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## Supplementary Guidance

# Air Quality Management and New Development

2011

## Suffolk Local Authorities

Written by:  
Suffolk Air Quality Management Group

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## **ACKNOWLEDGEMENTS**

This document has been produced by the Suffolk Air Quality Management Group.

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## 1. Introduction

### 1.1 Purpose of the Supplementary Guidance

- 1.1.1 This guidance has been developed by the Suffolk Air Quality Management Group and is aimed at developers, their consultants and Suffolk Local Authority staff. The guidance will help ensure consistency in the approach to planning and dealing with air quality within Suffolk and ensure that it is addressed at the earliest opportunity. Air quality is a material consideration within the planning regime with the potential to affect and influence planning processes for both proposed developments within designated Air Quality Management Areas (AQMAs) or where development within a locality may impact on an AQMA. Limited guidance on dust from construction activities and climate change is also included within this document since both may impact on health and local air quality. Odour requires more specialist attention and further advice should be sought from the Local Authority.
- 1.1.2 This document sets out the circumstances when an assessment may be required and provides details of the information required to undertake such an assessment. It is important that Environmental Practitioners responsible for air quality are made aware as early as possible of development proposals so that air quality considerations can be taken into account early in the development control process.

### 1.2 Aims of the Supplementary Guidance

The two principal aims of this Supplementary Guidance (SG) on air quality are to:

- Maintain and where possible improve air quality
- Ensure a consistent approach to local air quality management and new development across the county by:
  1. Identifying circumstances where an air quality assessment would be required to accompany an application
  2. Providing guidance on the requirements of the air quality assessment
  3. Providing guidance on mitigation and offsetting of impacts

### 1.3 Background and Context

- 1.3.1 Clean air is important for human health and the environment. Air pollution occurs when harmful substances are released into the air. The main pollutants affecting the air in Suffolk are nitrogen dioxide and particulates, but sulphur dioxide, lead, carbon monoxide, ground level ozone, benzene and, 1,3-butadiene are also of concern if emitted at high enough concentrations.
- 1.3.2 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland was first published in January 2000 and establishes the framework for air

quality improvements. The UK Government and the devolved administrations published the latest Air Quality Strategy in July 2007.

- 1.3.3 The aim of the air quality legislation and policy in the United Kingdom is to ensure that the air quality does not cause harm to human health and the environment. To this aim health based standards and objectives and vegetation and ecosystem objectives have been set for a number of pollutants and these are listed in Appendix 1. Improvements in air quality often have co-benefits for climate change and the environment.
- 1.3.4 Local Authorities have a duty to review and assess local air quality under Part IV of the Environment Act 1995. Where a Local Authority considers that one or more of the objectives are unlikely to be met and there is relevant exposure, it must declare an AQMA and develop an action plan setting out measures to work towards an improvement of the air quality in the area. Local Authorities are required to submit all relevant air quality reports to the Department for Environment, Food and Rural Affairs (DEFRA) for acceptance.
- 1.3.5 The designation of an AQMA does not mean that there will be no development allowed within the area, but that greater weight must be given to the consideration and removal of the impacts of any proposed development on air quality. It should be borne in mind when carrying out an assessment that the boundary of the AQMA does not necessarily define the areas of poor air quality. It is important to balance all aspects of development within an AQMA or affecting an AQMA. This applies particularly to development in town centres that may result in additional people, vehicles and polluting processes in the area, but may reduce the need to travel with the benefit of reduced emissions, improved air quality and additional improvements in greenhouse gas emissions.

#### 1.4 Air Quality as a Material Planning Consideration

- 1.4.1 The planning system plays a key role in protecting and improving the environment. Land use planning and development control can become an effective tool to improve air quality by first locating developments in such a way as to reduce emissions overall, and secondly reducing the direct impacts of those developments. Although the presence of an AQMA makes consideration of the air quality impacts of a proposed development more important, there is still a need to regard air quality as a material factor in determining planning applications in any location. This is particularly important where the proposed development is not physically within the AQMA, but could have adverse impacts on air quality within it, or where air quality in that given area is close to exceeding guideline objectives itself.
- 1.4.2 There is an overlap between the planning system and the Environmental Permitting Regime. A single air quality assessment can be carried out to support applications for both planning permission and an Environmental Permit. PPS23 Annex 1 paragraph 1.34 recommends that consideration be given to submitting applications in parallel.
- 1.4.3 Developers should ensure that they, or their consultants, have reference to any relevant documents published by the Suffolk Local Authorities as part of

the Air Quality Review and Assessment Process. Please refer to the Local Authority websites for up to date information on AQMAs currently declared in the county. These websites may also contain an archive of air quality review and assessment reports, source apportionment and action plans published to date. Please check with the Local Authority that all relevant reports are available in this form.

1.4.4 The Government's commitment to the principles of sustainable development were set out in 'A Better Quality of Life – A Strategy for Sustainable Development for the UK', May 1999 and superseded by "Securing the Future-delivering UK sustainable development strategy", in March 2005. Eight principles of particular relevance to planning and pollution control were set out: -

- Taking a long term perspective;
- Putting people at the centre;
- Taking account of costs and benefits;
- Respecting environmental limits;
- Applying the precautionary principle;
- Using scientific knowledge;
- Following procedures which are based on transparency, access to information, effective participation by stakeholders and access to justice; and
- Making the polluter pay.

At the heart of the 2005 Strategy is giving communities the chance to make a difference, spending money to ensure sustainability and demonstrating a commitment to deliver improvements.

Emissions of air pollutants Oxides of Nitrogen (NO<sub>x</sub>), Particulate Matter smaller than 10 microns (PM<sub>10</sub>) and Sulphur Dioxide (SO<sub>2</sub>) are listed as indicators within the UK Framework set that will be used to report progress.

1.4.5 There are a number of ways in which air quality is incorporated into planning and local air quality management guidance. A summary is provided below. This list is not exhaustive but may guide developers to further references:

- Environmental Impact Assessment (EIA) Legislation – EIA is a statutory tool for assessing the environmental impact of certain types of development, and identifying mitigation measures. Schedules 1 and 2 of the EIA Regulations list those projects where an EIA is required.
- Planning Policy Statement (PPS) 23: Planning and Pollution Control, 2004 - PPS23 is intended to complement the pollution control framework. It advises that 'any consideration of the quality of land, air or water and potential impacts arising from development, possibly leading to an impact on health, is capable of being a material planning consideration, insofar as it arises or may arise from any land use'. Air quality, as a material consideration in development control decisions is explained in detail in Annex 1: Pollution Control, Air and Water Quality which explains the background to pollution control legislation and how it interacts with the planning system. PPS23 aims to facilitate planning for good quality



sustainable development, taking appropriate account of pollution control issues, while avoiding duplication of the existing pollution control systems.

