



## **London Environment Strategy**

### **AMPS Executive Summary**

*The Mayor of London has published his draft environment strategy.*

*The following is a precis by AMPS of the full strategy documentation, concentrating on the areas considered to be of interest to AMPs members.*

*This looks forward to 2050 and covers the full London environment, from transport and industrial pollution to noise, tree cover and green spaces.*

*Air quality is stated to be most pressing environmental threat.*

*London's greenhouse gas emissions are falling, but the city remains over-reliant on fossil fuels.*

*Most of the energy used for domestic heating and hot water, is met using gas-fired boilers. Already one in ten electricity substations are approaching full capacity and there is increasing demand for energy and the infrastructure required.*

*Noise is part of a vibrant city but almost 2.4 million people in London are already exposed to noise levels that exceed international guidelines.*

*The publication of this document started a three-month period of statutory consultation which ends on 17 November 2017.*

*Amps support the Mayor's objectives and will be responding to the consultation.*

## **Chapter 1 London's Environment Today**

### **Air Quality**

The quality of London's air is dangerously – and illegally – poor. High levels of damaging pollutants harm human health and quality of life, limiting lung development in childhood and reducing life expectancy. Over 9,000 Londoners' lives end sooner than they should each year because of air pollution, and around a quarter of primary schools are in parts of London that breach legal air pollution limits. Air quality is the most pressing environmental threat.

### **Greenhouse gas emissions**

Although London's greenhouse gas emissions are falling, the city remains over-reliant on the fossil fuels that are a major contributor to global warming and climate change. London is not yet on track to reduce its emissions quickly enough to avoid the worst impacts of climate change, or to meet national and international climate aims.

### **Energy use**

Nearly three quarters of the energy used in London's homes is for heating and hot water, and most of this demand is met using gas-fired boilers. Already one in ten electricity substations are approaching full capacity and the redevelopment of large parts of the city will increase demand for energy and the infrastructure required to distribute it.

### **Ambient noise**

Noise is part of a vibrant city, but excessive noise can damage people's health. Noise can contribute towards a range of physical and mental health problems, disturb sleep and affect people's hearing, communication and learning. Almost 2.4 million people in London are already exposed to noise levels that exceed international guidelines.

## **Chapter 2 Transforming London's Environment**

### **AIMS**

To make the Mayor's vision of transforming the city's environment a reality, this strategy establishes some key aims for London.

The Mayor aims:

- for London to have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities
- for more than half of London's area to be green and for tree canopy cover to increase by ten per cent by 2050
- for London to be a zero-carbon city by 2050, with energy efficient buildings, clean transport and clean energy
- to make London a zero-waste city. By 2026 no biodegradable or recyclable waste will be sent to landfill, and by 2030 65 per cent of London's municipal waste will be recycled
- for London and Londoners to be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought
- to improve Londoners' quality of life by reducing the number of people adversely affected by noise and promoting more quiet and tranquil spaces

### **CONSULTATION**

The publication of this document starts a three-month period of statutory consultation with the public, during which the Mayor would like to receive Londoners' views about the issues raised in the draft strategy and the Mayor's plans for addressing them. Consultation ends on 17 November 2017.

AMPS will be responding to the consultation.

The strategy will then be revised in the light of comments received from the public and, following its submission to the London Assembly, a statutory London Environment Strategy will be published.

## **Chapter 3 New Approaches**

To make this vision a reality, London needs to approach how it thinks and acts on its environment in new ways. New solutions are required, making the most of all that London's environment has to offer, and seeing the opportunities that change can bring

### **STRATEGIC APPROACHES**

This document uses four strategic approaches to make the most of environmental opportunities now and in the future. They inform every aspect of the strategy, providing links between each of them to reinforce the holistic approach that must be taken to tackle London's environmental challenges. They also provide links between this and the Mayor's other strategies, to ensure that environmental concerns are factored into decision making across London. They are:

- low carbon circular economy

- smart digital city
- green infrastructure and natural capital accounting
- the Healthy Streets Approach

A low carbon circular economy is one in which as much value as possible is extracted from resources, through their use and reuse, before they become waste.

it is also a huge opportunity for London's businesses. In 2014/15, London's low carbon and environmental goods and services sector generated around £30.4bn in sales and its 10,900 businesses employed around 192,000 people. Between now and 2020, this sector is expected to grow by over six per cent a year.

