel efficient driving skills and supporting providers of fuel efficient driver training through communication to Westminster residents.

6.6.2 The Mayor's Air Quality Strategy also encourages the uptake of low emitting tyres, when these are available on the market, to reduce emission resulting from tyre wear. The City Council supports the Mayor in these aims.

Action TRAN 6 - Support and undertake local communication campaigns to raise awareness of the benefits of fuel efficient and smoother driving and evaluate the possibility of supporting providers of fuel efficient driver training through communication to Westminster residents.

Encouraging People Out of Cars

6.6.3 Westminster has exciting new architecture, a wealth of historic buildings of architectural interest and has retained many of its original 18th and 19th century buildings. Also, despite its intensely urban aspect Westminster has a rich natural environment including five Royal Parks in the central area of the City. The density of land use and movement means that many of these attractions can be linked together by short journeys on foot or cycle. Walking and cycling have key roles to play in creating a healthy, accessible and vibrant city. Within central Westminster there is such a density of walking activity that all streets are part of the 'walking' network.

6.6.4 The Council recognises the need to encourage people to walk or cycle more and public realm improvements, such as Leicester Square, Piccadilly Two Way and South Molton Street enhancements and the Legible London scheme, help to make walking and cycling more attractive which will help to cut down on emissions from motorised vehicles.

6.6.5 The City Council continues to implement projects aimed at promoting walking

as a sustainable means of transport. Westminster adopted a Walking Strategy in 2004 to set out policies in respect to implementing measures to encourage walking in the City. The Strategy is currently being revised and the new document will be adopted in 2013. The Council has held events such as the 'in town without my car' day and 'Walk once a week' and works with schools to promote walking. Westminster and the Central London Air Quality Cluster Group boroughs were involved in the development of less polluted walking routes on the website Walkit.com.

6.6.6 These routes were launched in February 2008 and provide a tool that can be used by an individual to help them to manage and reduce their exposure to air pollution, at the same time as being more active. Westminster also participates each year in walking week, where events target schools, families, workers and others, as well as other walking initiatives.

6.6.7 In November 2007 a prototype Wayfinding pedestrian signage system was launched jointly by the City Council, New West End Company and Transport for London. The Legible London project was launched in the Oxford Street, Regent Street and Bond Street area and is aimed at increasing the number of journeys walked, helping people to get to their destinations more efficiently and giving them the confidence to try new routes. Signing the central areas of Leicester Square and Soho has been prioritised, then outwards to main entry points into the City such as Victoria and Paddington. The prototype started with the installation of 19 signs and this will increase to over 400 signs by March 2013 with further plans for installations to link other London boroughs including Camden, Kensington and Chelsea, and Lambeth.

6.6.8 There is continued delivery of cycling support measures and the Council continues to implement its cycle stand programme which now has over 7,700 cycle parking spaces. The City Council also runs a training programme for adults and children to cycle more safely. The City Council fully recognises the importance of cycling and the positive impact this can have on the well being of the city and stakeholders. In response to this, the City Council's Leader stated (in her annual speech on 6th March 2013) that Westminster will deliver a cycling strategy, anticipated to be adopted in 2013, endorsing the Mayor of London's ambition to improve transportation links and the public health of the city. The new cycling strategy will set out strategies and initiatives in respect to implementing measures to encourage cycling in the City.

6.6.9 The City Council has worked with TfL to help roll out the Mayor's Central London Cycle Hire scheme by providing space for approximately 140 docking stations on the City of Westminster's road network. The mapping on

the London Cycle Hire Terminals is the same style as Legible London signs, and holds both walking and cycling information.

6.6.10 Other improvements to the City of Westminster's streets and public realm have been seen to increase and improve sustainable transport modes and the pedestrian experience. For example, the Piccadilly Circus Bus contra-flow and junction improvement works decreased bus congestion and travel times for three bus routes after implementation. This scheme also widened footways, introduced goods loading pads and increased pedestrian crossings which all helped to decrease road traffic congestion and improve road crossings.

6.6.11 Traffic free days have been held in Westminster since 2007 with events in Oxford Street, at the Prince of Wales junction and Chancery Lane, the latter in conjunction with City of London and LB Camden which involved closing the central section of the road to traffic during the daytime. In 2009, the pedestrianised part of Broadwick Street was used to promote various initiatives including the Kingly Street pedestrianisation scheme, Legible London and cycle training.

Action TRAN 7 - Support schemes to encourage people to use other forms of sustainable travel such as walking and cycling.

Work and School Travel Plans

6.6.12 The City Council works to support school and workplace travel plans. Consultants, on behalf of the Council, worked with schools to put travel plans in place, with the aim for all schools to have a travel plan. The Council encourages schools to develop travel plans which look at ways in which more pupils can be encouraged to walk or cycle to school. At present 68 out of 88 schools (77%) have a Travel Plan in place, and 46 of these (52%) are current, with the remainder in need of review. As the development of such plans is voluntary, engaging with the remaining schools and convincing them to develop plans has sometimes been challenging. The Council has also consistently offered cycle training to anyone living, working or studying in Westminster which has given participants the confidence to cycle safely on Westminster's busy roads. Similarly, improvements have been made to the London Cycle Network to improve safety and legibility of cycle routes through Westminster.

6.6.13 The Council is the lead partner for the Smart Green Business initiative, managed by the Cross River Partnership, which aims to support small and medium sized businesses in central London and help businesses improve their environmental performance through a variety of methods including travel plans. Travel planning can assist businesses seeking to become cleaner, greener and more efficient through actions encouraging alternative and sustainable methods of transport. Smart Green Business consultants work with businesses to develop a travel plan that is tailored to the business and makes recommendations for sustainable solutions; such as cycling,

walking and public transport; to business stakeholders including employers, customers/clients, visitors, and the wider public. Larger businesses are covered by Transport for London. The City Council also completed its own staff travel plan in 2009.

6.6.14 Where schools and businesses are developing travel plans, the City Council will encourage them to provide new or improved cycle parking facilities as part of their plans to develop solutions which encourage the use of alternative modes to the car.

Action TRAN 8 - Support and promote the implementation of travel plans for schools and businesses.

6.7 Objective 6 - Reduce emissions from the Westminster fleet

6.7.1 A Council fleet policy has been in place since 1997 setting standards for its own and its contractors' fleets. A review of the Westminster City Council Fleet strategy was completed in 2008 and revised standards were developed. All Council and contractors' vehicles are expected to meet the City Council's fleet policy which sets a hierarchy of preferred fuels for vehicles.

6.7.2 The fleet policy seeks to ensure that vehicles of the best emissions standards possible are procured within the budget available, whilst still being fit for purpose. In line with the fleet policy, the Council will seek to replace vehicles in order of the following preference: electric, electric hybrid, LPG/CNG, petrol and diesel. However, it should be noted that the vehicle must be able to perform its function to a satisfactory standard and some vehicle types, particularly larger vehicles, will not be available with electric or hybrid engines.

6.7.3 Through the Council's contract with Veolia, the majority of the Council waste vehicles were due to be replaced in July 2011 with new mostly Euro V vehicles. These vehicles tend to have a 7-8 year life cycle so have been replaced again at this time with vehicles of the highest available standards. These vehicles are also fitted with telemetric systems which record driving styles and encourage smoother more fuel efficient driving.

6.7.4 Aside from the vehicles managed through Veolia and other external contracts, the majority of the Council's fleet in 2011 met the Euro V standard (47%), Euro IV standard (22%), or are electric (2%), hybrid (5%) or LPG (14%). These vehicles tend to run on 5 year leases but are sometimes replaced at more regular intervals.

6.7.5 The Mayor's Air Quality Strategy details measures to work in partnership with boroughs and other public sector bodies to develop a 'low emissions strategy' for all of London's public sector vehicles with the objective of achieving zero tailpipe emissions.

Position Statement 4 – Reducing fleet emissions

- **Support the Mayor in developing a strategy aiming to achieve zero tail pipe emissions from public sector vehicles.**

Action TRAN 9 - Ensure the use of low emission vehicles within the Westminster City Council fleet and those of its contractors and regularly review Fleet Policy and fuel hierarchy to ensure best possible effects for air quality.

Action TRAN 10 - Compel contractors and associates to reduce air pollution and carbon emissions through tender and contract specifications.

6.7.6 The City Council currently ensures that all drivers of Westminster fleet vehicles undergo training to improve safe and fuel efficient driving skills. The City Council will continue to commit to training its own fleet drivers but will also evaluate the potential to extend this training out to its contractors' fleets and for including appropriate criteria to be scored as part of the tendering process.

6.7.7 Technology is available in the form of on-board monitoring systems to evaluate driving performance and emissions. There may be some benefit in the installation of these devices to help enhance fuel efficiency and therefore improve air quality.

Action TRAN 11 - Continue to commit to the provision of Safe and Fuel Efficient Driving (SAFED) training for fleet drivers and evaluate the possibility of:

- **extending Safe and Fuel Efficient Driving (SAFED) training to the City Council's contractors' fleet drivers;**
- **including criteria for Safe and Fuel Efficient Driving (SAFED) of the City Council's contractors' fleet drivers within specifications for the tendering process;**
- **assessing the benefits of on-board driving monitoring systems with a view to installing them on fleet vehicles.**

6.8 Objective 7 - Reduce exhaust emissions from road transport

6.8.1 Vehicles idling while stationary cause unnecessary use of fuel and an increase in emissions. Prolonged idling can also create a noisy environment, especially for residents and businesses. Prolonged idling from larger vehicles such as HGV's and coaches during unloading are a particular concern due to the high levels of emissions, when compared to other vehicles, and the potential for noise nuisance.

6.8.2 Over a few years in the late 1990's, the Council, together with the Police, undertook a programme of roadside vehicle exhaust testing on approximately 10,000 vehicles. The scheme was principally about raising the profile of air pollution and, in parallel with this scheme, Council officers also handed out leaflets on idling to drivers of stationary idling vehicles. The overall failure rates were very low and as engine vehicle technology has improved since that time, leading to fewer tailpipe emissions, it is considered that resources are more efficiently concentrated in other measures and projects to address air quality.

6.8.3 It is an offence to leave a vehicle engine idling unnecessarily whilst stationary, under certain road traffic regulations[30] and powers are available to authorised local authority officers to issue fixed penalty notices of £20 to drivers who allow their vehicle engines to run unnecessarily while the vehicle is stationary. It is considered by many that £20, with no inflationary increase, is too low to be a powerful disincentive and consequently, penalty charges for idling offences would benefit from being brought into line with parking penalty charges, to provide a stronger deterrent and to encourage enforcement. By way of comparison, legislation preventing smoking in public places allows for a fixed penalty of £50 for smoking in 'smoke free' premises (or £30 if paid within 15 days). Additionally, it is possible to enforce a 'no idling' Traffic Management Order (TMO) for coach parking in specific locations with a penalty charge of £80.

6.8.4 The Mayor, working with the boroughs, bus and coach operators and other organisations, plans to establish a 'No-Idling Zone' throughout London. Within this, there would be a focus on parked buses, coaches and taxis as well as the particular problem of idling buses at bus stands.

6.8.5 Resource requirements associated with the enforcement of 'no idling' legislation would be in addition to the current parking enforcement work of Westminster's Civil Enforcement Officers. The Council intends to review the options and resource and emissions implications of utilising 'no idling' legislation to help improve local air quality, including looking at focusing enforcement on specific vehicle types and areas, such as air quality hotspots, or at times of particular concern.

Action TRAN 12 – Undertake a review of the options and resource and emissions implications of utilising 'no idling' legislation to help improve local air quality.

