

# Standards and Requirements for Improving Local Air Quality

## Interim Policy Guidance



**TABLE OF CONTENTS**

**GLOSSARY**

**1. INTRODUCTION**

**2. THE PLANNING CONTEXT**

**3. AIR QUALITY ASSESSMENTS FOR PLANNING APPLICATIONS**

**4. MITIGATION OF AIR QUALITY IMPACTS**

**APPENDIX 1: REFERENCES**

**APPENDIX 2: TECHNICAL APPENDIX – HOW TO DO AN ASSESSMENT**

## **Glossary**

### **Air Quality Action Plan 2007-2010 (AQAP)**

Local councils with areas where air quality objectives are breached must designate them as Air Quality Management Areas and produce an action plan to improve air quality. Croydon Council has designated the whole borough an Air Quality Management Area because we will breach the air quality objective for annual average levels of nitrogen dioxide, one of the main pollutants from road traffic, along many of the borough's main roads. In June 2007 Croydon Council adopted a new Air Quality Action Plan for 2007-2010, containing measures aimed at improving air quality over this three year period.

### **Air Quality Assessment (AQA)**

An assessment of the impact of a development on the levels of certain pollutants in the local area.

### **Air Quality Management Areas (AQMAs)**

Areas where the air quality objectives are likely to be exceeded. Declared by way of an order issued under Section 83(1) of the Environment Act 1995.

### **Air quality objectives**

Air quality targets to be achieved locally as set out in the Air Quality Regulations 2000 and subsequent Regulations. Objectives are expressed as pollution concentrations over certain exposure periods, which should be achieved by a specified target date. Some objectives are based upon long term exposure (e.g. annual averages), with some based on short term objectives. Objectives only apply where a member of the public may be exposed to pollution over the relevant averaging time.

### **ALG**

Association of London Government. Now called London Councils.

### **Best Available Techniques (BAT)**

The basis for determining the appropriate technique for reducing pollution under the Environmental Permitting Regulations 2007.

### **LAQM.TG(09)**

Local Air Quality Management Technical Guidance (2009). This document provides national advice on how local authorities should assess air quality.

### **Exceedence**

Concentrations of a specified air pollutant greater than the appropriate Air Quality Objective.

### **EU limit values**

The maximum pollutant levels set out in the EU Directives on Air Quality. In some cases the limit values are the same as the national air quality objective, but may allow a longer period for achievement.

### **GLA**

The Greater London Authority (GLA) is a unique form of strategic citywide government for London. It is made up of a directly elected Mayor - the Mayor of London - and a separately elected Assembly - the London Assembly. There are around 600 staff to help the Mayor and Assembly in their duties

### **London Councils**

London Councils is a cross-party organisation, funded and run by the member authorities to work on behalf of them all, regardless of political persuasion. They also act as the employers' organisation for the 32 London boroughs, providing advice, support and training, and representing them in negotiations. Previously known as the Association of London Government (ALG).

### **Line source**

Mathematical models are important tools for assessing air quality. Necessarily they require a number of assumptions to be made. Sources such as constantly flowing road traffic are typically modelled as a line source rather than as a large series of individual cars.

### **Mitigation**

The IPG places most emphasis on reducing air quality impacts or issues by the correct design or redesign of the development. Where it is accepted that redesign cannot resolve the air quality issues satisfactorily mitigation may be acceptable. Mitigation measures will minimise (but not necessarily remove) the impact of poor air quality on a development.

### **National Air Quality Objectives**

See Air Quality Objectives.

### **National Air Quality Strategy Air Quality Strategy**

The UK Government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland on 17 July 2007. The Strategy sets out a way forward for work and planning on air quality issues, the air quality standards and objectives to be achieved, introduces a new policy framework for tackling fine particles, and identifies potential new national policy measures which modelling indicates could give further health benefits and move closer towards meeting the Strategy's objectives.

### **NO<sub>2</sub>**

Nitrogen dioxide. (See NO<sub>x</sub> below). Exposure to nitrogen dioxide may have several health impacts, including general irritation to the eyes, irritation of the respiratory system and shortness of breath.

### **NO<sub>x</sub>**

NO<sub>x</sub> = nitrogen oxides, which covers both nitric oxide and nitrogen dioxide. Most pollution sources emit nitrogen oxides primarily as nitric oxide. However, once in the atmosphere nitric oxide can be converted to nitrogen dioxide. Therefore it is important to know the concentrations of both NO<sub>x</sub> and NO<sub>2</sub>.

### **Offsetting**

Measures which 'compensate' for anticipated increases in pollution in the area but not necessarily at the exact locality. This might be for example by funding more general measures in the Air Quality Action Plan to improve air quality in Croydon.

### **PERAT** Planning emissions and reduction assessment tool (PERAT)

A simple ready reckoner for use by property developers and the local authority which will enable them to assess the emissions of the development they are replacing, with the aim of enabling developers to reduce emissions from a development site relative to its previous or current use.

### **PM<sub>10</sub>**

Particulate matter with a diameter of less than 10 microns in diameter (full definition available in the National Air Quality Strategy), also referred to as particles or particulate matter. The effect of inhaling particulate matter has been widely studied in humans and animals and

include asthma, lung cancer, cardiovascular issues, and premature death. The size of the particle is a main determinant of where in the respiratory tract the particle will come to rest when inhaled. Larger particles are generally filtered in the nose and throat and do not cause problems, but particulate matter smaller than about 10 microns, referred to as PM<sub>10</sub>, can settle in the bronchi and lungs and cause health problems. There is clear and unequivocal health advice that there is no accepted threshold effect for these small particles (both PM<sub>10</sub> or PM<sub>2.5</sub>) i.e. no recognised safe level for exposure.

**Part A1 and A2 installations**

Industrial installations which are regulated under the Environmental Permitting (EP) Regulations 2007 and subsequent Integrated Pollution Prevention and Control (IPPC) for emissions to all media (i.e. atmosphere, land and water).

**Part B installations**

Industrial processes which are regulated under the Environmental Permitting (EP) Regulations 2007 for emissions to air only.

**Point source**

A specific location where a known concentration of a certain pollutant is emitted such as a discharge stack.

**Polluting development**

A development which will directly or indirectly increase levels of relevant pollutants. This may include industrial installations but may also include developments which could cause increased traffic emissions and therefore may increase pollution concentrations within Croydon

**Environmental Permitting Regulations**

Environmental Permitting Regulations 2007 (as amended).

