



Development Control: Planning For Air Quality (2010 Update)



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Updated guidance from Environmental Protection UK on dealing with air quality concerns within the development control process

About Environmental Protection UK

Environmental Protection UK's vision is of a cleaner, quieter, healthier world. We seek changes in policy and practice to minimise air, noise and land pollution, bringing together stakeholders to inform debate and influence decision making. We are a national membership based charity and have been playing a leading role in environmental protection in the UK since 1898.



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Credits

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- Bristol City Council
- The Greater London Authority
- The Institute of Air Quality Management
- Kings College London Environment Research Group
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The discussion of commercially available products within this guidance, such as dispersion models, does not constitute endorsement of any kind. This document represents policy guidance from Environmental Protection UK, and does not necessarily reflect policy within the organisations of those who have contributed to, or were consulted on, its development. Information relating to time relevant items, such as limit values, objectives, draft or other guidance documents, was correct at the time of production.

EXECUTIVE SUMMARY

Environmental Protection UK has produced this guidance to help ensure that air quality is properly accounted for in the development control process.

The spatial planning system has an important role to play in improving air quality and reducing exposure to air pollution. Both the development of local planning policy and the determination of individual planning applications are important, the former setting the framework for the latter. This guidance focuses on development control but also stresses the importance of having good air quality policies within the local development framework.

The guidance deals principally with those pollutants regulated under the local air quality management (LAQM) regime. PM_{2.5} (which is not covered in regulations) is, however, given some attention because of its significant health effects and absence of a safe level for exposure. Mention is also made of nitrogen oxides which, although not covered in regulations, are relevant for assessment of ecosystem impacts.

The main focus of the guidance is on the impact of traffic emissions, although increasingly local planning authorities (LPAs) have to deal with the impact of biomass boilers. The assessment and control of dust impacts during construction is also considered, as dusts contribute to airborne particulate matter, as well as to dust soiling.

Emissions from industrial sources are specifically not included as they are principally covered by the Environmental Permitting regime. Assessments of the air quality impacts of major road schemes are principally covered by the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1 (Air Quality), although some aspects of this guidance may be relevant for these schemes. Greenhouse gas emissions are also not addressed explicitly, as they are covered by other initiatives, but synergies should always be sought between measures to minimise climate change and local air quality impacts. Odours are not included as they apply to a smaller proportion of planning applications and require more specialist attention, drawing on Defra and Environment Agency guidance for specific odour sources (or that produced by authorities in the Devolved Administrations).

Where a proposed development is likely to give rise to significant air quality impacts on the surrounding area or be impacted upon by existing poor air quality, the planning process requires assessment of the impacts and the introduction of measures to minimise any adverse impacts. National planning policy requires particular attention to be paid to development within or close to areas formally designated as air quality management areas (AQMA). In certain circumstances, air quality issues within AQMA may be sufficient for planning permission to be refused, but there is no blanket presumption against development within AQMA.

A key element of this guidance is advice on describing air quality impacts and assessing their significance. An important distinction is drawn between the requirements for the preparation of the air quality assessment submitted with the planning application and its subsequent consideration by the planning authority. For the applicant, the Institute of Air Quality Management has provided descriptors of the air quality impacts at specified receptors, and how to determine their overall significance. Local authority decision makers are provided, as part of this guidance, with a step-by-step approach to help determine the importance that should be placed on the air quality impacts in their recommendations to the planning officer. Impacts are classified as ranging from an 'overriding consideration' through to a 'low priority consideration'. This classification is linked to measures to reduce the impacts.

The importance of early and effective dialogue between developers and planners, as well as between planners and the environmental officers, and the role and importance of mitigation measures and planning obligations, are also explored.

This document updates the guidance originally published by Environmental Protection UK (formerly known as the National Society for Clean Air and Environmental Protection) in November 2004 (and subsequently revised in September 2006). The guidance has been widely used by local authorities, air quality consultants and developers, and lessons learnt over the past five years have led to a number of revisions, which are summarised below. In particular there is greater emphasis on measures to mitigate the impacts.

Summary of Revisions to Guidance

The 2010 version of this guidance takes account of a number of new documents issued since the previous version, including the 2007 Air Quality Strategy. It also takes into account the increased use of biomass boilers. Alongside numerous changes to the text throughout the document, the main changes since the previous version are:

- Definitions of terminology to be used to describe the magnitude of change and impact on air quality at individual receptors, as well as a number of amendments to the criteria for requiring Air Quality Assessments, are provided in the section on Air Quality Assessments (Chapter 5).
- Changes to the way in which the air quality significance of a development should be assessed are set out in Chapter 6. The revised approach relies on the professional judgement of the person carrying out the air quality assessment and underlines the requirement for this person to be appropriately qualified to carry out the assessment. On the other hand, the approach to be taken by the local authority upon receiving the air quality assessment remains unchanged, other than now explicitly referring to developments that introduce new exposure into an area of poor air quality.
- Following feedback, in the main from local authorities, the section on impact management (Chapter 7) has been strengthened to include examples of impact management and conditions relating to planning decisions.
- Examples of appeal decisions relating to air quality are included in Appendix 4.

1. Introduction to the Guidance

- 1.1 New developments have the potential to affect air quality. Where appropriate, the application for the development, which will normally be determined by the local planning authority (LPA)¹, should be accompanied by an air quality assessment. The LPA is tasked with determining these planning applications against a whole range of social, economic and environmental criteria. Air quality may be one of the material considerations, which local authorities have a duty to take into account as part of the decision-making process.
- 1.2 Under separate responsibilities, local authorities are tasked with identifying locations where concentrations of specific air pollutants exceed national air quality objectives. These locations are identified through a detailed air quality Review and Assessment procedure, typically involving a combination of monitoring and modelling techniques. Where exceedences are identified in locations with relevant public exposure the local authority is required to declare an air quality management area (AQMA). AQMAs have predominantly been declared within urban centres; however declarations have also been made in market towns and rural areas alongside motorways and trunk roads. The exceedences are usually found alongside busy roads, but they can also occur in close proximity to specific industrial and other sources². The presence of an AQMA has a particularly important role to play when evaluating the significance of the air quality implications of new developments.
- 1.3 The air quality assessment for a new development will be submitted by, or on behalf of the developer, and is usually prepared by independent consultants. Developers need to have a clear understanding of what is expected of them, and how the air quality assessment will be evaluated as part of the decision-making process. Air quality assessments need to consider the impacts on the surrounding area during both construction and operation, as well as considering whether the air quality is suitable for the proposed use of the site.
- 1.4 Planning Policy Statement 23 (PPS23)³ relating to Planning and Pollution Control provides the national policy context for addressing air quality in England. Similar policy statements exist, or are being developed, in Wales, Scotland (Planning Advice Note 51: Environmental Protection and Regulation) and Northern Ireland. The aim of this Environmental Protection UK document is to provide more specific non-statutory guidance on air quality and the planning system to:
- promote understanding of air quality management and development control requirements;
 - provide a methodology to help planning authorities address air quality issues within development control decisions; and
 - promote a consistent approach to the inclusion of air quality in development control decisions taken by local authorities.
- 1.5 The intended audience for this guidance is air quality and development control professionals within local government, as well as developers and consultants involved in the preparation of development proposals and, more specifically, the associated air quality assessments.
- 1.6 The guidance clarifies when an air quality assessment is required and what it should contain. It sets out how impacts should be described and assessed. Importantly it sets out a recommended approach that can be used to assess the significance of the air quality impacts, taking account of the advice issued by the Institute of Air Quality Management⁴. An important focus of this guidance is on minimising the air quality impacts of all developments for which air quality assessments have been requested by the planning authority; this will be through good design and application of appropriate mitigation measures – examples of the latter are provided.

¹ In some instances, for example for railways and trams, the process involves a Transport and Works Act Order or a Private Bill, and does not involve the local authority planning system. The Infrastructure Planning Commission will determine major infrastructure applications from March 2010 once the relevant national Policy Statement has been adopted.

² See list of local authorities that have declared AQMAs at www.airquality.co.uk/archive/laqm/list.php

³ PPS23 was published in 2004 and is available at: www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement23.pdf

⁴ IAQM 2009, Position on the Description of Air Quality Impacts and the Assessment of their Significance, November 2009. www.iaqm.co.uk/text/News/IAQM_PS_Significance_16_11_2009.pdf

2. Introduction to Local Air Quality Management

- 2.1 The concept of Local Air Quality Management (LAQM) in the UK was introduced with the Environment Act 1995 and in Northern Ireland through the Environment (Northern Ireland) Order 2002⁵. It was seen as the best way to deal with localised “hot spots” of poor air quality that were expected to remain after national and international measures, such as controls of emissions from new vehicles, brought about a general improvement. Key to the implementation of LAQM has been the establishment of air quality ‘standards’ and ‘objectives’ for the principal air pollutants of concern. The ‘standards’ have been set as minimum or zero risk levels, based purely on scientific and medical evidence. Clearly the definition of standards for pollutants such as fine particles, for which there is ‘no safe threshold’, must be somewhat arbitrary. The ‘objectives’ set out the extent to which the UK Government and Devolved Administrations expect the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale.
- 2.2 Health based objectives have been established for nine pollutants, with those for seven incorporated in Regulations for use by local authorities.
- 2.3 The Environment Act 1995 also established the need for a national Air Quality Strategy to be published. The first Strategy was published in 1997, and was updated in 2000, 2003 and 2007. The Strategy provides the policy context for air quality management and assessment in the UK⁶.
- 2.4 The current Strategy sets out proposed measures to work towards achieving the objectives. These measures include technological approaches such as the fitting of abatement technologies to motor vehicles and industrial processes, as well as a range of measures that are designed to change behaviour, such as traffic management, incentives for cleaner vehicles, road pricing etc. A range of “smarter choices” is also included, such as workplace and school travel plans, and the promotion of public transport, cycling and walking. In addition, it is recognised that there are important co-benefits from considering reductions in carbon dioxide emissions at the same time as tackling air pollution.
- 2.5 The LAQM regime requires every district and unitary authority to carry out regular Review and Assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) that identifies appropriate measures that will be introduced in pursuit of the objectives⁷. Such plans require effective collaboration between local authority departments, as well as external agencies and stakeholders (such as the Environment Agency, the Scottish Environment Protection Agency, the Northern Ireland Environment Agency, the Highways Agency and industry⁸).
- 2.6 The adoption of an air quality Supplementary Planning Document (SPD) can strengthen the weight given to air quality considerations within the development control process. The SPD, or other less formal documents, can also guide developers through the local air quality issues of importance when assessing new developments⁹. To ensure the effectiveness of the SPD it should be underpinned by appropriate air quality policies.
- 2.7 Air Quality Strategies, at the local or regional level, also have a significant role to play in the integration of various local authority planning functions (particularly local transport planning and economic development planning) to help improve local air quality. More specific guidance on developing Air Quality Strategies is available within the Environmental Protection UK guidance document on air quality action planning¹⁰ and from statutory Government guidance⁸.

Public exposure

- 2.8 Guidance from the UK Government and Devolved Administrations¹¹ makes clear that exceedences of the health based objectives should be assessed at outdoor locations where members of the public are regularly present over the averaging time of the objective. Table 1 provides an indication of those locations that may or may not be relevant for each averaging period.

EU legislation

- 2.9 A new EU air quality directive (Directive 2008/50/EC) came into force in June 2008, which will be transposed into legislation in England, Wales, Scotland and Northern Ireland by June 2010. This consolidates existing air quality legislation (apart from the 4th Daughter Directive¹³) and provides a new regulatory framework for PM_{2.5}. It also makes provision for Member States to postpone attainment deadlines. The obligation to meet the requirements of the Directive falls primarily upon the Secretary of State for the Environment in England, and appropriate Ministers in the Devolved Administrations, who are designated as the appropriate “competent authority”.
- 2.10 The UK objectives take account of the EU limit values and are either effectively identical, or more stringent. It is thus common practice to focus air quality assessments on the UK objectives. Formal Environmental Impact Assessments (EIAs)¹⁴ will, however, also need to take explicit account of the EU Limit Values; for instance, in preparing a formal EIA in Scotland, the assessment of PM₁₀ should be against the limit values in addition to the Scottish objectives. Furthermore, a formal EIA will introduce the need to assess the impact on PM_{2.5} concentrations, along with those pollutants that affect ecosystems and vegetation where appropriate.

Table 1. Examples of where the air quality objectives should apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objectives would apply, together with hotels. Gardens of residential properties. ¹²	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives would apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend one hour or more. Any outdoor locations at which the public may be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15-minute mean	All locations where members of the public might reasonably be expected to spend a period of 15 minutes or longer.	

⁵ HM Government (1995). Environment Act 1995. London, The Stationery Office.

⁶ Department for Environment, Food and Rural Affairs (Defra) in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, The Stationery Office.

⁷ For authorities rated as excellent the preparation of an AQAP is optional.

⁸ Further guidance on consultation is provided in (Defra 2009) Local Air Quality Management Policy Guidance (PG09).

⁹ Examples of SPDs are available at www.environmental-protection.org.uk/aqplanning

¹⁰ Air Quality Action Plans: Interim Guidance for Local Authorities, NSCA 2000 and Air Quality: Planning for Action, NSCA 2001, both available from Environmental Protection UK.

¹¹ See www.defra.gov.uk/environment/quality/air/airquality/local/guidance/ for Local Air Quality Management technical guidance. Policy guidance is provided by Defra (England and Wales), the Scottish Government and DOE Northern Ireland.

¹² Such locations should represent parts of the garden where relevant public exposure is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied.

¹³ Directive 2004/107/EC (the 4th Daughter Directive) established target values for arsenic, cadmium, nickel and benzo(a)pyrene. There are no objectives for these pollutants prescribed in UK Air Quality Regulations for the purposes of Local Air Quality Management. However, they are relevant for industrial sources of these pollutants.