6.8.6 An alternative method for reducing idling is to focus on key fleets. Already, TfL works with bus operators to require application of the no idling policy at bus stations and stands. TfL is continuing to discourage the practice of coach drivers running their engines whilst stationary, by installing 'no idling' signage at coach parking bays on London's major routes, reiterating this message through communication channels, including the Coach Parking Map and the TfL website. TfL also supports the Confederation of Passenger

[30] Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002

Transport, the national trade association for the coach and bus industry, in adopting measures to reduce idling and promote engine switch-off.

6.8.7 Westminster City Council could have some influence over the many idling vehicles which are managed on behalf of large organisations such as London Buses (TfL) or by coach and lorry companies. Directly approaching the management of these organisations and companies to take action to ensure drivers switch of their engines when stationary will help to reduce emissions. Additionally, the Council has direct control of the management of its coach parking bays on borough-managed roads and will aim to reduce idling from coaches by installing signs at a number of these locations to inform parked drivers to switch of their engines.

6.8.8 We welcome the Mayor's plans to make London a 'no idling zone' for parked vehicles (with a particular focus on buses, coaches, taxis, private hire vehicles, and delivery vehicles) and support the plans to work with boroughs to provide a mechanism for reporting problem idling and improving enforcement.

Action TRAN 13 – Communicate the 'no idling' message to parked coach drivers on Westminster's streets by installing signs in coach parking bays on borough managed roads.

Action TRAN 14 – Work with the Mayor to develop procedures to press the operator companies of vehicles found with idling engines to take enforcement action on the drivers of those vehicles.

6.8.9 Taxi idling, especially at rail termini and taxi ranks, is a particular issue. The current design of taxi ranks makes it difficult to prevent idling as taxis are required to move forward every few minutes. The Mayor is working with transport operators and the boroughs to address this where practical, potentially by making taxi passengers walk along the rank to the taxi rather than the taxi moving up the rank, and by working with the taxi trade and transport operators to develop better management of these areas by methods such as marshalling and fixed-fare journey sharing. Targeted action is also been taken at priority locations through the use of 'Eco Marshals' at some rail stations.

6.8.10 Raising awareness of the problem is also important and the Council will work to improve its communication of the 'no idling' message, focussing on locations where idling is thought to be a problem, such as at coach parking bays and at schools with parents who leave their cars running when picking up their children. The City Council works to support all school with travel plans with aim of encouraging healthier, sustainable travel on the journey to and from school – i.e. walking, cycling and public transport use - and away from private car trips and the 'school run'.

6.8.11 It is understood that there are a number of misconceptions surrounding the issues of idling and parking which need to be addressed by any future communication exercises. In particular, there is concern that the

misunderstanding that leaving your engine running may help prevent you getting a parking ticket - which is not true - may actually lead to idling where it is not necessary, for example, when dropping children off at school. Whilst it is not permitted to 'wait' or park on double yellow lines, it is permitted for the driver to stop for passengers to board or alight and to load or unload (unless there are also loading restrictions).

6.8.12 There are other incorrect ideas sometimes held by people, such as it being necessary to idle vehicles for a few minutes to warm up the engine, especially in winter and it being more economical and fuel-efficient to leave a car running for a few minutes rather than to turn it off and on. Although idling to 'warm-up' the engine is a common practice among some motorists, it is not needed and, if a driver was going to be stopped for more than 10 seconds, they would save fuel and money by turning off the vehicle and then restarting it when ready to drive again. Catalytic converters stay warm for up to 25 minutes after a driver turns off the engine, so frequent stops and starts don't produce the large amount of harmful emissions seen with cold starts.

6.8.13 Future communication campaigns will aim to dispel any confusion over idling and parking and inform the public of the health impacts from polluting emissions and poor air quality.

Action TRAN 15 – Improve public communications on air quality and no-idling messages by including information on the impacts of idling on the Council website and in Council publications.

6.9 Objective 8 – Support representation of air quality factors within local and national schemes

Vehicle Excise Duty (VED)

6.9.1 Carbon dioxide emissions from vehicles are taken into account when the rates for vehicle excise duty are decided. Since pollution from road vehicles is one of the main contributors to air pollution in the UK, taking account of emissions of air pollutants when calculating new rates would help and encourage the public to make more informed choices when buying cars and other vehicles. Incentivising low emission and more fuel efficient vehicles would have a beneficial effect on air quality. A consequence of the current system is that drivers are encouraged, through lower duty rates, to buy diesel vehicles; some of which are a significant source of PM_{10} emissions. Because VED incentivises, in some cases, more polluting vehicles, a conflict exists between national vehicle taxing policy and the City Council's requirement to reduce pollution levels. The Mayor's aims to encourage the Government to incentivise low emission vehicles through further changes to Vehicle Excise Duty and other tax regimes, with a focus on improved air quality as well as reductions in CO_2. The City Council welcome this.

Position Statement 5 – Vehicle Excise Duty

- **Support vehicle excise duty rates which would take account of and incentivise low air polluting vehicles.**

6.10 Objective 9 - Support low emission rail transport and electrification of the rail network in London.

6.10.1 Westminster has two rail lines that regularly use diesel trains. These are the Great Western Main Line from Paddington Station and the Chiltern Lines from Marylebone Station, from both of which, most trains are diesel-powered. Both stations have near-by residential areas and the emissions from the trains have the potential to affect the local air quality.

6.10.2 It is estimated that, by 2015, rail traffic related emissions will contribute to 12.7% of the overall NO_x emissions in Westminster and to 6% of PM_{10} emissions. Whilst these are not huge percentages, they are locally significant along the rail corridors and action can be taken to reduce the levels and thereby improve the local air quality.

6.10.3 Some measures have already been taken to work together with Station Managers and Train Operating Companies (TOC's) to reduce the impact of emissions from rail transport. These measures include:

- Undertaking of a detailed assessment at Paddington Station mainly focusing on sulphur dioxide. It was found that there was no significant exposure for that pollutant.
- Undertaking a particulate matter monitoring programme at Marylebone Station and at a near-by area of residential exposure for particulate matter. The monitoring results indicated no exceedence of the national objectives for PM_{10}.
- Working with TOC's to raise the importance of air quality and to investigate and encourage measures to reduce emissions, including: reducing the idling time of locomotives in stations and utilising new technology such as on-board auxiliary generators, and fuel additives or low sulphur fuel.

6.10.4 In July 2009 the Department for Transport released its Electrification Strategy for the UK which recommended electrification of a number of mainline routes in the UK including the main rail route between Paddington and Swansea; but, following the autumn 2010 comprehensive spending review, the initial stage of this will take electrification only as far as Didcot. Electrification of lines from Marylebone Station does not feature in current plans. The City of Westminster have been advised by Network Rail that Government has agreed to electrify the Paddington line in phases between 2016 and 2018, but has no current proposal for Marylebone.

6.10.5 The City Council intends to write to the Minister for Transport with responsibility for rail services setting out the air quality and other benefits

that would be achieved by the earliest possible electrification of rail services from Marylebone Station.

6.10.6 The Mayor's Draft Air Quality Strategy states that he will work with central Government, Network Rail and the rail industry and will support the electrification of the whole rail network in London. Westminster will strongly support this policy for electrification of the rail network in London and press for early commitment to start work on electrification of the Great Western train line.

6.10.7 The spending review inevitably has a bearing on the extent and speed with which electrification will happen across the UK. In these circumstances electrification of Marylebone Station lines cannot be expected to be completed for at least ten to fifteen years and possibly much longer. Electrification has a potential for reducing emission from rail sources in the long-term at Marylebone Station, but probably not for many years to come.

6.10.8 Many of the concerns of residents local to Marylebone Station focus on health concerns, visible emissions and noise from locomotives. Some aspects of air pollution emissions from railways are subject to legislation. The design and construction of road vehicles have been subject to emission standards since 1992 and the equivalent for new diesel locomotives - the Non-Road Mobile Machinery Regulations - has applied since 2006 and sets a series of steps in emission standards, but only for new locomotives and multiple-units. To reduce emissions from current rolling stock, alternative measures are required and the best opportunities for improvements to air emissions in the near future therefore lie with the TOC's continuing to take initiatives. The City Council will maintain dialogue with TOC's to review opportunities and push for continued improvement.

6.10.9 The City Council also proposes to communicate with government Ministers to make the case for stronger control of the environmental effects of rail services through existing mechanisms. The Department for Transport, with advice from Defra, could put in place requirements and processes to ensure that operators be required to reduce excessive air and noise pollution from rail services. This would drive improvements equitably across the UK industry. It should be possible for such improvements to include a mechanism by which the Department would consult local authorities in appropriate cases.

6.10.10 It is appropriate that decisions regarding assessment of new rail franchises should be taken at a national level, so long as environmental aspects are an explicit and significant part of the assessment. It is not clear that the current franchising process gives satisfactory consideration to environmental impacts, so the City Council proposes to take this issue up with Ministers.

6.10.11 However, Transport for London (TfL) does have an existing remit to be consulted about rail service franchises, so the City Council will maintain communication with TfL and the Mayor of London to set out our concerns

about the need for environmental aspects of rail services to be considered systematically when new franchises are being considered, and the need for TfL and the Mayor to be consulted about rail franchises, and to consult the City Council on issues of importance to Westminster.

Position Statement 6 – Rail emissions

- **Strongly support the policy for electrification of the rail network in London.**
- **Urge to TOC's to continue to take initiatives, review opportunities and push for continued emissions improvement.**

Action TRAN 16 - Write to the Minister for Transport with responsibility for rail services and to local MP's setting out the air quality and other benefits that would be achieved by the earliest possible electrification of rail services from Marylebone seeking information on the likely timescales for this.

Action TRAN 17 - Maintain dialogue with TOC's to review opportunities for improvements in reducing emissions.

Action TRAN 18 - Communicate with government Ministers to make the case for stronger control of the environmental effects of rail services through existing mechanisms.

Action TRAN 19 - Raise with TfL and the GLA the importance of appropriate environmental impact assessments within consultation exercises when changes in rail services are proposed (e.g. High Speed Rail 2), and to consult the City Council respectively.

6.11 Summary of Positions and Actions

Position Statement TRAN 1 – Low Emission Zones

- Continue to be supportive of the LEZ and its future planned phases.
- Continue to lobby the GLA for the inclusion of NOx in the remit of LEZ Phase 5 and support the Mayor in pressing the Government to implement an abatement certification scheme.
- Urge the Mayor to revisit further options associated with implementing an inner or targeted Low Emission Zone and undertake further assessment of feasibly.
- Continue to lobby the Mayor to request central Government introduce a national vehicle scrappage scheme.

Position Statement TRAN 2 – Taxis

- Support the Mayor in his aims to bring about improvements to the taxi and PHV fleet
- Support the Mayor in pressing central Government to introduce scrappage schemes for taxis
- Support and urge the Mayor to further reduce emissions and to find ways to facilitate and promote the use of low emission fuels and technologies, such as electric or hybrid technology, in the taxi fleet.

Position Statement TRAN 3 – Buses

- Support the Mayor in his measures to introduce hybrid and hydrogen buses to the fleet and urge him to look further at the use of other forms of low emission technologies, such as pure electric or compressed natural gas, in the bus fleet.
- Support the Mayor in his measures to reduce emissions from the bus fleet.
- Support the Mayor in his measures to place the lowest emission buses of the most polluted routes and urge him to continue with this action.
- Urge the Mayor to undertake a thorough review of the current bus route network and explore and assess options for change or rerouting with the aim of reducing congestion in key areas such as Oxford Street.

Position Statement TRAN 4 – Reducing fleet emissions

- Support the Mayor in developing a strategy aiming to achieve zero tail pipe emissions from public sector vehicles.