## **Chapter 4 Air Quality**

### **INTRODUCTION**

Since the passage of the Clean Air Act over sixty years ago, there has been huge progress in improving air quality in London. The city now meets legal limits set by the national Air Quality Regulations for most pollutants. There have been historic reductions in the levels of benzene, lead and sulphur dioxide pollution, which has greatly improved health and quality of life. This underlines the ability of effective and coordinated action to improve the air we breathe if we are bold enough to take strong action.

Two pollutants remain a specific concern. These are particulate matter (PM10, PM2.5 and black carbon) and nitrogen dioxide (NO2). London is failing to meet the legal limit for NO2. Particulate matter is damaging to health at any level and must be reduced.

Improving London's air quality requires the following actions:

- reducing exposure of Londoners to harmful pollution across London
- especially at priority locations like schools – and tackling health inequality
- achieving legal compliance with UK and EU limits as soon as possible, including by mobilising action from the London boroughs, government and other partners

- establishing and achieving new, tighter air quality targets for a cleaner London, meeting World Health Organisation (WHO) health-based guidelines by 2030 by transitioning to a zero emission London.

## **BOX 1: AIR POLLUTION DEFINITIONS**

### **What's the difference between emissions and concentrations?**

London's air quality is affected by a number of factors. These include the weather, local geography and **emissions** sources from both within and outside London. Air quality is measured in **concentrations**, which are specific levels of a pollutant in a given area. Legal limits are set in relation to concentrations. Local emissions from vehicles, buildings, construction and other sources contribute significantly to air pollution in London. This is what the Mayor can most directly control and influence. That means we must understand how these emissions are being reduced to understand how effective particular policies and proposals could be. However, there is rarely a direct relationship between reducing emissions within London and reducing concentrations given the other factors at play. This is why the strategy will refer both to concentrations and emissions.

### **Pollutants of concern in London**

#### **Particulate matter (PM10 and PM2.5):**

Particulate matter (PM) is a complex mix of non-gaseous material of varied chemical composition. It is categorised by the size of the particle (for example PM10 is particles with a diameter of less than ten micrometres ( $\mu\text{m}$ )). Most PM emissions in London are caused by road traffic, with exhaust emissions and tyre and brake wear being the main sources. Construction sites, with high volumes of dust and emissions from machinery are also major sources of local PM pollution. Other sources include wood burning stoves, accidental fires and burning of waste. However, a large proportion of PM comes from natural sources, such as sea salt, forest fires and Saharan dust. In addition, there are sources outside London caused by human activity. Small particles tend to be long-lived in the atmosphere and can be carried great distances. This imported PM forms a significant proportion of total PM in London.

#### **Black carbon:**

This is a component of fine particulate matter (PM2.5 and smaller). It is formed through the incomplete combustion of fossil fuels, biofuel, and biomass, and is emitted in both anthropogenic and naturally occurring soot. Black carbon also contributes to climate change. Black carbon warms the planet by absorbing sunlight and heating the atmosphere.

#### **Nitrogen dioxide (NO<sub>2</sub>):**

All combustion processes produce Nitrogen Oxide (NO<sub>x</sub>). In London, road transport and heating systems are the main sources of these emissions. NO<sub>x</sub> is primarily made up of two pollutants:

- nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). NO<sub>2</sub> is of most concern due to its impact on health. However NO easily converts to NO<sub>2</sub> in the air - so to reduce concentrations of NO<sub>2</sub> it is essential to control emissions of NO<sub>x</sub>

## **BOX 2: THE LONDON LOCAL AIR QUALITY MANAGEMENT FRAMEWORK (LLAQM)**

Local Air Quality Management (LAQM) is the statutory process by which a local authority is required to review the air quality within its area.

This system aims to determine if air quality objectives set within the Air Quality Regulations 2000 and the Air Quality (Amendment) Regulations 2010 are likely to be met in a certain area. It also drives improvements to achieve those objectives.

The London system used to be part of a national framework managed by DEFRA. However, in May 2016 the Mayor launched a bespoke system for the capital - London Local Air Quality Management (LLAQM).

This scheme was designed to encourage close working to help address this vital issue. This renewed focus on LAQM in London should help ensure that local authority air quality resources are protected, or where possible increased.