¹⁴ Carried out as part of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (www.opsi.gov.uk/si/si1999/19990293.htm) or Environmental Impact Assessment (Scotland) Regulations 1999 (www.scotland.gov.uk/library2/doc04/eia-02.htm)

3. Introduction to Planning

- 3.1 This chapter provides a brief overview of the important aspects of land use planning in the context of this Guidance. A more detailed review of the land use planning system in the UK is provided on *Pollution Control Online*¹⁵, a regularly updated online service provided by Environmental Protection UK. An annually updated Pollution Control Handbook is also available. Users of this Guidance are strongly encouraged to read Pollution Control Online, or the most up-to-date version of the Handbook, when issues related to land use planning legislation and policies are important to their requirements.
- 3.2 The development of LAQM over the last decade, and in particular the requirement for local authorities to review and assess air quality, with the subsequent widespread declarations of AQMAs, has ensured that air quality is often a material consideration in the planning decision process.
- 3.3 Planning applications for major developments that are required to have a formal EIA carried out¹⁶ will normally require a detailed assessment of the likely air quality effects arising from the proposed development. However, there are many other circumstances outside of the EIA Regulations when an air quality assessment will be required. The need for air quality assessments and the adequacy of such assessments is considered in Chapter 5. The requirements for Strategic Environmental Assessments are discussed below in paragraph 3.22.
- 3.4 The 2008 Planning Act¹⁷ 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. The IPC will use National Policy Statements (NPS), developed by the UK Government, as the policy framework for their decisions, although there will be an extensive process of consultation for each application. The new system is gradually being phased in from 1st March 2010¹⁸. Until the relevant infrastructure sector is transferred to the IPC, planning consent will continue to be granted by local authorities. The 2008 Act also introduces the Community Infrastructure Levy, which is discussed in Chapter 7. The Act does not apply in Scotland (other than those aspects detailed in Schedule 12 of the Act, which do not include the IPC) and Northern Ireland.
- 3.5 Local authorities will however retain the responsibility for decisions on all other developments. In arriving at a decision about a specific proposed development the local planning authority is required to achieve a balance between economic, social and environmental considerations. For this reason, appropriate consideration of issues such as air quality, noise and visual amenity is necessary. In terms of air quality, particular attention should be paid to the potential for the development to give rise to breaches of the national air quality objectives and of EU Limit Values¹⁹, to whether the development will materially affect any air quality action plan or strategy, and to the overall degradation in local air quality. It is also important to consider whether the development will introduce new public exposure into an area of existing poor air quality.

- 3.6 An overview of the context of air quality and planning at a national, regional and local level is set out in Table 2. The air quality impacts of a planning application will be judged against the policies within these documents. It is therefore important to ensure that the wording of these policies is appropriate for this purpose.

Table 2. Context of air quality and planning

Level	Relevant Documents
National	Planning Policy Statement 23 (PPS23) (England) Planning Advice Note 51 (PAN 51) (Scotland) Planning Policy for Wales Air Quality Strategy 2007
Regional	Regional Spatial Strategy (RSS) Scottish Planning Policies Regional Air Quality Strategy ^a
Local	Local Development Framework (LDF) Core Strategy Supplementary Planning Documents (SPD) Air Quality Action Plans

^a For example the Mayor's Air Quality Strategy in London

Strategic Planning Framework

- 3.7 The Planning and Compulsory Purchase Act 2004²⁰ introduced a plan-led planning system in England and Wales, with more community involvement. It abolished Structure Plans and Local Plans, replacing them with more flexible Local Development Frameworks (LDFs) comprising a series of Local Development Documents (LDDs). These have to have regard to national policy and the Regional Spatial Strategy (RSS). There have been considerable delays in the adoption of the RSSs and the LDFs and most LPAs are still using 'saved' policies from their previous Local Plan.
- 3.8 The 2004 Act required Planning Policy Guidance notes (PPGs) to be replaced by Planning Policy Statements (PPSs), applicable to England only. PPS1 on Sustainable Development describes the principles of the planning system, while PPS23 covers Planning and Pollution Control²¹. PPS23 covers key policies and principles, with a technical annex on pollution control, air and water quality providing more detail. In Wales, planning policy for improving air quality is contained in Planning Policy Wales²² (PPW), Chapter 13, issued in April 2002.
- 3.9 The Planning etc (Scotland) Act 2006²³ amends and replaces much of the Town and Country Planning (Scotland) Act 1997. It introduces a National Planning Framework, establishes Strategic Development Planning Authorities (SPDAs) and a new hierarchy for proposed developments which determines the decision-making process (e.g. for national, major and local developments). Scottish Planning Policies (SPPs)²⁴ provide statements of Scottish Government Policy on nationally important land use matters, and will also replace National Planning Policy Guidelines.

- 3.10 The Planning (Northern Ireland) Order 1991²⁵ provides the main legal basis for planning in Northern Ireland. It has been amended by the Planning Reform (Northern Ireland) Order 2006 which reflects many of the measures in the Planning and Compulsory Purchase Act 2004 (see above).
- 3.11 It is important to include policies relating to air quality into the strategic planning framework at every level (e.g. RSS, LDF and LDDs), as new developments must be considered in relation to these policies. The presence of a suitable air quality policy, or policies, can be particularly useful where a refusal of planning permission leads to an appeal and subsequent public inquiry.

Supplementary Planning Documents and Guidance

- 3.12 Supplementary Planning Documents (SPDs) represent guidance formally adopted by local authorities in England. They provide additional information in relation to specific policy areas within the Local Development Framework. Prior to 2004, they were published as Supplementary Planning Guidance (SPG). Many local authorities have now published SPGs or SPDs on air quality²⁶. Often these draw on information provided in previous versions of this guidance. They generally set out when an air quality assessment is required and what it should include. Some also include criteria for assessing the significance of the impact of a proposed development. These documents are a very useful tool for providing transparent and consistent advice to both development control departments and to developers. They can also provide a benchmark to assess the adequacy of an air quality assessment.
- 3.13 The UK Government considers that both SPGs and SPDs can be taken into account when considering planning applications, and that weight accorded to them will be increased if they have been subject to public consultation. Appropriate air quality policies should, however, underpin the more detailed guidance in the SPD (or SPG) to ensure its effectiveness (see paragraph 3.18).

Planning process

- 3.14 Development proposals may be submitted as outline or full applications. Outline applications should contain sufficient detail to allow the impacts to be properly assessed. Pre-application discussions between developers, or their representatives, and local authorities are encouraged to ensure an application is complete and meets the necessary requirements. The decisions made by local authorities should be made in accordance with the local policies and plans, unless there are material considerations to suggest otherwise²⁷.
- 3.15 The applicant may receive an unconditional permission or, more likely, for those developments requiring an air quality assessment, permission subject to conditions. The application can also be refused. Outline applications will be approved subject to reserved matters. In some circumstances conditions or the reserved matters require an air quality assessment prior to commencement of site

works or occupation/use of a development. This is not good practice as it is unlikely that major changes will take place to mitigate any impacts at this late stage in the design of a new development.

- 3.16 Air quality (and other) impacts can be controlled through the application of planning conditions or through planning obligations (often known as 'section 106 agreements')²⁸. (Within Scotland, Section 75 of the Planning Act (Scotland) allows planning agreements which serve a similar function.) Conditions are specific to the development, while planning obligations can have a wider remit. For instance, a planning condition might be used to require the installation of a suitable ventilation system, while an obligation often requires a financial contribution, for example, to require a "car club" to be set up. Conditions and planning obligations have different legal standing and advice from planners should be sought to determine the appropriate approach to apply to mitigate the air quality impacts of specific developments. Combinations of planning conditions and obligations are now often used to fund Low Emission Strategies (see 7.4).

Material considerations

- 3.17 The planning system recognises that in principle any consideration which relates to the use and development of land is capable of being a planning consideration. Whether or not this is the case will depend on the circumstances of the planning application. Material considerations must be genuine planning considerations, relating specifically to the development and use of land in the public interest. They must also fairly and reasonably relate to the application concerned.
- 3.18 Where a planning application runs counter to relevant local policies, it is not normally permitted, unless other material planning considerations outweigh the objections and justify granting permission. This emphasises the importance of ensuring that appropriate planning policies dealing with air quality are in place. Particular attention is paid to whether such policies are met or not during the planning appeals process. If good air quality policies are in place, either within the LDF Core Strategy or an SPD, air quality issues will be given greater weight compared to other issues, than where there are only weak or no relevant policies.

Air quality as a material consideration

- 3.19 Any air quality issue that relates to land use and its development is capable of being a material planning consideration. However, the weight given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:
- the severity of the impacts on air quality;
 - the air quality in the area surrounding the proposed development;
 - the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and
 - the positive benefits provided through other material considerations.

Chapter 6 explores in more detail how to judge the significance of the air quality impacts of a development proposal, and the likely outcome in terms of planning decisions.

- 3.20 Air quality has increasingly played a part in the determination of planning applications, particularly for developments in AQMAs and other areas identified as having poor air quality. Refusals have led to the decisions being tested at appeal. The outcomes have been varied because each is determined on its own merit, as illustrated in the examples set out in Appendix 4.

Linkages with other relevant issues

- 3.21 Decision makers need to take account of a wide range of potential impacts arising from new developments. In many cases there are linkages between air quality and these other issues. Examples include the use of road humps to limit traffic speeds and improve safety, which can in turn increase emissions due to traffic slowing down and speeding up, and the use of biomass boilers to reduce climate change impacts, which can increase emissions of particulate matter and NO_x. It is important that these linkages are fully understood and taken into account to optimise the opportunities to enhance the sustainability of new developments.

Strategic Environmental Assessment (SEA)

- 3.22 The European Community Directive on Strategic Environmental Assessment (SEA) came into force in June 2001, with the UK Government and the Devolved Administrations incorporating its requirements into law in 2004²⁹. SEA legislation requires national, regional and local authorities to carry out environmental assessments of certain plans and programmes they promote. SEA is an emerging process, which may have implications for improving air quality locally and particularly within the action planning process. Further details can be found at Environmental Protection UK's *Pollution Control Online*³⁰.

¹⁵ See www.pollutioncontrolonline.org.uk

¹⁶ Carried out as part of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (www.opsi.gov.uk/si/si1999/19990293.htm or Environmental Impact Assessment (Scotland) Regulations 1999 (www.uk-legislation.hmso.gov.uk/legislation/scotland/ssi1999/19990001.htm))

¹⁷ www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

¹⁸ The December 2009 routemap is available at www.communities.gov.uk/documents/planningandbuilding/pdf/routemap.pdf.

¹⁹ The duty to meet EU Limit Values for NO₂, PM₁₀, SO₂ etc. is placed on the Secretary of State and not local government.

²⁰ See www.opsi.gov.uk/acts/acts2004/20040005.htm

²¹ See: www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps23/

²² See wales.gov.uk/desh/publications/planning/ppw/ppw2002e.pdf?lang=en

²³ See www.opsi.gov.uk/legislation/scotland/acts2006/asp_20060017_en_1

²⁴ These are being consolidated into a single Scottish Planning Policy (SPP), expected to be published early 2010.

²⁵ See www.planningni.gov.uk

²⁶ Examples available at www.uwe.ac.uk/aqm/review/mplanspd.htm and www.lowemissionstrategies.org/downloads/LES_Good_Practice_Guide_2010.pdf

²⁷ See www.communities.gov.uk/documents/planningandbuilding/pdf/147396.pdf

²⁸ See www.communities.gov.uk/publications/planningandbuilding/circularplanningobligations

²⁹ England www.opsi.gov.uk/si/si2004/20041633.htm

Scotland www.opsi.gov.uk/legislation/scotland/ssi2004/20040258.htm repealed by www.opsi.gov.uk/legislation/scotland/acts2005/asp_20050015_en_1

Wales www.opsi.gov.uk/legislation/wales/wsi2004/20041656e.htm

Northern Ireland www.opsi.gov.uk/Sr/sr2004/20040280.htm

³⁰ See www.pollutioncontrolonline.org.uk

4. Dealing with Planning Applications

Communication, systems and procedures

- 4.1 The first step necessary to ensure that air quality considerations are properly addressed within the development control process is to make sure that good air quality policies are included within the LDF Core Strategy and an air quality SPD is adopted. Without this air quality will not be given the appropriate weight in the decision making process.
- 4.2 The next step is to ensure that systems are in place to allow appropriate consideration of the air quality impacts of new development, by the appropriate personnel, at the appropriate time. To do this, it is essential that two-way dialogue is established between air quality and planning professionals to ensure that:
- the air quality professionals are aware as early as possible of proposals with potential air quality implications;
 - the development control professionals are aware of the importance of air quality in their decision-making processes; and
 - air quality considerations are taken into account in the development control process.
- 4.3 In Northern Ireland, responsibilities for planning and road transport lie with the Planning Service and Road Service respectively, both of which are agencies of the Department of the Environment Northern Ireland. Weekly bulletins from the Planning Service are circulated to relevant Environmental Health Officers, who have the responsibility for determining whether they wish to review and comment upon applications within their area. This is not the case in England, Wales or Scotland.
- 4.4 In England, the Department for Communities and Local Government (DCLG) is responsible for national and regional planning policy, promoting sustainable development in the English regions, and for providing planning guidance for regional and local government alike. Decisions on planning applications (other than major infrastructure projects determined by the Infrastructure Planning Commission) are devolved to local

government. In certain circumstances, the Secretary of State can 'call-in' planning applications for determination, although this step is only taken when planning issues that extend beyond local importance are involved. Such issues may include potential conflict with national planning policy, issues of national controversy or security. The Secretary of State uses the powers of intervention rarely, and will not interfere with the jurisdiction of local planning authorities unnecessarily. The number of applications 'called-in' should reduce with the introduction of the Infrastructure Planning Commission. Within the Welsh Assembly Government, the Planning Division's role, similar to that of DCLG, is to oversee the planning system in Wales, advising the Assembly Minister for Environment, Planning and Countryside of applications requiring intervention. In Scotland, planning is part of the Scottish Government's Directorate for the Built Environment, which plays the equivalent role of England's DCLG. The Planning Service, an agency of the NI Department of the Environment is responsible for the development and implementation of policies and development plans in Northern Ireland.

- 4.5 The actions required by both the local authority and developer at each stage of the application are summarised in Table 3. This highlights the requirement for interaction between parties throughout the application process.
- 4.6 Generally, the earlier environmental protection concerns are addressed within the development control process, the less likelihood there is for conflict and contention. Pre-application discussions usually only take place with respect to significant major developments (i.e. those most likely to have an air quality impact). It is imperative that air quality professionals are involved in such discussions. Clarification as to whether relevant exposure exists, either now or in the future in relation to proposals, can take place at this stage, and the requirement for air quality monitoring or preparation of a detailed air quality assessment made. The final shape of the development may be influenced as much by the outcome of these decisions as by the formal development control process. Therefore, if air quality problems can be addressed at this stage, the need for expensive and time-consuming retrospective re-design or mitigation can be avoided. The

Table 3. Steps in the planning application process^a

Local Authority		Developer
Steps	Actions	Steps
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	← Propose Conditions / S106 →	

^a Based on the process in England; may differ in detail in the Devolved Administrations.

preparation of Supplementary Planning Documents can greatly assist this process by providing the basis by which a development control officer can consider whether pre-application discussions regarding air quality are required.