Position Statement TRAN 5 – Vehicle Excise Duty

- Support vehicle excise duty rates which would take account of and incentivise low air polluting vehicles.

Position Statement TRAN 6 – Rail emissions

- Strongly support the policy for electrification of the rail network in London.
- Urge to TOC's to continue to take initiatives, review opportunities and push for continued emissions improvement.

Action TRAN 1 - Work with TfL to investigate options for reducing through-traffic in specific parts of Westminster, such as Oxford Street and Marylebone Road, and to examine the options for reducing air pollution at hotspots.

Action TRAN 2 - Examine potential options and implement actions to minimise pedestrian exposure to high levels of pollution.

Action TRAN 3 - Support car clubs with particular emphasis on the inclusion of low emission vehicles in the fleet.

Action TRAN 4- Continue to promote and provide infrastructure for electric and low emission vehicles.

Action TRAN 5 - Continue to investigate ways in which freight consolidation can be developed and investigate and develop ways to reduce congestion from delivery vehicles.

Action TRAN 6 – Support and undertake local communication campaigns to raise awareness of the benefits of fuel efficient and smoother driving and evaluate the possibility of supporting providers of fuel efficient driver training through communication to Westminster residents.

Action TRAN 7 - Support schemes to encourage people to use other forms of sustainable travel such as walking and cycling.

Action TRAN 8 - Support and promote the implementation of travel plans for schools and businesses.

Action TRAN 9 - Ensure the use of low emission vehicles within the Westminster City Council fleet and those of its contractors and regularly review Fleet Policy and fuel hierarchy to ensure best possible effects for air quality.

Action TRAN 10 - Compel contractors and associates to reduce air pollution and carbon emissions through tender and contract specifications.

Action TRAN 11 - Continue to commit to the provision of Safe and Fuel Efficient Driving (SAFED) training for fleet drivers and evaluate the possibility of:

- extending Safe and Fuel Efficient Driving (SAFED) training to the City Council's contractors' fleet drivers;
- including criteria for Safe and Fuel Efficient Driving (SAFED) of the City Council's

contractors' fleet drivers within specifications for the tendering process;

- Assessing the benefits of on-board driving monitoring systems with a view to installing them on fleet vehicles.

Action TRAN 12 – Undertake a review of the options and resource and emissions implications of utilising 'no idling' legislation to help improve local air quality.

Action TRAN 13 – Communicate the 'no idling' message to parked coach drivers on Westminster's streets by installing signs in coach parking bays on borough managed roads.

Action TRAN 14 – Work with the Mayor to develop procedures to press the operator companies of vehicles found with idling engines to take enforcement action on the drivers of those vehicles.

Action TRAN 15 – Improve public communications on air quality and no-idling messages by including information on the impacts of idling on the Council website and in Council publications.

Action TRAN 16 - Write to the Minister for Transport with responsibility for rail services and to local MP's setting out the air quality and other benefits that would be achieved by the earliest possible electrification of rail services from Marylebone seeking information on the likely timescales for this.

Action TRAN 17 - Maintain dialogue with TOC's to review opportunities for improvements in reducing emissions.

Action TRAN 18 - Communicate with government Ministers to make the case for stronger control of the environmental effects of rail services through existing mechanisms.

Action TRAN 19 - Raise with TfL and the GLA the importance of appropriate environmental impact assessments within consultation exercises when changes in rail services are proposed (e.g. High Speed Rail 2), and to consult the City Council respectively.

7 Tackling Emissions from Buildings and Development

7.1 Background

7.1.1 Westminster has exciting new architecture and a wealth of historic buildings of architectural interest. The city has retained many of its original 18th and 19th century buildings and has in excess of 11,000 listed buildings with 75% of the city covered by Conservation Area designations. The Council receives around 12,000 planning applications every year, ranging in scale from small home extensions to large developments and infrastructure projects such as at Paddington, Victoria, Chelsea Barracks and Crossrail oversite developments. A significant amount of air pollution is generated by constructing, heating and powering our buildings.

Over 40% of nitrogen oxide emissions in Westminster come from burning fuel for heat and power.

7.1.2 Westminster has an estimated residential population of around 250,000 and is an important commercial centre containing more businesses, employees and more office floor space than any other local authority in the UK. Some 550,000 people work in the City and Westminster's businesses play a key role in the economy of London and the UK as a whole.

7.1.3 There are increasing conflicts between the need for growth, and the pressures that this growth creates on the environment. Space is at a premium with pressure to build more. Emissions from gas and oil combustion (for domestic, commercial and industrial energy and heating purposes) are predicted by 2015 to amount to some 44% of total nitrogen oxides emissions in Westminster[31]. In addition, the significant pressure to reduce emissions of greenhouse gases, particularly CO_2, is leading a drive for more renewable energy. Whilst increased use of renewable energy is to be encouraged, certain technologies and fuels such as biomass (e.g. wood pellets and chips) have harmful consequences for air quality, and other emerging fuels such as liquid biofuels and biogas have some unclear consequences for local air pollution.

7.1.4 The Mayor of London is responsible for the strategic planning of London, including the preparation of the London Plan which forms part of the statutory development plan for Westminster and our Local Plan must be in general conformity with the London Plan.

7.1.5 The London Plan[32] and the Mayor's Climate Change Strategies promote energy efficiency and increased reliance on renewable resources.

[31] London Atmospheric Emissions Inventory 2008 – Mayor of London August 2010

[32] The London Plan Spatial Development Strategy for Greater London - The Mayor of London, 2011

Sustainable design and construction can minimise energy demand and promote on-site generation of heat or electricity. Combined heat and power and community heating schemes can optimise energy efficiency. The Mayor's Climate Change, Mitigation and Energy Strategy[33] sets out and explains how to apply a hierarchy to guide decision-making and the consideration of development proposals. The hierarchy states that essential energy needs should be met through applying, in sequence, the following factors: using less energy, using renewable energy and supplying energy efficiently. Use of the energy hierarchy will ensure that carbon dioxide and air pollution emissions from the development are minimised during operation. Appropriate design, orientation, layout and construction of buildings can avoid energy loss, minimise energy demand through natural lighting, heating and cooling and allow on-site generation of heat or electricity from renewable sources.

7.1.6 Westminster's spatial planning policies can play a central role in mitigating the air quality impacts of development to ensure that the effects of poor air quality are minimised. Core Strategy policies were adopted in January 2011 to replace the strategic Unitary Development Plan (UDP) policies and contain a requirement to complete environmental performance assessments for developments over a certain size. Policy CS30 of the Core Strategy requires new development and construction to minimise emissions. The Local Plan, once adopted, will include the Core Strategy policies and will provide the detailed local planning policies used for development management purposes and will set the standards by which emissions will be minimised. Supplementary Planning Guidance[34] on 'Sustainable Design' is currently under review and will also include guidance on reducing air pollution from development.

7.1.7 Carbon reduction and building efficiency measures will be supported and a balanced approach will be used to ensure any reduction in CO_2 emissions from the introduction of renewable energy measures will not negatively affect air quality. It is difficult to accurately quantify emissions from construction sites, partly due to the temporary and fluctuating nature of these emissions, but it is known that demolition and construction is a significant source of air pollution, particularly fine dust and particles. Stationary demolition and construction plant are also sources of PM_{10} and NO_x emissions. The following measures have already been undertaken:

- Environmental Impact Assessments (EIA) required for large, complex and potentially intrusive developments that are likely to have significant environmental effects.

- Air Quality Assessments (AQA) are required for developments which City Council deems to be significant in terms of air quality.

[33] Delivering London's Energy Future: The Mayor's Climate Change, Mitigation and Energy Strategy - The Mayor of London, October 2011

[34] Supplementary Planning Guidance on Sustainable Buildings - City of Westminster, 2003

- The Westminster Code of Construction Practice (CoCP) for major sites, requires developers to control and monitor dust emissions in accordance with best practise guidance.

- Target requirement for major developments to achieve at least 20% renewable energy.

Planned Measures

Objectives - Tackling emissions from buildings and development

The following key objectives have been identified:

- Minimise emissions from new developments.
- Reduce emissions from combustion for heat and energy.
- Control of emissions from biomass and other biofuels.
- Reduce transport emissions from development.
- Reduce emissions from construction sites.

7.2 Objective 1 - Minimise emissions from new developments

Unitary Development Plan (UDP)

7.2.1 The City Council has a role both in terms of developing spatial planning policies to protect, manage and facilitate change in the built environment; and in applying those policies through the development management process. Westminster's UDP was adopted in January 2007. There are a number of extant UDP policies which deal directly or indirectly with Air Quality.

The Local Plan

7.2.2 The Local Development Framework (LDF) was introduced by the Government under the Planning and Compulsory Purchase Act (2004), the implementation of this has recently been updated through the National Planning Policy Framework (NPPF), and now refers to the Local Plan. Westminster's Local Plan will replace the UDP and will contain the spatial planning policies guiding all decisions on planning permissions, listed building consents, conservation area consents, advertisement consent and works to protected trees. The Core Strategy was adopted in January 2011,

updated in the summer of 2012 to be NPPF compliant, and pulls together the overall vision and objectives for planning in Westminster for the next 10-15 years.

7.2.3 Air quality policy has being substantially strengthened in this new framework and the Core Strategy policy requires consideration of air pollution in the building design stage. Use of appropriate technology is considered the most effective way of achieving a reduction in non-road transport emissions.

Policy CS30 Air Quality
The City Council will require a reduction of air pollution, with the aim of meeting the objectives for pollutants set out in the national strategy.

Developments will minimise emissions of air pollution from both static and traffic-generated sources.

Developments that include uses that are more vulnerable to air pollution (Air Quality Sensitive Receptors) will minimise the impact of poor air quality on occupants through the design of the building and appropriate technology.

7.2.4 The City Council will require certain developments to submit an air quality assessment as part of their planning application and is developing further air quality policy and documentation in order to develop transparent air quality assessment methodology for planning applications.

7.2.5 Where an air quality assessment shows that a new development may have a negative impact on air quality, or expose new residents to poor air quality, the applicant will be required to submit an air pollution abatement and mitigation plan.

Urban Greening

7.2.6 Urban greening is an important feature of the city environment and covers a wide range of landscape features, from natural green spaces to parks, gardens, squares, trees, landscaping, living roofs and walls. These features make an important contribution to the heritage, townscape and enjoyment of the Westminster and London area as a whole. With many positive impacts, urban greening supports the natural environment, increases habitats, can have some effect on air quality and contributes to adaption and to mitigation of climate change.

7.2.7 Whilst ‘greening’ is popularly regarded as positive for air quality, objective evidence for this is limited and there are still uncertainties over how trees interact with pollution. The ‘chemical’ properties of green infrastructure, such as filtering and ‘picking-up’ pollutants though leaves, are very complex in

nature and the overall understanding of the extent to which our urban trees and plants will benefit air quality is still to be evidentially demonstrated through research and monitoring. The Council will implement effective policy based on latest research and information on green infrastructure. For example, monitoring carried out on the green wall of Edgware Road tube station by Imperial College London may provide further data which could help inform green infrastructure policy direction. The physical properties of the trees can affect localised temperature and create wind breaks leading to disrupted dispersion, both of which would affect the atmospheric chemistry of air pollution. Urban greening can make a positive contribution in reducing the impacts of poor air quality and Council planning policy is designed to protect, encourage and manage greening in Westminster.

Action DEV 1 - Require developers to undertake an Air Quality Assessment (AQA) where a development may adversely affect local air quality and require developers to submit an air pollution abatement and mitigation plan where an air quality assessment shows that a new development is likely to have an adverse impact on air quality, or expose new air quality sensitive receptors[35] to poor air quality.