The basic statutory framework for local air quality management is via national Air Quality Regulations and Part IV of the Environment Act 1995. This remains in place and applies to London's 32 boroughs and the City of London. However, it was agreed with DEFRA that the relevant LAQM guidance for London should differ from the rest of the UK in recognition of the particular challenges the capital faces. London now has its own bespoke statutory policy and technical documents.

The key LLAQM requirements for boroughs are:

- to continue to monitor and assess air pollution in their areas
- to ensure an Air Quality Management Area (AQMA) is declared and in place for any locations that are exceeding air quality objectives and EU Limit Values
- to ensure that a current and relevant Air Quality Action Plan is in place for all AQMAs.

The Action Plan should be updated every five years at a minimum, and progress against this should be reported annually to complete the annual monitoring and Action Plan update reports.

### **Transboundary pollution**

The challenge of cleaning London's air is made more difficult because a large amount of the pollution sources are not within London. The most recent analysis shows that sources outside London make the largest contribution to the estimated death risk from long-term exposure to PM2.5 in London. This is also responsible for most of health effects associated with short term exposure.

Tackling all sources of pollution. To achieve legal compliance as quickly as possible, all sources of pollution must be addressed. That means significantly increasing efforts in relation to non-transport sources. This is vital as the proportion of total emissions from non-transport sources is expected to increase over the lifetime of this strategy as our efforts on transport start to have an effect.

## **Objectives, policies and proposals**

### **OBJECTIVE 4.2 Achieve legal compliance with UK and EU limits as soon as possible, including by mobilising action from London boroughs, government and other partners**

#### **Policy 4.2.3 Reduce emissions from non-transport sources, including by phasing out fossil fuels**

NRMM is a diverse sector, including construction machinery, generators, and industrial equipment. This policy is primarily aimed at construction, roadworks, events and similar uses.

Engines used in NRMM are subjected to progressive emissions limits by the EU, similarly to road vehicles, meaning that newer machines are far less polluting than older ones. However, these standards are further behind those applied to road vehicles and there has historically been greater flexibility in their application.

NRMM used in the construction and infrastructure building sectors currently accounts for approximately seven per cent of NO<sub>x</sub> and eight per cent of PM<sub>10</sub> emissions in London. As emissions from road transport fall, these sectors are expected to grow as a proportion of London's total emissions.

The diversity of the NRMM sector means that different approaches may be necessary for different users. The Mayor's planning powers are currently being used to create an NRMM Low Emission Zone with minimum emission standards.

These are based on European 'stages', which are similar to emission standards for vehicles. The applicable standards are stage IIIB on construction sites in central London, and stage IIIA in the rest of London currently. These will tighten to stage IV and IIIB respectively in 2020. The Mayor will review the NRMM Low Emission Zone standards to ensure that they deliver the largest possible improvements. The Mayor wants stronger enforcement powers to ensure that these standards are consistently met across London, and has asked the government to legislate to provide these. The Mayor will lead by example through the GLA group. Emissions from NRMM construction and maintenance activities will, where appropriate, meet or exceed the standards set out by the NRMM Low Emission Zone. The Mayor will also work with other major infrastructure developers, such as Network Rail, Thames Water, National Grid and High Speed 2 (HS2), so they incorporate these as minimum emissions standards. Working with the Environment Agency, DEFRA and the London boroughs, the Mayor will seek to incorporate NRMM emissions standards into environmental permits. The Mayor will also promote the use of zero and ultra-low emission technology, such as fuel cell, hybrid or electric machines to reduce emissions and carbon impacts from NRMM. As well as setting requirements for minimum emissions standards, the Mayor will develop a new enhanced website to make participation in the NRMM Low Emission Zone as straightforward as possible and set up a Green Machines NRMM positive recognition scheme to promote best practice in reducing emissions and encourage innovation.