- 4.7 Development Briefs and Supplementary Planning Documents are often prepared for large sites, in which constraints governing noise, air quality, contaminated land and other issues are described. The development of such documents may require an SEA (see paragraph 3.22). Requirements within the brief might include the location of specific buildings and their distance to major roads, provision and design of footpaths and open space provision. Once prepared for internal use and finalised following internal consultation, a developer would find the document difficult to ignore when developing the site.

Communications post-application submission

- 4.8 Local authorities structure their services in different ways, although in the majority of cases air quality and development control issues are addressed by different officers within different departments and divisions. It is common for the air quality professional to be located within a unit dealing with other environmental protection concerns, such as noise, contaminated land, industrial regulation etc, while development control will be located within a more general land-use planning department. It may also be appropriate for officers dealing with air quality to discuss adequacy of information and possible mitigation measures with colleagues involved in evaluating the Transport Assessment.

Development listing

- 4.9 There are two basic ways in which air quality professionals can be made aware of development proposals. One is by means of a weekly bulletin listing all of the applications for that week. This has the advantage that the air quality officer is, in theory, aware of all new applications, and can pick out those with a likely air quality impact. The majority on the list will, however, have little or no relevance for environmental protection, and those that do will generally be dominated by noise or odour concerns (not considered in this guidance).
- 4.10 A variant on this approach is the electronic logging of planning applications and allowing comments to be made on them. This type of system has the advantage that it allows applications with no air quality significance to be filtered out relatively easily. Both of these systems suffer from the fact that they are somewhat impersonal.
- 4.11 The second basic approach is for development control, possibly through a designated officer, to refer to the air quality professional(s) only those applications which they feel would have a relevant impact. This has the advantage of encouraging the development control officers to consider and recognise the environmental impacts of an application, rather than simply ceding this function to environmental protection. However, there is always the risk that key applications will not be picked up until a much later stage. Given the usual eight week timeframe in which decisions on planning applications are made, it is

important that any commentary in relation to air quality is delivered within the first month of consulting on an application.

- 4.12 Both of these systems, or variants of them, are in place within different local authorities. Neither are ideal, and both suffer from the disadvantage that the environmental protection department is only involved once the application has been made, i.e. not in the pre-application discussions which have a significant part to play in shaping major developments. However, they can be made to work very effectively. In general, what differentiates good efficient systems from those that operate poorly is the quality of the personal contact between the two professionals. In other words, the key is whether the system used is the only contact between the two professions, or whether it is simply a formal support mechanism for more informal information exchange.

Personal information exchange

- 4.13 The value of effective inter-departmental (inter-sectional, etc.) communication, co-operation and information exchange cannot be over-stated. There are potentially very large advantages in mutual understanding if information is exchanged on a person to person basis. This includes the need to involve transportation departments in such discussions as well as air quality officers and planning departments. This is useful, for example, to ensure that the scope of any required Transport Assessment also meets the requirements of the air quality assessment, and vice versa. There are a number of ways in which such exchanges can be set up. One is to establish regular, preferably weekly, surgeries where information can be exchanged. These should be attended by qualified and experienced officers from each relevant department to ensure the correct information is exchanged. Another is for each team to designate liaison officers who meet with each other on a regular basis. Regular mutual training and information sessions could also be arranged, to ensure that environmental protection, transportation and development control departments are kept up to date with the latest local and national policy developments. The overriding aim is that regular contact and mutual understanding is established between the departments.

Planning applications in areas of poor air quality

- 4.14 It is not necessarily the case that a proposed development in an area of poor air quality will have a negative impact. However, it is important to recognise when such development might introduce additional people into an area of poor air quality.
- 4.15 Areas of poor air quality may need to be considered in one of four ways:
- as areas which have been declared as an AQMA;
 - as areas adjacent to a declared AQMA;
 - as areas where concentrations are close to an air quality objective and the proposed development (or other

planned developments in the area) could lead to breach of that objective; and

- as areas where air quality is poor enough to breach one or more of the air quality objectives, but which has not been declared an AQMA due to previous lack of exposure.

The LAQM process should ensure that information on such areas is readily available to the local authority.

4.16 PPS23, for example, states clearly that not all planning applications for developments inside or adjacent to AQMAs should be refused, even if the development would result in a deterioration of local air quality, as such an approach could sterilise development. The declaration of an AQMA therefore does not mean that there will be a complete ban on development within that area. Rather, it means that greater weight must be given to the consideration of air quality impacts and their mitigation. This should address not only the impacts in the immediate vicinity of the development but also the wider impacts on air quality within the AQMA.

4.17 It is also relevant to bear in mind that the boundary of an AQMA does not necessarily define the limit of the area of poor air quality. The only constraint on the definition of the AQMA boundary is that it should be at least as large as the area of likely exceedence, where there is relevant exposure. In many instances local authorities have declared the entire administrative area as an AQMA. In these instances, the mere fact that a development is within or close to an AQMA does not mean that it is necessarily affecting an area of exceedence of the objective(s), nor that it is being affected by air pollution that exceeds the objective(s). On the other hand, where an AQMA only covers part of the administrative area, it should be borne in mind that the development could be introducing new exposure into an area of poor air quality, which has not been identified and declared an AQMA, as previously there was no relevant exposure.

4.18 It is important to balance all aspects of development within an AQMA. For example a new residential development in the central area of a town or city may increase the number of people exposed to poor air quality. On the other hand, there may be social and economic benefits arising from the regeneration of the area. Moreover, if the development is close to a main shopping or employment area, there may be a reduction in the need to travel by car, with a corresponding potential to reduce emissions if people who previously travelled into the area by car no longer do so, leading to an improvement in air quality. There may also be benefits in terms of a reduction in emissions of greenhouse gases, although a fully balanced consideration of this would be needed.

4.19 However, the case outlined above does not mean that the immediate air quality impacts of the development can be dismissed. Local planning processes can assist with off-setting³¹, removing or reducing the impacts of development. As such, 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.

4.20 Planning Policy Statement 1 (PPS1)³² sets out the general principles of the planning system and states that 'both planning policies and planning decisions should be based on (paragraph 19):

- up-to-date information on the environmental characteristics of the area;
- the potential impacts, positive as well as negative, on the environment of development proposals (whether direct, indirect, cumulative, long-term or short-term), and
- recognition of the limits of the environment to accept further development without irreversible damage'.

4.21 Air quality will invariably be raised as a potential material consideration where a development is being proposed within an AQMA. However there will be other situations where air quality will be a material consideration even for developments not within an AQMA. This will include situations where the development might impact on air quality within a nearby AQMA due, for instance, to increased traffic or to a biomass boiler. It should not be forgotten that odours and dusts can also be material air quality considerations, although these are not explicitly covered in this guidance.

Potential for new air quality management areas

4.22 Particular attention should be paid to applications within areas with poor air quality that may give rise to the need for a new AQMA. This would require the preparation of a new action plan or the extension of an existing action plan. The authority's air quality Review and Assessment reports should help identify such areas. Consultation with air quality officers within the local authority may also highlight further potential air quality issues relevant to the development site.

³¹ Off-setting is defined as mitigation measures that don't directly mitigate impacts of the scheme but would generally improve air quality elsewhere, for example contributions to an air quality action plan, or Travel Plan

³² www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps1/

5. Air Quality Assessments

5.1 Where a development requires an air quality assessment this should be undertaken using an approach that is robust and appropriate to the scale of the likely impacts. One key principle is that the assessment should be transparent and thus, where reasonable, all input data used, assumptions made, and the methods applied should be detailed in the report (or appendices).

The need for an air quality assessment

5.2 Air quality assessments may be required as part of a formal EIA for a major development, or as a stand-alone air quality report submitted in support of a planning application. The same general principles will apply to both types of air quality assessment and thus both are covered by the guidance in this Chapter. In all cases the extent of the assessment required should be commensurate with the potential significance of the impacts. It may be possible to scope out certain impacts at an early stage.

5.3 As a general rule, an air quality assessment will be required where the development is anticipated to give rise to significant changes in air quality. This will require an element of professional judgement. These changes may arise during both the construction and operational phases. There will also be a need to assess air quality implications of a development where a significant change in relevant exposure is anticipated, such as when new residential properties are proposed in an area known to experience poor air quality.

5.4 The decision as to whether or not an air quality assessment is required should take into account:

- the physical characteristics and scale of the proposals;
- the changes in traffic flows predicted to arise;
- the proposals for Combined Heat and Power (CHP) plant or stand alone boilers burning biomass; and
- the air quality sensitivity of the area (a highly sensitive area would be one where concentrations are above or close to the objectives; if concentrations are well below the objectives, then the area would be of lower sensitivity).

While the focus of this guidance is on residential and mixed use developments and developments giving rise to increased traffic, air quality assessments will also be required for industrial developments where the installations are permitted under the Environmental Permitting Regulations (England & Wales; PPC Regulations, Scotland & N. Ireland) and for major road schemes, although these will primarily be assessed using the DMRB. Assessment may also be required for other smaller industrial processes, such as those regulated under the Clean Air Act, depending upon local circumstances. A residential development proposed close to an existing industrial source of pollution, including odours, may also require an air quality assessment. These latter requirements for air quality assessments are not addressed explicitly within this chapter.

5.5 Professional judgement will be required when deciding whether an air quality assessment is necessary, as it is not possible to apply an exact and precise set of criteria to cover all development proposals. It will be important to take into account current air quality conditions and the location of relevant exposure, as well as the potential impacts when requesting an air quality assessment.

5.6 The following criteria are provided to help establish when an air quality assessment is likely to be considered necessary:

- Proposals that will generate or increase traffic congestion, where 'congestion' manifests itself as an increase in periods with stop start driving;
- Proposals that will give rise to a significant change in either traffic volumes, typically a change in annual average daily traffic (AADT) or peak traffic flows of greater than $\pm 5\%$ or $\pm 10\%$, depending on local circumstances (a change of $\pm 5\%$ will be appropriate for traffic flows within an AQMA), or in vehicle speed (typically of more than ± 10 kph), or both, usually on a road with more than 10,000 AADT (5,000 if 'narrow and congested'³³);
- Proposals that would significantly alter the traffic composition on local roads, for instance, increase the number of HDVs by say 200 movements or more per day, due to the development of a bus station or an HGV park (professional judgement will be required, taking account of the total vehicle flow as well as the change);
- Proposals that include significant new car parking, which may be taken to be more than 100 spaces outside an AQMA or 50 spaces inside an AQMA. Account should also be taken of car park turnover, i.e. the difference between short-term and long-term parking, which will affect the traffic flows into and out of the car park. This should also include proposals for new coach or lorry parks. These criteria are designed to trigger the requirement for the assessment of traffic on the local roads. It may also be appropriate to assess the emissions from within the car park itself;
- Developments which may significantly affect nitrogen deposition to sensitive habitats;
- Introduction of new exposure close to existing sources of air pollutants, including road traffic, industrial operations, agricultural operations etc;
- Proposals that include biomass boilers or biomass-fuelled CHP plant (there is no established criterion for the size of plant that might require assessment. Reference should be made to Environmental Protection UK's guidance on biomass³⁴);
- Consideration should be given to the impacts of centralised boilers or CHP plant burning other fuels (e.g. gas or oil) within or close to an AQMA.
- Proposals that could give rise to potentially significant impacts during construction for nearby sensitive locations, e.g. residential areas, areas with parked cars and commercial operations that may be sensitive to dust;
- Large, long-term construction sites that would generate large HGV flows (>200 movements per day) over a period of a year or more.

- 5.7 Some local authorities have developed more specific criteria, based on local concerns and circumstances; these criteria are published within Supplementary Planning Documents or informal advisory notes to developers. Examples of these documents can be downloaded from Environmental Protection UK's website³⁵.
- 5.8 Assessments may not be required in all cases, and will depend upon local circumstances. Equally, there may be circumstances where an assessment is required even though the changes are below those shown above. Clearly a balance must be struck between burdening developers with unnecessary assessments, and ensuring that all significant impacts are quantified. It is recommended, however, that in most instances the balance should err on the side of caution and an air quality assessment should be required.

Content of an air quality assessment

- 5.9 The intent of an air quality assessment is to demonstrate the likely changes in air quality or exposure to air pollutants, as a result of a proposed development. Where possible these changes will be quantified, although in some instances a qualitative assessment will be required. Ultimately the planning authority has to use this information to decide the "significance" of the air quality impacts, and thereby the priority given to air quality concerns in determining the application. The assessment therefore needs to provide sufficient information to allow this decision to be made.
- 5.10 It is important that an agreement is reached between the applicant and the local authority as to the proposed assessment methodology. The basis of the assessment should be to compare the air quality following completion of the development with that expected at that time without the development. Comparison with existing conditions will also be required, as current conditions are those with which people are familiar. There are thus three basic steps in an assessment:
- (i) Assess the existing air quality in the study area (existing baseline);
 - (ii) Predict the future air quality without the development in place (future baseline);
 - (iii) Predict the future air quality with the development in place (with development).
- 5.11 The report prepared detailing the results of the assessment should contain the following information:
- a) **Relevant details of the proposed development.** A description containing information relevant to the air quality assessment should be provided, although a fully detailed description of the proposal is not required. This should identify any on-site sources of pollution and an overview of the expected traffic changes or the changes in emissions from the site for a specified year, e.g. the opening year or year the project is completed if phased. A brief introduction to the sensitivity of the area should also be provided, noting the presence of an AQMA and other sources that may affect the site. The proposed location of any sensitive receptors in relation to these nearby sources should be described. An introduction to the pollutants and sources to be assessed should be provided and if appropriate those scoped out of further assessment.
 - b) **The policy context for the assessment.** This should summarise the national, regional and local policies that should be taken into account in the assessment.
 - c) **Description of the relevant air quality standards and objectives.** Most air quality assessments will be carried out to assess compliance with UK air quality objectives, but EU limit values are also important because there is an absolute duty on the UK government to ensure compliance with them.
 - d) **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.
 - e) **Details of the assessment methods.** This section should provide details of the methods, including the model and the input data used for the assessment and any assumptions that have been made. Where a commonly applied method is used, a detailed description of the model is not required. However, details should be provided on all local input data and assumptions, including, for traffic assessments the:
 - traffic data used in the assessment;
 - source of the emission data, with details where non standard data are used;
 - source of the meteorological data, with a description of how representative they are of the conditions in the vicinity of the proposed development;
 - baseline pollutant concentrations;
 - background pollutant concentrations;
 - choice of baseline year;
 - basis for NO_x:NO₂ calculations; and
 - other relevant input parameters used, e.g. whether a road has been treated as a 'canyon'.
- And for point source emissions the:
- type of plant;
 - source of emissions data and actual emissions assumed;
 - the stack parameters, height, diameter, emission velocity and exit temperature;
 - source of the meteorological data, with a description of how representative they are of the conditions in the vicinity of the proposed development;
 - baseline pollutant concentrations;
 - background pollutant concentrations;
 - choice of baseline year;
 - basis for deriving NO₂ from NO_x.