**Risk Assessments**

A comprehensive assessment of the risks associated with a particular hazard which is relevant to the development site.

**Sensitive development**

A development which would allow users of the site to potentially be exposed to pollutants above the objective for the relevant period. For example, the introduction of a new residential development into an area where an air quality objective is already exceeded, would create the potential for the exposure of residents to poor air quality above the objective. Incidentally, this type of development may also generate significant additional traffic flow and also be a polluting development.

**Street Canyon**

A relatively narrow street with buildings on both sides, where the height of the buildings is generally greater than the width of the road. (Defra: Local Air Quality Management Technical Guidance LAQM. TG(09))

## **1. Introduction**

### **Aims of this Interim Policy Guidance**

This document provides detailed advice on how the Council will consider, and how developers should deal with, planning applications that could have an impact on air quality. If the procedures in this document are followed it will help ensure consistency in the approach to dealing with air quality and planning in Croydon and help ensure that development plays its proper role in delivering the Government's and the Council's air quality objectives. This Interim Policy Guidance (IPG) amplifies the requirements of policies in the Croydon Unitary Development Plan (adopted 13<sup>th</sup> July 2006), and conforms to Government policy.

The following criteria are in accordance with the Revised Local Development Scheme:

#### Subject, Role or Content

The document sets out the standards and requirements for all development and change in the borough in relation to improving air quality in the borough and protecting human health and the environment pursuant to Croydon Plan Policy EP1. It also provides guidance for the control and prevention of atmospheric pollution.

#### Geographical coverage

Borough-wide.

#### Relationship with other LDDs and the Croydon Plan

This document is compatible with existing SPDs and SPGs (e.g. those for securing sustainable development).

The recent draft Air Quality Expert Group (AQEG) Air Quality and Climate Change report recognises the potential for both local and global air quality improvements. Croydon will be looking towards reductions in both and developers should take this into account throughout the design, construction and operational phases and bear in mind any potential trade-offs between global and local air quality improvements.

### **Sustainability appraisal of this IPG**

This document was initially prepared as a SPD and so subjected to a Sustainability Appraisal (SA) which is a form of assessment which considers the potential implications of the document from a social, environmental and economic perspective and informed its preparation. The process of undertaking SA is mandatory under the 2004 Planning & Compulsory Purchase Act for local development documents in the Local Development Framework (LDF) based on high level plans (i.e. Croydon Plan) that have not

been subjected to SA<sup>1</sup>. There is also an EU Directive which requires a 'Strategic Environmental Assessment' (SEA) of plans and programmes, including development plans. The Department for Communities and Local Government (DCLG) has issued guidance on how to incorporate the two processes. A Sustainability Appraisal Scoping Report was produced following government guidance. Through an assessment of existing plans and proposals, collecting baseline data and identifying sustainability issues specific to Croydon the SA derived a set of objectives designed to promote the creation of sustainable communities. The purpose of the SA is to promote sustainable development through the better integration of sustainability considerations into the preparation and adoption of plans. It is an iterative process that identifies and reports on the likely significant effects of the planning guidance, and the extent to which its implementation will achieve the social, environmental and economic objectives by which sustainable development can be defined..

### **Background**

Clean air is vital to human health. High levels of particulate air pollution are estimated to have caused 1,031 accelerated deaths and 1,088 respiratory hospital admissions in London in 2005 (The Mayor's Air Quality Strategy: Progress Report to March 2005).

The Government adopted the UK Air Quality Strategy (AQS) in 1997 to deal with, amongst other issues, local air quality and its impact on health. This was the initiative that led to the setting of air quality objective levels for various pollutants. The AQS set requirements from the Environment Act 1995 for local authorities to undertake a process of Local Air Quality Management (LAQM). As part of this process, local authorities must review air quality in their areas and assess whether or not air quality will meet their objective levels. Where the prescribed air quality objectives are unlikely to be met, local authorities must designate Air Quality Management Areas (AQMA) and produce an Air Quality Action Plan setting out measures they intend to take to work towards objectives. Under the requirements of the Greater London Authority Act 1999, the Mayor for London produced an Air Quality Strategy setting out how the National Strategy will be implemented in London as a whole. London boroughs' action plans need to have regard to the Mayor's Strategy.

All London boroughs have declared one or more AQMA for nitrogen dioxide (NO<sub>2</sub>) and/or particles (PM<sub>10</sub>). In Croydon the whole borough has been designated as an AQMA because of annual mean levels of NO<sub>2</sub> exceeding the air quality objective. At present, the major cause of air pollution in London is road traffic. However, by 2010 emissions of nitrogen oxides from buildings

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<sup>1</sup> Note: S180 of the Planning Act 2008 amended the Planning & Compulsory Purchase Act, removing the requirement for the SA of SPDs based on high level plans (eg. Core Strategy) for which an SA has been undertaken.

will broadly equal those from road transport, mainly because tighter Euro standards and the LEZ have been put in place to reduce emissions from vehicles but there has been very little concerted effort to reduce emissions from buildings. Other contributions come from industrial plant and premises, and domestic energy production.

#### The current air quality situation in Croydon

Croydon has met and is well placed to continue to meet existing statutory air quality objectives for all pollutants except NO<sub>2</sub>. Away from busy roads, annual average levels of NO<sub>2</sub> are well below air quality objective levels. However, the Council's monitoring of current air quality shows that the air quality objective for NO<sub>2</sub> is not met at roadside monitoring stations and this is likely to remain the case beyond 2010.

Local Authorities are not held responsible by the law if objectives are not met in their area because this can often be outside the direct control of the local authority. However, local authorities are under a statutory duty to work towards achieving the objectives in areas where they are not currently (or will not in the future be) met. Government guidance interprets this as placing a duty on local authorities to take reasonable, proportionate and cost-effective measures to reduce air pollution concentrations by targeting the sources of pollution in their areas and working with other agencies to deal with cross-boundary sources.

#### **2007 revisions to the AQS**

The AQS has undergone a series of reviews since its publication in 1997. The latest version was published in 2007. Although the objective for particles (PM<sub>10</sub>) is currently met in the borough the 2007 AQS introduced a new exposure reduction regime for PM<sub>2.5</sub>, tiny particles associated with respiratory and cardiovascular illness and mortality which have no known safe limit for human exposure. The new regime will, for the first time, attempt to reduce the exposure of all urban dwellers, alongside the existing method of reducing hotspots of PM exposure. This approach will help to improve human health across our towns and cities.