Action DEV 2 - Strengthen and further develop air quality policy in the local planning documents in order to develop transparent air quality assessment methodology for planning applications and support planning officers in the assessment of those applications.

7.3 Objective 2 - Reduce emissions from combustion for heat and energy.

7.3.1 A significant amount of total NO_x emissions across Westminster is a result of combustion in premises with the majority of this combustion being due to the heating of water and space in buildings. Reducing the emissions from boilers used for space and water heating will help reduce the levels of NO_2 pollution and this benefit to air quality would be coupled with a reduction in CO_2 emissions.

7.3.2 Spatial planning policies manage new development and can influence and require the minimisation of emissions from buildings. In situations where planning permission is not required the City Council has limited control over any building work or refurbishments that are completed. The installation or replacement of a commercial heating system or domestic boiler is subject to the requirements of the Building Control Regulations 2000. These regulations require that notice be given to the City Council of any installation or refurbishment of a heating system, and that the system meets high energy efficiency and carbon emission standards as defined in the regulations.

[35] 'Air quality sensitive receptors' comprises schools, day care centres and nurseries, hospitals, care homes for the elderly and similar institutions where occupiers are particularly vulnerable to air pollution.

Boiler Scrappage Scheme for Carbon and Air Quality Benefits

7.3.3 Where inefficient boilers are replaced for newer models there is a reduction in emissions of carbon and air pollutants which aids both climate change and air quality goals.

7.3.4 The Energy Saving Trust's Boiler Scrappage Scheme in the UK incentivised the replacement of older units for newer, cleaner, and more efficient models which are less polluting. The scheme, which had been very successful, was closed due to a termination of funding. The Mayor has stated in his 2010 Air Quality Strategy that he will *'lobby the Government to extend this scheme so that more Londoners will have the opportunity to upgrade their inefficient boilers'.* The City Council will support the Mayor is this action.

Position Statement DEV 1 – Reduce emissions from boilers

- **Support the Mayor in lobbying for the continuation of a boiler scrappage scheme for older and inefficient models.**

Sustainable Design

7.3.5 The Mayor's Climate Change, Mitigation and Energy Strategy defines a hierarchy to guide decision making during new developments. The hierarchy states that "essential energy needs should be met through applying in sequence the following factors: using less energy, supplying energy efficiently and using renewable energy." The City Council follows this hierarchy and will ensure that sustainable building design in new buildings to minimise energy use and emissions is defined in policy within the local plan and subsequent documents. Sustainable design has direct benefits for air quality due to the resulting reduction in energy demand for heating/cooling.

7.3.6 Minimising carbon and air pollution is an integral part of the development process and should not be viewed solely as an additional 'cost' for development. Sustainable design, refurbishment and construction measures provide one of the most effective and efficient ways in which to reduce resource use, greenhouse gas emissions and local pollution, in terms of the materials used and construction techniques employed, as well as throughout the lifetime operation of the development. Furthermore, excellence in design quality and floor space adaptability will increase the lifetime of the building and enable its reuse by reducing the need for redevelopment.

7.3.7 In Westminster a major source of NO_x emissions is from domestic and commercial combustion and the use of appropriate technology is the most effective way of achieving a reduction in these emissions. The Code for Sustainable Homes[36] and the BRE Environmental Assessment Methodology (BREEAM)[37] set criteria which represent good or best practice, are technically feasible, and can be delivered by the building industry. Emission

[36] Code for Sustainable Homes: Technical guide– Communities and Local Government, 2010
[37] www.breeam.org

standards have been set by both the Code for Sustainable Homes and BREEAM for low NO_x emissions from heating. The City Council will push developers to achieve these high standards (or their equivalent) in order to ensure emissions from buildings are minimised.

7.3.8 Current Supplementary Planning Guidance on Sustainable Buildings[38] is available to guide developers to reduce their contribution to air pollution. This guidance is due to be revised and updated. This revised guidance will bring together aspects of good design in new developments to aid the reduction of unwanted emissions from boilers through improved building efficiency, boiler efficiency, using renewable energy and supplying energy efficiently.

Action DEV 3 - Include air quality requirements in Sustainable Design SPD to help reduce unwanted emissions from boilers through improved building efficiency, boiler efficiency, using renewable energy and supplying energy efficiently.

Heat Networks and Combined Heat and Power (CHP)

7.3.9 With emerging planning policies requiring that developments are designed and constructed to use less energy and meet high standards of energy efficiency, the use of heat networks and combined heat and power (CHP) plant within Westminster is advocated because, in some areas of the City, conservation and listed status restricts the potential for installing on-site renewables.

7.3.10 Westminster has two district heating systems. The Pimlico District Heating Undertaking (PDHU) provides heat and power to a large number of homes together with commercial and other premises in the south of the borough. A second system at Whitehall is operated by the Office of Government Commerce and can provide heat and electricity for Whitehall including 18 government departments. However, this system may well have the potential to be networked more widely.

Pimlico District Heating, the oldest district heating system in the UK, achieves over 80% efficiency, due to the recovery of waste heat, compared to a conventional coal-fired power station at 38% (or less if you include transmission losses). This makes considerable carbon savings and reduces air pollution.

7.3.11 Westminster's dense, urban, residential and commercial nature is particularly well suited to networks of decentralised heat and power providing both energy and hot water (and sometimes cooling) via an efficient CHP unit. These systems achieve significantly higher efficiencies than power supplies from the national grid because they do not suffer from losses from long range transmission and utilise waste heat.

[38] Supplementary Planning Guidance on Sustainable Buildings - City of Westminster, 2003

7.3.12 Following the use of less energy in the first instance, the efficient supply of energy represents one of the most effective ways to contribute to the mitigation of climate change and air pollution in Westminster. City Council planning policy not only enables the protection and expansion of the current district heating networks, but also encourages the development of new networks within Westminster.

Action DEV 4 - Protect decentralised energy networks in order to provide efficient energy production and to minimise emissions from combustion.

7.3.13 There are concerns within central London that the uptake of CHP technology will have a negative effect on local air quality due to the increase in gas combustion from the local production of electricity. (Currently, electricity is supplied by the national grid via non-local centralised power stations). Prioritising larger scale CHP's and heat networks over numerous smaller units can help reduce any negative impact as the designs will take consideration of air quality emissions and can ensure they are minimised through adequate abatement and also ensure that there is no negative effect on local air quality through the use of adequate dispersion techniques.

7.3.14 However, the Mayor is in the best position to assess any potential air pollution implications from the development of CHP's and decentralised heat and power schemes across London. A study, carried out at a London-wide level, would best ensure that these policies are applied in ways that achieve the least possible impacts on local air pollution at the same time as achieving the aims of carbon reduction and improved energy security.

7.3.15 Combustion processes in the UK are regulated under the Environmental Permitting Regulations (EPR) 2007 which enable a Permit to be granted which requires the level of the emissions to be kept below a prescribed standard. However, the EPR Regulations only cover combustion plants over a certain size. Many CHP's will not require a Permit and therefore currently have no legal mechanism to monitor or minimise emissions. In urban areas it is very important to ensure that emissions from CHP's do not negatively impact local air quality.

7.3.16 Emissions from CHP's are capable of being reduced through the 'lean burn process' and post combustion treatments such as catalytic and non-catalytic converters, although their applicability varies according to the engine technology and size. The Mayor's Air Quality Strategy states the Mayor's intention to *'ensure that new CHP installations that are not currently covered by the existing emissions regulatory regime will meet emission standards for* NO_x*'.* Specifically, he intends to introduce emission standards which must be achieved by all new CHP developments. In addition to the currently required Air Quality Assessment, developers will need to demonstrate through the planning application process that the required standards can be met. A planning condition will be imposed on the developer/operator to supply, on an annual basis, evidence (such as an annual maintenance report) to

demonstrate that the emissions standards are still being met. The approach would be enforced where the Mayor determines strategic applications and it is expected that London boroughs would also adopt the same approach.

7.3.17 The emission standard is being developed with input from boroughs and appliance manufacturers and will be given statutory planning status. Over time, further technology may become available to allow more stringent standards to be set. The City Council looks forward to working with the Mayor to develop standards strong enough to ensure that there are no adverse impacts on local air quality.

Position Statement DEV 2 – Combined Heat and Power

- **Support and work with the Mayor to implement CHP emission standards to ensure that there are no adverse impacts on local air quality.**

7.4 Objective 3 - Control of Emissions from biomass and other biofuels

7.4.1 The combustion of biomass fuel (e.g. wood pellets, woodchips and wood waste) is a form of renewable energy. It has recently been recognised however, that biomass combustion would be detrimental in areas of poor air quality as it emits substantially higher levels of particulates than the combustion of gas and slightly higher NO_2. Due to the negative impact on air quality that the introduction of biomass combustion would have, central London boroughs are seeking to limit the uptake of this source of renewable energy.

7.4.2 The London Plan currently requires 20% of a building's energy to be produced from renewables. In some parts of Westminster, the choice of biomass to fulfil the renewables target is a desirable one for developers due to the lack of other possible renewable options. Westminster's Local Plan considers any potential for negative effects on air quality from the introduction of biomass, but consistent policy and guidance is needed to provide certainty to developers and to avoid biomass having cumulative and damaging effects. As a result of this, an air quality impact assessment will be required for all developments which include biomass boilers and CHP. If necessary the City Council will refuse planning permission for schemes where air quality is adversely affected.

7.4.3 The Mayor's Air Quality Strategy addresses the problems of biomass development within Air Quality Management Areas and supports action to ensure that there is no negative air quality impact as a result of biomass development. As with CHP's, the Mayor intends to work with industry and boroughs to develop biomass boiler emission standards for both NO_x and PM_{10}. Developers will need to demonstrate through the planning application process that the required standards can be met and a planning condition will be imposed on the developer/operator to supply, on an annual basis, an

annual maintenance report to demonstrate that the emissions standards are still being met. A management/operating plan would also be required. The operating plan should include details of how inspections and/or maintenance checks will be carried out annually and this can be used to demonstrate compliance with the emissions standards. It will be up to the developer to decide how the emission limits will be met, but this could be through fitting abatement technology for PM_{10} (such as ceramic or fabric filters) or use of the most efficient biomass boilers.

7.4.4 Once again, the City Council looks forward to working with the Mayor to develop standards strong enough to ensure that there are no adverse impacts on local air quality.

7.4.5 Liquid biofuels are now being promoted as a possible means of reducing CO_2 emissions and further research on the air quality impacts of the use of these fuels is necessary. The City Council will lobby for a full assessment of the impacts of both liquid biofuels and biogases, such as biomethane from landfill.

Position Statement DEV 3 – Biofuels

- **Support and work with the Mayor to implement biomass/biofuel emission standards to ensure that there are no adverse impacts on local air quality.**

Action DEV 5 – Adopt policy which ensures biofuel combustion does not negatively impact on local air quality.

7.4.6 There is a lack of regulatory control over emissions from small scale biomass installations, including domestic wood burners used for space heating of homes. There is potential for a cumulative negative impact from widespread wood burning across London due to an increase in uptake of small scale biomass units (wood burning stoves) which would lead to an increase in air pollution.
The main regulatory control that councils have over small biomass installations is the Clean Air Act 1993 which covers dust, smoke and in some cases fumes and allows some restriction of fuels and appliances used and emissions from chimneys in a declared Smoke Control Area - the whole of the City of Westminster is a Smoke Control Area. As emissions from the combustion of biomass are largely invisible and odourless, there are concerns that the control mechanism outlined in the Clean Air Act is not robust enough to fully tackle the problem.

The Clean Air Act 1993 and Part III of the Environmental Protection Act 1990 currently regulate emissions of smoke from chimneys and open fires.

