

DELIVERING CLEANER AIR FOR SCOTLAND

Development Planning & Development Management

Guidance from Environmental Protection Scotland
and the Royal Town Planning Institute Scotland

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Working for a cleaner, quieter, healthier, sustainable Scotland

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This guidance was produced by EPS and RTPI Scotland and is based upon a revision of the EPUK/IAQM guidance on Planning & Air Quality published in 2015.

Environmental Protection Scotland: EPS is a national charity that provides expert policy analysis and advice on air quality, land quality and noise and their effects on people and communities in terms of a wide range of issues including public health, planning, transport, energy and climate. Membership is drawn from local authorities, industry, consultancies and individuals who are practicing professionals in their field and/or have an interest in the environment.

Royal Town Planning Institute Scotland

The RTPI is the Chartered Institute responsible for maintain professional standards and accrediting planning education for its 23000 members in the UK and worldwide. RTPI Scotland works to shape and inform planning policy within the separate planning system in Scotland. It promotes the RTPI's wider purpose to advance the science and art of planning by sharing good practice, and providing opportunities for training and networking between its members, the Scottish Government, local government, public agencies and others within development and place making.

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Key Reference Documents

Town and Country Planning (Scotland) Act 1997

Local Government in Scotland Act 2003

Planning (Scotland) Act 2006

National Planning Framework 3, 2014

Scottish Planning Policy 2014

Cleaner Air for Scotland Strategy, November 2015

Planning Circular 3/2013 Development Management Procedures

Planning Advice Note 51 Planning, Environmental Protection and Regulation 2006

Planning Advice Note 75 Planning for Transport

Planning Circular 3/2012 Planning Obligations and Good Neighbour Agreements

Development Planning and Management Transport Appraisal Guidance: Transport Scotland

1. Purpose and structure of this guidance

- 1.1. Environmental Protection Scotland (EPS) and the Royal Town Planning Institute Scotland (RTPI Scotland) have revised and updated the 2015 UK on Planning and Air Quality Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) This was to make it relevant for the Scottish planning system and air quality objectives to ensure that air quality is adequately considered in development planning and development management in Scotland.
- 1.2. The planning system has an important role to play in improving air quality and reducing exposure to air pollution and this is recognised in current Scottish Government policy, as set out in the Cleaner Air for Scotland, Strategy - The Road to a Healthier Future (CAFS, 2015), Scotland’s National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP). This guidance seeks to provide technical assistance in further developing the assessment of air quality throughout all levels of planning policy and in the assessment of planning applications. The development of Strategic Development Plan (SDP) and Local Development Plan (LDP) policies and the determination of individual planning applications are important in reducing air pollution and exposure to air pollution from new developments. The Scottish planning system is plan-led and strategic and local development plans, set the framework for the consideration and determination of planning applications. This guidance focuses on development management, but also stresses the importance of having robust air quality policies within the SDP and LDP. Such policies will include the location of developments and the assessment of transport related to developments to ensure that impacts on air quality can be fully considered as part of the wider consideration of the proposals.
- 1.3. The intended audience for this guidance are local authority air quality and planning officers, developers and consultants involved in the preparation of development proposals and planning applications. It may also be of interest to community groups and the general public concerned with air quality issues associated with new developments. It aims to provide professionals operating within the planning system a basis for sound decision-making, having regard to the air quality implications of development proposals. It is also anticipated that developers will be better able to understand what will make a proposal more likely to succeed. This guidance, of itself, has no formal or legal status and is not intended to replace other guidance.
- 1.4. The guidance sets out why air quality is an important consideration and how good planning decisions can reduce human exposure to air pollution, as well as providing other benefits of well-being to the wider community. It also emphasises the importance of applying good design and ‘best-practice’¹ measures to *all developments*, to reduce both pollutant emissions and human exposure. It provides guidance on how air quality considerations of individual schemes may be considered within the development management process, by suggesting a framework for the assessment of the impacts of developments on local air quality.

¹ Best practice in this guidance implies those measures which are currently considered to be the best available – this does not preclude better practice in the future.