- A number of other Planning Policy Statements will be relevant to air quality, such as PPS1: Creating Sustainable Communities and PPS4: Planning for Sustainable Economic Growth (2009)
- EPUK Guidance Document – Development Control: Planning for Air Quality (2010 Update) - This document updates the 2004 and 2006 NSCA guidance, and is specific to local air quality and the development control system. A key element of the guidance is advice on the significance of air quality impacts and impact management. This is a non-statutory guidance document. Further information can be found on EPUK's "Pollution Control Online" web-site relating to land-use planning legislation and policies.
- Local Air Quality Management – This is statutory guidance for use in the Local Air Quality Management regime, under Part IV of the Environment Act 1995. It includes information and advice on air quality and the planning process and has useful information on AQMAs and transport related measures.
- Local Air Quality Strategy – Individual Local Authorities may have developed and adopted their own Air Quality Strategy. Please contact the Local Authority for further information.
- Local Development Framework of the Local Authority where the development is taking place.
- Air Quality Action Plans (AQAP) – Where Air Quality Management Areas have been declared, individual Local Authorities may have developed Action Plans. Please contact the Local Authority for further information.
- The 2008 Planning Act introduced a change in the planning consent regime for major or "nationally significant" infrastructure projects, for example, energy, transport, water and waste. Consent will be granted by the Infrastructure Planning Commission (IPC), rather than by the Local Planning Authority. (Note: the Government's intention is that the IPC will be incorporated into the Major Infrastructure Projects Unit of the Planning Inspectorate and decisions will be made by the Secretary of State)

## 1.5 Processing Planning Applications

1.5.1 It is essential that a two way dialogue is established between Air Quality and Planning Practitioners as follows:

**(i) Pre-application discussions and development briefs:**

Generally the earlier air quality concerns are addressed within the development control process, the less likelihood there is for conflict and contention. It is imperative that the Environmental Practitioners are involved in any pre-application discussions for relevant developments so that requirements for air quality monitoring and the preparation of detailed assessments can be identified. If air quality problems can be identified at

this early stage, the need for costly and time-consuming retrospective redesign and mitigation can be avoided. It is important to ensure that any required transport assessment meets the requirements of the air quality assessment. See Sections 2.3.4 and 2.4 for further guidance.

**(ii) Communications post-application submission:**

The Environmental Practitioner should be advised when applications are received and given the opportunity to make comments on the content. Sufficient time should be allowed for a proper checking of any air quality assessments, whether they form part of an EIA or are submitted separately. Air quality impacts should also be considered when a traffic impact assessment is required. Transport professionals may need to be involved in the process. Particular attention will need to be paid in areas of poor air quality where AQMAs have been, or are about to be, designated and also those which are close to the objectives.

**(iii) Routine Applications:**

Planning Officers will have regard to this Guidance and regular consultations with the Environmental Practitioners should be carried out.

A Checklist of matters to be considered could be drawn up to include air quality. A regular planning application list should be submitted to the Environmental Practitioner.

Ensure that regular contact is established between the departments by personal exchange of information, training and information sessions. Planning Consents should not be used to request that an air quality assessment be carried out. Where required, this should always be included in the Planning Application submission.

Actions required by both the Local Authority and the Developer at each stage of the application are summarised below:

**Table 1- Steps in the Planning Application Process**

<b>Local Authority</b>		<b>Developer</b>
<b>Steps</b>	<b>Actions</b>	<b>Steps</b>
Agree scope of air quality assessment	← Pre-Application discussions →	Scope air quality assessment
Evaluate air quality assessment and any mitigation measures	← Submit air quality assessment →	Carry out air quality assessment identifying significant impacts and any necessary mitigation measures
Advise Planners on significance of impacts		
Set Conditions/S106 Agree Conditions/S106	← Propose Conditions/S106 →	

## 2. Air Quality Assessment

### 2.1 Identifying the Impact of Development on Air Quality

2.1.1 The three main ways that a development may have a significant impact on air quality are:

- (a) If the operational phase of the development is likely to result in a deterioration in local air quality and will increase pollutant levels either directly or indirectly;
- (b) If the development is in an area of poor air quality and will expose future occupiers to unacceptable pollutant levels;
- (c) If the demolition/construction phase will have a significant impact on the local environment.

2.1.2 Areas of poor air quality can be characterised in one of four ways:

- (a) Areas declared as an AQMA;
- (b) Areas adjacent to, or which can affect, a declared AQMA;
- (c) Areas where air quality is poor enough to breach one or more of the AQ objectives but which has not been declared an AQMA due to lack of relevant exposure (see Appendix 1 for relevant pollutant);
- (d) Areas where air quality is poor but objectives are not yet breached. Air quality levels are approaching the AQ objectives.

### 2.2 Developments that Require an Air Quality Assessment

2.2.1 The Local Authority will consider a range of circumstances when determining whether an air quality assessment is required. Some examples of when an air quality assessment may be required are listed in Box 1 below. **This list is not exhaustive and other factors may determine that, in the Local Authority officer's opinion, an air quality assessment is required. Please consult on individual Applications.** For those where a formal EIA is required, there will be a need to assess the impact of other pollutants, along with those pollutants that affect ecosystems and vegetation, where appropriate. Cumulative impacts will also need to be considered.

**Box 1- Examples of when an Air Quality Assessment May be Required :**

**NOTE: If your development falls within any of these criteria please liaise with the local authority to establish whether an Air Quality Assessment is necessary.**