- f) **Model verification.** This will be required for all traffic modelling, but is not normally appropriate for point-source modelling. Model verification involves a comparison of the predicted versus measured concentrations, and allows an adjustment to be made to account for systematic errors. Such errors may include traffic flow uncertainties, vehicle emission estimates and estimated background concentrations. Model verification will be important, especially where predicted concentrations are close to the objective and should be based on the most appropriate available data (for some schemes it may be necessary to carry out specific monitoring to allow robust model verification to be undertaken). A more complete description of the approach to model verification is provided in LAQM.TG(09)³⁶. Full details of the verification should be provided in the assessment.
- g) **Identification of sensitive locations.** Local receptors should be identified, including residential and other properties close to and within the proposed development, as well as alongside roads significantly affected by the development, even if well away from the development site, and especially if within AQMAs. These receptors will represent locations where people are likely to be exposed for the appropriate averaging time (dependent on the air quality objective being assessed against). Ecologically sensitive areas should also be identified.
- h) **Description of baseline conditions.** The findings of any site visit(s) and/or desktop investigations will be set out, noting sources that may affect local air quality. A description of available monitoring data will be important to help define baseline conditions and put the model results into context. Where monitoring data are included in the report, it will be important to include details of the monitoring locations, the monitoring method, sampling period, data capture and any adjustments applied to the data, such as diffusion tube bias adjustment factors.
- i) **Assessment of impacts.** Results of modelling the 'with development' scenario should be clearly set out in tables, and where appropriate as concentration contours on maps of the study area. Comparisons should be made with the 'no development' conditions. Differences in concentrations between 'with development' and 'no development' conditions should also be tabulated.
- j) **Description of construction phase impacts.** These impacts will relate primarily to dust emissions, which give rise to dust soiling and elevated PM₁₀ concentrations, although construction plant and vehicles may sometimes need assessment. The assessment should take into consideration the likely activities, duration and mitigation measures to be implemented. The distance over which impacts are likely to occur and an estimate of the number of properties likely to be affected should be included. This assessment will invariably be a subjective assessment due to the difficulty of realistically defining emissions to allow modelling.
- k) **Mitigation measures.** In those cases where significant impacts are identified then the measures to be employed to avoid, reduce and, if possible, offset significant adverse effects should be set out. Even where impacts are judged to be insignificant, consideration should be given to application of measures, in line with current best practice. This is especially the case for developments that increase emissions of particulate matter, as there is no safe level for exposure, and all reductions in emissions will be beneficial.
- l) **Summary of the assessment results.** This should include:
- impacts during the construction phase of the development (usually on dust soiling and PM₁₀ concentrations);
 - impacts during operation (usually on concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5});
 - any exceedences of the air quality objectives or EU air quality limit values arising as a result of the development, or any worsening of a current breach (including the geographical extent);
 - whether the development will compromise or render inoperative the measures within an Air Quality Action Plan, where the development affects an AQMA;
 - the significance of the impacts identified; and
 - any apparent conflicts with planning policy.
- 5.12 In some cases the likely changes in the population exposed to concentrations above the objective over time should also be included in the assessment, particularly where new receptors are being introduced into an area of high pollution.
- 5.13 Most assessments are carried out for the first year of occupation of the proposed development, as this will generally represent the worst-case scenario. This is because concentrations are predicted to decline in future years, due principally to ever more stringent controls on emissions from new vehicles. However, where development is phased it will also be appropriate to assess conditions for the opening years of each new phase.

Agreement of datasets and methodologies

- 5.14 Before undertaking an assessment, every effort should be made to obtain agreement between the planning authority, and whoever is to undertake the assessment, on the appropriate datasets and methodologies to be used, as described above.
- 5.15 It is important to recognise that the focus of the procedures used by local authorities to prepare their Review and Assessment reports is designed specifically for the purpose of identifying whether any air quality objectives are likely to be exceeded. An air quality assessment for a development will need to go beyond this, especially in a formal EIA, with attention given to defining the magnitude of the changes that will take place, even where objectives are not exceeded. The technical guidance to help local authorities carry out their LAQM duties, nevertheless, sets out useful information on carrying out an air quality assessment, especially the Appendices to LAQM.TG(09).
- 5.16 In some cases it may be appropriate to carry out a short period of air quality monitoring as part of an air quality assessment. This may be particularly helpful where new

relevant exposure is proposed in a location with a complex road layout and/or topography, which may be difficult to model, or where there are no data available to verify the model. Monitoring should ideally be carried out for a minimum of six months using a methodology and locations agreed with the local authority. Where monitoring is carried out for less than a year, the results will need to be adjusted to an annual mean equivalent using the methodology described in the Technical Guidance, LAQM.TG(09). This will add to the uncertainty associated with any model verification and adjustment, and this should be recognised.

Selection of modelling methodology

5.17 Modelling is the principal means by which impacts arising from a development can be assessed, especially those impacts associated with road traffic emissions and those associated with point source emissions, such as biomass boilers.

Traffic emissions modelling

5.18 A number of models are available to assess traffic impacts. They can be broken down into three main types:

- a) **Screening models.** These are generic approaches based on a limited number of variables that are intended to assess whether an air quality problem exists and if a more detailed assessment is required. Such methods are particularly useful when comparing different scheme options. However, they are unlikely to be appropriate where there are significant topographical features or a complex road layout. The Design Manual for Roads and Bridges (DMRB)³⁷ is the main road traffic screening method used. An updated version of this model is expected to be released in 2010. As with all models the results should be verified against local monitoring data, where possible.
- b) **Local scale dispersion models.** These enable the emissions from the local road network or from specific area sources, e.g. car parks to be modelled. The local background concentrations are added to the modelled values to predict the total concentrations at each location. Typical examples are ADMS-Roads, ADMS-Urban, the Caline group of models (available commercially in the Breeze Roads package) and AAQuIRE. The models used for road traffic emissions will invariably require the modelled local contributions to be verified against local monitoring data and if necessary adjusted (see LAQM.TG(09)). Verification of area-source models is not normally practicable.
- c) **Regional scale dispersion models.** Regional scale models include both local sources and those spread over a wide area (several square kilometres). The wider regional background is then added from measurements made at rural monitoring sites outside of the model domain. Typical examples are ADMS-Urban, AIRVIRO and the KC-ERG model for London. Verification of these models should be carried out separately for the modelled local sources and the modelled wider-scale sources. These models are rarely used for assessing the impact of new developments.

Point source models

- 5.19 A range of models is available to assess the impact of point sources, such as CHP plant and boilers. Screening models include SCREEN3 and ADMS Screen. At the more basic level, LAQM.TG(09) has a series of nomograms which can be applied for an initial screening. The most widely used detailed local scale dispersion models are ADMS4 and AERMOD. Point sources can also be incorporated into regional scale dispersion models, such as ADMS-Urban. Particular attention should be paid to the use of representative meteorological data relevant to the study area. Point source models are rarely verified because of the difficulty of doing so.
- 5.20 Specific guidance on assessment of biomass plant in England and Wales is available in 'Biomass and Air Quality Guidance for Local Authorities'³⁸ and 'Biomass and Air Quality Information for Developers'³⁹ both published by Environmental Protection UK⁴⁰. Biomass guidance for Scotland is also being developed by Environmental Protection UK. These documents include guidance on screening assessments of installations and set out information on the different types of boiler plant and their emissions, as well as guidance on when more detailed air quality modelling is required.

Assessing construction phase impacts

- 5.21 The construction phase of a development can lead to both nuisance dust and elevated PM₁₀ concentrations. Modelling is not appropriate for assessing construction impacts, as emission rates vary depending on a combination of the construction activity and meteorological conditions, which cannot be reliably predicted. Therefore assessments should focus on the distance and duration over which there is a risk that impacts may occur. It will also be appropriate to identify the number of residential and other properties that are at risk of being affected by dust and PM₁₀ impacts. Commercial premises such as car showrooms, electronics and food preparation processes can be particularly sensitive to dust impacts, as can schools, hospitals etc.
- 5.22 The assessment should consider the activities to be carried out and their duration. The greatest potential for construction impacts is likely to be from the initial phases of demolition and site preparation, and from the passage of vehicles travelling across unpaved ground during periods of dry weather. There is also the potential for dust and PM₁₀ emissions during the handling of dusty materials and the cutting of stone/concrete. Dust may also be tracked out of the site onto the adjoining road network and this should also be taken into account.
- 5.23 It is important to note that any effects will usually be temporary and relatively short lived, and only likely to arise during dry weather with the wind blowing towards a receptor, at a time when dust is being generated and mitigation measures are not being fully effective. Such conditions would only be expected to arise occasionally during the construction period, further limiting the potential for any impacts.

- 5.24 For large construction projects, where high numbers of vehicle movements, especially lorries, are expected to be generated over a long period of time (a year or more) in the same location, it may be appropriate to consider the impact of construction phase traffic. This should be carried out using the same approach as described above for operational phase traffic impacts.
- 5.25 An important element of the assessment of construction phase impacts should be the consideration of appropriate mitigation and where appropriate, monitoring (see Chapter 7). Useful information on the assessment and control of dust from construction sites is available in the GLA's Best Practice Guidance on the Control of Dust and Emissions from Construction and Demolition⁴¹, and in the Building Research Establishment publication "Controlling particles, vapour and noise pollution from construction sites", BRE, London, 2003⁴².

Describing the impacts

- 5.26 To be able to draw comparisons between the effects of different schemes it is useful to use a consistent approach to describe the impacts. The EIA process requires the magnitude of changes to be set out and taken into account. In many instances there is also a desire to use a consistent descriptive terminology across all environmental impacts within an environmental statement so that, for example, ecological and noise impacts can be described using the same terminology as applied to air quality. The Institute of Air Quality Management (IAQM) has recommended an approach to defining the magnitude of changes and describing the air quality impacts at specific receptors⁴³. An approach to assessing the overall significance of the air quality impacts is also recommended by IAQM, and this is discussed in Chapter 6.
- 5.27 The IAQM has also advised on the number of significant figures to which concentrations should be reported. This is ultimately a compromise between reducing the number in recognition of the uncertainty associated with air quality calculations and the need to contribute to the decision

making process by being able to demonstrate a small but widespread change, if one exists. Three significant figures should normally be appropriate, e.g. 0.403, 4.03, 40.3, or 403 etc); however there may be occasions when it is better to present results to two significant figures, depending on professional judgement regarding the accuracy of the data. Any rounding of the data should be done after any calculations have been carried out.

Impact Magnitude

- 5.28 The magnitude of an impact should be described using the criteria set out in Table 4. These criteria are based on the change in concentration brought about by the scheme as a percentage of the assessment level⁴⁴. Tables translating these criteria into changes in concentration for nitrogen dioxide and PM₁₀ for UK objectives are provided in Appendix 3. It is recommended that the appropriate tables from the Appendix are presented in the assessment report, rather than the generic values in Table 4. The use of 1% as the criterion for an 'imperceptible' change is consistent with the screening methods promoted by the Environment Agency and Natural England. The criteria set out in Table 4 have been developed by IAQM for annual mean PM₁₀, PM_{2.5} and nitrogen dioxide. They have also been applied to the number of days above 50 µg/m³ PM₁₀ (see Table 16 in Appendix 3) because of the importance of the 24-hour mean objective, which is more stringent than the annual mean objective except in Scotland. No descriptors have been developed by the IAQM for the 1-hour mean objective for nitrogen dioxide.

Table 4. Definition of impact magnitude for changes in pollutant concentration as a percentage of the assessment level

Magnitude of Change	Annual Mean
Large	Increase/decrease >10%
Medium	Increase/decrease 5 - 10%
Small	Increase/decrease 1 - 5%
Imperceptible	Increase/decrease <1%

Table 5. 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 ^{a b}		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value With Scheme (>40 µg/m³)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value With Scheme (36-40µg/m³)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value With Scheme (30-36 µg/m³)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value With Scheme (<30 µg/m³)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value Without Scheme (>40 µg/m³)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value Without Scheme (36-40 µg/m³)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value Without Scheme (30-36 µg/m³)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value Without Scheme (<30 µg/m³)	Negligible	Negligible	Slight Beneficial

^a See Table 15 in Appendix 3 for description of changes for annual mean nitrogen dioxide.

^b An imperceptible change (see Table 15) would be described as 'negligible'.

5.29 When describing an air quality impact at a specific receptor, the actual concentration at that receptor should be taken into account, in combination with the magnitude of change, using the approach set out in Table 5. Table 5 is specifically for the assessment of annual mean nitrogen dioxide concentrations, although it can also be used for the assessment of annual mean PM₁₀ concentrations in England, Wales and Northern Ireland, where the objective is the same level (40 µg/m³). Tables for assessment against the annual mean objective for PM₁₀ in Scotland and 24-hour mean objective for PM₁₀ across the rest of the UK are provided in Appendix 3. The IAQM has also stated that it may be appropriate to use the same proportions of the assessment level (e.g. 90-100% as being 'just below', with <75% as 'well below') for other pollutants; this should, however, be agreed by all parties on a case-by-case basis.

5.30 Tables 4 and 5 should be used for describing the impact at each **specific receptor**. This can then be used to inform the evaluation of the overall significance of a development. This judgement of the overall air quality significance will take into account additional factors and is described fully in the next chapter.

Assessing the adequacy of an air quality assessment

5.31 Once an air quality assessment has been received by a local authority, it must be reviewed for its adequacy. The local authority should review:

- whether the assessment report contains all the information required;
- whether an appropriate assessment has been undertaken; and
- whether the conclusions are consistent with the assessment results.