- 1.5. Chapters 2 to 4 set out the role of the planning system, the important links between air quality and human health, and environmental assessment within the planning process. Chapters 5 to 8 then describe the roles of the local authority and developer/applicant in the process. More specifically, Chapter 5 deals with the overarching concepts of land use planning and air quality that should be applied throughout the development planning and development management processes. It emphasises that *all developments* should incorporate good principles of design with regard to minimising emissions and the reduction of impacts on local air quality. Chapters 6 to 8 then deal with the assessment of individual planning applications; the approach set out herein is founded on the principles set out in Chapter 5 being followed. Decisions are made by planning authorities on a case-by-case basis, with primary regard to the approved Local Development Plan and taking account of other material planning considerations.
- 1.6. This guidance is not intended to cover the specific assessment of odour or construction dust effects that some developments may give rise to. Separate guidance has been published e.g. '*Guidance on the assessment of odour for planning*' and '*Guidance on the assessment of dust from demolition and construction*' by IAQM which should be consulted as appropriate².

Following the publication of the CAFS Strategy (2015) Scotland now has challenging targets for improving air quality to meet over the coming years, including having the first Low Emission Zone (LEZ) in place by 2018. Reducing the adverse impacts of air pollution on human health requires an evaluation of the cumulative impacts of emissions along with a spatial plan that reduces human exposure. A new Scottish Planning System is currently under consultation, however this guidance will still be valid as a reference to ensure potential air quality impacts have been considered.

² <http://iaqm.co.uk/guidance>

2. The Role of the Planning System

- 2.1. Planning can play an important role in improving local air quality. SDP and LDP policies can allocate land uses to make sure existing, sustainable transport links between the home, workplace, educational, retail and leisure facilities are used and also plan for new sustainable transport links and identify appropriate locations for potentially polluting industrial development. LDP policies can ensure that developments with associated emissions from transport or combustion processes providing heat and power can be carefully located to take account of sensitive receptors such as hospitals and schools.
- 2.2. The pattern of land use can determine the need for travel and is a major influence on transport-related emissions. Decisions made on the allocation of land use can influence future emissions, as many people and businesses will make significant use of road transport for journeys between places that form part of their daily lives. Suppressing this demand for travel by road can be achieved by having a plan that recognises this demand. All planning authorities should have policies that reduce the demand for road journeys by individual cars. Scotland's National Transport Strategy, Regional Transport Strategies and Local Transport Strategies set the policy basis for this and include transport proposals to reduce emissions and promote sustainable transport proposals for a hierarchy of sustainable transport means. SDPs and LDPs should be developed with reference to these transport strategies.
- 2.3. Policies that promote high quality building standards, reduce energy use, and require the preparation of low emissions strategies, can help to reduce local emissions of air pollutants. They will also align with other policies aimed at increasing sustainability, notably for reducing greenhouse gas emissions.
- 2.4. Development is not inherently negative for air quality. Whilst a new development at a particular site may have its own emissions, it may also provide an opportunity to reduce overall emissions in an area by installing new, cleaner technologies and applying policies that promote sustainability. The installation of more efficient, low emission boilers is one obvious example.
- 2.5. There is a hierarchy of plans within the Scottish system with statutory plans at the national and planning authority level. Council areas within the major conurbations around Glasgow, Edinburgh, Dundee and Aberdeen jointly prepare strategic development plans for these areas so that the development plans for these areas comprise both the SDP and the LDP. The National Planning Framework (NPF) provide a statutory framework for Scotland's long term spatial development. The Scottish Planning Policy (SPP) sets out policy that will help deliver the objectives of NPF. SPP establishes the important role of local authorities in achieving good place making and protecting and enhancing the environment. It sets out Scottish Government policy and, as a statement of Ministers' priorities it is expected to carry significant weight in the preparation of development plans and to be a material consideration in planning decisions. As plans are prepared and replaced on a rolling programme, there may be areas where policies that affect air quality are non-existent or out-of-date. For example, the currently-approved LDP may not reference any recently declared Air Quality Management Areas (AQMA) or any future Low Emissions Zones (LEZs) or Clean Air Zones. (CAZs). Air quality officers should ensure that planners are made fully aware of such zones to ensure early

reference within the LDP. The Scottish Planning System is currently under review and a consultation document has been published in January 2017. The consultation document proposes reducing/removing supplementary guidance making it more important to ensure that issues like air quality are embedded into the evaluation process where appropriate.