- Proposals that will lead to new rail, road, roundabout, signalling, bridge, or tunnel development;
- Proposals that will result in an increase in vehicle trip generation within the local area, and which will lead to an increase or decrease in traffic volumes (annual average daily traffic (AADT) or peak traffic flow) of 5% on roads with 10,000 AADT or more, or 5,000 or more if narrow and congested. Within AQMAs, all proposals resulting in an increase or decrease of AADT or peak traffic flows of 5%. Baseline information can be obtained from the Suffolk Local Authorities.
- Proposals that will result in increased congestion – this will vary according to location, but can generally be considered to be where there is a build up of traffic preventing efficient movement;
- Proposals that will result in change in average vehicle speed by more than 10kph (6.2mph) than is present on the existing local road network on roads with 10,000 AADT or more (5,000 if narrow and congested);
- Proposals that would significantly alter the composition of traffic (e.g. increase in Heavy Duty Vehicle (HDV – vehicles over 3.5 tonnes) trips such that adverse air quality impacts may arise;
- Proposals that include new vehicle parking of more than 100 spaces outside an AQMA, 50 spaces within an AQMA, or an increase on existing parking provision of 25% or more, or new coach, bus or lorry parks;
- Proposals for new residential development, or intensification of existing residential use, which would introduce sensitive receptors into an area of existing poor air quality, or close to existing sources of air pollutants, including road traffic, industrial sources, etc.;
- Proposals that may impact upon the Local Transport Plan air quality actions, AQMA Action Plan measures, or those actions listed in a Local Authority Air Quality Strategy.
- Local Development Framework sites.
- Proposals in or close to sites with features that are sensitive to nitrogen deposition in designated wildlife sites such as Special Protection Areas, Special Areas of Conservation (SAC), Ramsar sites, designated ecological sites or Sites of Special Scientific Interest (SSSI), County Wildlife Sites, Local Nature Reserves, Roadside Nature Reserves and taking account of the Suffolk

Biodiversity Action Plan where appropriate;

- Proposals forming part of a major phased redevelopment of an area;
- Developments with direct emissions into a street canyon (narrow streets where the height of buildings on both sides of the road is greater than the road width);
- Developments creating a street canyon or that enclose roads and reduce dispersion of pollutants;
- New biomass/biogas boilers greater than 50kW, or Combined Heat and Power Plant (there is no established criterion for the size of plant that might require assessment. Please refer to EPUK's guidance on biomass).
- Developments with significant demolition/construction phases – large long term construction sites that would have a significant impact on AADT, in particular large numbers of HGV movements over a period of a year or more;
- New industrial development (which may include processes governed by the Environmental Permitting regime);

N.B. Not all of the above will be relevant for all applications – please speak to your Local Authority contact. Cumulative impacts should also be considered.

With regard to industrial development, most proposals for industrial developments that have potential to emit pollution will normally require an air quality assessment under The Town and Country Planning (Environmental Impact Assessment)(England and Wales) Regulations or as part of a permit application under the Environmental Permitting (England and Wales) Regulations. In the unusual circumstances where an assessment is not required under the EIA or permitting regimes, the Local Authority may request an air quality assessment as part of the planning process.

### 2.3 Undertaking an Air Quality Assessment

2.3.1 There are a variety of methods of carrying out an air quality assessment. An air quality assessment may be a simple screening assessment using a model suited to an urban environment, or it may be necessary to undertake detailed monitoring and modelling studies. The method selected must be appropriate to the location and nature of the proposed development. If the development requires a detailed study, it is recommended that the developer contacts the Environmental Practitioner to ensure that suitable techniques are used.

2.3.2 Air quality assessments will normally be undertaken using a combination of monitoring and dispersion modelling work and should take account of other committed developments within the locality or surrounding area that may jointly impact on air quality. These committed developments may be in a neighbouring authority area.

2.3.3 An air quality assessment should clearly indicate the likely change in pollutant concentrations arising from the proposed development. There are generally three basic steps:

- Assess the existing air quality situation;
- Predict the future air quality without the development; and
- Predict the future air quality with the development.

2.3.4 Traffic generation is a particularly important factor when considering air quality. It is therefore essential that there is an agreed transport assessment before carrying out the air quality assessment. To avoid delays in the determination of an application it will be useful to discuss these matters with the Local Authority at the earliest opportunity.

## 2.4 Summary of the Key Principles for Carrying Out the Air Quality Assessment

- (i) **Agree traffic data with the Local Authority prior to use within the assessment.** Developers are advised to get any transport assessment or traffic data approved by the Local Authority prior to use in an air quality assessment. If air quality assessments are carried out with unapproved traffic input data, developers risk their air quality assessment being rejected if traffic proposals subsequently change, the data is considered out of date or the data is incorrect.
- (ii) **Choose a model appropriate for the scenario being modelled, having regard to Technical Guidance including LAQM TG09.** There are a number of different dispersion models that may be used. Choice of model must be made on appropriateness to the situation to be modelled, and whether or not the assessment is screening or detailed. It must be capable of modelling all relevant emission sources and be capable of modelling the effect of height where appropriate. We recommend contacting your Local Authority Environmental Practitioner to discuss this further.
- (iii) **Validate the model to measured pollution concentrations.** All of the Suffolk Local Authorities carry out monitoring of nitrogen dioxide using diffusion tubes and/or continuous monitors. Other pollutants may be monitored in specific locations. Upon request the results from these monitoring studies can be made available. It may, however, be necessary for developers to carry out their own monitoring studies depending on the size of development, location, pollutant to be modelled and availability of monitoring for that area. If consultants wish to use their own data then we would require all analysis to conform to best practice – we recommend contacting your Local Authority Environmental Practitioner to discuss this issue further.
- (iv) **Include the effects of local, committed developments both within and outside the Local Authority boundary.** Where practical these should include uncommitted developments that planning officers consider are likely to proceed.

- (v) **Account for background pollution.** The Local Authority may be able to provide monitoring data on background pollutants. Please contact the Local Authority for further information. The National Air Quality Archive data may be used, as appropriate, with the agreement of the Local Authority.
- (vi) **Use appropriate meteorological (MET) data.** One year of MET data would normally be sufficient. Please contact the Local Authority to agree year and MET data requirements in advance of assessment.
- (vii) MET data, emissions, background and monitoring data to all be for the same year.
- (vii) **Model for all relevant pollutants.** If the development is expected to affect traffic flows then model for particulates and nitrogen dioxide. If the development is itself a source of pollution then pollutants relevant to the polluting activity must be assessed, for example benzene from a petrol station development, along with particulates and nitrogen dioxide from the related increased traffic flows. Please contact the Local Authority for further advice as other pollutants may be relevant to heavily trafficked areas or industrial development.
- (viii) **Assess the existing air quality situation.** This can be undertaken from monitoring studies or modelling studies, or a combination of both.
- (ix) **Predict statistics** relevant to the air quality objective without the development in place for the year of development completion.
- (x) **Predict statistics** relevant to the air quality objectives with the development in place for the year of development completion.

Problems can occur where major developments are broken down into a series of smaller planning applications. It will normally be the case that the total impact of the development as a whole will be assessed by the Local Authority officers and as such it is suggested that an air quality assessment is produced for the entire proposed development. The advantage of approaching air quality as a single stage is that it is less costly to carry out one assessment and ensures consistency, which may be reduced if different consultants carry out individual assessments. This approach does however rely on an accurate and detailed prediction of traffic impacts for the whole development being available from the outset.