#### **What is this IPG for?**

Because of the increasing relative contribution of non road transport sources of emissions of air pollution to breaches of the air quality objectives and the exposure reduction target, the Council considers that development should play a greater role in improving air quality. In the medium term it is the Council's intention to revise its LDF policies on air pollution to bring about this change. One option that the Council may consult on is a policy in the future draft Core Strategy and/or Development Management DPD for the borough that requires certain developments to have lower emissions of air pollution



than those emitted from a site prior to its redevelopment. In the intervening period, there is a need to update and provide clearer guidance about developments that have impacts on air quality. This **IPG** therefore aims:

- to identify circumstances where an air quality assessment would be required to accompany a development proposal
- to provide technical guidance on the process of assessment to ensure consistency
- to provide guidance on mitigation and monitoring of air quality impacts via planning conditions and Section 106 planning agreements
- to provide guidance on borough-wide or local site-specific measures that could help achieve air quality objectives.

In addition this **IPG** will:

- re-appraise the likely achievement (or otherwise) of air quality objectives beyond 2010 – and in particular clarify the role that development needs to play in helping to deliver the Government's new objectives for exposure reduction for very small combustion particles (PM<sub>2.5</sub>)
- set revised thresholds above which developments require air quality assessments and above which air quality impacts would be considered to be significant
- set out the way in which the Council will treat new polluting technologies such as biomass burners.

### **To what type of development does this IPG apply?**

This **IPG** is intended for use by developers or architects involved in new residential development, new industrial and commercial development, or mixed use development with housing. It is the Council's intention to seek an overall level of high quality development and to allow flexibility in the design of a scheme in view of the constraints and special circumstances of individual sites and a balance of relevant planning objectives. Where developments take place in an AQMA (i.e. the whole borough of Croydon), developers should give very careful consideration to the air quality impacts of their proposed development. Since very few developments are 'zero emission' developments, most development will have a negative impact on air quality. Developers should consider all appropriate measures to minimise emissions of air pollution at the design stage and should incorporate best practice in the design, construction and operation of the development. Where a development has a negative impact on air quality, developers should identify mitigation measures that will minimise or offset the emissions from the development. This is especially important where provision has been made for a large number of parking spaces, where the development will generate a significant

number of trips, or will give rise to other potentially significant sources of pollution.

A key principle of LAQM is for local authorities to integrate air quality considerations with other policy areas, including planning. Planning Policy Statement (PPS23) on Planning and Pollution Control clearly states that air quality can be a material planning consideration. Indeed, PPS23 goes on to state that the planning system should not just seek to maintain the 'environmental *status quo*', rather "planning should become a more strategic, proactive force for economic, social and environmental well-being". It goes on to say, "The planning system plays a key role in protecting and improving the natural environment, public health and safety, and amenity". It is therefore very important for all local authorities to think about how they can best bring air quality considerations into the planning process at the earliest possible stage and it is no longer satisfactory simply to demonstrate that a development is no worse than the existing or previous land use on a particular site.

This **IPG** takes into account new planning policies including PPS23, The London Plan and UDP policies, and aims to help reduce exposure to air pollution across the whole of Croydon. This approach should bring health benefits to everyone - not just those living in localised areas (i.e.hotspots) where the objectives are exceeded. This is particularly important for particulate matter, as this pollutant has a significant impact on health and has no safe threshold. In order to reduce overall exposure, background pollution will need to be reduced, so it makes sense that every development that has the potential to emit pollution should require mitigation or off-setting to help achieve an overall reduction in Croydon's air pollution.

This technical guidance has incorporated work produced by the APPLE (Air Pollution Planning and the Local Environment) working group. APPLE is a working sub-group of the London Air Quality Steering Group (AQSG). The AQSG, which London Councils currently chairs, consists of officers from the GLA, borough air quality officers representing the various sub-regional cluster groupings within London, and an officer from the Environment Agency. It works to disseminate information, share best practice, and manage research projects in the air quality field. The group produced a revised version of the Air Quality and Planning Guidance in January 2007 for London Councils (formerly the ALG) which has been incorporated in this document.

### **How to use this IPG**

This document includes the following important information:

➤ policy requirements: standards and requirements underpinned by policies on the national, regional and local levels. All new developments are required to comply with the relevant policy requirement. (Pink box)

➤ guidance: further guidance, illustrations, further references and information for developers. It is good practice to follow the guidance. (Blue box)

- *Appendix 1:* A summary list of all major standards and requirements and reference documents.
- *Appendix 2:* Technical Appendix – How to carry out an air quality assessment.

### **Status of this document**

This **IPG** is non-statutory planning guidance within Croydon's Local Development Framework (LDF). It has been prepared to supplement the policies and proposals of the adopted Croydon Replacement Unitary Development Plan (UDP) 2006 and the London Plan which together form the development plan for the area. The relevant planning policies are indicated in the beginning of each topic.

This document has been prepared in line with the legislative requirement of the Planning and Compulsory Purchase Act 2004 and associated regulations and guidance. This document is a material consideration when the Council considers planning applications.

If you need a large print version of this document or translation to other languages, please contact the Policy and Strategy Team on 020 8407 1385.

## **2. Planning Policy Context**

### **The planning context**

Guidance relevant to local planning authority's air quality responsibilities is set out in the following planning policy guidance:

#### **Mayor of London. The London Plan: Spatial Development Strategy for Greater London (2004) and Air Quality Strategy (2002)**

The Mayor of London is responsible for strategic planning in London, and his London Plan replaces strategic guidance RPG3. Borough's development plans must conform to the plan. Policy 4A.6 on Improving Air Quality sets out that the Mayor and boroughs should implement the Mayor's Air Quality Strategy to achieve reductions in pollution emissions in the new developments. For example by:

- improving the integration of land use and transport policy by reducing the need for car travel
- setting out criteria for different pollutants, against which plans and policies can be assessed
- ensuring that air quality is taken into account as a material consideration at the planning application stage.