- 2.6. Since the Scottish planning system is a plan-led system, it is essential that the LDP provides sufficient reference to air quality issues to enable the council's air quality policies to be competently considered as material issues when planning applications are being assessed by the development management planners. Planning policies should set out the local authorities' intention to consider new developments so as to sustain compliance with, and contribute towards, meeting European Union (EU) limit values and Scottish domestic objectives for air pollutants³, taking into account the presence of AQMAs and the cumulative impacts on air quality from individual sites in local areas.
- 2.7. Local authorities need to set out their policies to achieve good air quality, both within AQMAs and more widely across their districts and periodically to review them to keep them relevant and up-to-date. Air quality officers should provide updates to any changes in air quality policy and pollution reduction initiatives to the planners involved in developing new LDPs. Both LDPs and SDPs should make a specific reference to the plan being compliant with the advice within Scottish Government's CAFS Strategy (2015)

³ The air quality objectives for Scotland are defined in the Air Quality (Scotland) Regulations 2000 and the Air Quality (Scotland) Amendment Regulations 2002 and 2016; The EU Limit Values are transposed into UK legislation within the Air Quality Standards (Scotland) Regulations 2010 and the Air Quality Standards (Scotland) Amendment Regulations 2016.

3. Links between poor air quality, human health and the environment

- 3.1. Planning has a key influence on air quality and also, therefore, human health and the environment. Ideally, air quality should be a prime consideration for long-term planning, so that land is used and allocated in ways that minimises emissions and exposure of people to air pollution. As a minimum, decisions on individual planning proposals should not lead to unacceptably poor air quality, nor should it make a series of decisions that collectively produces this undesirable outcome.
- 3.2. Scottish planning, transport and health policies all encourage collaboration between professionals working in planning, transport, environmental health and public health so that collective decisions can be made that positively influence both air quality and health.
- 3.3. In the UK it has been estimated that the mortality burden of long term exposure to particulate matter (PM_{2.5}) in 2008 was equivalent to nearly 29,000 premature deaths in those aged 30 or older.⁴ The Public Health England report ‘Estimating Local Mortality Burdens associated with Particulate Air Pollution’⁵ shows the fraction of mortality attributable to air pollution by local authority (average for Scotland 3.9%).⁶ It is likely that removing exposure to all PM_{2.5} would have a bigger impact on life expectancy in Scotland than eliminating passive smoking or road traffic accidents⁷. The economic cost from the impacts of air pollution in the UK is estimated at £9-19 billion every year which is comparable to the economic cost of obesity (over £10 billion)⁸. In 2013, the International Agency for Research on Cancer identified outdoor air pollution as causing lung cancer, without identifying the specific carcinogenic components⁹.
- 3.4. Nitrogen dioxide can also, independently of particulate matter, play an adverse role in exacerbating asthma, bronchial symptoms (even in healthy individuals), lung inflammation and reduced lung function. Reduced lung function growth is also linked to nitrogen dioxide exposure at concentrations currently found in many urban areas. There is also an increasing awareness of evidence, as summarised in the HRAPIE review by the WHO, that chronic exposure to NO₂ may be important for premature mortality effects. The strength of this evidence is less than it is for the much larger body of evidence for particles, with regard to the use of a concentration-response function that is suitable for quantification of the impact on mortality. The evidence is considered by the Committee on the Medical Effects of Air Pollutants to be sufficient to conclude that NO₂ is causing some of the health effects observed in epidemiological studies¹⁰ and the Committee is considering recommendations for concentration-response functions. The strength of the association for NO₂ proposed by the HRAPIE review is such that it is comparable to that of PM_{2.5}, but only above a threshold of 20 µg/m³ as an annual mean for adult populations.

⁴The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom. The Committee on the Medical Effects of Air Pollutants (COMEAP) (2010) <https://www.gov.uk/government/publications/comeap-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-uk>

⁵Public Health England. (2013). Health Protection.