Position Statement DEV 4 – Modernisation of combustion regulations

- **Support and press for modernisation of national regulations covering emissions from combustion processes in urban areas.**

7.5 Objective 4 - Reduce transport emissions from development

7.5.1 Westminster has some of the poorest air quality in the country and it is imperative that the City Council supports, encourages, and provides people with real opportunities for behavioural change to reduce emissions. Because of the high levels of movement in and out of the City, increasing use of more sustainable transport options within Westminster would have a significant impact. The density of land use and movement within Westminster means that many journeys are short and can be made on foot. As well as the large number of journeys made solely on foot, walking forms part of most journeys: for example, from a bus stop or station or vehicle/cycle parking space to the final destination. Public Transport Access Levels (PTAL) are a simple tool used to assess access to public transport based on the distance from any given point to the nearest public transport stops and the frequency of the service from those stops. Westminster is graded entirely PTAL 6 (the highest grade), which indicates excellent access by public transport.

7.5.2 For many years the City Council has operated a policy approach of encouraging mixed use developments, of which residential is considered the priority use. Such a policy approach encourages a large residential population to live in Westminster, reducing the need to commute from outer London and beyond to reach jobs and central London activities.

7.5.3 A range of transport policies also seeks to integrate land use and transport, reduce the environmental impact of transport and to encourage walking, cycling and the use of public transport. For example, very strict controls are placed on the number of parking spaces that are provided in commercial developments with only the minimum spaces being allowed (e.g. for disabled access).

7.5.4 Local Plan policy requires transport assessments be undertaken for developments and provisions for sustainable transport be prioritised, such as installing electric vehicle recharging points and providing cycle storage/parking facilities. This should provide a beneficial effect on local air quality due to the move away from more polluting forms of transport.

7.5.5 The detailed policies of the local planning documents require workplace and/or residential travel plans for planning applications exceeding certain thresholds outlined in Transport for London guidance. Also, Construction Logistic Plans and Delivery and Servicing Plans will also be required, in line with the London Freight Plan and coordinated with travel plans, to ensuring that the servicing needs of a development are met and any negative impacts during both the construction and occupation minimised. The council encourages existing premises to develop and regularly review Travel Plans

and/or Delivery and Servicing Plans to minimise the impact of occupant travel and deliveries on the highway, surrounding properties and the environment. National guidance on 'low emission strategies'[39] is also available to help local authorities mitigate transport impacts from development.

Action DEV 6 - Prioritise low polluting transport options in development.

7.6 Objective 5 - Reduce emissions from construction sites

7.6.1 The demolition and construction phases of development can result in the generation of dust from grinding and cutting of materials, stockpiling of dusty materials and particles that are carried on the wheels of construction vehicles and deposited on roads. By controlling the dust levels we can reduce the impact on local PM_{10} concentrations and help prevent nuisance complaints by local residents. The City Council is keen to encourage developers to manage the impacts of construction and to ensure that any negative effect of such work on the environment and amenity is minimised. Stationary demolition and construction plant are also sources of PM_{10} and NO_x emissions.

7.6.2 There are a number of City Council planning polices which deal with impacts from construction, many of which are important for air quality. Policy requires site owners, developers and contractors to mitigate the negative impacts of construction sites through appropriate site management and monitoring. Policy states that, where construction or demolition activities might cause significant disturbance, Westminster's Code of Construction Practice (CoCP) (or an agreed alternative) may be applied in the form of planning conditions and / or obligation.

7.6.3 Westminster's Code of Construction Practice (CoCP) was developed to manage the construction impact of Paddington developments in 1997 and has subsequently been revised in 2008. The Code has since been applied to all major developments to manage and alleviate new developments' construction impacts to the surrounding areas. Major developments where the CoCP has been applied include the Quadrant in Regent Street, One Hyde Park in Knightsbridge, the Frogmore Development in Tottenham Court Road and the BBC HQ building in Regent Street. Developers, undertakers and promoters of projects must take steps to ensure that all parties involved in the construction work, including contractors, sub-contractors and their suppliers, will observe the relevant provisions of the CoCP.

7.6.4 As part of this, contractors must prepare a Site Environmental Management Plan (SEMP) to demonstrate how they will comply with the requirements of the CoCP. Developers, their contractors and sub-contractors must comply with the standards of construction management, detailed in the 'Best Practice Guidance for the Control Dust and Emissions from Construction and

[39] www.lowemissionstrategies.org

Demolition' published by London Councils and Greater London Authority. Developers will need to submit dust and air quality management information containing detailed methodology laying out the description of, controls over, and, where applicable, monitoring plan of all relevant activities. The plan must consider the entire lifetime of the demolition and/or construction project and its full sequence of works.

7.6.5 Where relevant, the Construction Code of the relevant infrastructure projects will be developed and negotiated with the promoter. It is usual practice for major infrastructure projects/ upgrades programme to compile a code that is specific for that project, such as Crossrail Construction Code, Victoria Station Upgrade Code of Construction Practice. The code should mirror Westminster's Code of Construction Practice and include the most up-to-date legislations and best practice from other projects to ensure the project's impact could be controlled, mitigated and monitored at the highest standard.

7.6.6 In Westminster, the actions and methodologies of the best practice guidance could also be applied to smaller development sites in Westminster to help reduce the impact of any dust emissions on local air quality. The Mayor's Air Quality Strategy has committed to pushing for implementation of the best practice guidance across all construction sites in London and the City Council intends to assess the feasibility of such measures.

Action DEV 7 - Require major site developers to comply with the Westminster Code of Construction Practice and the GLA's 'The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance' to all development sites.

7.7 Summary of Positions and Actions

Position Statement DEV 1 – Reduce emissions from boilers

- Support the Mayor in lobbying for the continuation of a boiler scrappage scheme for older and inefficient models.

Position Statement DEV 2 – Combined Heat and Power

- Support and work with the Mayor to implement CHP emission standards to ensure that there are no adverse impacts on local air quality.

Position Statement DEV 3 – Biofuels

- Support and work with the Mayor to implement biomass/biofuel emission standards to ensure that there are no adverse impacts on local air quality.

Position Statement DEV 4 – Modernisation of combustion regulations

- Support and press for modernisation of national regulations covering emissions from combustion processes in urban areas.

ACTION DEV 1 - Require developers to undertake an Air Quality Assessment (AQA) where a development may adversely affect local air quality and require developers to submit an air pollution abatement and mitigation plan where an air quality assessment shows that a new development is likely to have an adverse impact on air quality, or expose new air quality sensitive receptors to poor air quality.

Action DEV 2 - Strengthen and further develop air quality policy in the emerging local plan in order to develop transparent air quality assessment methodology for planning applications and support planning officers in the assessment of those applications.

ACTION DEV 3 - Include air quality requirements in Sustainable Design SPD to help reduce unwanted emissions from boilers through improved building efficiency, boiler efficiency, using renewable energy and supplying energy efficiently.

ACTION DEV 4 - Protect decentralised energy networks in order to provide efficient energy production and to minimise emissions from combustion.

ACTION DEV 5 - Adopt policy which ensures biofuel combustion does not negatively impact on local air quality.

ACTION DEV 6 - Prioritise low polluting transport options in development.

ACTION DEV 7 - Require major site developers to comply with the Westminster Code of Construction Practice and the GLA's 'The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance' to all development sites.

8 Increasing Awareness of Air Pollution

8.1 Background

8.1.1 Members of the public in Westminster can be exposed to varying levels of pollution throughout the day and keeping people informed about air pollution can help protect them from its impacts. By having an understanding for where pollution comes from and when and where the levels are at their worst, people can make choices which can help minimise their exposure to pollution, such as choosing to walk along routes which are away from main roads. Increasing understanding can also help to bring about lifestyle changes which can help improve air quality, such as choosing more sustainable forms of transport and improving the energy efficiency of homes.

8.1.2 Westminster currently monitors air pollution across a number of locations and has undertaken research to further its understanding of the patterns of air pollution across the City as well as undertaking a variety of initiatives to communicate air quality information to the public. The following measures have already been undertaken:

- Monitoring of real-time pollution levels at numerous background and roadside sites across the City and dissemination of that data through the London Air Quality Network[40] and the National Air Quality Archive[41].
- Distribution of air quality information via the Westminster City Council website.
- Promotion of AirText - air pollution mobile text alert system, in association with GLA and other London boroughs.

[40] www.londonair.org.uk
[41] www.airquality.co.uk

Planned Measures

Objectives - Increasing awareness of air pollution

The following key objectives have been identified:

- Provision of key air quality information via the City Council's website.
- Raise awareness about air quality making links to other communication campaigns, sustainable transport and climate change.

8.2 Objective 1 - Provision of key air quality information via the City Council's website

Disseminating Information to the Public

8.2.1 The Westminster Council website has pages communicating information about air quality, covering information on our air quality monitoring, strategy, research and review and assessment work. There is also extensive information on planning, low emission vehicles and transport related aspects of the City Council's work which all have bearing on air quality. There are links to other websites from where our monitoring data can be easily viewed and downloaded. Westminster will continue to make air pollution data and other air quality information available to the public and will explore new and improved ways to present and disseminate information, especially to vulnerable groups.

Action COMM 1 - Publish high quality air quality information via the Westminster City Council website, and investigate new methods of informing and communicating with the public, especially vulnerable groups.

Air Quality Monitoring

8.2.2 Westminster currently monitors a wide range of pollutants across the City in order to have a thorough and robust understanding of the patterns and levels of air pollution in the area. The City Council will maintain this air monitoring network and periodically undertake a review of its monitoring in order to provide high quality data.

Action COMM 2 - Monitor air pollution across the City and periodically review the air quality monitoring network.

Very fine Particulate Matter $PM_{2.5}$

8.2.3 $PM_{2.5}$ is particulate matter which is less than 2.5 µm in diameter and contributes to a proportion of PM_{10} concentrations. Health effects from this pollutant are similar to those for PM_{10}, but, additionally, research has indicated that very fine particles cause cancers, since cancer-causing chemical compounds can become attached to the particles. Importantly, studies have been unable to identify a safe level of concentration at which particulate matter has no effect on health.

8.2.4 The current local air quality management regime operates in such a way that action to reduce pollution is targeted to specific areas where the objectives are not met. Since there is no acceptable safe level for $PM_{2.5}$ exposure, the local authority air quality management system, in its current form, is not the most appropriate mechanism for reducing levels of $PM_{2.5}$.

8.2.5 The UK Air Quality Strategy 2007 has adopted an exposure reduction approach based on the principle that for pollutants with a low or zero threshold for adverse effects, it will generally be more beneficial to public health, and potentially more cost-effective to reduce $PM_{2.5}$ levels across the whole of an urban area or region rather than in a small area or hot-spot. For this reason, the objectives have not currently been incorporated into local authority air quality management and local authorities have no statutory obligation to review and assess their local air quality against them. Shown in the table below are the UK national air quality objectives for $PM_{2.5}$.

Table 2 Air quality objective for $PM_{2.5}$

Region	Air Quality Objective	Date to be achieved by
UK (except Scotland)	An annual average (mean) of 25 microgrammes of $PM_{2.5}$ per cubic metre cannot be exceeded.	2020
UK urban areas	Target of 15% reduction in concentrations at urban background locations. Calculated as an average (mean) over 3 years.	Between 2010 and 2020

8.2.6 Ongoing Government review of the Local Air Quality Management regime has previously given some consideration to incorporating the obligation for local authorities to assess $PM_{2.5}$ into UK regulation. To inform our understanding of the impact and concentrations of $PM_{2.5}$ in Westminster, the following measures have already been undertaken:

- Monitoring of $PM_{2.5}$ at 2 sites within Westminster (1 background, 1 roadside) and dissemination of that data through the London Air Quality Network[42] and the National Air Quality Archive[43].