#### **EPUK guidance Development Control: Planning for Air Quality**

This national guidance initially published in 2004 provides a framework for air quality considerations that need to be taken into account in the development control process. The guidance provided a new approach to addressing air quality impacts and helped provide some consistency in decision making processes. In the light of experience using the EPUK guidance, an updated and extensively revised version was published in 2006. The 2006 version contains a wider range of case studies; describes how local authorities have dealt with mitigation in practice; provides examples of how cumulative impacts may be tackled; and provides revised guidance on assessing significance. It takes into account the experience of local authorities and consultants who had used the previous guidance over the intervening years, as well as other relevant recently published documents (such as PPS 23, the London Code of Construction Practice (2005) and the London Councils guidance on air quality and planning (2007)).

#### **Further Alterations to the London Plan (Spatial Development Strategy for Greater London) 2008**

A review of the London Plan initiated by the Mayor of London. The further alterations endorse the intent to improve the quality of the environment in

Croydon including air quality. There are a number of significant changes with relevance to air quality. New draft policies reflect how action can be taken to help mitigate and abate the effects of climate change.

**PPS1**

Planning Policy **Statement** 1 sets out the Government's overarching planning policies on the delivery of sustainable development through the planning system. It states that development plan policies should take account of environmental issues such as mitigation of the effects of, and adaptation to, climate change through the reduction of greenhouse gas emissions and the use of renewable energy; air quality and pollution. The Government has also consulted on a draft PPS which sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and be more resilient to the climate change now accepted as inevitable.

**PPS23 Planning and Pollution Control (2004)**

The Government's policy in relation to planning consideration of air quality is set out in Planning Policy Statement 23 (PPS23): Planning and Pollution Control, and its annex covering pollution control, air and water quality. PPS23 aims to facilitate planning for good quality sustainable development that takes appropriate account of pollution control issues, while avoiding duplication of the existing pollution control systems. The PPS sets out how the planning system can contribute to improvements in air quality. PPS23 advises that any consideration of the quality of land, air or water and potential impacts arising from development, possibly leading to impacts on health, is a material planning consideration where it arises from or affects land use. It also advises that the existing and likely future air quality in an area should be considered in the preparation of development plan documents.

**PPS6 Planning for Town Centres (2005), PPS12 Local Development Frameworks (2004) and PPG13 Transport (2001)**

PPS6 and PPS12 deal with air quality indirectly by promoting sustainable forms of development i.e. development in locations such as town centres that are well served by public transport in order to reduce traffic generation and emissions. Draft revised PPG13 emphasises the importance of local air quality as an "important consideration in the integration of planning and transport" (para 9). It also states the importance of well-designed traffic management as a measure to reduce local air pollution.

**Planning Obligations Circular 05/05**

The purpose of this Circular is to provide guidance on the use of planning obligations in England under section 106 of the Town and Country Planning Act 1990 as substituted by the Planning and Compensation Act 1991.

Planning obligations (or 's106 agreements') are private agreements negotiated, usually in the context of planning applications, between local planning authorities and persons with an interest in a piece of land, and intended to make acceptable development which would otherwise be unacceptable in planning terms. Obligations can also be secured through unilateral undertakings by developers. This Circular replaces Department of the Environment Circular 01/97.

**Planning Conditions Circular 11/95**

This circular sets out guidance on the use of planning conditions for situations that can enhance the quality of the development. Conditions need to be fair, reasonable and practical and meet the tests set out in this document.

**Local Policies**

The UDP policies agreed with Government Office for London and of particular relevance are:

**SP13** The Council will seek to minimise the energy requirements of new developments and will expect the use of renewable energy technologies and sustainable materials.

**EP1** Development that may be liable to cause or be affected by pollution of water, air or soil, or pollution through noise, dust, vibration, light, heat or radiation will only be permitted if:

- (i) the health, safety and amenity of users of the site or surrounding land are not put at risk; and
- (ii) the quality and enjoyment of the environment would not be damaged or put at risk.

The Council will impose conditions, or seek a planning obligation, to implement this policy.

**PERAT Planning emissions and reduction assessment tool (PERAT)**

Because of the increasing relative contribution of non road transport sources of emissions of air pollution to breaches of the air quality objectives and the exposure reduction target, the Council considers that development should play a greater role in improving air quality. It is the Council's intention to consult on a policy in the future draft Core Strategy for the borough that would require certain developments to have lower emissions of air pollution than those emitted from a site prior to its redevelopment. To this end the Council is in the process of developing a simple ready reckoner for use by developers, which will enable them to assess the emissions of the development they are replacing, with the aim of enabling developers to reduce emissions from a

development site relative to its previous or current use. The Council encourages developers to adopt this approach as good practice when assessing the impacts of their proposals on air quality and in identifying mitigation measures.

### **3. Air quality assessments for planning applications**

#### **Introduction**

Where an air quality assessment is required as part of a planning application, guidance is often sought by the applicant as how best to undertake this to the satisfaction of the local authority. This document sets out situations when an assessment may be required and suggests methods of undertaking such an assessment within the Croydon area. It is based on situations unique to Croydon and on the experience of other London local authorities.

#### **Pre Application Discussions**

Pre-application discussions are recognised as a legitimate way to obtain informal views as to the merits of a development proposal. This enables a developer to acquire clear, impartial professional advice, at an early stage, regarding any key issues that should be addressed prior to submitting a formal development proposal. This advice can help to prevent unacceptable schemes from entering the formal planning process and as a result can assist in speeding up the determination of planning applications and improve the quality of the development proposal.

The submission of complete and accurate applications can greatly assist in providing third parties with a clear and concise development proposal on which to make comments. This can help to streamline the consultation and notification process, to the benefit of both applicant and third parties alike. Applications submitted without pre-application discussions or without regard to advice given at pre-application stage will normally be determined as submitted, as officers are unable to entertain significant discussion and negotiation during the consideration of a formal application.

Once an air quality assessment has been completed, the Pollution Service will make a judgement on whether the proposed development is likely to affect air quality or, if it is located in an area of poor air quality, whether the existing local air quality situation would have an impact on the proposed new development. If a development is determined to result in a deterioration of air quality, Croydon will aim to reduce this impact by securing mitigation or off-setting measures that will allow the development to progress. Similarly if a development introduces sensitive receptors into an area of poor air quality, we will expect the developer to ensure all measures are taken to secure an acceptable environment for new receptors.