⁶Comparing estimated risks for air pollution with risks for other health effects, Miller and Hurley, IOM (2006)

⁷<http://www.defra.gov.uk/environment/quality/air/air-quality/impacts/>

⁹IARC Scientific Publication No. 161 Air Pollution and Cancer, Editors: K. Straif, A. Cohen, and J. Samet, 2013, Lyon

¹⁰COMEAP (2015) Statement on the Evidence for the Effects of Nitrogen Dioxide on Health, 12 March 2015 (<https://www.gov.uk/government/publications/nitrogen-dioxide-health-effects-of-exposure>)

- 3.5. The control of air pollution is the responsibility of central government, local authorities and government agencies through several Acts of Parliament and Regulations. (both at a UK and Scottish level). Air pollution has many sources and is not confined by administrative boundaries. Consequently, its control requires regulatory authorities and the Scottish Government to use a wide range of policy levers to influence air quality. Local authorities have a wide remit and their responsibilities touch on many aspects of our lives. To achieve their objectives, they need to draw on many different resources, some statutory, and some that rely on cooperation with others. Good air quality is one such objective, where many players can affect the outcome through actions taken in different places and sometimes over long periods of time as one development succeeds another. Determining one application in isolation may not achieve good air quality on its own. This is often achieved through many decisions made in different circumstances guided by a mosaic of policies that implemented together will create better air quality.

4. The Scottish Planning System

Policy context

- 4.1. This Chapter provides a brief overview of the important aspects of planning in the context of this Guidance. A more detailed review of the land use planning system in Scotland is provided on the Scottish Government’s website. Primary planning legislation is laid out in The Planning (Scotland) Act 1997, Local Government in Scotland Act 2003, The Planning (Scotland) Act 2006. Scottish Planning Policy and related statutory instruments and circulars and NPF3 set out the basis of the system. Planning Advice Notes provide further (non-statutory) advice.
- 4.2. Scottish planning policy focuses on plan-making, planning decisions and development design on the Scottish Government’s purpose of “creating a more successful country, with opportunities for all to flourish, through increasing sustainable economic growth”.The Scottish Planning system is currently being reviewed and it is anticipated that new legislation will be promoted to introduce a new process for the approval of nationally significant infrastructure projects. At the opposite scale of development, more minor applications may be taken out the planning process completely and Simplified Planning Zones introduced. The Environmental Assessment process for planning applications and the Strategic Environmental Assessment process for plans both derive from European legislation and new EIA regulations are being introduced in 2017 which will change current requirements.
- 4.3. Planning authorities are responsible for decisions on development. A hierarchy of 3 categories of planning applications are identified within the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009, with different approval routes and different routes for appeal should an application be refused these being National, Major and Local development categories. Nationally significant development noted in NPF3 are regarded as acceptable in principle to Scottish Ministers but are subject to a planning approval assessment process and the planning authority can attach planning conditions. Both major and national developments will be likely to have implications for air quality. Major applications include:All developments included within Schedule 1 of the Environmental Impact Assessment (Scotland) Regulations 2011.
- 50 or more houses or a site area larger than 2 hectares
 - Business, general industry, storage or distribution developments of more than 10,000 square metres or 2 hectares
 - An electricity generation station of more than 20 megawatts
 - Waste management facilities of 25,000 tonnes or more per annum capacity
 - Transport and infrastructure projects for new and replacement roads, rail and tramways, and waterways of more than 8 kilometres
 - Mineral extraction of more than 2 hectares
 - Mixed use developments of over 5000 square metres or a site of more than 2 hectares
 - Extensions to any of the above

Applications for major developments may need to be supported with a transport assessment or statement and design statement and be screened for environmental impacts. If refused

or if granted with conditions unacceptable through a committee of elected councillors, applicants can appeal against the decision to the Scottish Ministers through the Planning and Environmental Appeals (DPEA) division of the Scottish Government. Local developments are generally small-scale and included within a planning authority's statutory scheme of delegation for a decision by planning officers. If refused, the decision may be appealed via the local authority review body. All decisions are subject to the same statutory tests. 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:

- compliance with national air quality objectives and of EU Limit Values^{11, 12}
- whether the development will materially affect any air quality action plan, including a LEZ
- the overall degradation (or improvement) in local air quality, and
- whether the development will introduce new public exposure into an area of existing poor air quality.