## 2.5 Dust and Odour

2.5.1 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 taking many years. An impact assessment should be included for dust and contribution to PM<sub>10</sub> levels for developments expected to take one year or more to complete. An impact assessment shall also be undertaken for mineral extraction and waste disposal and recycling sites.

2.5.2 Guidance can be found in the following documents:

- Control of dust from construction and demolition activities, by Vina Kukadia, Stuart Upton and David Hall, BRE and dti, February 2003;
- The control of dust and emissions from construction and demolition, Best Practice Guidance, Produced in Partnership by the Greater London Authority and London Councils;
- Minerals Policy Statement 2: Controlling and mitigating the environmental effects of Minerals Extraction in England, Annex 1 Dust, Office of the Deputy Prime Minister.

This list is for guidance only and is not exhaustive.

2.5.3 Odour emissions may have a significant effect on health. Further advice should be sought from the Local Authority for applications where odour is likely to be a problem such as sewage treatment plants, composting facilities, poultry and pig farms.

## 2.6 Reporting the Air Quality Assessment

2.6.1 In summary, the following information included in Box 2 should be provided as a minimum when reporting an air quality assessment:



## **Box 2 - Minimum Information to be Reported in an Air Quality Assessment**

- Credentials of the consultant undertaking the investigation and the quality control procedures that the document has been subject to.
- Relevant details of the proposed development including a map of the area and basic site layout. Local sensitive receptors should be identified.
- Policy context for the assessment, summarising the national, regional and local policies to be taken into account in the assessment.
- A description of the relevant air quality standards and objectives.
- The basis for determining significance of impacts. The descriptors used to describe impacts should be set out, together with the basis for determining the significance of the air quality impacts.
- A description of the methodology or model used.
- Details of any monitoring undertaken.
- Source of emissions data and details of any extra emissions calculations.
- Input data - sources included, input parameters specific to the model and site, meteorological data with a description of how representative it is of conditions in the vicinity of the proposed development, traffic data, type of plant, stack parameters: height, diameter, emission velocity and exit temperature, choice of baseline year (high or low pollution year), baseline pollutant concentrations, background pollutant concentrations, basis for NO<sub>x</sub>:NO<sub>2</sub> calculations. Whether a road has been treated as a “canyon”. All data should be referenced.
- The years modelled.
- Results of the modelling assessment
- Evidence of model performance or validation results for all traffic modelling.
- Summary of results and assessment against relevant air quality objectives to include identification of whether the development will compromise or render inoperative the measures within an Air Quality Action Plan, where the development affects an AQMA. All working should be to three significant figures. Any rounding of the data should be done after any calculations have been carried out.
- Model output data, on maps where appropriate.
- Impact of demolition and construction stage and a Dust Action Plan, where appropriate.
- Results of odour assessment, where relevant.
- Recommendations for development redesign, mitigation or offsetting, which could include consideration of maximising environmental sustainability (water and energy use).
- Discussion of results.
- Determination of significance.
- Conclusions.

The assessment should provide a transparent account of the modelling undertaken and the Local Authority may request raw data and output sheets from the modelling exercise. It may be appropriate to include details of the

varying contributions of different sources to the concentrations of pollutants (source apportionment) within the air quality assessment.

2.6.2 On receipt, the Local Authority should review the assessment for its adequacy. It is important that the person assessing this adequacy has a full appreciation of the reliability and limitations of methods and data. Box 3 suggests criteria to consider when assessing the adequacy of an air quality assessment.

**Box 3 - Criteria for Evaluating Whether an Air Quality Assessment is Adequate**

<b>Modelling Procedures</b>			
▪	Has an appropriate model been used?	Y/N	
▪	Has the model been appropriately verified?	Y/N	
▪	Are the modelling scenarios and projections appropriate?	Y/N	
▪	Have suitable on and off-site receptors been selected, including those which are 'worst case'?		
▪	Adequacy of input data?	Traffic & emissions data?	Y/N
		Meteorological data?	Y/N
		Background concentrations?	Y/N
		NO <sub>x</sub> :NO <sub>2</sub> relationship?	Y/N
		Other relevant input data?	Y/N
<b>Monitoring Data</b>			
▪	Adequacy of baseline information?	Monitoring locations described?	Y/N
		Relevant exposure considered?	Y/N
▪	Adequacy QA/QC information?	Bias adjustment of NO <sub>2</sub> tubes?	Y/N
		Other QA/QC information?	Y/N
<b>Presentation and Assessment of Results</b>			
▪	Are appropriate pollutants and/or objectives considered?	Y/N	
▪	Have correct units been used?	Y/N	
▪	Do the predicted concentrations and changes in concentrations appear reasonable?	Y/N	
▪	Have the changes in concentrations been adequately described?	Y/N	
▪	Are the impacts assessed in relation to appropriate air quality objectives and EU limit values?	Y/N	
▪	Has the significance of the impacts been described?	Y/N	
▪	Has consideration been given to impacts on neighbouring Local Authorities?	Y/N	
<b>Other Information</b>			
▪	Are the potential impacts described appropriately?	Pollutant sources?	Y/N
		Expected changes to traffic volumes, composition, speed etc?	Y/N
▪	Have construction phase impacts, including duration, activities to be carried out and properties likely to be affected been adequately described?	Y/N	
▪	Have the necessary mitigation measures been described?	Y/N	
▪	Has consideration been given to the likely impacts of the development on the implementation of the Air Quality Action Plan (where one is in place)?	Y/N	

## 2.7 Significance of the Air Quality Impact

### 2.7.1 Assessment of Significance

Significance can be assessed at two stages in the overall process of examining air quality as a material consideration:

- (i) within the air quality assessment using the professional judgement of the authors (see section 2.7.2); and
- (ii) by the Local Authority to evaluate the significance of the air quality impacts, using the professional judgement of its officers, to help it reach a decision on the planning application (See Section 3.).

### 2.7.2 Guidance on the Significance Within the Air Quality Assessment

The main requirement within the air quality assessment will be to describe significance in terms of the change in concentration and the absolute concentration after completion in relation to the air quality objectives. The number of people exposed to the change should also be considered. The magnitude of the changes should be set out and a consistent descriptive explanation given. For many developments, in particular those involving new residential accommodation, the significance of the following impacts should be described separately:

- Impacts of emissions related to the development on existing receptors;
- Impacts of emissions from surrounding sources on new exposure being introduced within the development.