8.2.7 Data shows that we are likely to exceed the levels required by the UK objectives at our Marylebone Road monitoring site. It is anticipated that, in the near future, assessment of $PM_{2.5}$ concentrations will increase in importance and the Council intends to review $PM_{2.5}$ monitoring in the City to ensure that we are ready to adapt to any changes in local air quality regulation.

Action COMM 3 - Monitor $PM_{2.5}$ air pollution across the City and periodically review our air quality monitoring network.

8.3 Objective 2 - Raise awareness about air quality

8.3.1 Improving communication can raise awareness of air pollution health impacts and help minimise exposure to pollution. The City Council will improve communication to increase the public's understanding of the main sources and health effects of air pollution emissions. Information will be given on the health impacts with links being made to initiatives which promote sustainable transport, energy and health. Co-operation with local Clinical Commissioning Groups (CCGs) and Health Department would be beneficial for communications regarding health effects and efforts will be made to foster links and partnership working.

8.3.2 The City Council hopes that engaging with the public and increasing understanding of the health impacts associated with PM_{10} and NO_2 will help bring about lifestyle change and enable informed choices to be made which can help mitigate the effects of air pollution on people's health as well as reduce traffic, promote sustainable transport and reduce energy use through improved efficiency.

Action COMM 4 - Undertake communication campaigns to raise awareness of air pollution health impacts and minimise exposure to pollution, where possible linking with other complementary initiatives.

Action COMM 5 - Foster links with Clinical Commissioning Groups (CCGs) and Health Departments to aid public communication and understanding of how air pollution affects heath.

[42] www.londonair.org.uk
[43] www.airquality.co.uk

Support the Air Pollution Alert System - AirTEXT

8.3.3 AirTEXT is an air quality information service adopted by several London Councils and supported by the Mayor for people who live or work in London and who suffer from asthma, emphysema, bronchitis, heart disease, angina and any other respiratory or heart problems. It is designed to alert people to increases in the level of air pollution by mobile text message, voice message or email so they can take measures to help reduce the potential for any ill effect on their health.

Action COMM 6 - Continue to support and raise awareness about the AirTEXT air quality information service

Pan-London communication campaign for air quality awareness

8.3.4 Air pollutants do not recognise borough boundaries and any significant reduction in pollution levels will be best achieved through actions taken across wider areas such as central London and the whole of London. Engaging with the public to communicate information on the health effects of air pollution could be undertaken across the whole of the London area. By implementing a pan London approach, a cohesive message can be presented which would benefit all London residents. The Mayor has committed to developing a central air quality website for London, which will include data, technical information and advice on how to improve air quality. We welcome this measure.

Position Statement COMM 1 – Pan-London communication

- **Support the Mayor in a pan London communication campaign to raise awareness of air quality issues and health impacts.**

Business Engagement

8.3.5 Gaining support from local businesses to reduce emissions of pollutants, particularly NOx / NO2 is crucial in helping to improve air quality and the Council can encourage and work with businesses in a range of actions to support behaviour change initiatives within the City. It is clear on speaking to businesses that many are not aware of the issues associated with air pollution and many businesses are keen to get involved. By engaging with businesses, and breaking down any potential barriers, we can help to improve local air quality.

8.3.6 The Council will actively engage with businesses to raise the profile of air quality and to encourage and demonstrate how relative simple changes to business practice and operations can make a positive contribution in minimising local air pollution emissions. Directly engaging with businesses will allow tailored travel plans to be provided and encourages sustainable options for the supply chain, employees and business users. Similarly for

business occupied buildings, demonstrating sustainable and energy efficient practices can help to reduce NOx emission from gas consumption. This measure hopes to compliment a successful, similar measure delivered by the City of London called 'CityAir'.

8.3.7 The Council is the lead partner for the Smart Green Business initiative, managed by the Cross River Partnership, which aims to support small and medium sized businesses in central London and help businesses improve their environmental performance. In addition to the Smart Green Business work, the Council intends to review options for implementing and resourcing more focused air quality based business engagement work.

Westminster Schools Engagement

8.3.1 The Council will actively engage with schools in Westminster to raise awareness of air pollution issues and the actions individuals can take to reduce their emissions contribution and personal exposure. By increasing the understanding of air quality issues of those who work or study in schools, and by demonstrating what it can mean for an individual's health, more sustainable and healthier forms of travel can be chosen. Both 'soft' and 'hard' measures will be conducted as part of this project; softer measures include raising awareness through educational interaction with students and teachers. Harder measures may include, for example, installation of green walls/infrastructure, installation of monitoring equipment to help increase educational awareness interaction, installation of cycle parking infrastructure, and installation of 'no idling' engine signs. Measures will be implemented where practicable and in relation to site-specific pressures.

Action COMM 7 - Undertake business engagement to raise awareness of air quality and encourage reduction in emissions associated to business transport and buildings.

Action COMM 8 – Raise awareness of air quality within Westminster schools to increase understanding of issues, encourage more sustainable travel modes and minimise exposure.

8.4 Summary of Positions and Actions

Position Statement COMM 1 – Pan-London communication

- Support the Mayor in a pan London communication campaign to raise awareness of air quality issues and health impacts.

ACTION COMM 1 - Publish high quality air quality information via the Westminster City Council website, and investigate new methods of informing and communicating with the public, especially vulnerable groups.

ACTION COMM 2 - Monitor air pollution across the City and periodically review the air quality monitoring network.

ACTION COMM 3 - Monitor $PM_{2.5}$ air pollution across the City and periodically review our air quality monitoring network.

ACTION COMM 4 - Undertake communication campaigns to raise awareness of air pollution health impacts and minimise exposure to pollution, where possible linking with other complementary initiatives.

ACTION COMM 5 - Foster links with Clinical Commissioning Groups (CCGs) and Health Departments to aid public communication and understanding of how air pollution affects

ACTION COMM 6 -Continue to support and raise awareness about the AirTEXT air quality information service.

ACTION COMM 7 - Undertake business engagement to raise awareness of air quality and encourage reduction in emissions associated to business transport and buildings.

ACTION COMM 8 – Raise awareness of air quality within Westminster schools to increase understanding of issues, encourage more sustainable travel modes and minimise exposure.

9 Action Plan

The actions the City Council intends to take are summarised in the following table together with timescales, the departments leading the action and details on how progress with the action will be evaluated, assessed and reported. Westminster City Council will work with partner organisations to develop specific targets for improvements in air quality. These will show improvements that local and regional measures will make, and which can be monitored at a local and strategic level.

Abbreviations for Council Functions:

Air Quality	AQ	Procurement	P
City Planning	CP	Premises Management (Environmental Health)	PM
Transportation Projects	TP	Public Realm	PR
Development Planning	DP	Parking	PK
Development Planning (Construction)	DPC		

Tackling Emissions from Transport

Action	Timescale	Leads Depts
ACTION TRAN 1 - Work with TfL to investigate options for reducing through-traffic in specific parts of Westminster, such as Oxford Street and Marylebone Road, and to examine the options for reducing air pollution at hotspots.	Ongoing	AQ, TP
ACTION TRAN 2 - Examine potential options and implement actions to minimise pedestrian exposure to high levels of pollution.	Ongoing	AQ, TP
ACTION TRAN 3 - Support car clubs with particular emphasis on the inclusion of low emission vehicles in the fleet.	Ongoing	AQ, TP
ACTION TRAN 4- Continue to promote and provide infrastructure for electric and low emission vehicles.	Ongoing	AQ, TP
ACTION TRAN 5 - Continue to investigate ways in which freight consolidation can be developed and investigate and develop ways to reduce congestion from delivery vehicles.	Ongoing	AQ, TP

ACTION TRAN 6 – Support and undertake local communication campaigns to raise awareness of the benefits of fuel efficient and smoother driving and evaluate the possibility of supporting providers of fuel efficient driver training through communication to Westminster residents.	2013 - ongoing	AQ, TP
ACTION TRAN 7 - Support schemes to encourage people to use other forms of sustainable travel such as walking and cycling.	Ongoing	AQ, TP
ACTION TRAN 8 - Support and promote the implementation of travel plans for schools and businesses.	Ongoing	AQ, TP, PR
ACTION TRAN 9 - Ensure the use of low emission vehicles within the Westminster City Council fleet and those of its contractors and regularly review Fleet Policy and fuel hierarchy to ensure best possible effects for air quality.	Ongoing	AQ, TP, P
ACTION TRAN 10 - Compel contractors and associates to reduce air pollution and carbon emissions through tender and contract specification.	Ongoing	AQ, TP, P
ACTION TRAN 11 - Continue to commit to the provision of Safe and Fuel Efficient Driving (SAFED) training for fleet drivers and evaluate the possibility of: • extending Safe and Fuel Efficient Driving (SAFED) training to the City Council's contractors' fleet drivers; • including criteria for Safe and Fuel Efficient Driving (SAFED) of the City Council's contractors' fleet drivers within specifications for the tendering process; • assessing the benefits of on-board driving monitoring systems with a view to installing them on fleet vehicles.	Ongoing 2013	AQ, TP, P
ACTION TRAN 12 – Undertake a review of the options and resource and emissions implications of utilising 'no idling' legislation to help improve local air quality.	2013	AQ, TP, PM, PK
ACTION TRAN 13 – Communicate the 'no idling' message to parked coach drivers on Westminster's streets by installing signs in coach parking bays on borough managed roads.	2013	AQ, TP
ACTION TRAN 14 – Work with the Mayor to develop procedures to press the operator companies of vehicles found with idling engines to take enforcement action on the drivers of those vehicles.	2013	AQ, TP
ACTION TRAN 15 – Improve public communications on air quality and no-idling messages by including information on the impacts of idling on the Council website and in Council publications.	2013	AQ, TP
ACTION TRAN 16 - Write to the Minister for Transport with responsibility for rail services and to local MP's setting out the air quality and other benefits that would be achieved by the earliest possible electrification of rail services from Marylebone seeking information on the likely timescales for this.	2013	AQ, TP
ACTION TRAN 17 - Maintain dialogue with TOC's to review opportunities for improvements in reducing emissions.	Ongoing	AQ, TP
ACTION TRAN 18 - Communicate with government Ministers to make the case for stronger control of the environmental effects of rail services through existing mechanisms.	2013	AQ, TP

ACTION TRAN 19 - Raise with TfL and the GLA the importance of appropriate environmental impact assessments within consultation exercises when changes in rail services are proposed (e.g. High Speed Rail 2), and to consult the City Council respectively.	2013	AQ, TP
Evaluation criteria Traffic counts on major roads; No. of air quality measures implements at hot-spots/hot-routes; Car club members; No. eco vehicles in car clubs; Members of Electric vehicle recharging scheme; Electric recharging points installed; No. delivery loading pads; No. communication events/initiative undertaken; School and business travel plans completed; Eco vehicles in Council fleet; No. of drivers completing SAFED training; Length of new cycle routes installed, No. cycle stands installed.		