4.4. The National Planning Framework (NPF3) and Scottish Planning Policy set out planning policy supported by Circulars and the wider series of Planning and Architecture documents and all are material considerations in the planning system. They place a general presumption in favour of sustainable economic growth, stressing the importance of local development plans, and state that the planning system should perform an environmental role to minimise pollution. One of NPF's four outcomes is to achieve a successful sustainable place where living environments foster better health and have reduced spatial inequalities in well-being.

4.5. NPF3 recognises the importance of reducing the impact of the car on cities and town centres and investing to address congestion, air pollution and noise and improving the public realm. While the NPF addresses the low carbon agenda and the need for more accessibility by means of walking and cycling is recognised, there is no specific reference to air quality objectives. Work is required to ensure that the next NPF fully reflects the aims and targets set out in the CAFS strategy (2015). Scottish Planning Policy 2014 introduces a presumption in favour of development that contributes to sustainable development. Paragraph 29 states that policies and decisions should be guided by a number of principles including "protecting the amenity of new and existing development and considering the implications of development for water, air and soil quality".

4.6. Planning Advice Notes (PANs) provide advice on good practice and other relevant information. PAN 51 on Planning, Environmental Protection and Regulation (revised in 2006) provides advice on air quality and planning and sets out linkages with the Local Air Quality Management Policy Guidance and SEPA's role in air quality. It identifies the need for close

¹¹ The duty to meet EU Limit Values is placed on the Secretary of State and not local government.

¹² The precise role of the development control process in delivering compliance with the EU limit values is uncertain, and clarification has been sought from Defra

working between Environment Health/Air Quality officers, Transport officers and Planners. It identifies that air quality is likely to be a material consideration in assessing developments within AQMAs or areas close to declaring them. In such cases a study of air quality may be warranted where proposals are likely to have a significant effect on air quality. This is likely to be part of a wider EIA. The PAN further states there may also be a need to consider the cumulative effects of development on air quality leading to a gradual deterioration in air quality. An overview of the context of air quality and planning at a national, regional and local level is set out in Table 4.1. The air quality impacts of a planning application will be judged against the policies within these documents.

Table 4.1 Context of air quality and planning in Scotland

Level	Relevant Documentation
National	National Planning Framework 3 ,2014 Scottish Planning Policy, 2014 Cleaner Air for Scotland 2015 National Transport Strategy Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007
Regional	Strategic Development Plans for 4 city regions of Aberdeen, Dundee, Edinburgh and Glasgow Regional Transport Strategies
Local	Local Development Plans and related Supplementary Guidance Air Quality Action Plans Local Air Quality Guidance Local Transport Strategies

Strategic Development Plans

4.7. SDPs are required for the 4 largest city regions in Scotland and these deal with region wide issues that cross boundaries of individual local authority areas and provide the policy context for housing demand, land-use implications of strategic transport and travel to work demand. It is a legal requirement to submit SDPs to Scottish Ministers within 4 years of the approval of the existing SDP. Air quality may not be a specific main issue in SDPs but include policies that prioritise sustainable transport, reduce urban sprawl and enable city development around effective public transport hubs will all help to achieve better air quality. SDPs should make reference to CAFS (2015) and where relevant refer to any Low Emission Zones being considered for cities.