#### **Proposal 4.2.3b The Mayor will work with industry and other partners to seek reductions in emissions from construction and demolition sites.**

Construction and demolition sites, including roadworks, can be a significant contributor to local particulate levels if they are not well managed. These projects can last a long time and many

can happen in the same area. This means these emissions can significantly affect the health of local residents, unless they are properly controlled and managed. It is important to develop and share best practice to support and improve the measures the construction sector already puts in place. Similarly, the understanding of how monitoring can be used on construction sites to inform the operators when additional measures are required must be improved. To do this, the Mayor will maintain guidance on managing dust and other emissions on construction sites, as well as using planning powers. The Mayor will continue to support the London Low Emissions Construction Partnership and similar projects to research and develop the best dust-control techniques for construction sites. Voluntary approaches will be promoted to control the problem at sites or in areas where the Mayor has no statutory powers.

**Proposal 4.2.3d The Mayor will work with government to seek reductions in emissions from large scale generators producing power for commercial buildings in London.**

There is evidence that diesel generators installed as emergency backup power sources in offices and other buildings are increasingly being used to meet peak electricity demand from the grid. This is because the grid now struggles to match supply with demand. The government does not impose any controls on the emissions from most of these generators. However, they have the potential for significant negative impacts if their use continues to grow. Even where they are used only for short amounts of time, old or poorly located generators can have a major impact on local air quality.

Current DEFRA proposals to introduce emissions limits for generators over one megawatt in capacity will not affect existing generators until at least the mid-2020s. Generators that run for less than 500 hours a year will not be affected. These new controls do not go far enough or fast enough to protect the health of Londoners.

The Mayor will use planning powers to prevent the creation of new diesel powered 'generator farms' in London and ensure the impacts of any new emergency generators in buildings are minimised. To help this the Mayor will work with health authorities and others to raise awareness of the impacts of the use of diesel generators on air quality. The Mayor will work with the Department for Business, Energy and Industrial Strategy and DEFRA to seek market reforms and discourage the use of emergency generators in the Short-Term Operating Reserve and Capacity Markets. The Mayor will encourage DEFRA to apply more robust standards, and give the Mayor the powers to regulate this sector in London.

The Mayor will also work with the retrofit industry and generator owners to develop effective and install effective retrofit solutions for existing generators as soon as possible. Where applicable, retrofit for emergency generators could be supported by the Mayor's retrofit programmes

**Policy 4.2.4 The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality**

**Proposal 4.2.4b The Mayor will work with the government to achieve full legal compliance with UK and EU limits as soon as possible.**

- Provide new powers for construction, including stronger enforcement powers against Non Road Mobile Machinery (NRMM) both on and off construction sites.

**Proposal 4.3.3b Through the new London Plan, the Mayor will consider new policies on heat and power provision to make sure CO<sub>2</sub> and pollution targets are achieved in a coordinated way with no air quality disbenefits.**

The Mayor has set ambitious long-term targets to both reduce harmful pollution emissions and to become a zero-carbon city. In the past, some policies have had the result of addressing

one of these issues to the detriment of the other. The Mayor's energy policies will take a holistic approach to overall emissions while ensuring no air quality disbenefits. Through the London Plan the Mayor will consider a hierarchy for energy systems that contributes towards improving air quality. In particular, while combined heat and power systems (CHP) can have benefits in terms of carbon emissions, gas engine CHP plant usually gives rise to higher emissions of NO<sub>x</sub> and/or PM<sub>10</sub> emissions than ultra-low NO<sub>x</sub> gas boilers, even when abatement equipment is used. Therefore, in preparing his London Plan, the Mayor will consider whether, in areas which exceed legal air quality limits, the policy should prevent emissions from energy production plant, including from CHP, that would exceed those of an ultralow NO<sub>x</sub> gas boiler. Energy production plant used in other areas should meet all relevant emission standards (which may require abatement equipment) as considered by the new London Plan, as well as not causing unacceptable local impacts on air quality.

To better understand the pollution impact of existing CHP systems in London the Mayor will develop a new CHP register which will be reflected in future versions of the London Atmospheric Emissions Inventory.

## **Chapter 6: Climate change mitigation and energy**

### **Proposal 6.1.3b Supporting reducing emissions and energy within the commercial sector including through improved building management, energy efficiency and reporting**

In particular, while Combined Heat and Power systems (CHP) can have benefits in terms of carbon emissions, gas engine CHP plant usually gives rise to higher emissions of NO<sub>x</sub> and/or PM<sub>10</sub> emissions than ultra-low NO<sub>x</sub> gas boilers, even when abatement equipment is used. Therefore, in preparing his London Plan, the Mayor will consider whether, in areas which exceed legal air quality limits, the policy should prevent emissions from energy production plant, including from CHP, that would exceed those of an ultralow NO<sub>x</sub> gas boiler. Energy production plant used in other areas should meet all relevant emission standards (which may require abatement equipment) as considered by the new London Plan, as well as not causing unacceptable local impacts on air quality.