London authorities have typically used similar assessment methods to each other to fulfil the requirements of the detailed review and assessment process that led to the AQMA designation. For consistency, air quality impact assessments for developments within London should, where possible, follow similar methodologies.



Applicants intending to undertake an air quality assessment should always seek the latest information available on air quality and pollutants of concern from the Council's Pollution Service. Guidance on tools suitable for use within AQ assessments is available in the Department for the Environmental, Food and Rural Affairs (Defra) Technical Guidance note LAQM.TG(09). This guidance is periodically updated as answers to Frequently Asked Questions (FAQs) on the Review and Assessment Helpdesk website ([www.uwe.ac.uk/aqm/review](http://www.uwe.ac.uk/aqm/review)).

### **Developments that require an air quality assessment**

The overall aim of an air quality assessment is to determine whether the development will have an unacceptable impact on air quality or whether the existing air quality environment is unacceptable for the proposed development.

The three main ways a development may have an unacceptable impact are:

1. If the development is likely to cause a deterioration in local air quality (i.e. once completed it will increase pollutant concentrations), especially if this deterioration occurs in an area which already breaches an air quality objective or results in increased levels of particles
2. If the development is located in an area of poor air quality and will expose future occupiers to pollutant concentrations which breach air quality objective levels (or levels below this in the case of sensitive developments such as schools, homes for the elderly, hospitals etc.)
3. If the demolition/construction phase will have a significant impact on the local environment (e.g. through fugitive dust and exhaust emissions).

These three factors highlight as considerations the importance of:

- i. the type of pollutant
- ii. its concentration
- iii. the location
- iv. the exposure period.

Relevant locations depend upon the averaging period of the air quality objective for the pollutant in question. For example, relevant locations for the annual mean air quality objectives are the facades domestic properties and sensitive developments.

The Environmental Impact Assessment (EIA) process is likely to require a detailed study of the effects of a development on air quality, particularly where a development is to take place in the urban environment or in an AQMA. In such cases, the approach set out in this guidance note should be followed. Most proposals for commercial or industrial installations that have the potential to emit pollution (e.g. Part A installations) will also normally require an air quality assessment under the EIA regulations. Small industries, such as Part B installations, may still require an assessment as part of a permit application under the Environmental Permitting (EP) regime, as too would waste handling activities, and the same assessment can often be used to help determine the impact of the development in terms of air quality for a planning application. If for whatever reason, planning permission is being sought in the absence of an assessment having been carried out for a permit application or similar, then the Council will require an assessment to be submitted.

There are likely to be many other situations where developments that do not require a full EIA will never the less warrant an air quality assessment as part of the planning application. Developers should always check with the local authority to determine whether an air quality assessment is required before submitting a planning application.

**Croydon Council considers that the following types of development proposals should normally be accompanied by an air quality assessment:**

- Locality of development – including relevant exposure
- Length of time and scale of demolition/construction phase
- Proposals which are likely to increase traffic levels from the existing base (either through servicing or parking requirements)
- Proposals which may result in increased congestion and lower vehicle speeds than is present on the existing local road network
- Proposals which include the provision of 50 or more vehicle parking spaces (regardless of the current parking provision on the site)
- Developments in ‘street canyons’ or any developments that create street canyons
- Proposals which significantly alter the composition of traffic, in particular increases in heavy duty vehicles or buses
- Proposals for coach and lorry parks, bus stations, depots and distribution warehouses
- Industrial developments with a point source of emission (e.g. developments with a chimney)
- New or significantly upgraded railway lines, roads, signalling, bridges, tunnels or other major infrastructure projects
- Waste handling activities
- Proposals which include biomass combustion for energy generation

- Any other developments which the Council considers likely to have an adverse impact on air quality either directly or indirectly, particularly in sensitive areas.

Developers are encouraged to enter into early dialogue with the Council's Pollution Service, in order to determine the need for an air quality assessment.

#### **4. Mitigation of air quality impacts**

This guidance has been designed to help Croydon Council to identify those developments that are likely to have significant air quality impacts or those developments which are sensitive to air pollution. The Council strongly encourages developers to explore mechanisms to ensure that a development enhances the environment, in line with PPS23. In terms of air quality, this may be through careful design and construction of the development or by securing mitigation or off-setting measures through planning obligations or conditions that will allow the development to go ahead.

##### **Construction phase**

Emissions and dust from the demolition and construction phase of a development can have a significant impact on local air quality, especially from large developments where this phase can take many years. The Council has agreed a Code of Practice Control of Dust and Emissions from Construction and Demolition Sites with adjacent boroughs, which sets out best practical means to control dust and emissions from development. In addition the Mayor of London has published the London Best Practice Guidance: The control of dust and emissions from construction and demolition, which is applicable to larger scale developments. The guidance document can be downloaded free of charge from the GLA website at: [www.london.gov.uk/mayor/environment/air\\_quality/construction-dust.jsp](http://www.london.gov.uk/mayor/environment/air_quality/construction-dust.jsp). The Council will expect developers to have regard to both of these use documents and to incorporate their best practice into construction management plans and other elements of development proposals, in order to minimise the impact from fugitive dust emissions and vehicle exhausts. Where necessary the Council will use planning conditions to minimise air quality impacts from the demolition and construction phase of development.

##### **Design of the development**

Careful consideration should be given to the site and area characteristics of the development, as particular elements of a scheme may be more sensitive to air pollution than others. For example, children's play spaces or housing should be located away from roads with high levels of air pollution. The location and design of buildings can act as a barrier, or mitigate against the adverse impact of air pollution.

Buildings should be constructed to meet "excellent" standards according to the Building Research Establishment Environmental Assessment Method (BREEAM) or Code for Sustainable Homes or EcoHomes. Developers should follow the Mayor's Sustainable Design and Construction Supplementary Planning Guidance, which demonstrates measures to ensure buildings are as low emitting as possible and which protect internal air quality. Many of these measures will also improve energy efficiency and therefore reduce carbon dioxide emissions.

The Council will also consider issues such as ventilation provision and location of opening windows and doors to improve indoor air quality. In the case of tall buildings, mixed use can help make development acceptable by, for example, placing residential use on higher storeys away from air pollution (and noise) at ground level, allowing for balconies and opening windows, while lower floors can accommodate commercial uses where mechanical ventilation and windows that cannot be opened are more acceptable. The outside space is also important and exposure in gardens and roof terraces need to be considered.