Factors to be used in judging the overall significance are included in Table 2 below:

**Table 2 - Factors Used to Judge Overall Significance**

<b>Factors</b>
<ul style="list-style-type: none"><li>▪ Number of properties affected by slight, moderate or major air quality impacts and a judgement on the overall balance.</li><li>▪ Where new exposure is being introduced into an existing area of poor air quality, then the number of people exposed to levels above the objective or limit value will be relevant.</li><li>▪ The magnitude of the changes and the descriptions of the impacts at the receptors i.e. Tables 3 and 6 findings.</li><li>▪ Whether or not an exceedence of an objective or limit value is predicted to arise in the study area where none existed before or an exceedence area is substantially increased.</li><li>▪ Whether or not the study area exceeds an objective or limit value and this exceedence is removed or the exceedence area is reduced.</li><li>▪ Uncertainty, including the extent to which worst-case assumptions have been made.</li><li>▪ The extent to which an objective or limit value is exceeded, e.g. an annual mean NO<sub>2</sub> of 41 µg/m<sup>3</sup> should attract less significance than an annual mean of 51 µg/m<sup>3</sup>.</li></ul>

An example of one set of descriptors used in air quality assessments is set out in the EPUK guidance and replicated in Tables 3, 4 and 5 below:

**Table 3 - Definition of Impact Magnitude for Changes in Pollutant Concentration as a Percentage of the Assessment Level**

<b><u>Magnitude of Change</u></b>	<b><u>Annual Mean NO<sub>2</sub>/PM<sub>10</sub></u></b>
Large	Increase/decrease >10%
Medium	Increase/decrease 5 -10%
Small	Increase/decrease 1 -5%
Imperceptible	Increase/decrease <1%

**Table 4 - Definition of Impact Magnitude for Changes in Annual Mean Nitrogen Dioxide and PM<sub>10</sub> Concentration**

<b><u>Magnitude of Change</u></b>	<b><u>Annual Mean NO<sub>2</sub>/PM<sub>10</sub></u></b>
Large	Increase/decrease > 4µg/m <sup>3</sup>
Medium	Increase/decrease 2 - 4µg/m <sup>3</sup>
Small	Increase/decrease 0.4 - 2µg/m <sup>3</sup>
Imperceptible	Increase/decrease < 0.4µg/m <sup>3</sup>

**Table 5 - Definition of Impact Magnitude for Changes in Number of Days with PM<sub>10</sub> Concentrations Greater than 50 µg/m<sup>3</sup>**

<b><u>Magnitude of Change</u></b>	<b><u>Annual Mean</u></b>
Large	Increase/decrease > 4 days
Medium	Increase/decrease 2 - 4 days
Small	Increase/decrease 1 – 2 days
Imperceptible	Increase/decrease < 1 day

### 2.7.3 Impact Description

Air quality impacts at specific receptors, in combination with the magnitude of change, should be described using the approach set down in Tables 6 and 7 below. The results should be used to inform the evaluation of overall significance of development.

**Table 6 - Air Quality Impact Descriptors for Changes to Annual Mean Nitrogen Dioxide Concentrations at a Receptor**

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration <sup>a b</sup>		
	Small	Medium	Large
<b><u>Increase with Scheme</u></b>			
<b>Above Objective/Limit Value <i>With</i> Scheme (&gt;40 µg/m<sup>3</sup>)</b>	Slight Adverse	Moderate Adverse	Substantial Adverse
<b>Just Below Objective/Limit Value <i>With</i> Scheme (36-40 µg/m<sup>3</sup>)</b>	Slight Adverse	Moderate Adverse	Moderate Adverse
<b>Below Objective/Limit Value <i>With</i> Scheme (30-36 µg/m<sup>3</sup>)</b>	Negligible	Slight Adverse	Slight Adverse
<b>Well Below Objective/Limit Value <i>With</i> Scheme (&lt;30 µg/m<sup>3</sup>)</b>	Negligible	Negligible	Slight Adverse
<b><u>Decrease with Scheme</u></b>			
<b>Above Objective/Limit Value <i>Without</i> Scheme (&gt;40 µg/m<sup>3</sup>)</b>	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
<b>Just Below Objective/Limit Value <i>Without</i> Scheme (36-40 µg/m<sup>3</sup>)</b>	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
<b>Below Objective/Limit Value <i>Without</i> Scheme (30-36 µg/m<sup>3</sup>)</b>	Negligible	Slight Beneficial	Slight Beneficial
<b>Well Below Objective/Limit Value <i>Without</i> Scheme (&lt;30 µg/m<sup>3</sup>)</b>	Negligible	Negligible	Slight Beneficial

- a See Table 4 for description of changes for annual mean nitrogen dioxide.  
 b An imperceptible change (see Table 4) would be described as 'negligible'.

**Table 7 - Air Quality Impact Descriptors for Changes to Number of Days with PM<sub>10</sub> Concentration Greater than 50µg/m<sup>3</sup> at a Receptor**

Absolute Concentration in Relation to Objective/Limit Value	Change in Number of Days <sup>a</sup>		
	Small	Medium	Large
<b><u>Increase with Scheme</u></b>			
<b>Above Objective/Limit Value <i>With</i> Scheme (&gt;35 days)</b>	Slight Adverse	Moderate Adverse	Substantial Adverse
<b>Just Below Objective/Limit Value <i>With</i> Scheme (32-35 days)</b>	Slight Adverse	Moderate Adverse	Moderate Adverse
<b>Below Objective/Limit Value <i>With</i> Scheme (36-32 days)</b>	Negligible	Slight Adverse	Slight Adverse
<b>Well Below Objective/Limit Value <i>With</i> Scheme (&lt;26 days)</b>	Negligible	Negligible	Slight Adverse
<b><u>Decrease with Scheme</u></b>			
<b>Above Objective/Limit Value <i>Without</i> Scheme (&gt;35 days)</b>	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
<b>Just Below Objective/Limit Value <i>Without</i> Scheme (32-35 days)</b>	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
<b>Below Objective/Limit Value <i>Without</i> Scheme (36-32 days)</b>	Negligible	Slight Beneficial	Slight Beneficial
<b>Well Below Objective/Limit Value <i>Without</i> Scheme (&lt;26 days)</b>	Negligible	Negligible	Slight Beneficial

a See Table 5

The use of descriptors has limitations and the examples given provide some examples of how impacts may be assessed. They are limited to operational impacts and do not cover construction impacts. Professional judgement is therefore required in the interpretation of the air quality assessment significance, and descriptors should be adapted to meet local requirements. It is important that descriptors are applied consistently throughout an air quality assessment report.