### **Policy 6.1.5 Monitor and report on London's emissions regularly to track London's progress**

#### **Proposal 6.1.5a Publish the London Energy and Greenhouse Gas Inventory on an annual basis**

To assess the impacts of actions taken by the Mayor and others undertaken to tackle climate change London's emissions must be monitored. The London Energy and Greenhouse Gas Inventory will be published on an annual basis, making data available to the public, and report London's GHG emissions and activities to mitigate climate change annually through a global web platform.

### **Objective 6.2 develop clean and smart, integrated energy systems utilising local and renewable energy resources**

In addition to reducing the energy use of buildings in London there is a need to transform the energy system so that power and heat for buildings and transport is generated from clean, low carbon and renewable sources, such as solar and waste heat.



Energy infrastructure will need to be transformed so that it is smarter and more effective. This will enable supply and demand of energy to be better matched, reduce consumption and enable people to take advantage of cheaper electricity, sold during low demand periods such as overnight, or high supply periods such as on sunny and windy days.

While this is a national issue, in London the supply of more local, decentralised, low carbon energy can be maximised. Decentralised energy ranges from small production, such as electricity from solar PV panels, to larger scale systems based district heating (or cooling) through a network of underground pipes connecting it to homes and buildings. For London to become zero carbon by 2050, the energy system will need to move away from using natural gas to being fuelled more from municipal waste, renewable energy and the heat that is wasted from industrial and commercial processes.

The changing nature of energy supply will mean that the way energy is used, and the infrastructure that supports supply, will need to become more flexible integrating different types of energy and responding to demand at different times of the day. A smart approach is therefore required which uses real-time data and technologies such as smart meters to ensure that the energy system can operate in a way that will reduce system peaks. Combined with the increasing use of energy storage and balancing electricity, heat and cooling demand with the available supply, a smart system will deliver the optimum cost savings, reduce resource consumption and promote environmental benefits. The Mayor will work to increase delivery of decentralised energy in London and identify and map the opportunities to create a smart, flexible energy system.

### **Policy 6.2.1 Delivering more decentralised energy in London**

#### **Proposal 6.2.1a Help implement large scale decentralised and low carbon energy projects, including stimulating demand from the GLA group**

District heating networks and renewable energy supply account for approximately half of London's decentralised energy systems, delivering the equivalent of two per cent of total demand. There is the opportunity to increase this type of energy supply to 15 per cent of demand by 2030. There are a number of opportunities for further decentralised energy projects including large-scale solar PV installations and heat networks utilising technologies such as heat pumps in combination with secondary heat sources.

To facilitate implementation the Mayor will provide support to boroughs and the private sector through the Decentralised Energy Enabling Project (DEEP). Over the next two years, this programme will help implement large-scale decentralised energy projects in London, which the market is currently failing to develop. DEEP will provide technical, commercial, financial and other support services to assist public and private sectors to develop, procure and bring into operation these large scale projects.

## **Chapter 9: Ambient noise**

### **Other noise sources**

Other noise sources include construction, industrial, commercial and waterways. For these sources complaints are the most widely collected form of data. This is quite fragmented as attitudes to noise are subjective, and within London different organisations have different roles and responsibilities (see appendix 3). Local authorities collect and collate data for their borough, while large organisations such as TfL collect complaints

### **Policy 9.1.3 Minimise the adverse impacts of noise from non-transport sources**

#### **Proposal 9.1.3a The Mayor will provide guidance on appropriate noise mitigation measures for commercial and industrial premises**

Guidance on appropriate noise mitigation measures for commercial and industrial premises can be found in Supplementary Planning Guidance (SPG). This sets out the layout, design and management practices that developers should follow to reduce noise from these sites. This guidance will be kept under review to ensure that it is mitigating noise from these premises in the long-term. The Mayor will minimise adverse noise impacts on local residents from construction on large and long-term building sites.

The Mayor will establish best practice guidance for noise produced by construction and demolition, and advice on noise management of construction activity.