Table 6. Criteria for evaluating whether an air quality assessment is adequate⁴⁵

Table 6. Criteria for evaluating whether an air quality assessment is adequate ⁴⁵		
Modelling Procedures		
• 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'?		Y/N
• Adequacy of input data?	Traffic & emissions data?	Y/N
	Meteorological data?	Y/N
	Background concentrations?	Y/N
	NO _x :NO ₂ relationship?	Y/N
	Other relevant input data?	Y/N
Monitoring Data		
• Adequacy of baseline information?	Monitoring locations described?	Y/N
	Relevant exposure considered?	Y/N
• Adequacy QA/QC information?	Bias adjustment of NO ₂ tubes?	Y/N
	Other QA/QC information?	Y/N
Presentation and Assessment of Results		
• 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
Other Information		
• 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 AQAP (where one is in place)?		Y/N

It is important that the person assessing this adequacy has a full appreciation of the reliability and limitations of methods and data. Where relevant expertise is not available within the local authority, then the need for an external peer review should be considered. At the conclusion of this process, the planning authority should be adequately informed as to the impacts expected to arise from a particular development proposal. Chapter 6 sets out the approach the local authority should take when assessing the air quality significance of the proposal.

- 5.32 A local authority may choose to develop a simple proforma or checklist to ensure that various issues or considerations have been addressed within the air quality assessment accompanying a planning application. Table 6 suggests criteria to consider when assessing the adequacy of an air quality assessment. All criteria will not necessarily be required for every evaluation.

Assessing the effectiveness of mitigation as part of an air quality assessment

- 5.33 An air quality assessment should consider the likely effectiveness of any, mitigation or compensating, measures to minimise air quality impacts. Requesting such analysis has the added benefit of encouraging the consideration and adoption of such measures. Over time, it will also lead to a better understanding of the strengths and weaknesses of the measures. Unfortunately, in many cases, the quantification of mitigation measures is difficult, and at present is rarely considered. At the very least applicants should explore likely benefits of mitigation in qualitative terms.

Cumulative impacts and impact mitigation

- 5.34 As mentioned elsewhere in this guidance, a key feature of the UK development control system is that each planning application must be considered on its own merits, within the confines imposed by national, regional and local policies. This clearly presents difficulties when developments are permitted sequentially, with each individually having only a relatively low polluting potential, but which cumulatively result in a significant worsening of air quality.

5.35 In general, this type of problem will occur where:

- a single large site is divided up into a series of units, such as an industrial estate or retail park;
- a major development is broken down into a series of smaller planning applications for administrative ease; and
- there are cumulative air quality impacts from a series of unrelated developments in the same area.

5.36 In the first two cases, the development is likely to be brought forward by a single developer who puts forward an outline planning application. The cumulative impact is then dealt with in part by the imposition of design parameters, which will determine the maximum areas of the site to be used for specific activities etc, which in turn determine the traffic volumes. The cumulative impact is thus dealt with in some detail as part of the environmental assessment of the scheme.

5.37 For the major development which is broken down into a series of smaller planning applications, the use of a master plan or 'parameter plan' which covers the whole site, could be used. A parameter plan, which is an accepted method, can set a limit on development, for example maximum limits for car parking, floor areas, building heights etc, and allows the environmental effects to be properly assessed.

5.38 For individual, unrelated developments (the third case in paragraph 5.35), controls on cumulative emissions or impacts are much less apparent. The main solution in this case lies at the policy level, through the development of SPDs. Carefully framed local guidance can provide a basis for adopting a more rigorous approach to air quality protection and improvement through development control, and such guidance can allow a local authority to act at a more strategic level to avoid cumulative impacts and "background creep"⁴⁶.

5.39 One approach to dealing with the cumulative impacts of small developments is through the preparation of a Low Emission Strategy designed to accelerate the uptake of low emission fuels and technologies in and around development sites⁴⁷. With a Low Emission Strategy in place it is possible to establish a central 'low emission fund' to support a variety of projects, to which developers in a particular area will contribute.

³³ See LAQM.TG(09) for a definition of 'narrow and congested'.

³⁴ Specific guidance on biomass boilers and air quality is available at www.environmental-protection.org.uk/biomass/

³⁵ See www.environmental-protection.org.uk/aqplanning

³⁶ See www.defra.gov.uk/environment/airquality/local/guidance/pdf/tech-guidance-laqm-tg-09.pdf

³⁷ [www.highways.gov.uk/business/documents/DMRB_Screening_Method_V1.03c__\(12-07-07\)_locked.zip](http://www.highways.gov.uk/business/documents/DMRB_Screening_Method_V1.03c__(12-07-07)_locked.zip)

³⁸ www.environmental-protection.org.uk/biomass/

³⁹ www.environmental-protection.org.uk/biomass/

⁴⁰ www.environmental-protection.org.uk/biomass/

⁴¹ http://legacy.london.gov.uk/mayor/environment/air_quality/docs/construction-dust-bpg.pdf

⁴² www.brebookshop.com/details.jsp?id=144548

⁴³ www.iaqm.co.uk/text/News/IAQM_PS_Significance_16_11_2009.pdf

⁴⁴ The UK objective, Limit Value or Environmental Assessment Level

⁴⁵ It should be noted that some elements of this table will not be relevant if a detailed assessment is not required

⁴⁶ Examples of local authority supplementary planning documents are provided at www.environmental-protection.org.uk/aqplanning

⁴⁷ See examples in the good practice guide at: www.lowemissionstrategies.org/downloads/LES_Good_Practice_Guide_2010.pdf

6. Assessing Significance

6.1 It is useful to define the significance of the impact at two separate stages of the development control process:

- the first is within the air quality report accompanying the planning application;
- the second is when the local authority's air quality specialist makes his/her recommendations to the planning officer.

These are mutually exclusive requirements serving different purposes. Ultimately, any disputes on these matters are dealt with by the judgement of a planning inspector following a planning appeal.

Significance within the air quality assessment

6.2 The IAQM has recommended an approach to describing and then assessing the significance of the air quality impacts of a new development⁴⁶. This makes clear that the conclusion as to the overall significance of the air quality impacts should be based on the professional judgement of the person preparing the report. The factors to consider in reaching this judgement are set out in Box 1. Clearly the person making this judgement must be suitably qualified to do so. Furthermore the basis of the judgement should be explicitly set out. It is open to this person to describe the overall impacts as insignificant, or of minor, moderate or major significance.

6.3 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.

Assessment of significance by the planning authority

6.4 The local planning authority that receives a planning application with an accompanying air quality assessment will have to carry out its own evaluation of the significance of the impacts. Figure 1 (page 23) sets out an approach to help local authority officers. In addition to the flow chart, the evaluation should take account of how the impacts relate to the requirements of the local air quality policies.

6.5 There are a number of key points which should be borne in mind when using the flow chart:

- Air quality has the potential to be a “material consideration” in all planning applications. Whether it is a material consideration for any individual application will depend on the circumstances of the case, both in terms of the proposed development and its environment or location.
- Likewise, the significance of the impacts will depend on the context of the development. For example, air quality is likely to be a high priority for a major industrial proposal within a highly populated urban area. On the other hand, air quality is likely to be a low priority for a low polluting office development in an area of low pollution.
- The flow chart is equally applicable to a development which increases emissions (degrades air quality) as to one where the main impact is to increase exposure, such as a residential development.
- The weight given to the EU limit values reflects their status in law. The limit values are binding on the UK as a whole, whereas there is no legal obligation placed on central government or local authorities to meet the UK Air Quality Objectives, despite the fact that they are contained in Regulations (see Appendix 2).
- Several steps require a judgement to be made of the ‘significance’ of the worsening that will take place. This judgement should be carried out by a suitably qualified officer, as discussed in the next section.

6.6 It should also be noted that the flow chart could be adapted to fit in with specific local considerations within a Supplementary Planning Document.

Professional judgement

6.7 The exercise of professional judgement by both the organisation preparing the air quality assessment and the local authority officers when they evaluate the findings is an important part of the assessment of significance as set out in this guidance. Those exercising such judgement should clearly be competent to do so. In the field of air quality, there are no set qualifications for assessing competence, and professional recognition is in its early stages. Staff engaged in assessing the significance of air quality impacts should hold qualifications in pollution control and/or environmental assessment/management,

Box 1. Factors to Judge Overall Significance

Number of properties affected by slight, moderate or major air quality impacts and a judgement on the overall balance.

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.

The magnitude of the changes and the descriptions of the impacts at the receptors i.e. Tables 4 and 5 findings.

Whether or not an exceedance of an objective or limit value is predicted to arise in the study area where none existed before or an exceedance area is substantially increased.

Whether or not the study area exceeds an objective or limit value and this exceedance is removed or the exceedance area is reduced.

Uncertainty, including the extent to which worst-case assumptions have been made.

The extent to which an objective or limit value is exceeded, e.g. an annual mean NO₂ of 41 µg/m³ should attract less significance than an annual mean of 51 µg/m³.

or hold degree level qualifications which contained a substantial proportion of the curriculum devoted to such topics. A number of years' experience in air quality assessment is also required, and extensive experience could be taken as a substitute for formal qualifications. Membership of the Institute of Air Quality Management would clearly be advantageous, as this is professionally assessed and dependent on sufficient knowledge, experience and qualifications. Membership of other relevant professional bodies such as the Chartered Institute of Environmental Health (CIEH), Chartered Institute of Water and Environmental Management (CIWEM), Royal Society of Chemistry, Chartered Chemist, Chartered Meteorologist, Chartered Scientist or Chartered Environmentalist status, or their equivalents, may also be acceptable if combined with professional experience.

- 6.8 The exercise of judgement should in all cases be as transparent and open as possible. It is clearly open to challenge within the context of public inquiries or judicial reviews.
- 6.9 It would be useful if the authors of air quality assessments gave their qualifications and experience in an appendix to the report to enable the local authority officer reviewing it to have additional confidence in the results.

6.11 Mitigation should, nevertheless, play a key role in all development proposals where an air quality assessment has been required, particularly where it will give rise to an increase in particulate matter emissions/concentrations. As set out in Appendix A2, the UK has obligations to meet a national exposure reduction target for PM_{2.5}. This recognises that particulate matter is a non-threshold pollutant, and that there are public health benefits from reducing concentrations even where the limit value is achieved. New developments have an important role in assisting the UK to meet this important target, through ensuring that schemes are as "air quality neutral" as possible. This is discussed further in Chapter 7.

- 6.12 A key to good mitigation strategies is open and frank discussions between the applicant or its representative, and the local authority at an early a stage so that there is a clear understanding of what is required. Good developments evolve over time, taking account of air quality and other issues as they are identified.
- 6.13 At the conclusion of this process, the appropriately qualified officer will need to report the findings on the air quality assessment to the planning officer, who will take all other matters into account in making a recommendation for approval or refusal of the planning application, and for any planning conditions/obligations required to make the application acceptable.

Actions following first use of Significance Flow Chart

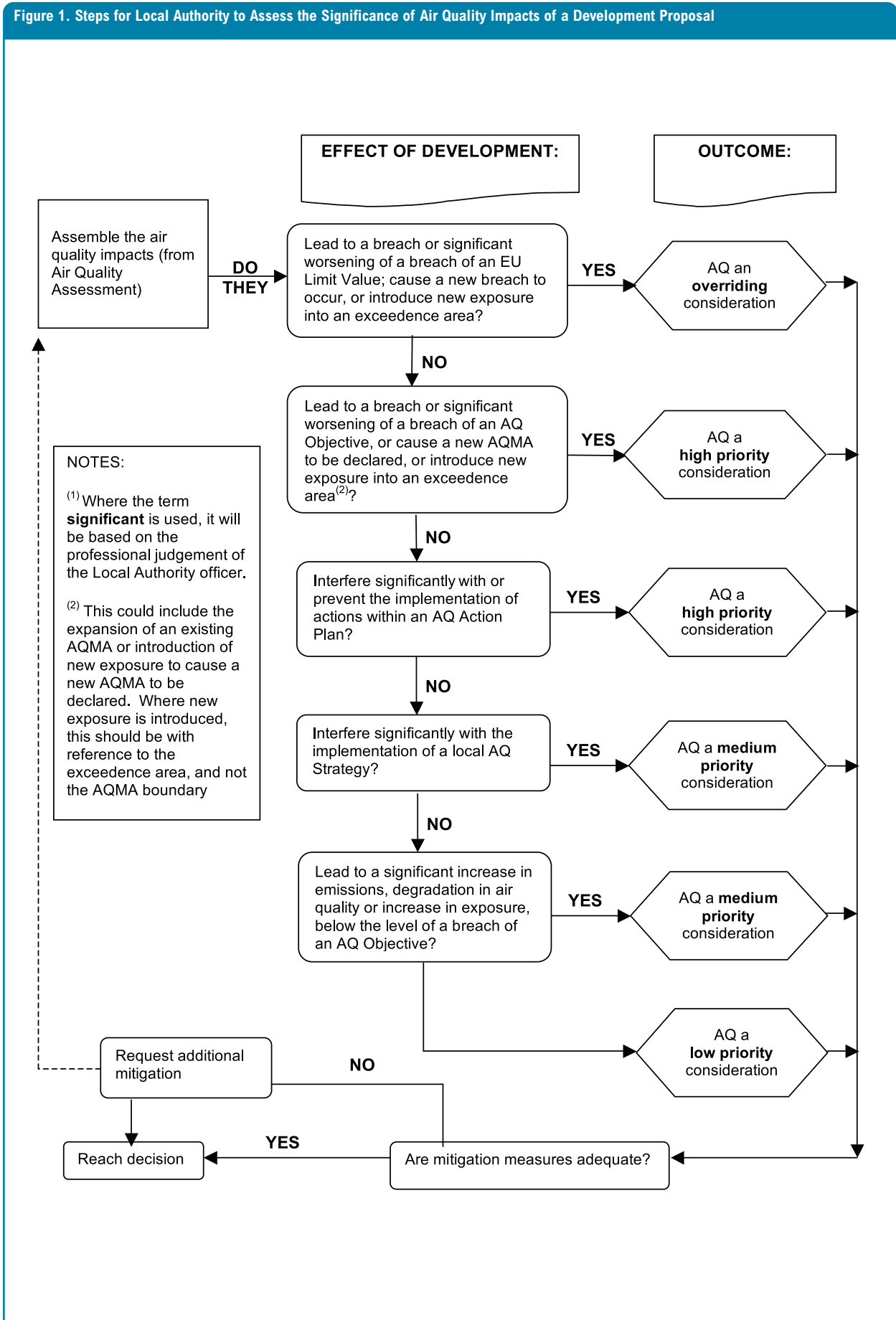
- 6.10 Table 7 sets out mitigation recommendations following the initial judgement of impact significance. The measures available to mitigate or compensate for impacts are considered in Chapter 7.