### **3. Assessment of Significance by the Planning Authority**

- 3.1. The Local Planning Authority, upon receipt of an air quality assessment, must carry out an evaluation of the significance of the impacts. There is no official guidance on how this should be done and there is no simple method for making a determination that can cover all situations that may arise.
- 3.2 The guidance set out in the following paragraphs is based upon the guidance produced by EPUK (EPUK; Development Control: Planning for Air Quality (2010 update)). EPUK has developed a flow chart approach that has been reproduced in this guidance document at Appendix 2. Also included is a description of recommendations for mitigation following the assessment.
- 3.3 The flow chart starts with the assumption that the air quality impacts have been assessed and quantified. The significance of the impacts is assessed through a series of questions with closed answers. The questions lead to the priority which air quality should be afforded in consideration of the development proposal on a scale ranging from over-riding priority to low priority.

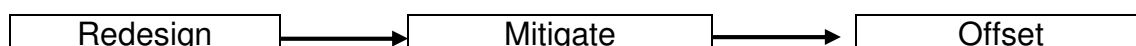
When using the flow chart the Local Planning Authority will consider the following points:

- Air quality has the potential to be a ‘material consideration’ in all planning applications;
- The significance of the impacts will depend on the context of the development;
- The flow chart is equally applicable to a development which increases emissions as to one which increases exposure;
- The weight given to EU Limit Values reflects their status in law;
- An Environmental Practitioner should judge the ‘significance’ of the worsening that will take place.

### **4. Managing the Impact of Development Proposals**

#### **4.1 Mitigation and Monitoring of Impacts**

- 4.1.1 Section 3 of this document explains the assessment of significance by the planning authority. Appendix 2 describes the process used by the Local Authority to make the assessment and lists the recommendations to be followed after assessment. Key to the process is redesign, mitigation and offsetting measures to compensate for, or reduce, the air quality impact.



- 4.1.2 When considering the impact of a proposed development on air quality it is important to recognise that if the impact can be removed or sufficiently mitigated then there would be no reason, on air quality grounds, why the development could not proceed. Where impacts are ‘over-riding’ or ‘high

priority', preference must be given to a fundamental redesign of the project. Where redesign cannot reasonably reduce the significance of the air quality impact, it may be acceptable to mitigate or offset the air quality impact.

- 4.1.3 There are a number of commonly used methods to mitigate or offset against air quality impacts and use of these depends on the nature and scale of the proposed development. Box 4 contains some examples of measures that can form part of a mitigation scheme and developers are encouraged to consider including them in their proposals even when the predicted impact of the development on air quality is not significant. Only zero-emission developments are unlikely to have any impact on local or global air quality and developers should consider mitigation for all developments.
- 4.1.4 Each application must be considered on its own merits.
- 4.1.5 The Local Authority will seek to use Section 106 agreements and planning conditions to mitigate significant detrimental impacts of development on air quality. However, it is important that developers are encouraged to consider mitigation measures, along with their effectiveness at an early stage.

**Box 4: Examples of Redesign, Mitigation and Offsetting**

**Demolition/Construction Phase**

- Barriers
- No bonfires
- No idling vehicles
- Vehicle Wash
- Skip covers/Minimise drop heights
- Wrap buildings to be demolished
- Use of water as a dust suppressant.
- Ensure concrete crusher has permit to operate
- Sustainable water use should be considered.
- Considerate Contractor Scheme

**Sensitive Development**

Redesign of Scheme

- Increase distance between the sensitive development and pollution source.
- Identify the areas of poorest air quality within the site and place least sensitive use in these areas (e.g. bin storage areas).
- Place non-habitable rooms nearest to roadside or pollution source e.g. stairwells, bathrooms, kitchens.
- Place balconies, gardens, communal relaxation areas away from polluted areas.
- Investigate air quality with height. Air quality may improve with height (but not always) and if proven through an air quality assessment, sensitive receptors may be placed on higher storeys.

Mitigation

- Mechanical ventilation in areas of poor air quality with air taken from a (proven) area of good air quality. This is not a desirable option and should be considered as a last resort. If this option is to be progressed the following must be considered:



- Air must be taken from an area of proven good air quality.
- Measures must be put in place to protect the intake of air becoming polluted at a later date (for example if an emission source was placed beside the intake).
- Windows should be non-openable to the polluted façade.
- The mechanical ventilation must be suitable to prevent overheating;
- Energy use must be considered with an emphasis on low energy and green energy usage.
- A maintenance contract will be required.
- A monitoring strategy may be required.

#### Offsetting

- Develop a Travel Plan.
- Contribution towards improvements in public transport, pedestrian and cycle routes.
- Secure cycle parking.
- Contribution to new or improved traffic management measures and/or road infrastructure.
- The management of car parking.
- Contribution to the Air Quality Action Plan or Strategy.
- Contribution to monitoring of air quality.
- Measures during the construction of new development including dust control, site monitoring and plant emissions.
- Section 106 Agreements. The Council will use S106 Agreements and unilateral undertakings to mitigate impacts from new developments that are detrimental to air quality and are in or adjacent to or have a quantifiable impact on air quality in AQMAs by seeking contributions for measures of the type as described above. This list is indicative and is not exhaustive.

#### **Polluting Development**

##### Redesign of Scheme

- Arrange site layout to minimise impact of pollutants on sensitive receptors.
- Consider car free development or limit the number of parking spaces.
- Parking management such as priority parking for disabled, families with young children, cars with multiple occupancy, low emission vehicles.
- Ensure traffic management control systems minimise congestion.
- Avoid emitting pollutants into street canyons or the creation of street canyons.

##### Mitigation

- Secure cycle parking and shower and changing facilities for staff/visitors.
- Use of clean fuel fleet of vehicles in and associated with the development.
- Vehicle maintenance and emission testing regimes for fleets and deliveries to site.
- Improvements in public transport, pedestrian and cycle routes.
- Develop a Travel Plan.

### Offsetting

- Contribute to the actions within the Air Quality Action Plan or air quality monitoring programme.
- Provide ongoing air quality monitoring on and off site.
- Contribute towards improvements in public transport, pedestrian and cycle routes.
- Contribute to allow changes in road design, for example measures designed to reduce congestion.
- Contribution to Green Infrastructure projects

### Section 106 Agreements

- The Council will use S106 Agreements and unilateral undertakings to mitigate impacts from new developments that are detrimental to air quality and are in or adjacent to or have a quantifiable impact on air quality in AQMAs by seeking contributions for measures of the type as described above. This list is indicative and is not exhaustive.

## **5. Climate Change**

- 5.1 Many of the causes of global climate change are intricately linked to local air quality issues. The use of fossil fuels results in the release of carbon dioxide, a key greenhouse gas, and also oxides of nitrogen, particulates and ground level ozone, which impact on local air quality. Many of the measures employed to reduce the emissions of greenhouse gases will result in an improvement in local air quality.