Tackling Emissions from Buildings and Development

Action	Timescale	Lead Depts
ACTION DEV 1 - Require developers to undertake an Air Quality Assessment (AQA) where a development may adversely affect local air quality and require developers to submit an air pollution abatement and mitigation plan where an air quality assessment shows that a new development is likely to have an adverse impact on air quality, or expose new air quality sensitive receptors to poor air quality.	Ongoing	AQ, DP
ACTION DEV 2 - Strengthen and further develop air quality policy in the emerging local planning documents in order to develop transparent air quality assessment methodology for planning applications and support planning officers in the assessment of those applications.	Ongoing	AQ, DP
ACTION DEV 3 - Include air quality requirements in Sustainable Design SPD to help reduce unwanted emissions from boilers through improved building efficiency, boiler efficiency, using renewable energy and supplying energy efficiently.	2013-2014	AQ, CP, DP
ACTION DEV 4 - Protect decentralised energy networks in order to provide efficient energy production and to minimise emissions from combustion.	2013	AQ, CP, DP
ACTION DEV 5 - Adopt policy which ensures biofuel combustion does not negatively impact on local air quality.	2013	AQ, CP, DP
ACTION DEV 6 - Prioritise low polluting transport options in development.	Ongoing	AQ, CP, DP, TP

ACTION DEV 7 - Require major site developers to comply with the Westminster Code of Construction Practice and the GLA's 'The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance' to all development sites.	Ongoing	AQ, CP, DP, DPC
Evaluation criteria No. AQA undertaken/mitigation plans received; No. CHP's installed; No. Biomass burners installed; No. developments connected to heat networks; No. major developments complying with CoCP.		

Increasing Awareness of Air Pollution

Action	Timescale	Lead Depts
ACTION COMM 1 - Publish high quality air quality information via the Westminster City Council website, and investigate new methods of informing and communicating with the public, especially vulnerable groups.	2013	AQ, PM
ACTION COMM 2 - Monitor air pollution across the City and periodically review the air quality monitoring network.	Ongoing	AQ, PM
ACTION COMM 3 - Monitor $PM_{2.5}$ air pollution across the City and periodically review our air quality monitoring network.	Ongoing	AQ, PM
ACTION COMM 4 -Undertake communication campaigns to raise awareness of air pollution health impacts and minimise exposure to pollution, where possible linking with other complementary initiatives.	2013	AQ
ACTION COMM 5 - Foster links with Clinical Commissioning Groups (CCGs) and Health Department to aid public communication and understanding of how air pollution affects heath.	Ongoing	AQ
ACTION COMM 6 -Continue to support and raise awareness about the AirTEXT air quality information service.	2013	AQ
ACTION COMM 7 - Undertake business engagement to raise awareness of air quality and encourage reduction in emissions associated to business transport and buildings.	2013	AQ
ACTION COMM 8 – Raise awareness of air quality within Westminster schools to increase understanding of issues, encourage more sustainable travel modes and minimise exposure.	2013	AQ
Evaluation criteria No. communication events/initiative undertaken; No. monitoring sites; No. Monitoring reviews undertaken.		

10 Glossary

Air Quality Action Plan (AQAP): A plan which must be prepared as part of the Local Air Quality Management (LAQM) process, if an Air Quality Management Area is designated.

Air Quality Management Area (AQMA): An area that a local authority has designated, on the basis of predicted or actual exceedences of the air quality objectives.

Air Quality Objectives: Limit values set by UK Government, usually expressed as a maximum concentration to be achieved within a specified timescale, possibly with a permitted number of exceedences.

Air Quality Review and Assessment: The process by which local authorities review current and likely future air quality and assess whether air quality objectives are currently being achieved or are likely to be achieved.

Air Quality Sensitive Receptors: Comprises of schools, day care centres and nurseries, hospitals, care homes for the elderly and similar institutions where occupiers are particularly vulnerable to air pollution.

Annual Mean: The average over a year of concentrations measured (or predicted) for a pollutant, relating to a calendar year

Carbon Dioxide (CO_2): Carbon dioxide, a greenhouse gas that contributes to global warming.

City Management Plan (CMP): Development plan which contain specific development management policies for determining planning applications and managing development.

Combined Heat and Power Plant (CHP): The generation of useable heat and power (usually electricity) in a single process.

Code of Construction Practice (CoCP): A document setting out the standards and procedures to which a developer or contractor must adhere when undertaking major construction projects.

Concentration: The amount of a substance in a volume (of air) typically expressed as a mass of a pollutant per unit volume of air, e.g. microgrammes per cubic metre ($\mu g/m^3$).

Congestion Charging Scheme/Zone: The charge applied to vehicles entering a defined area of central London to reduce congestion.

Core Strategy: The adopted local plan for Westminster, containing Westminster's Strategic Policies. It will be revised in 2013 (see The Local Plan, below).

Daily Mean: The average over a day (24 hrs) of concentrations measured (or predicted) for a pollutant.

Department for Environment, Food and Rural Affairs (Defra): Government department for environment, food and rural affairs.

Department for Transport (DfT): Government department for transport

Emission: The amount of a substance emitted in a certain time, typically expressed as a mass of a pollutant per unit of time (e.g. grams per second or tonnes per year).

Emissions Inventory: A quantification and compilation of emission sources by geography and time, usually including data covering one or several years The GLA distributes on an annual basis the London Atmospheric Emissions Inventory (LAEI)

Euro standards: Emissions standards set by the EU which all new road vehicles sold in the EU must meet.

Exceedence: When a UK air objective or EU limit value is not achieved.

Greater London Authority (GLA): The region-wide governing body for London. It consists of a directly elected executive Mayor of London and an elected 25-member London Assembly with scrutiny powers

Hourly Mean: The average over an hour of concentrations measured (or predicted) for a pollutant.

Light Goods Vehicles (LGVs): Large vans.

Local Air Quality Management (LAQM): A UK Government policy framework that requires local authorities to periodically review and assess the current and future air quality in their areas.

Local Implementation Plans (LIPs): Statutory transport plans produced by London boroughs.

(The) Local Plan: Westminster's City Plan - It will include the strategic policies, previously adopted in Westminster's Core Strategy (2011), updated to take the National Planning Policy Framework and other updates into account. It will be further revised to incorporate the City Management policies for Westminster, providing the detailed planning policies.

London Air Quality Network: A network of air pollution monitors owned by the London Boroughs.

London Atmospheric Emissions Inventory (LAEI): A quantification and compilation of emission sources in Greater London by geography and time.

(The) London Plan: London's Spatial Development Strategy published by the Mayor of London, which forms part of the development plan for Westminster, together with the Core Strategy and the saved policies in the Unitary Development Plan that have not been superseded by the Core Strategy.

Low Emission Zone (LEZ): The application of charges across Greater London based on emissions of air pollutants to reduce the amount of harmful vehicular emissions in the city.

Microgramme (µg): One millionth of a gramme

Microgrammes per cubic metre of air (µg/m^3): A unit for describing the concentration of air pollutants in the atmosphere, as a mass of pollutant per unit volume of clean air

Nitrogen dioxide (NO_2): Formed in small amounts in the atmosphere during high temperature combustion, but the majority is formed in the atmosphere through the conversion of nitric oxide in the presence of ozone.

Nitrogen monoxide (NO): Formed from nitrogen in the atmosphere during high temperature combustion, and the main constituent of NO_x, commonly known as nitric oxide.

Nitrogen oxides (NO_x): Includes both NO and NO_2

Particulate matter (PM_{10}): Particles with an equivalent aerodynamic diameter of ten microns or less and is small enough to penetrate the lungs.

Particulate Matter ($PM_{2.5}$): Particles with a mean effective aerodynamic diameter of 2.5 microns or less.

Private Hire Vehicle (PHV): A vehicle constructed or adapted to seat fewer than nine passengers which is made available with a driver to the public for the purpose of carrying passengers, other than a licensed taxi or public service vehicle.

Supplementary Planning Document (SPD): Advice issued by a planning authority that explains and expands on its statutory policies. Forms part of the local planning documents.

Supplementary Planning Guidance (SPG): Advice issued by a planning authority that explains and expands on its statutory policies.

Transport for London (TfL): The functional body of the GLA accountable to

the Mayor, with responsibility for delivering an integrated and sustainable transport strategy for London.

Unitary Development Plan (UDP): Saved policies and those not superseded by the Core Strategy form part of the development plan for Westminster. It provides detailed planning policies which will be superseded when the full Westminster's City Plan is adopted.

Appendix 1 - Impacts of Air Pollution

10.1 Health

10.1.1 London has some of the worst air pollution in Europe, with central London being the worse affected due to its high density of development, high levels of traffic and complex urban environment. The pollution comes from many different sources but is mainly associated with traffic, transport and fuel combustion in buildings. It is present all around us in the air we breathe; it affects everyone.

10.1.2 Air quality has direct implications for human health. Research shows that poor air quality can reduce the quality of life by causing health problems, especially in those who are more vulnerable such as children, the elderly and those with pre-existing conditions. There is considerable research showing a link between exposure to air pollution and effects on health. Evidence also shows that increased levels of fine particles in the air can increase risks of death.

10.1.3 Evidence[44] suggests that population life expectancy is shorter in areas of high pollution when compared to areas with less pollution. There is also evidence suggesting that exposure to pollution can reduce life expectancy in the UK by an average of 7 to 8 months[45].

10.1.4 Studies show that poor air quality principally affects respiratory and cardiovascular systems with some initial symptoms being sore eyes and nose, itchy irritated throat, coughing and troubled breathing. There is also evidence that high levels of air pollution can trigger an increase in admissions to hospital and contribute to the premature death of those people that are more vulnerable to daily changes in levels of air pollutants.

10.1.5 There are long-term indications that the effects of pollution on health are generally associated with cardiopulmonary (heart and lung) effects and can also contribute to premature mortality, which is a key focus for NHS Westminster.

10.1.6 Research also shows that particulate pollutants inhaled deeply into the lungs can lead to an increased risk of some cancers. Pollutants can also cause long term cardio and respiratory problems and can contribute to premature deaths among those with pre-existing lung and heart illnesses. Importantly, for some pollutants, studies have been unable to identify a safe level at which there is no effect on health.

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[44] Long-Term Exposure to Air Pollution: Effect on Mortality, COMEAP 2009

[45] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1) - Department for Environment, Food and Rural Affairs (Defra), July 2007

10.1.7 The Committee on the Medical Effects of Air Pollutants (COMEAP) is an advisory committee of independent experts that provides advice to government departments and agencies, via the Department of Health's Chief Medical Officer, on all matters concerning the effects of air pollutants on health. COMEAP advises that health impacts associated with long and short term exposure to air pollution can include:

- Shortening of lifespan
- Worsening of respiratory diseases (such as asthma, Chronic obstructive pulmonary disease (COPD) and bronchitis),
- Acute symptoms (such as wheezing, coughing and respiratory infections),
- Increased risk of cancers

10.1.8 In 2010, the House of Commons Environmental Audit Committee published its report[46] on air quality in the UK. The report included evidence which estimated that air pollution could be contributing to as many as 50,000 deaths in the UK per year. The Committee also heard evidence during its investigation into air quality in 2010/11 that at least 3,500 people in London die prematurely each year due to poor air quality, and that this figure could be as high as 8,000.

10.1.9 Broadly in line with the estimates of the Environmental Audit Committee report are the results of a study commissioned by the Greater London Authority in 2010[47], which detailed that an estimated 4,267 premature deaths in London in 2008 could be attributed to long term exposure to fine particles ($PM_{2.5}$[48]).

10.2 Ecosystem

10.2.1 Although it is a densely developed area, Westminster has a rich natural environment and some 438 hectares of parkland including the five Royal Parks. Trees and private gardens also make an important contribution to the quality of biodiversity and, together with other green infrastructure, form an important network which can provide habitat for plants and animals and opportunities for wildlife to spread across the city.

[46] Air Quality (Volume 1) - House of Commons Environmental Audit Committee, March 2010
[47] Report on estimation of mortality impacts of particulate air pollution in London - Dr Brian G Miller (Institute of Occupational Medicine), June 2010
[48] $PM_{2.5}$ – Particulate matter with a diameter of less than 2.5 micrometres (1 micrometre = 1 millionth of a metre)

10.2.2 A great diversity of species can be found within the urban environment where there are trees and herbaceous plant species in public parks, along roadsides and in private gardens. Unfortunately, this diversity can be threatened by the impact of air pollution on the ecosystem.