Table 7. Recommendations following the assessment of significance by the local authority	
Impact significance from flow chart	Recommendation
Overriding consideration	Require mitigation measures to remove "overriding" impacts. If the impact is still "overriding", there should be a strong presumption for a recommendation for refusal on air quality grounds. ⁴⁸
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.

⁴⁸ www.iaqm.co.uk/text/News/IAQM_PS_Significance_16_11_2009.pdf

⁴⁹ An automatic recommendation to the planning officer of refusal on air quality grounds will not always be necessary or appropriate. Dealing with exceedences of Limit Values is a national obligation. There may be situations where large areas are already in exceedence of the Limit Value, and a blanket ban on new developments would risk sterilising large areas. In these circumstances it would be appropriate to take account of the contribution the new development would make to the exceedence. If this is small, and strong measures are incorporated in the proposal to minimise the impacts, then it would probably not be appropriate to recommend refusal on air quality grounds.

Figure 1. Steps for Local Authority to Assess the Significance of Air Quality Impacts of a Development Proposal



7. Mitigating Impacts

- 7.1 The type of measures proposed to improve air quality will depend on the nature and scale of the proposed development. Where the proposal is for a small number of new residential units it would be reasonable to examine design and ventilation arrangements to reduce the impact of the external environment on occupants in the building. Where the proposed development is larger and the impact on air quality greater, then more measures should be considered, such as improvements in public transport and funding for traffic management measures over a wider area.
- 7.2 The presence of an AQMA should not halt all development, but where development is permitted, the planning system should ensure that any impacts are minimised as far as is practicable. Even where developments are proposed outside of AQMAs, and where pollutant concentrations are predicted to be below the objectives/limit values, it remains important that appropriate mitigation is included in the scheme design and that, as far as is practicable, developments should be “air quality neutral”⁵⁰. This is particularly important where the proposed development increases the emissions of particulate matter, in light of the UK obligation to meet the EU exposure-reduction target.

Planning obligations and conditions, and Low Emission Strategies

- 7.3 Planning obligations (or ‘section 106 agreements’, or in Scotland Planning Agreements) can be entered into by means of a unilateral undertaking by a developer or by way of an agreement between the developer and a local planning authority. They are designed to tackle the impacts that may arise from a development and can involve controls on activities or the nature of the development. They can also involve a financial contribution, for example to an air quality action plan. Conditions can be attached to a planning permission and can only apply to the application site itself or adjoining land under the applicant’s control.
- 7.4 Increasingly local authorities are requiring developers to fund Low Emissions Strategies as an innovative combination of planning obligations and agreements. These provide a package of measures to help mitigate the transport impacts of developments aimed at reducing emissions of NO_x and PM, and of carbon dioxide. Guidance on the development of Low Emissions Strategies has been published jointly by the Low Emissions Strategies organisation and Defra⁵¹. Further guidance in the form of a “toolkit” to help local authorities calculate the benefits of various transport initiatives is to be published in 2010⁵².
- 7.5 Low Emissions Strategies can be funded either directly by the developer, or via contributions to a “general pool”. The “Greenwich Formula” (see below) is often cited for this purpose.
- 7.6 Conditions and/or obligations should be reasonable in relation to both the scale of the development and its impacts. An SPD which sets out the basis for the

calculation of contributions to mitigation measures can greatly assist in providing transparency. For example, the London Borough of Greenwich uses a standard formula for schemes greater than 10 dwellings or commercial schemes of more than 500 m². A contribution of £100 per dwelling or £10 per m² for town centre and commercial developments is sought. Other authorities have developed their own criteria, based on local concerns and circumstances; these criteria are often published within Supplementary Planning Documents or informal advisory notes to developers. A list of these documents can be downloaded from Environmental Protection UK’s website⁵³.

Community Infrastructure Levy

- 7.7 The Community Infrastructure Levy (CIL) will be introduced under the Planning Act 2008. This will empower local authorities (in England and Wales) to charge on most types of development in their area. It will be related to the size and character of development, based on a simple formula to be set by the local authority. Local authorities will be required to prepare a formal list of infrastructure that they intend to fund via CIL contributions. At the time of writing the details of CIL were still to be finalised, and guidance for local authorities on implementing CIL was yet to be produced. Potentially CIL provides an opportunity to fund Low Emission Strategies through a readymade charging structure, and could also allow inter-authority Low Emission Strategies to be established where appropriate. The facility to enter into planning obligations and conditions will remain in place when the CIL is introduced; these are, however, likely to be limited to mitigating the direct impacts of the development in question and the provision of affordable housing.

Examples of impact management

- 7.8 Examples of measures to mitigate against the impacts of developments are provided in Table 8 and include both construction phase and post-development mitigation measures. The list is by no means exhaustive⁵⁴. Some specific examples of mitigation measures which have proved effective and workable are provided in Table 9. In addition, a ‘menu’ of possible low carbon travel measures and further case studies are available in the DfT’s guide on delivering sustainable low carbon travel⁵⁵.

Problems associated with planning conditions and mitigation measures

- 7.9 Some specific issues to address when developing planning conditions and the difficulties that may arise are listed below.
- It is important to ensure that mitigation measures are related to the scale of the impact of the development.
 - Where possible, there should be transparent justification for contributions to Action Plan measures or monitoring.
 - Councils should reach agreement with the developer as to the level of bus service to be supported with respect to new developments, including the need to provide this service from the time that residents first move into properties, so as to ensure take up of the services

Table 8. Examples of measures to mitigate against local air quality impacts

CONSTRUCTION PHASE MEASURES	
1. General	Commentary (where applicable)
<ul style="list-style-type: none"> • Agree a Code for Construction Practice with LPA prior to work commencing 	
2. Control of Dust	
<ul style="list-style-type: none"> • Building enclosures; use of screens; sheeted vehicles; 	
<ul style="list-style-type: none"> • Early implementation of paved haul routes 	
<ul style="list-style-type: none"> • Hard-standing cleaning 	
<ul style="list-style-type: none"> • Water spraying; wheel washing 	
<ul style="list-style-type: none"> • Consideration of location of stockpiles, stone-cutting activity; designated storage areas; diversion routes 	
<ul style="list-style-type: none"> • Prohibit fires 	
<ul style="list-style-type: none"> • Just-in-time deliveries 	
3. Monitoring strategies	
<ul style="list-style-type: none"> • Site boundary monitoring pre-development and post-development (at closest receptor) 	
<ul style="list-style-type: none"> • Liaison meetings with local residents 	
<ul style="list-style-type: none"> • Considerate contractor schemes (and their equivalent) 	
4. Construction plant emissions	
<ul style="list-style-type: none"> • Age and type of plant 	
<ul style="list-style-type: none"> • Plant maintenance 	
<ul style="list-style-type: none"> • Alternative fuel use 	
OPERATIONAL PHASE MEASURES	
1. Transport related measures	
<ul style="list-style-type: none"> • Travel Plans 	
<ul style="list-style-type: none"> • Car clubs 	
<ul style="list-style-type: none"> • Incentives for increased public transport use 	Discounted fares, provision of information.
<ul style="list-style-type: none"> • Parking standards 	Set maximum number of spaces.
<ul style="list-style-type: none"> • Preferential parking for low emission or car club vehicles or graduated parking charges based on emissions 	
<ul style="list-style-type: none"> • Provision of alternative fuels 	Electric charging points or biogas facilities.
<ul style="list-style-type: none"> • Public transport fleet improvements 	E.g. provision of low emission buses.
<ul style="list-style-type: none"> • Service vehicles 	Agreement to achieve specified emissions standards.
<ul style="list-style-type: none"> • Contribution to specific traffic management or road schemes 	
2. Non-Transport related measures	
<ul style="list-style-type: none"> • Monitoring programme (development specific) 	Needs careful consideration as to the usefulness of the specific monitoring programme, relevant assessment levels and the action that could be taken if the assessment levels are breached.
<ul style="list-style-type: none"> • Ventilation 	Mechanical ventilation becoming increasingly common. Care required on location of inlet. Need to ensure long-term maintenance.
<ul style="list-style-type: none"> • Contribution to action plan and monitoring programmes 	Can be a financial contribution to help the authority develop and implement its action plan. May be a contribution to the authority's air quality monitoring programme.
<ul style="list-style-type: none"> • Buffer Zone 	Can be useful, but not simple to define extent. Not always practicable. May need to set against other benefits of development.
3. Building design	
<ul style="list-style-type: none"> • Remove or relocate balconies 	May be best avoided in locations of poor air quality, especially at ground and first floors.
<ul style="list-style-type: none"> • Habitable rooms 	Consider placing away from façade fronting pollution source, e.g. in flats put corridors, stairwells, bathrooms etc. in these locations.
<ul style="list-style-type: none"> • Avoid canyon streets or creating canyons 	Creating gaps in building facades can help ensure free flow of air in the street.

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provided. All too often, an agreement only comes into effect once the whole development is completed, which can be years following the occupation of the first properties on site. Discussions with public transport providers and operators therefore need to take place at the pre-application and early design stage.

- It is increasingly common to require mechanical ventilation for new residential developments located alongside busy roads. Attention will need to be paid to the exact location of the air inlet. This is commonly specified as being at roof level at the rear of the property, although this will not be appropriate in all circumstances, and attention will need to be given to siting the intake away from other emission sources, such as vents for catering outlets or flues for boiler plant. Attention will also need to be given to ensuring that procedures are in place for regular maintenance of the system. This also raises issues of responsibility for the funding of this maintenance and the payment of electricity costs.
- Where mechanical ventilation is provided the issue arises as whether to require non-opening windows. One argument is that windows should be non-opening to ensure residents are protected from poor air quality. The other argument is that people should be free to choose whether they want to open the window (knowing that they do not have to do so to receive adequate ventilation), as not all individuals are sensitive to air pollution and there are times of the day and different days of the week when, even alongside busy roads, pollution levels are not high and open windows would be an acceptable option. In some cases, where mechanical ventilation has been installed due to poor external air quality, occupants have

Table 9. Some specific examples of measures applied by local authorities to mitigate against local air quality impacts of new developments

<i>Local authority</i>	<i>Nature of mitigation or measure</i>	<i>Commentary (where applicable)</i>
1. York CC	Pre-design mitigation	College Learning Centre: negotiated setting back and curving of the front of the building by having early meeting with developers and advising that there was a potential to produce a canyon effect within the street if they built up to the road side. Leisure centre: negotiated to get building set back and communal staircases/ utility areas placed on ends of blocks closest to road. Mixed use development: recently approved application where negotiation has limited residential units on the main road to second storey and above only. The original plans showed residential at all levels on road frontage. Requirement for non-opening windows/rear ventilation: used for relatively small residential developments in the existing technical breach areas where there are already existing properties which it is not wanted to be seen to blight but likewise don't want to allow further exposure.
	Air quality monitoring	£5000 secured in each of two new housing sites in 'technical breach' areas through s106 to go towards air quality monitoring. A problem with these types of conditions is that generally they are only initiated once a certain number of units are built or have been occupied. Problems also include being dependent on the planning enforcement team to ensure compliance and difficulties in arriving at a specific financial sum to request.
2. London Borough of Hammersmith & Fulham	Conditions	Re-development of land along Westway, comprising residential units and off-street parking. Two conditions of planning permission related to the assurance that air quality will be of an 'acceptable level' for the occupants of the proposed residential units, in accordance with policy EN21 of the Council's UDP. One related to development not being permitted until details of the proposed mechanical ventilation and air filtration systems have been submitted and approved. The second related to the maintenance and cleaning of the ventilation and filtration systems.
3. Gloucester City Council	Mechanical ventilation	The development in question (residential property) is within an Air Quality Management Area, therefore all habitable rooms to the ground and first floor fronting onto Barton Street must have non-opening windows, and mechanical ventilation shall be installed that only draws air from the rear of the property and maintained thereafter. This scheme must be approved by Local Planning Authority prior to commencement of work.
4. London Borough of Greenwich	Transport	Re-development of the Greenwich Dome area - where it has been possible to minimise the road traffic generation during the construction phase by using water transport for large quantities of construction material such as sand. Congestion on surrounding roads, and the subsequent poor reliability of HGV deliveries, has also made this an attractive measure for the developer. This type of action is obviously limited to those locations where such alternatives are feasible.
	Parking	An application for a residence for >1000 students in Greenwich included just 12 car parking spaces (6 for staff and 6 for disabled students). If a student uses a space, they receive an initial warning. If they repeat the offence they face eviction.

been provided with a welcome pack providing air quality and travel plan information.

- The use of a 30-50m buffer zone between new residential properties and a major road can be an effective mitigation option, as concentrations should be close to local background levels at this distance. This measure can, however, be difficult to agree, especially in London and other conurbations, where such a buffer zone would conflict with the need to maximise property densities. In these circumstances increasing the distance between the road and building façade by as little as 2-5m would still be beneficial and should be sought where possible, as concentrations fall off rapidly with distance from a road, especially over the first 10m back from the kerb.
- Sometimes planning conditions require the developer to carry out an air quality assessment after planning permission is granted. This is to be discouraged as it is then difficult to deal with any air quality problems that may arise, putting unnecessary pressures on both developers and the planning authority. Air quality assessments, where they are required, should be requested at an early stage in the planning process, so that developers can build in any design changes or measures that may be required to mitigate adverse impacts.

Impacts from construction and demolition

7.10 There are two key guidance documents that address the control of dust and other emissions from construction and demolition activities:

- *Controlling particles, vapour and noise pollution from construction sites*, BRE, London, 2003 (available from bookshops); and
- *The control of dust and emissions from construction and demolition best practice guidance: Greater London Authority and London Councils*, London, 2006⁵⁰

These documents should be referred to when developing control programmes. In some instances the measures will be incorporated in a Construction Environmental Management Plan to be applied by the contractor.

Considerate contractor schemes

7.11 Considerate Contractor Schemes, also known as Considerate Builder Schemes, represent a separate but complementary approach. They are part of a national initiative to improve the image of the construction industry

through better management and presentation of its sites, over and above the statutory requirements. A number of local authorities have developed these, including the Corporation of London, Westminster City Council, Southwark Council, and Birmingham City Council.

7.12 The schemes differ in detail between local authority areas. For example some include annual awards for the best contractors, whereas others are more explicit on what constitutes 'considerate'. However, the basic elements of the schemes are common to all.