However, there may be situations where measures to improve local air quality may be of detriment to efforts to reduce emissions of greenhouse gases. Wherever possible, both air quality and climate change should be considered side by side in the planning process. Careful consideration must be given to ensure that the benefits for both local air quality and climate change are maximised. A clear statement of impacts (both positive and negative) on air quality and climate change is required with all air quality impact assessments.

**APPENDIX 1****EU AND NATIONAL OBJECTIVES**

<b>Human Health Objectives included in the Air Quality (England) 2000 and in Air Quality (England) (Amendment) Regulations 2002 for the purpose of Local Air Quality Management</b>			
<b><i>Pollutant</i></b>	<b><i>Air Quality Objective Concentration</i></b>	<b><i>Measured As</i></b>	<b><i>Date to be achieved by</i></b>
Benzene	16.25µg/m <sup>3</sup>	Running annual mean	31/12/2003
	5µg/m <sup>3</sup>	Annual mean	31/10/2010
1,3 Butadiene	2.25µg/m <sup>3</sup>	Running annual mean	31/12/2003
Carbon monoxide	10.0mg/m <sup>3</sup>	Maximum daily running 8-hour mean	31/12/2003
Lead	0.5 µg/m <sup>3</sup>	Annual mean	31/12/2004
	0.25µg/m <sup>3</sup>	Annual mean	31/12/2008
Nitrogen dioxide	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31/12/2005
	40µg/m <sup>3</sup>	Annual mean	31/12/2005
Particles (PM <sub>10</sub> ) (gravimetric)	50µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24-hour mean	31/12/2004
	40µg/m <sup>3</sup>	Annual mean	31/12/2004
Sulphur dioxide	350µg/m <sup>3</sup> not to be exceeded more than 24 times a year	1-hour mean	31/12/2004
	125µg/m <sup>3</sup> not to be exceeded more than 3 times a year	24-hour mean	31/12/2004
	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	15-minute mean	31/12/2005
<b>Human Health Objectives not currently included in Regulations</b>			
Particles (PM <sub>2.5</sub> )	25µg/m <sup>3</sup> (target)	Annual mean Urban background exposure reduction	2020
	15% cut (target)		2010 - 2020
PAH (Poly Aromatic Hydrocarbon)	0.25ng/m <sup>3</sup>	Annual average	31/12/2010

## Vegetation and Ecosystem Objectives

<b><i>Pollutant</i></b>	<b><i>Air Quality Objective Concentration</i></b>	<b><i>Measured As</i></b>	<b><i>Date to be achieved by</i></b>
NOx	30 µg/m <sup>3</sup>	Annual mean	31/12/2000
Sulphur dioxide	20 µg/m <sup>3</sup>	Annual mean	31/12/2000
	20 µg/m <sup>3</sup>	Winter average	31/12/2000
Ozone	18mg/m <sup>3</sup>	5 year average of summer 1 hr values AOT 40	01/01/2010

### Definitions:

µg/m<sup>3</sup> = microgrammes per cubic metre of air

mg/m<sup>3</sup> = milligrammes per cubic metre

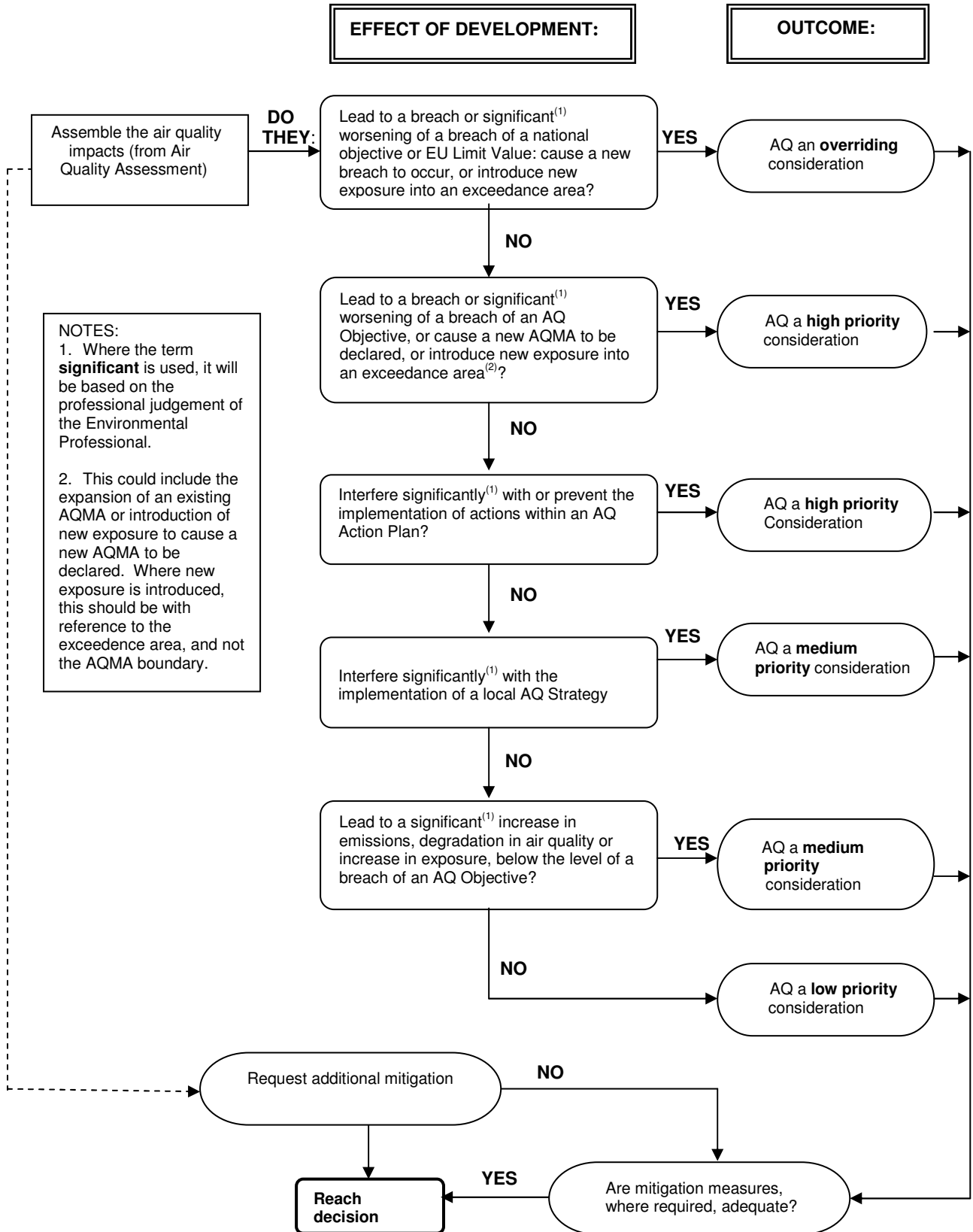
ng/m<sup>3</sup> = nanogramme per metre cubed - there are 1,000,000,000 nanogrammes in one gram

AOT 40 = the sum of the differences between hourly concentrations greater than 80 µg m<sup>-3</sup> (=40ppb) and 80 µg m<sup>-3</sup>, over a given period using only the 1-hour averages measured between 0800 and 2000.