### **Building emissions**

The Mayor's SPG on Sustainable Design and Construction highlights the following ways to reduce energy use and hence carbon and air pollution emissions from buildings.

### **Energy efficiency**

The energy efficiency of a building can be improved by its design, choice of materials, plant and equipment. The SAP rating of the building provides a measure of the overall efficiency of a domestic building. Developers also need to take into account Part L of the Building Regulations, which provides guidance on conservation of fuel and power.

### **Renewable energy**

The Mayor of London requires a proportion of energy demand in new development to be generated by renewables on site and several London local authorities also ask for new builds to have a 10% proportion of electricity supplied by renewables. There are many different types of renewable energy technologies available and developers should select the most feasible technology to bring about the greatest reduction in CO<sub>2</sub> emissions, whilst having due regard to any impacts on air quality, for example in the selection of biomass technologies, which are not appropriate in all parts of the borough due to the impacts of their particle emissions unless of a sufficient scale for effective emissions abatement to be technically feasible.

### **Supply of energy**

Developers should consider energy schemes such as tri-generation combined heat and power (CHP), solar water heating, or district heating from the outset. These are more efficient than installing gas central heating or condensing boilers in each dwelling and therefore reduce overall emissions.

Air conditioning can put additional strains on energy consumption and this should be considered carefully. Solar power should be considered in association with any air conditioning, although passive ventilation should always be preferred where possible.

### **Mitigating Climate Change**

This document is primarily concerned with air pollution in Croydon and regionally. However the developer should consider the carbon impacts of his proposals and ensure the air quality and carbon strategies for the development are harmonised as far as possible. Any 'trade-offs' should be brought to the Council's attention.

### **Planning obligations**

Annex 1 of PPS23 describes how s106 agreements can be used to enable developers to provide assistance or support to the local authority to implement actions in pursuit of their Air Quality Action Plans (AQAPs), in order to offset or mitigate against air quality impacts which might otherwise have prevented the development from proceeding and which cannot otherwise be achieved by way of a planning condition.

The following are examples of projects within the Council's AQAP which may be applicable:

- Idling vehicles: developers may be able to assist in the funding of the promotion, publicity and implementation of the Council's programme to prevent vehicles from idling unnecessarily at the roadside.
- South London Freight Quality Partnership (SLFQP): this is a sub-regional programme which, inter alia, seeks to reduce the impact of air pollution from freight transport. The efficient use of freight and logistics in developments in Croydon could be a major factor in improving local air quality. Developers may be able to contribute to the implementation of this programme, either by incorporating elements of the SLFQP's action plans into scheme design or by funding elements of the programme.

The full range of measures in the AQAP can be downloaded from the Council's website at:

<http://www.croydon.gov.uk/contents/departments/democracy/pdf/617342/aqaplan10.pdf>

Any benefits offered by the developer may be a material planning consideration but this will not make a development to which there are fundamental planning objections acceptable.

### **Travel Plans**

All new developments should make provisions to encourage cycling and walking and wherever possible seek submission of Travel Plans that

encourage staff and visitors to use more sustainable modes of transport rather than rely on car use. Measures in a Travel Plan need to produce quantifiable emission benefits and ideally an element of monitoring should be included in the agreement.

Examples of individual measures within a Travel Plan include:

- Secure cycle parking and changing facilities.
- Safe pedestrian routes.
- Facilities for public transport, such as bus stops and lay-bys.
- Management and use of parking spaces, so that priority is given to certain categories of people, e.g. disabled people, people with children, visitors, or cars with more than one occupant, electric or low emission vehicles.
- The removal of parking spaces after a specified period, or when access to the site is improved (e.g. new public transport routes, cycle lanes)
- Car free housing developments.
- The provision of information on public transport, walking and cycling access to the site.
- Details on deliveries to the site, covering specification of vehicles and hours of operation, and specifications for lorry parking and turning spaces; and junction and road layouts.
- Employment of a travel plan co-ordinator for the site with responsibility for monitoring.
- Setting targets on the proportion of employee trips to be made by public transport and other alternative modes of transport.
- Setting up or participating in City Car Clubs for residents or employers.

If a travel plan is proposed by way of mitigation the emissions benefits must be quantified and proposals for monitoring its implementation set out.

#### **Use of clean/alternatively fuelled vehicles**

Promoting the provision of refuelling for alternative fuels such as liquid petroleum gas, liquefied/compressed natural gas, hydrogen, or biogas at local fuel stations, encouraging suitable locations for new refuelling facilities or installing electric vehicle charging points in car parks can encourage people to use cleaner fuelled vehicles. Site operators or occupiers can be required to use clean fuel fleets or restrictions can be placed on them to use specific classes and types of vehicles. They can also be required to monitor the maintenance and carry out emissions testing of the fleet. The benefits to air quality must be quantified if this is used as a mitigation/off-setting strategy.

#### **Low Emission Schemes and Strategies**

All reasonable means to minimise emissions from a scheme should be adopted. Measures may include using opportunities to regulate vehicle

emissions, either in relation to European Emission Standards or CO2 emissions in line with Vehicle Excise Duty Bandings. Consideration should be given to both incentives and disincentives to influence vehicle emissions in both commercial and residential usage. A more holistic approach would consider all types of emissions from a development and there may be opportunities to off-set increased vehicle emissions with reduced energy emissions and vice versa. Guidance on selecting and implementing low emission strategies can be downloaded from [www.lowemissionstrategies.org](http://www.lowemissionstrategies.org)

**Air quality monitoring**

Section 106 agreements can be secured to require the operator or occupier to monitor concentrations of pollutants at off-site locations. London local authorities, including Croydon, have also secured s106 agreements to require developers to contribute to their borough-wide air quality monitoring programmes. In these cases, funding may be sought for the purchase, installation, operation or maintenance of new equipment.

**Other**

The Council will seek to secure appropriate contributions through the Planning Obligation process for any reasonable measure that can help improve air quality, where this can enable development that would otherwise be unacceptable in air quality terms to proceed. This means there will be opportunities to improve air quality, rather than just put monitoring in place. Planning obligations can significantly increase the quality of development. They can secure benefits capable of offsetting the negative impacts of a development.