7.13 The schemes are intended to benefit all parties and stress the importance of partnership. The scheme operated by the City of London makes clear that "co-operation is the key to the success of the scheme", which is designed to "promote high standards on all building sites, to encourage builders to take pride in their sites, and to ensure the development proceeds without making life unpleasant for those who live and work nearby". The Considerate Contractor Scheme is a co-operative initiative open to all contractors undertaking building and civil engineering in the City of London.

7.14 The essence of Considerate Contractor Schemes is that contractors who join a scheme commit themselves to following a Code of Good (or Considerate) Practice. There are eight main features:

- Consideration;
- Environmental awareness;
- Cleanliness;
- Being a "Good Neighbour";
- Respect;
- Safety;
- Responsibility; and,
- Accountability.

7.15 Sites registered under the scheme are visited regularly to check that the Codes are being complied with. Obviously the Codes go far wider than air quality but compliance with them can bring a range of benefits. The most important points are that proper management procedures are in place; that equipment use is managed efficiently (e.g. switched off when not in use); that all equipment details are recorded in a log-book; and that means of reducing emissions are properly fitted and maintained. Above all else, all personnel should be properly educated in considerate working practices.

⁵⁰ This means that developments should generate no net increase in emissions. This can be achieved by off-setting the increases due to traffic generation, on-site energy use etc, with reductions elsewhere, or example by way of contributing to the funding the Council's AQAP or a Low Emission Strategy

⁵¹ www.lowemissionstrategies.org/downloads/LES_Good_Practice_Guide_2010.pdf

⁵² Links will be provided to the toolkit from www.environmental-protection.org.uk/aqplanning

⁵³ See www.environmental-protection.org.uk/aqplanning

⁵⁴ Further details on mitigation measures to apply during construction are set out in a Building Research Establishment publication "Controlling particles, vapour and noise pollution from construction sites", BRE, London, 2003, whilst additional examples of post-development measures are provided in www.lowemissionstrategies.org/downloads/LES_Good_Practice_Guide_2010.pdf

⁵⁵ Delivering Sustainable Low Carbon Travel: An Essential Guide for Local Authorities, DfT 2009. www.dft.gov.uk/pgr/sustainable/guidelocalauth/pdf/lowcarbontravel.pdf

⁵⁶ legacy.london.gov.uk/mayor/environment/air_quality/docs/construction-dust-bpg.pdf

8. Conclusions and Key Points

8.1 The need for closer integration of air quality within planning policy and development control has been apparent since the inception of the LAQM regime, if not before. This Environmental Protection UK guidance seeks to facilitate this closer integration and promote a consistent approach to the treatment of air quality issues within development control decisions. In addition to the outline methodologies provided for undertaking air quality assessments, the assessment of significance, and the development of planning policy recommendations, there are a number of key points which the guidance sets out. These are listed in the order in which they first appear in the guidance:

- Development control is an important tool in the improvement of air quality (Chapter 2).
- It is important for local authorities to include air quality policies within their LDF Core Strategy. An SPD dealing with air quality can also be beneficial. Both should reflect the local area and local environmental conditions. As air quality does not respect local authority boundaries it may be appropriate for a group of authorities to jointly develop an SPD (Chapter 2).
- Any air quality consideration that relates to land use and its development is capable of being a material planning consideration (Chapter 3).
- Two kinds of impact must be considered – the impact of the development on air quality (including both construction and operational impacts), and the impact of existing sources of air quality on the development (e.g. low polluting developments in areas of poor air quality) (Chapter 4).
- Air quality concerns need to be addressed at as early a stage in the development control process as possible, preferably at the pre-application stage (Chapter 4).
- Local authorities should develop a working protocol between Environmental Health and Development Control teams to ensure good communication between the professionals involved (Chapter 4).
- AQMAs are a tool to assist in the improvement of air quality, not a block on development (Chapter 4);
- Where air quality assessments are undertaken, it is important to seek agreement on the datasets, methodologies and outputs which are appropriate to the assessment of the development's air quality impacts (Chapter 5).
- It is useful to use a consistent terminology to define the magnitude of changes and to describe air quality impacts at individual receptors (Chapter 5).
- The overall significance of the impacts set out in the air quality assessment report should be determined using professional judgement (Chapter 6).
- The local authority air quality specialist should use the air quality report provided by the applicant, and the flow chart in the guidance to help determine his/her recommendation(s) to the planning officer (Chapter 6).
- The scale of mitigation imposed on a development must reflect the severity of its impacts and the context in which the development is to take place. Experience of developing mitigation packages is now becoming well established (Chapter 7).
- Many local authorities are now requiring developers to fund Low Emission Strategies using a combination of planning agreements and obligations, in order to mitigate the air quality impacts, including cumulative impacts, of development.
- Measures to mitigate construction impacts will invariably be required. Best practice guidance is available to help with this (Chapter 7).

APPENDIX 1: Glossary of Abbreviations

AADT: Annual average daily traffic.

AQAP: Air quality action plan: required by a local authority to identify and implement actions to reduce air quality concentrations below the objectives.

AQMA: Air quality management area: a local authority is required by the Environment Act 1995 (or in Northern Ireland, the Environment (NI) Order 2002) to declare an AQMA where it believes UK air quality objectives prescribed in Regulations (see Appendix 3) are being exceeded.

AQO: Air quality objective: targets set by the Government and Devolved Administrations as minimum acceptable standards of air quality (see Appendix 3).

CO: Carbon monoxide.

CO₂: Carbon dioxide.

DCLG: Department for Communities and Local Government.

Defra: 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.

DETR: Department of the Environment, Transport and the Regions. In 2001 DETR's functions were divided between Defra, the Office of the Deputy Prime Minister (since integrated into the Department for Communities and Local Government) and the Department for Transport (DfT).

DoENI: Department of the Environment, Northern Ireland: the Devolved Administration for air quality issues in Northern Ireland.

EA: Environment Agency (England and Wales).

EIA: Environmental impact assessment (see Chapter 3).

EPR: Environmental Permitting Regulations:

EU: European Union.

HIA: Health impact assessment (see Chapter 3).

LAQM: Local air quality management: system introduced by the Environment Act 1995 to address local air quality "hot spots". It includes the Review and Assessment process, the designation of AQMAs and the development of action plans. It is steered through Guidance notes.

LDD: Local Development Documents (which replace Local Plans and Unitary Development Plans under the Planning and Compulsory Purchase Act 2004) are the new framework for local authorities to prepare local land-use plans. Local Development Schemes set out the LDDs that local planning authorities propose to produce.

LDF: Local Development Frameworks (previously Structure Plans) contain Local Development Documents, some of which have development plan status (and therefore subject to independent examination).

LTP: 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. In Scotland, Transport Scotland is responsible for transport, with local

authority local transport strategies helping to deliver national and local transport objectives. The Welsh Assembly Government (Environment, Planning and Transport), and Department of the Environment, Northern Ireland are responsible for transport planning in Wales and Northern Ireland respectively.

NIEA: Northern Ireland Environment Agency: Body with national responsibility for industrial pollution control and regulation in Northern Ireland, including Part A and B installations under PPC, also statutory consultee for some planning applications in Northern Ireland.

NO₂: Nitrogen dioxide.

NO_x: Oxides of nitrogen: NO_x is the sum of NO and NO₂ (plus other minor oxides) and is often used to express the emitted pollutant quantity. NO₂ is largely a secondary pollutant, being formed by the oxidation of nitric oxide (NO) after emission, although some NO₂ is directly emitted, the proportion of which is related to the exhaust treatment technology.

PAH: 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).

PM₁₀ and PM_{2.5}: Particulate matter with an aerodynamic diameter of less than 10 microns (µm) (PM₁₀) or less than 2.5 µm (PM_{2.5}), expressed in units of µg/m³.

PPC: Pollution prevention and control: Europe wide system which is largely replacing the earlier UK based integrated pollution control (IPC) system, a process which has now been completed. Introduced in England, Scotland and Wales through the Pollution Prevention and Control Regulations 2000 (Regulations for Northern Ireland followed in 2003); in England and Wales PPC is now delivered through the Environmental Permitting Regulations.

PPG: Planning Policy Guidance, setting out the policy framework in which local planning authorities were required to draw up their local development plans. Being replaced by PPSs.

PPS: Planning Policy Statements, setting out the policy framework in which local planning authorities were required to draw up their local development plans.

RSS: Regional Spatial Strategies, statutory requirements under the Planning and Compulsory Purchase Act 2004, replace the Regional Planning Guidance, and are prepared by regional planning authorities.

SEA: 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.

SEPA: Scottish Environment Protection Agency: body with national responsibility for industrial pollution control and regulation in Scotland, including Part A and B installations under PPC, also statutory consultee for some planning applications in Scotland.

SPD: Supplementary Planning Document.

SPG: Supplementary Planning Guidance.

SO₂: Sulphur dioxide.

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TA: Transport Assessments consider the potential impact from new development on a transport network.

TIA: Transport Impact Assessments have been superseded by Transport Assessments.

UDP: Unitary Development Plans have been superseded by Local Development Documents (see LDDs).

VPH: Vehicles per hour.

WAG: Welsh Assembly Government: the Devolved Administration for Wales.

APPENDIX 2: Air Quality Objectives

A2.1 The air quality objectives and limit values currently applying to the UK can be split into three groups. Each has a different legal status and they are therefore handled in different ways within the framework of UK air quality policy. The groups are:

- UK air quality objectives set down in regulations for the purposes of local air quality management;
- UK air quality objectives not included in regulations; and
- EU Limit Values transcribed into UK legislation.

UK Objectives for Local Air Quality Management

A2.2 Part IV of the Environment Act 1995 requires that local authorities review and assess the quality of air in their areas, against any air quality standards or objectives, and that regulations may be made setting out what these standards or objectives are. This means that local authority air quality Review and Assessment only refers to those objectives laid out in the following regulations:

- The Air Quality (England) Regulations 2000 (similar regulations were also passed in 2000 covering Wales and Scotland);
- The Air Quality Regulations (Northern Ireland) 2003, as amended 2003;
- The Air Quality (Scotland) (Amendment) Regulations 2002;
- The Air Quality (England) (Amendment) Regulations 2002.

A2.3 Local authorities (or anyone else) are not under a legal duty to achieve the objectives. Rather, the duty is to carry out an assessment against the objectives, where there is likely to be a breach to declare an AQMA, and thereafter to prepare a plan setting out how the authority proposes

Table 10: Objectives for the Purposes of Local Air Quality Management (included in the Air Quality Regulations, as amended) (note: objectives are the same in England, Wales, Scotland and Northern Ireland unless otherwise stated)

Pollutant	Objective	Measured as	Date in force
Benzene	16.25 µg/m ³	Running Annual Mean	31 December 2003
	5 µg/m ³ (E & W)	Annual Mean	31 December 2010
	3.25 µg/m ³ (Scotland & NI)	Running Annual Mean	31 December 2010
1,3-Butadiene	2.25 µg/m ³	Running Annual Mean	31 December 2003
Carbon monoxide	10.0 mg/m ³	Maximum daily running 8 Hour Mean (E, W & NI) Running 8 Hour Mean (Scotland)	31 December 2003
Lead	0.5 µg/m ³	Annual Mean	31 December 2004
	0.25 µg/m ³	Annual Mean	31 December 2008
Nitrogen Dioxide	200 µg/m ³ Not to be exceeded more than 18 times per year	1 Hour Mean	31 December 2005
	40 µg/m ³	Annual Mean	31 December 2005
Particles (PM₁₀) (gravimetric)	50 µg/m ³ Not to be exceeded more than 35 times per year	24 Hour Mean	31 December 2004
	40 µg/m ³	Annual Mean	31 December 2004
	50 µg/m ³ Not to be exceeded more than 7 times per year (Scotland)	24 Hour Mean	31 December 2010
	18 µg/m ³ (Scotland)	Annual Mean	31 December 2010
Sulphur dioxide	266 µg/m ³ Not to be exceeded more than 35 times per year	15 Minute Mean	31 December 2005
	350 µg/m ³ Not to be exceeded more than 24 times per year	1 Hour Mean	31 December 2004
	125 µg/m ³ Not to be exceeded more than 3 times per year	24 Hour Mean	31 December 2004

to use the powers at its disposal in pursuance of the objectives. The current objectives are as follows:

UK Objectives not included in regulations

A2.4 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (the UK Air Quality Strategy) also contains a number of objectives which are not included in regulations for the purposes of LAQM. They are intended as drivers for UK air pollution policy, as are the other objectives, but it is not thought appropriate for local authorities to assess against them at this time. The main reasons for this are that local authorities lack the necessary policy instruments to address the pollutant in question, or that the pollutant is regional in nature and therefore not suitable for local control (e.g. ozone).

EU Air Quality Limit Values

A2.8 A new EU air quality directive (Directive 2008/50/EC – also known as the Clean Air for Europe (CAFÉ) Directive) came into force in June 2008. This is to be transposed into national legislation by June 2010. It consolidates previous air quality legislation (apart from the 4th Daughter Directive⁵⁷) and provides a new regulatory framework for PM_{2.5}. It also makes provision for Member States to postpone attainment deadlines.

A2.9 This Directive requires Member States to identify zones and agglomerations where either the target values or long term objectives are unlikely to be met within the specified period, and draw up action plans or programmes in accordance with the Directive. Member States should also identify those zones and agglomerations in which the long term objective is already met and should ensure that air quality is maintained in those areas.

A2.10 The fourth Daughter Directive, 2004/107/EC was adopted in December 2004 and had to be transposed into national legislation by 15 February 2007. It aims to minimise the harmful effects of heavy metals – arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons (using B[a]P as a marker) – in ambient air.

A2.11 The Directive sets target values (see Table 14) for four heavy metals, with Member States required to "take all necessary measures, not entailing disproportionate cost" to meet the target values by 31 December 2012. Installations regulated for PPC will be expected to use "best available techniques" to reduce emissions.

⁵⁷ Directive 2004/107/EC (the 4th Daughter Directive) established target values for arsenic, cadmium, nickel and benzo(a) pyrene. There are no objectives for these pollutants prescribed in UK Air Quality Regulations for the purposes of Local Air Quality Management. However, they are relevant for industrial sources of these pollutants.