µg = one millionth of a gramme

**APPENDIX 2**

**STEPS FOR LOCAL AUTHORITY TO ASSESS THE SIGNIFICANCE OF AIR QUALITY IMPACTS OF A DEVELOPMENT PROPOSAL**



**Recommendations Following the Assessment of Significance by the Local Authority**

<b>Impact Significance from Flow Chart</b>	<b>Recommendation</b>
Over-riding consideration	Require mitigation measures to remove ‘over-riding’ impacts. If the impact is still ‘over-riding’, there should be a strong presumption for a recommendation for refusal on air quality grounds.
High priority consideration	Ensure that measures to minimise ‘high priority’ impacts are appropriate in the proposal. Recommend strengthening the measures if appropriate. Consideration may also be given to compensation/offsetting. Depending on the scale of the impacts, taking into account the number of people affected, the absolute levels and the magnitude of the changes, and the suitability of the measures to minimise impacts, it may be appropriate to recommend refusal.
Medium and Low priority consideration	It is unlikely that refusal would be recommended, but mitigation measures should be incorporated into the scheme design to ensure that the development conforms to best practice standards, and is “air quality neutral” as far as is reasonably practicable.

## **GLOSSARY OF ABBREVIATIONS**

<b>AADT:</b>	Annual average daily traffic.
<b>AQ:</b>	Air Quality
<b>AQAP:</b>	Air Quality Action Plan: required by a Local Authority to identify and implement actions to work towards reducing concentrations of airborne pollutants to below the Air Quality Strategy objectives.
<b>AQMA:</b>	Air Quality Management Area: a Local Authority is required by the Environment Act 1995 to designate an AQMA where it believes UK air quality objectives prescribed in Regulations (see Appendix 1) will be exceeded.
<b>CO:</b>	Carbon monoxide.
<b>CO<sub>2</sub>:</b>	Carbon dioxide.
<b>DEFRA:</b>	Department for Environment, Food and Rural Affairs: responsible for environment policy, including the production of the Air Quality Strategy for England, Scotland, Wales and Northern Ireland, and the supervision of the LAQM and LAAPC regimes.
<b>DETR:</b>	Department of the Environment, Transport and the Regions. In 2001 DETR's functions were divided between Defra, ODPM and the Department for Transport (DfT).
<b>EA:</b>	Environment Agency (England and Wales).
<b>EIA:</b>	Environmental Impact Assessment.
<b>Environmental Practitioner:</b>	Suitably qualified/experienced Local Authority officer.
<b>EU:</b>	European Union.
<b>HDV</b>	Heavy Duty Vehicles over 3.5 tonnes gross weight (this will include articulated vehicles, buses and coaches).
<b>HIA:</b>	Health impact assessment.
<b>LAAPC:</b>	Local Authority Air Pollution Control: the system introduced in England and Wales by the Environmental Protection Act 1990 for the permitting and control of emissions to air by locally important industrial and commercial polluting processes (Part B processes). More significantly important processes (Part A) are regulated by the Environment Agency, for all media. Modified and largely superseded by the Pollution Prevention and Control (PPC) regime (see below).
<b>LAQM:</b>	Local Air Quality Management: system introduced by the Environment Act 1995 to address local air quality 'hot spots'. Includes the review and assessment process, the designation of AQMAs and the development of action plans. The system is steered through the production of Secretary of State's Guidance notes.
<b>LDF:</b>	Local Development Frameworks (previously Structure Plans) contain Local Development Documents, some of which have development plan status (and therefore subject to independent examination) and Planning Policy Statements (formerly Planning Policy Guidance).

<b>LTP:</b>	Local Transport Plans in England (not including London) provide the funding mechanism by which local highways authorities set out strategies for improving public transport, roads and transport within their authority.
<b>MET:</b>	Meteorological
<b>NO<sub>2</sub>:</b>	Nitrogen dioxide.
<b>NOx:</b>	Oxides of nitrogen: NO <sub>2</sub> is largely a secondary pollutant, being formed by the oxidation of nitrogen oxide (NO) after emission, although some NO <sub>2</sub> is directly emitted, the proportion being due to exhaust treatment technology. NOx is the sum of NO and NO <sub>2</sub> (plus other minor oxides) and is often used to express the emitted pollutant quantity.
<b>NCSA:</b>	National Society for Clean Air and Environmental Protection (recently re-named Environmental Protection UK).
<b>PAH:</b>	Polycyclic Aromatic Hydrocarbon: a complex group of pollutants some of which are powerful carcinogens. Usually represented in concentration terms by the marker compound benzo[a]pyrene (B[a]P).
<b>PM<sub>10</sub>:</b>	Particulate matter with an effective diameter of less than 10 microns (µg).
<b>PM<sub>2.5</sub></b>	Particulate matter can be expressed in a number of different size ranges (PM <sub>2.5</sub> , PM <sub>1</sub> , etc.), most commonly by mass (µg/m <sup>3</sup> ), but also by particle number.
<b>PPS:</b>	Planning Policy Statements will replace the former Planning Policy Guidance notes under the new planning regime.
<b>RAMSAR:</b>	Classification system for wetland type.
<b>SAC:</b>	Special Area of Conservation
<b>SEA:</b>	Strategic Environmental Assessment is a requirement under the Strategic Environmental Assessment Directive 2001/42/EC, requiring the assessment of the effects of certain plans and programmes on the environment.
<b>SO<sub>2</sub>:</b>	Sulphur dioxide.
<b>SG:</b>	Supplementary Guidance
<b>SSSI:</b>	Sites of Special Scientific Interest.
<b>TA:</b>	Transport Assessments consider the potential impact from new development on a transport network. Though not statutory, the requirement for a TA is identified as an important way of reducing traffic, as stated in government Planning Policy Statements.
<b>VPH:</b>	Vehicles per hour.