## **Appendix 1: References**

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## **Appendix 2**

### **Technical Appendix – How to do an air quality assessment**

#### **General principles of air quality assessments**

There are two primary factors that impact upon the AQ assessment of a proposed development, they are; site suitability and impact of the development. Site suitability is very important, especially in the urban environment. It should be recognised that a development in an area that is already exceeding AQ limits could have a detrimental impact upon its residents.

Equally, the impact of the development on the environment needs to be detailed. An air quality impact assessment should clearly indicate the likely change in pollutant concentrations (relevant to the air quality objectives) arising from the proposed development – both during construction and operational phases. It is important that the assessment considers the *difference* in air quality as a result of the proposed development. The assessment of the impact of construction may need to be undertaken qualitatively in many circumstances.

There is no single, definitive method for carrying out a detailed air quality assessment; but the method must be appropriate to both the location and the scale of the development. For some developments, screening models may be acceptable but it should be demonstrated that they work and are suitable for the urban environment. However, many developments will normally require an initial screening followed by detailed dispersion modelling and developers should consult the Pollution Service about their chosen modelling technique to ensure it is appropriate for the air quality assessment.

Consistency is important in all air quality assessments and this guidance note is particularly concerned with air quality assessments where dispersion models are to be used. The scope for inconsistency is greater due to the range of different possible model inputs in such situations.

Where practicable, air quality assessments should take into account the cumulative air quality impacts of other developments, both within the authority and neighbouring boroughs. This will ensure that a realistic scenario of air quality in the AQMA is presented for both the “baseline” and “with development” predictions of the air quality impact of the development.

**An air quality assessment must demonstrate how a development would affect pollution concentrations in relation to health based statutory and**

**proposed air quality standards and objectives.** This would normally involve dispersion modelling to:

- Assess the current air quality situation in the locality (the baseline scenario);
- Estimate emissions of local air pollutants from the development;
- Predict the air quality situation relevant to the air quality objectives *without* the development in place relative to the year of opening and air quality objectives (e.g. 2010 and 2015 EU limit values) – the baseline scenario;
- Predict statistics relevant to the air quality objectives *with* the development in place in the same years.

Modelled baseline scenarios should be checked against the Council's air quality review and assessment, to ensure that they broadly agree. Full explanations should be given for differences in modelling results and assumptions. The factor of greatest importance would be the *difference* in air quality associated with the proposed development compared to the baseline.

### **Choosing a dispersion model**

Dispersion models should be used in almost all cases for large developments, or those developments proposed in areas where air quality is approaching or exceeding the relevant standards. Defra guidance LAQM.TG (09) suggests models that can be used for air quality assessments – it will be beneficial to confirm the selection of the model with the Council. The model should be capable of taking into account all relevant emission sources within the borough, for example; line (major road), area (minor road, domestic heating, individual boilers, commercial etc) and point sources (i.e. chimney stacks) for most assessments. Where relevant the model should be able to determine the effect of height above the ground on air pollutant concentrations, if relevant, for the planning application under consideration.

### **Model input data**

The assessment should provide a transparent account of the modelling undertaken, all assumptions made and input data used. The Pollution Service may request an audit of the assessment, in which case the developer must provide any extra appropriate data requested.

### **Emissions data**

The Greater London Authority (GLA) compiles an atmospheric emissions inventory for London. This inventory is annually updated using best available data and is used as the basis for all London local authorities' air quality review and assessment reports. The most recent version of the London Atmospheric Emissions Inventory (LAEI) should be used for an air quality assessment within Croydon, unless significantly better data are available. Developers can

obtain this inventory directly from the GLA Air Quality Team. Road traffic emission factors are incorporated into the LAEI but can also be obtained from the Emission Factor Toolkit (v2e).

If other emission data is needed for specific situations, such as more recent emission factors on idling, slow speeds or cold starts, they should be shown to be consistent with those used in this inventory. The GLA or local authority should be approached to obtain more information. Except for situations where a distant major source has a significant effect on pollution levels in the area of interest, only major roads and stacks in the vicinity of the development need be included explicitly.

Further information on emissions and atmospheric emissions inventories, can be found in the Defra's technical guidance document LAQM.TG (09).

### **Time-varying emissions**

Traffic flows and speeds, and hence emissions, vary throughout the day. If appropriate, emissions from vehicles should vary within the model, by time of day and by day of week. Where possible, time-varying traffic movements should be based on local information, for instance a local network of automatic traffic counters (ATCs).

The additional density of emissions that occurs during traffic congestion needs to be properly addressed in the assessment. This is particularly important where the proposed development is likely to result in increased congestion or increased queue length.

For industrial processes, these should be modelled to vary in time as would be expected by the authorisation or permit.

### **Supplementary traffic data**

Where a transport assessment (TA) has been prepared for a proposed development, modelled or predicted development traffic flows in the TA should generally be used as the basis for the calculation of "with development" emissions and subsequent model runs. Before an air quality assessment based on a TA is undertaken, the TA should be finalised and approved by the Council's traffic planners, in consultation with the Pollution Service. Otherwise, developers risk undertaking an air quality assessment on the basis of traffic proposals, which may subsequently change, risking the assessment becoming obsolete. By liaising with traffic engineers and dispersion model users, it is usually possible to obtain traffic data in a suitable format to perform an emissions calculation.

Where the proposed development is likely to result in additional congested traffic conditions, the TA will need to provide sufficient information to quantify the times when queuing around junctions is likely to occur. Particular care

should be taken in selecting appropriate traffic speeds. The diurnal traffic profile must be used.

#### Weather data

The format required will depend on the model to be used, and should be checked with the supplier of the dispersion model.

- Weather data should be taken from an appropriate and representative site with a full dataset.
- At least one year of hourly-sequential data should be used.
- In adopting a precautionary approach, it is currently recommended that suitable 'worst-case' met year be used, as well as a 'typical' met year.

#### Model specific data

Depending on the model used and the area in question, there are other parameters that should be agreed prior to modelling being undertaken.

These might include:

- Site surface roughness length (typically 1m to 2m in London)
- Minimum Monin-Obukhov length (certain models only)
- The number and dimensions of any street canyons (streets where pollutant dispersal is adversely affected by surrounding buildings)
- Release height of aggregated sources (grid or volume sources)

#### Background pollution data

Pollution can be carried into London or into the modelled area from non-local sources and this must be taken into account. Validated and ratified monitoring data should be taken from an appropriate background site or from the National Air Quality Archive.