10.3 Buildings

10.3.1 In the past, high levels of sulphur dioxide damaged buildings by producing acid rain which has an eroding effect on some building materials. Levels of sulphur dioxide are now much lower, but some damage to buildings is still evident and this could be caused by increased concentrations of other pollutants such as ozone and nitrogen compounds. Also, particulate pollution predominantly from diesel vehicles is now the main cause of blackening of building surfaces.

10.4 Pollutants

10.4.1 In the UK, there are nine pollutants which have local authority regulatory controls. These are:

- Particulate matter
- Ozone
- Benzene
- 1,3 Butadiene
- Polyaromatic hydrocarbons
- Nitrogen dioxide
- Sulphur dioxide
- Carbon monoxide
- Lead

10.4.2 In Westminster, the measured levels of two pollutants exceed levels that are considered to be acceptable in terms of what is known about their health and environmental effects. These pollutants are particulate matter (including both PM_{10} and $PM_{2.5}$) and nitrogen dioxide. Other pollutants such as ozone, polyaromatic hydrocarbons and other volatile organic compounds such as benzene and 1,3 butadiene can affect atmospheric chemistry and can react in the air to form or destroy other pollutants.

Short Term exposure to NO_2	Short Term exposure to PM
• Respiratory impacts particularly for asthma sufferers • Increase in airway allergic inflammatory reactions • Increased hospital admissions • Increased mortality	• Lung inflammatory reactions • Respiratory symptoms • Adverse effects on the cardiovascular system • Increased medication usage • Increased hospital admissions • Increased mortality
Long Term exposure to NO_2	**Long Term exposure to PM**
• Reduction in lung function • Increased respiratory symptoms	• Increase in lower respiratory symptoms • Reduction in lung function in children • Increase in COPD • Reduction in lung function in adults • Reduction in life expectancy mainly owing to cardio-pulmonary mortality and probably cancer

Figure A1-1: Health Impacts of pollutants of concern

Particulate Matter

10.4.3 Particulate Matter (including both PM_{10} and $PM_{2.5}$) can be natural or man-made and is often emitted directly to the atmosphere from combustion sources, for example from the exhaust of cars, wood burners and from open fires. It is also caused by wear of the tyres and brakes on vehicles. Naturally occurring sources include sea spray and Saharan dust which can travel very long distances via weather systems.

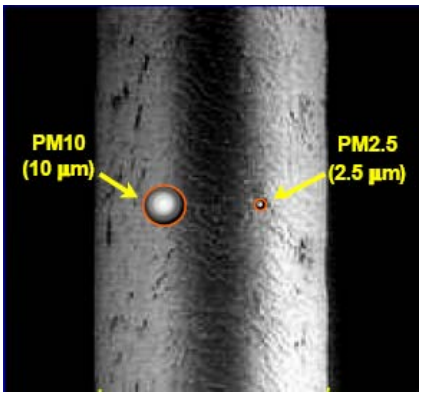

Figure A1-2 Size of PM particles relative to a human hair

10.4.4 Particulate matter is defined by size. PM_{10} is particulate matter which is 10 micrometres (µm) or less in diameter, whereas, $PM_{2.5}$ is only 2.5 micrometres or less in diameter. Figure 2 shows the relative size of PM particles compared to a human hair.

Nitrogen Dioxide

10.4.5 Nitrogen dioxide (NO_2) belongs to a group of gases called nitrogen oxides (NO_x) which are formed during the combustion of fossil fuels. The majority of NO_x emitted as a result of combustion is in the form of nitric oxide (NO). When NO reacts with other gases present in the air, it can form nitrogen dioxide (NO_2) which is harmful to health. It is also important in the formation of ozone. The table below gives information on nitrogen dioxide and particulate matter, their sources and health effects.

$$2NO + O_2 \rightarrow 2NO_2$$

$$NO_2 \rightarrow NO + O$$

$$O + O_2 \rightarrow O_3$$

$$NO + O_3 \rightarrow NO_2 + O_2$$

Table A1-1 Nitrogen Dioxide and Particulate Matter sources and health effects

Nitrogen Dioxide (NO_2) All combustion processes in air produce oxides of nitrogen (NO_X) including nitrogen dioxide (NO_2) and nitric oxide (NO). Nitrogen chemistry is complex and the levels of NO_2 are related to those of NO as well as the presence of light, oxygen and other organic compounds. The main source of nitrogen oxides include gas/oil combustion and road transport, followed by the electricity supply industry and other industrial and commercial sectors.
Particulate Matter Both PM_{10} and $PM_{2.5}$ pollution is often emitted directly to the atmosphere from combustion sources although it can come from natural sources such as sea spray and Saharan dust which comes over via weather systems. In the UK the biggest man-made emissions are from fuel combustion sources. These include both stationary (i.e. industrial and domestic burners) and transport sources. Road transport gives rise to particulate matter from engine emissions and tyre and brake wear.

Ozone

10.4.6 Ozone (O_3) gas occurs naturally in the upper part of the atmosphere where it is referred to as 'the ozone layer' and protects the Earth from high levels of Ultra Violet (UV) radiation which would be harmful. At

ground level, O_3 is not emitted directly, but is formed by a complex set of chemical reactions involving nitrogen oxides (NO_x) and other chemicals in the presence of sunlight. When conditions are unpolluted, a balance is reached where sunlight breaks down nitrogen dioxide to form ozone, which then reacts with nitric oxide to reform nitrogen dioxide. At night, when there is no sunlight, the first part of the cycle stops and ozone is destroyed but not replaced.

10.4.7 Problems occur when other pollutants such as volatile organic compounds (VOCs) are present in the atmosphere which disrupt the nitrogen oxide cycle and allow NO to form NO_2 without destroying the ozone (O_3), resulting in a build up.

Volatile Organic Compounds

10.4.8 Volatile Organic Compounds (VOCs) comprise of a range of chemical compounds and may be natural or synthetic and include industrial chemicals such as fuels, solvents, coatings and refrigerants. Current attention is focused on 1,3 butadiene, primarily from vehicle exhausts, and benzene which comes from the combustion or evaporation of petrol.

Appendix 2 - Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Appendix 3 - Air Quality Monitoring in Westminster

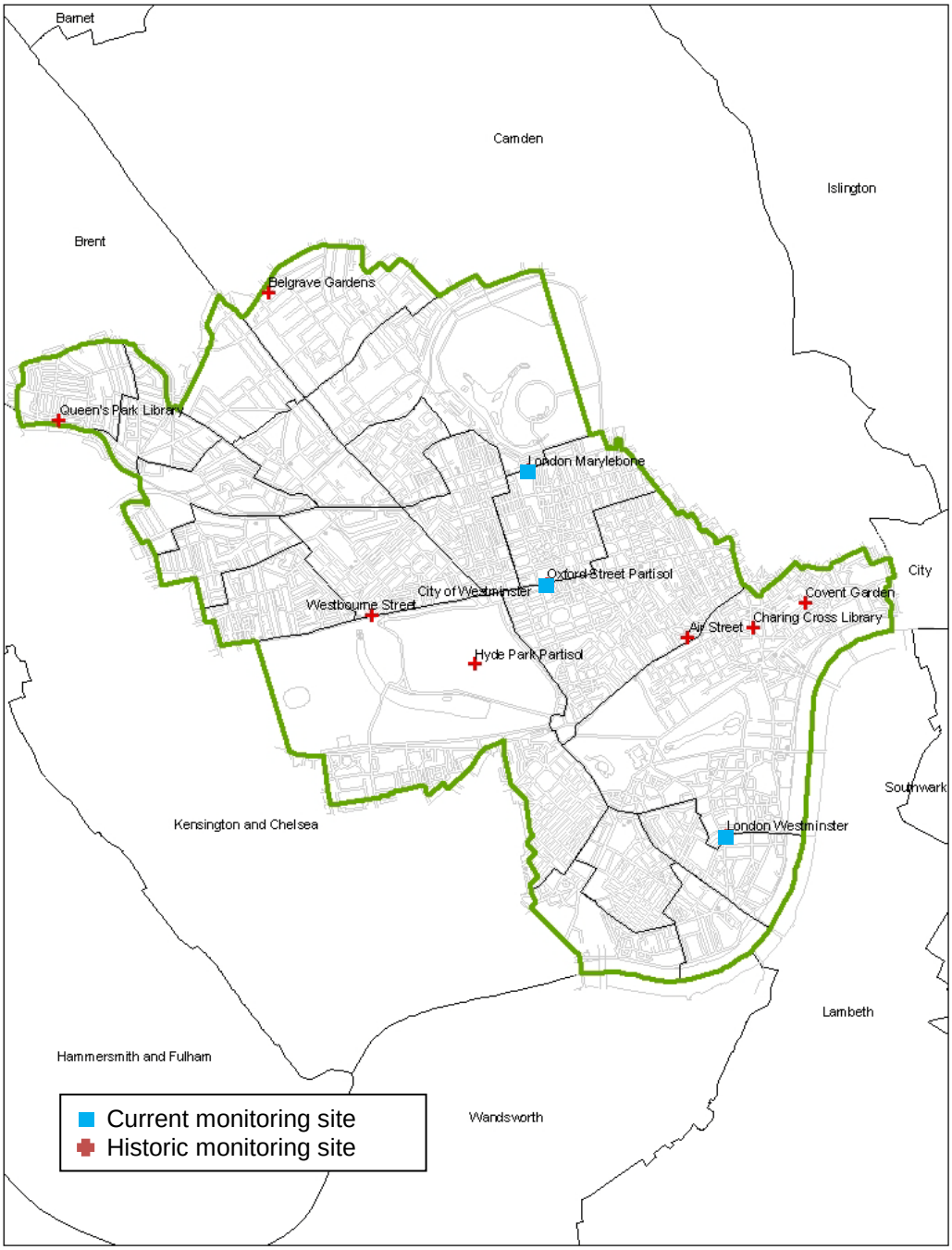

Figure A3.1 Location of monitoring sites in and around Westminster

Table A3.1 Current monitoring sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored
Marylebone Road	Kerbside	528121 182015	CO, NO_2, O_3, PM_{10} (gravimetric), PM_{10} (TEOM), PM_{10}, (FDMS), $PM_{2.5}$ (TEOM), Hydrocarbons, SO_2
London Westminster	Urban Background	529778 178960	CO, NO_x, O_3, PM_{10}, (gravimetric), SO_2
Oxford Street	Kerbside	528276 181065	PM_{10} (gravimetric) NO_x , NO_2 and NO.

Table A3.2 Historic monitoring sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored
Charing Cross	Roadside	529997 180699	NO_x
Covent Garden	Urban Background	530444 180903	NO_x
Hyde Park	Urban Background	527674 180396	PM_{10}, (gravimetric)
Westbourne Street	Roadside	526752 180799	NO_2 (diffusion tube)
Air Street	Roadside	529453 180616	NO_2 (diffusion tube)
Belgrave Gardens	Urban background	525958 183503	NO_2 (diffusion tube)
Queen's Park	Urban background	524205 182430	NO_2 (diffusion tube)
Oxford Street	Kerbside	528278 181065	PM_{10}, NO_2 (diffusion tube)
Hyde Park	Urban background	527673 180396	PM_{10}, NO_2 (diffusion tube)
London Westminster	Urban background	529780 178958	NO_2 (diffusion tube)
Covent Garden	Urban background	530434 180909	NO_2 (diffusion tube)

City of Westminster