Table 11: National Objectives not included in the AQ Regulations

Pollutant	Objective	Measured as	To be achieved by
Objectives for the protection of human health			
Ozone (Provisional)	100 µg/m ³ Not to be exceeded more than 10 times per year	Daily maximum of running 8 hr mean	31 December 2005
PAHs (Benz-a-pyrene)	0.25 ng/m ³	Annual Mean	31 December 2010
Particles (PM2.5) (gravimetric)	25 µg/m ³	Annual Mean	31 December 2020
	12 µg/m ³ (Scotland)	Annual Mean	31 December 2020
	15% reduction in concentrations at urban background locations	3-year Mean	Between 2010 and 2020
Objectives for the protection of vegetation and ecosystems			
Nitrogen Oxides (assuming as Nitrogen Dioxide)	30 µg/m ³	Annual Mean	31 December 2000
Ozone	18000 µg/m ³ /hour	AOT40*, calculated from 1h values May-July. Mean of 5 years starting 2010.	01 January 2010
Sulphur dioxide	20 µg/m ³	Annual Mean	31 December 2000
	20 µg/m ³	Winter Mean (01 October - 31 March)	31 December 2000

* AOT40 is the sum of the differences between hourly concentrations greater than 80 µg/m³ and 80 µg/m³ over a given period using only the 1-hour averages measured between 0800 and 2000.

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Pollutant	Value	Measured as	To be achieved by
Benzene	5 µg/m ³	Annual Mean	1 January 2010
Carbon monoxide	10.0 mg/m ³	Maximum Daily 8-Hour Mean updated Hourly	1 January 2005
Lead	0.5 µg/m ³	Annual Mean	1 January 2005
Nitrogen Dioxide	200 µg/m ³ Not to be exceeded more than 18 times per year	1-Hour Mean	1 January 2010
	40 µg/m ³	Annual Mean	1 January 2010
Nitrogen Oxides (assuming as Nitrogen Dioxide)	30 µg/m ³ (for the protection of vegetation)	Annual Mean	19 July 2001
Ozone (Target)	120 µg/m ³ Not to be exceeded more than 25 times per year	Maximum Daily Running 8 hour Mean updated Hourly	1 January 2010
Particles (PM₁₀) (gravimetric)	50 µg/m ³ Not to be exceeded more than 35 times per year	24-Hour Mean	1 January 2005
	40 µg/m ³	Annual Mean	1 January 2005
Sulphur dioxide	350 µg/m ³ Not to be exceeded more than 24 times per year	1-Hour Mean	1 January 2005
	125 µg/m ³ Not to be exceeded more than 3 times per year	24-Hour Mean	1 January 2005
	20 µg/m ³ (for the protection of vegetation)	Annual Mean	19 July 2001

Time Period	Objective/Obligation	To be achieved by
Annual mean	Target value of 25 µg/m ³	2010
Annual mean	Limit value of 25 µg/m ³	2015
Annual mean	Stage 2 indicative limit value of 20 µg/m ³	2020
3 year Average Exposure Indicator (AEI) ^a	Exposure reduction target relative to the AEI depending on the 2010 value of the 3 year AEI (ranging from a 0% to a 20% reduction)	2020
3 year Average Exposure Indicator (AEI) ^a	Exposure concentration obligation of 20 µg/m ³ of vegetation)	2015

^a The 3 year running annual mean or AEI is calculated from the PM_{2.5} concentration averaged across all urban background monitoring locations in the UK e.g. the AEI for 2010 is the mean concentration measured over 2008, 2009 and 2010.

Pollutant	Value	Measured as	To be achieved by
Arsenic	6 ng/m ³	Total content in the PM ₁₀ fraction averaged over a calendar year	31 December 2012
Cadmium	5 ng/m ³		
Nickel	20 ng/m ³		
BaP	1 ng/m ³		

APPENDIX 3: Impact Magnitude and Impact Descriptors in Relation to Specific Objectives

Impact Magnitude

Table 15. Definition of Impact Magnitude for Changes in Annual Mean Nitrogen Dioxide and PM₁₀ Concentration^a

Magnitude of Change	Annual Mean
Large	Increase/decrease >4 µg/m ³
Medium	Increase/decrease 2 - 4 µg/m ³
Small	Increase/decrease 0.4 - 2 µg/m ³
Imperceptible	Increase/decrease <0.4 µg/m ³

^a Impact on annual mean PM₁₀ concentration applicable to England, Wales and Northern Ireland. For changes in annual mean concentration in Scotland see Table 17

Table 16. Definition of Impact Magnitude for Changes in Number of Days with PM₁₀ Concentration^a Greater than 50 µg/m³

Magnitude of Change	Number of days above 50 µg/m ³ ^b
Large	Increase/decrease >4 days
Medium	Increase/decrease 2 - 4 days
Small	Increase/decrease 1 - 2 days
Imperceptible	Increase/decrease <1 day

^a Applicable to England, Wales and Northern Ireland only. In Scotland the annual mean objective is the most stringent criteria, therefore changes in annual mean concentration are most important (see Table 17). An equivalent table for Scotland would involve part days and would not be very meaningful.

^b Based on percentage of 35 days, rounded to most appropriate whole number of days.

Table 17. Definition of Impact Magnitude for Changes in Annual Mean PM₁₀ Concentration in Scotland

Magnitude of Change	Annual Mean
Large	Increase/decrease >1.8 µg/m ³
Medium	Increase/decrease 0.9 - 1.8 µg/m ³
Small	Increase/decrease 0.2 - 0.9 µg/m ³
Imperceptible	Increase/decrease <0.2 µg/m ³

Table 18. Air Quality Impact Descriptors for Changes to Number of Days with PM₁₀ ^a Concentration Greater than 50 µg/m³ at a Receptor

Absolute Concentration in Relation to Objective/Limit Value	Change in Number of Days ^{b,c}		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value <i>With Scheme</i> (>35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value <i>With Scheme</i> (32-35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value <i>With Scheme</i> (26-32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value <i>With Scheme</i> (<26 days)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value <i>Without Scheme</i> (>35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value <i>Without Scheme</i> (32-35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value <i>Without Scheme</i> (26-32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value <i>Without Scheme</i> (<26 days)	Negligible	Negligible	Slight Beneficial

^a Applicable to England, Wales and Northern Ireland only. In Scotland the annual mean objective is the most stringent criteria, therefore changes in annual mean concentration are most important (see Table 17)

^b See Table 16

^c An imperceptible change (see Table 16) would be described as 'negligible'.

Table 19. Air Quality Impact Descriptors for Changes to Annual Mean PM₁₀ Concentrations at a Receptor in Scotland			
Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration^{a,b}		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value <i>With Scheme</i> (>18 µg/m³)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value <i>With Scheme</i> (16-18 µg/m³)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value <i>With Scheme</i> (14-16 µg/m³)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value <i>With Scheme</i> (<14 µg/m³)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value <i>Without Scheme</i> (>18 µg/m³)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value <i>Without Scheme</i> (16-18 µg/m³)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value <i>Without Scheme</i> (14-16 µg/m³)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value <i>Without Scheme</i> (<14 µg/m³)	Negligible	Negligible	Slight Beneficial

^a See Table 17

^b An imperceptible change (see Table 17) would be described as 'negligible'.

APPENDIX 4. Planning Appeals where Air Quality has been a Consideration

Location	Date	Description	Allowed or Dismissed	Issues	Mitigation
Additional exposure in area of poor air quality					
Privett Road, Gosport, Hampshire	December 2004	11 houses	Allowed	<ul style="list-style-type: none"> - Impact on highway safety. - Impact on neighbours (fumes, noise and disturbance). There was no evidence that 'fumes' would affect neighbours 	None
37 Broad Lane, Seven Sisters, London	December 2004	Children's nursery	Allowed	<ul style="list-style-type: none"> - Acceptable conditions for children and staff. No air quality evidence provided. Inspector determined conditions would not be unacceptable based on a site visit and presence of school and residential properties in the area 	Mechanical ventilation
Granite Way, Mountsorrel, Leicestershire	February 2006	Housing near to quarry and waste transfer station	Allowed	<ul style="list-style-type: none"> - Impact of noise & air quality on occupants (traffic and dust from quarry and waste transfer station). No evidence provided by Council to demonstrate a problem 	Inspector concluded that a condition proposed by the Council for 3-months PM ₁₀ monitoring was unreasonable as evidence to substantiate existence of an air quality problem was not provided. Condition was viewed by Inspector as an attempt to transfer part of the Council's statutory responsibilities to the developer
Clarence Road, Windsor	January 2006	Housing in AQMA	Allowed	<ul style="list-style-type: none"> - Impact on character & appearance of area - Provision of open space - Impact of air quality on occupants. Inspector concluded that occupants would only be exposed to concentrations above the objective for a short period of time (as concentrations reducing) 	Mechanical ventilation
100 Birmingham Road, Great Barr, Sandwell	March 2007	Housing near to M6	Allowed	<ul style="list-style-type: none"> - Impact of noise & air quality on occupants. Inspector concluded that occupants would only be exposed to concentrations above the objective for a short period of time (as concentrations reducing) 	None

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Location	Date	Description	Allowed or Dismissed	Issues	Mitigation
Former Renault Garage, 128 Milton Road, Portsmouth	June 2007	Sheltered accommodation in AQMA	Allowed	<ul style="list-style-type: none"> - Effect of the design in a prominent location - Impact of air quality on residents. Council modelling indicated that objective would be achieved across the site by 2010. Short timescale over which objective would be exceeded and provision of alternative ventilation makes development acceptable. Redesign not appropriate 	Mechanical ventilation, with opening windows
Blackwall Lane, Greenwich	January 2009	Housing in area of poor AQ	Allowed	<ul style="list-style-type: none"> - Impact of air quality on residents (Main issue). Monitoring indicated levels lower than anticipated through modelling - Inspector concluded that 'sealed units' are inconsistent with contemporary living standards and aspirations 	<p>Ventilation & air pollution mitigation information pack</p> <p>'Sealed units' not actually proposed</p>
6-42 Blackheath Road, Greenwich	November 2001	Housing in area of poor AQ	Dismissed	<ul style="list-style-type: none"> - Retention of employment land (reason for refusal) - Impact on Conservation Area (reason for refusal) - Amenity of neighbours - Impact on setting of listed building - Impact on noise & air quality of occupants (reason for refusal). Inspector concluded that objective exceedences are not a bar to development and that the precautionary approach is to assume that current pollution levels are unlikely to change 	Inspector determined that the building was designed without regard for requirement for mechanical ventilation. Maintenance issues had not been considered

Location	Date	Description	Allowed or Dismissed	Issues	Mitigation
Former Gas Works, Frome, Somerset	May 2004	Housing next to B2 General Engineering Use	Dismissed	<ul style="list-style-type: none"> - Continued availability and viability of adjacent B2 use. The concern that the introduction of housing next to the industrial use would constrain activities on the industrial site was the main reason for refusal - Adequacy of living environment for future occupants 	None
73 Battersea Rise, London	July 2005	Housing near busy road	Dismissed	<ul style="list-style-type: none"> - Change of use - Impact on amenity space and outlook - Impact of noise & air quality on occupants. No evidence submitted, just based on proximity to main road 	None
Neath Road, Swansea	May 2005	Housing in AQMA	Dismissed	<ul style="list-style-type: none"> - Sustainable development - Impact of noise & air quality on occupants. No air quality assessment carried out. Council should have requested this pre-application. No local air quality policies therefore limited weight attributed to this argument but backed up noise issues 	None
Clockhouse, Spur Road, Cosham, Portsmouth	September 2005	Mixed-use ground floor with housing above in AQMA	Dismissed	<ul style="list-style-type: none"> - Visual impact - S106 obligation - Noise & air quality (appeared to be secondary to visual impact issues in decision to dismiss appeal) 	Inspector acknowledged that mechanical ventilation could mitigate impacts but at the expense of living in a relatively 'sealed' environment
203 - 241 Watford Way Hendon LB Barnet	April 2007	Housing in area of poor AQ	Dismissed	<ul style="list-style-type: none"> - Impact of air quality on residents. There did not appear to be any specific air quality evidence, just located next to busy roads in AQMA - Character and appearance - Highways 	None

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Location	Date	Description	Allowed or Dismissed	Issues	Mitigation
Gilda Court, Watford Way LB Barnet	July 2007	Care home	Dismissed	<ul style="list-style-type: none"> - Impact of air quality and noise on care home residents - Character and appearance 	Ventilation proposed Inspector determined not acceptable to have no 'fresh air'. Outdoor air (terraces) would be unacceptable
Heath Road, Sandbach, Congleton	Oct 2007	Gypsy caravans in area of poor AQ	Dismissed	<ul style="list-style-type: none"> - Impact of air quality on gypsy caravan next to M6. Suitable air quality and noise environment not demonstrated - Site compliance with housing policies 	None
Rookery Lane, Halifax Calderdale MBC	January 2008	Housing in area of poor AQ	Dismissed	<ul style="list-style-type: none"> - Unacceptable loss of open space - Whether land is 'greenfield' - Impact of air quality on residents. In AQMA, no evidence provided on air quality at proposed properties. Inspector took precautionary approach and decided that air quality was considered an additional reason for the appeal to fail 	None proposed.
Impact of development on AQ					
Traffic					
Purimachos, Old Market, Bristol	January 2007	Housing in AQMA	Allowed	<ul style="list-style-type: none"> - Impact on conservation area - Impact on safety, security and amenity space of residents - Provision of contribution to Showcase bus route 	Council sought contribution of £1,000 per unit based on other developer contributions in the area. Council conceded this approach does not represent a formula as envisaged in paragraph B33 of Circular 05/2005. Inspector concluded that the Council had failed to show that the contribution sought is fairly and reasonably related in scale to the proposed development
96, 98 & 100 Clerkenwell Road, London	July 2009	Use of former petrol station as temporary car park (increase of 11-16 spaces, long-term)	Dismissed	<ul style="list-style-type: none"> - Impact on character & appearance of conservation area - Impact on traffic congestion (reason for appeal being dismissed) 	

Location	Date	Description	Allowed or Dismissed	Issues	Mitigation
Biomass					
Explorer Road, Dundee	February 2009	Biomass boiler	Allowed	<ul style="list-style-type: none"> - Impact of biomass boiler on local residents & nursery - 5.8% increase in PM₁₀ not regarded as significant (concentration >75% of objective) - Council's concern about cumulative effects with future developments dismissed. Each future application will need to be considered on its merits Concerns about non-threshold PM best addressed by minimising emissions using BAT 	<ul style="list-style-type: none"> - Condition that restricts emissions to the same as natural gas, not considered necessary by Inspector - Conditions on boiler emissions, abatement and fuel type imposed



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