Background air pollution can be accounted for by using urban background data from a nearby monitoring station where the data is sufficiently relevant to the study area. However care should be taken to avoid double counting emissions if the urban background concentrations are used. The monitoring site used for background concentrations should always be outside of the geographical output area of the model being used.

In most cases the same year as the weather data will be used; however, there maybe occasions when data from different years maybe appropriate. The developer should agree in advance with the Pollution Service which background data should be used.

### **Pollutant-specific concerns**

If a development is expected to alter traffic flows, PM<sub>10</sub> and NO<sub>2</sub> would normally be modelled, since motor vehicles are a significant source of each. The whole of the London Borough of Croydon has been declared an AQMA for NO<sub>2</sub> and exceedences are currently measured throughout the borough close to busy roads. Particles are a pollutant of concern because there are no safe levels of PM<sub>10</sub>.

If the development is itself a significant emitter, pollutants relevant to the type of development need to be taken into account (for instance, SO<sub>2</sub> and NO<sub>2</sub> should be considered for an oil-burning process or benzene from a petrol station or refinery).

The results for local air pollutants should be compared against air quality objectives. Any likely exceedences or worsening of air quality as a result of the development must be highlighted.

### **Local Concerns**

Nitrogen dioxide (NO<sub>2</sub>)

NO<sub>2</sub> is derived from NO<sub>x</sub> via a series of complex chemical reactions. An empirical method or a chemistry scheme may be used to derive NO<sub>2</sub> from NO<sub>x</sub>.

- All inputs relevant to the chosen chemistry scheme or a NO<sub>x</sub>: NO<sub>2</sub> conversion scheme should be used (see LAQM.TG(09)) and detailed in the report
- The model's NO<sub>x</sub> outputs should be shown. A full table of outputs should be shown in the appendix, identifying road contributions and total concentrations.

The details of the verification process should also be included.

Fine particles (PM<sub>10</sub>)

The objective for PM<sub>10</sub> is based on a gravimetric measurement. Any PM<sub>10</sub> modelling study should present results as a *gravimetric equivalent*. Projection of PM<sub>10</sub> for future years should follow the Defra guidance LAQM.TG (09).

- PM<sub>10</sub> should be calculated as a gravimetric equivalent.
- Secondary and coarse PM<sub>10</sub> components should be included if relevant
- For biomass PM<sub>2.5</sub> emissions should be stated or modelled if in a relevant area.

Other pollutants

There are other local air pollutants (including those not in the Air Quality Regulations) that may also be relevant to specific developments. The

developer should check with the local authority to determine whether they need to consider the implications of other pollutants or take into account any new air quality objectives. Other pollutants could include:

- Carbon monoxide (CO)
- PAH (poly aromatic hydrocarbons)
- PM<sub>2.5</sub>
- Heavy metals
- Benzene
- Industrial pollutants, e.g. dioxins, halides
- Ozone
- Odours
- Dust

### **Model output area**

The output results should cover the area likely to be affected by the proposed development. For a development that affects traffic movements, the output should cover the area where traffic movement is significantly affected, i.e. as a minimum all the roads included in the transport assessment.

The results produced would normally be in the form of a detailed contour plot of predicted pollutant concentrations and scale of air quality change. A map showing predicted concentrations with the development in place and a map of the *difference* in concentration with and without the development should both be produced. Ideally the grid spacing for any contour plots should not be more than 5 metres, to ensure robust definition.

In certain cases it may be acceptable for the assessment to predict concentrations at a number of carefully selected receptors. The developer should agree the output area, location and number of receptors in advance with the local authority. All receptors should be presented on an appropriately scaled Ordnance Survey map.

In the case of tall buildings, developers may need to consider the vertical as well as the horizontal dispersion of pollutants in terms of model outputs. Developers should consider the surrounding environment of the development; any high level point sources, such as chimney stacks or ventilation outlets, should be identified to ensure that the proposed development does not encroach upon the plume dispersion. Developers should therefore take into account any research, emerging studies or guidance on this matter. For example, the Building Research Establishment (BRE) has produced reports concerning the dispersion of pollutants over a building envelope. Developers should consider such knowledge.



### **Model Verification**

Because of the number of uncertainties associated with dispersion modelling, the performance of the model being used in relation to measured pollution concentrations in a similar environment should be demonstrated. For air quality assessments in Croydon it should be demonstrated as a minimum that the model can adequately predict pollution concentrations in a similar urban environment, preferably within the borough, since model performance may vary from location to location. Where the model is used to predict statistics relevant to the air quality objectives (such as percentiles), the evidence of model performance should also address this. Evidence of this should either be incorporated into the report, or submitted with it.

Wherever possible, it is preferable to verify the model against measured pollution concentrations using the same input parameters as for the air quality assessment. Model verification as described in TG(09) is required. Within London, there are many continuous monitoring sites that may be used to verify a modelling exercise. The transport assessment study area may need to be extended to include these verification sites. Sites within London are normally associated with the Automatic Urban Network (AUN) or the London Air Quality Network (LAQN). The Council collects its own data from five air pollution monitoring stations. This can also be used for any necessary verification work. Review and Assessment reports, and communication with the air quality officer directly, can be used to identify relevant nearby monitoring sites.

- The accuracy in terms of margin of error or uncertainty of the results must be stated explicitly.
- Any scaling factor applied to model outputs (e.g. to adjust results according to observed data) must be clearly stated.
- The model's effectiveness at predicting statistics relevant to the air quality objectives must be demonstrated.

### **Determining significant impacts on air quality**

One of the key concerns with regard to assessing the air quality impact of a development in Croydon is its impact on human health. It is important that an air quality assessment evaluates modelled air quality in terms of changes in pollution concentrations where there is relevant public exposure. The current Air Quality Regulations are concerned with areas that exceed air quality objectives but account should also be taken of the exposure reduction targets set for PM<sub>2.5</sub>. This guidance takes this approach into account, which means that any development that may lead to additional air pollution problems, even if it is outside an area which breaches an air quality objective, could be significant. Officers in the Pollution Service will make a judgement on the likely impact of each development, based on the results of the air quality assessment and their professional experience. We may also consider the

impact of the development on air quality in neighbouring authorities and greater London as a whole.

**Audit trail**

The assessment should provide a transparent account of the modelling undertaken and all assumptions made. Should an audit of the assessment be required, the Council may request extra data.