Local Development Plans Guidance

4.8. A Local Development Plan (LDP) is required for each local authority area in Scotland. There is

a legal requirement on planning authorities to adopt a new LDP within 5 years of the adoption of the previous plan. Where there is an SDP, a new LDP must be adopted within 2 years of the approval of the SDP. LDPs may also be prepared for specific issues such as mineral extraction, which may also have air quality implications. LDPs allocate sites for new development and designate protected sites. LDPs set the policies for the local authority's decisions on planning applications, on contributions for sustainable transport infrastructure (e.g. the Edinburgh Tram and Glasgow's Fastlink bus). The Scottish planning system is a plan-led system and any significant air quality issues should be identified in each Plan. There should be a reference to the CAFS strategy (2015) in each plan and the boundaries of any AQMAs and proposed LEZs should be indicated in the plan. When preparing the plan, the evidence-base requires to be clearly set out and it is essential that air quality issues are identified within the process so that any significant air quality implications are considered. Two key assessments for this are the Strategic Environmental Assessment (SEA) and the Transport Assessment. These should indicate the impact of the plans proposals on road traffic overall and on specific roads. Transport Scotland advice on Transport Assessments is contained within Development Planning and Management Transport Appraisal Guidance (2010). It is expected that the development of national and regional traffic and air quality models (the National Modelling Framework) will assist in identifying a more robust evidence base for the allocation of major development sites such as Community Growth Areas and for large sites identified for new development by land-owners and developers.

- 4.9. At the Main Issues and Proposed Plan stages, these documents should be reviewed to check that: AQMAs and LEZs are referenced, the traffic impact of new developments has been assessed and resultant effect of any traffic hotspots considered in relation to surrounding air quality. Methodology provided by Transport Scotland, SEPA and the Scottish Government for modelling air quality impacts should be used. Since LDPs are being prepared on a continuing cycle, there are opportunities to ensure that significant air quality issues are flagged, that CAFS (2015) is considered within the plans and, where there are significant issues, Supplementary Guidance on improving air quality can be prepared as part of the LDP process

Supplementary Guidance (SG)

- 4.10. Supplementary Guidance (SG) is guidance prepared, consulted on and adopted by the Planning Authority to deal with further information or detail about particular LDP issues. SG must be expressly identified in the LDP and be submitted to the Scottish Ministers. Once adopted, SG forms part of the Development Plan. Several local authorities in Scotland have now published guidance on air quality that sets 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 Management planners and developers. They can also provide a means for assessing the adequacy of an air quality assessment. SGs could provide an important mechanism for Scottish LDPs to take better account of air quality where poor air quality is a significant issue and the use of SGs for specific problem areas should be encouraged. SG is developed as part of the LDP process and subject to full consultation and scrutiny. SG must be clearly linked to the LDP itself and allows for detailed information to be provided which would not be appropriate within the LDP itself. SG

is a material consideration when considering planning application.

- 4.11. The Scottish Government is currently consulting on a review of the Scottish Planning system which proposes reducing and/or removing SGs which will require that relevant advice, information and tools will need to be embedded in the generic planning guidance document.

The Development Management Process

- 4.12. Development proposals may be submitted for planning permission in principle, planning permission, or for approval of matters specified in conditions. Applications in principle should contain sufficient detail to allow the impacts to be properly assessed. Pre-application discussions between developers or their representatives/consultants and planning authorities are encouraged, to ensure an application is complete and meets the necessary requirements. The decisions made by planning authorities should be made in accordance with the Development Plan, unless there are material considerations to suggest otherwise. The Scottish planning system gives the highest priority to the role of the approved Development Plan.
- 4.13. Applications in principle, maybe approved subject to matters specified in conditions. If air quality is likely to be a significant issue in relation to the proposed development, it will be most effectively considered if the air quality assessment is carried out as the application is being processed. Once approval is given by the local authority, the air quality issues identified will be evaluated within the context of a consent for the development. In some circumstances, conditions may 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.
- 4.14. Air quality (and other) impacts can be controlled through the application of planning conditions or through planning obligations. 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.

Material Considerations

- 4.15. 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. This includes air quality. The circumstances of a particular planning application will determine whether or not this is the case in practice. 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.
- 4.16. Where a planning application runs counter to the Development Plan, 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 effective policies for air quality management are in place, either within the LDP or SDP, then air quality issues can be accounted for in decision-making to a much greater extent than in cases where the relevant policies are ineffective or non-existent.

Air quality as a material consideration

4.17. Any air quality issue that relates to land use and its development is capable of being a material planning consideration. Chapter 7 of this Guidance explores in more detail how to judge the significance of the air quality impacts of a development proposal, and inform the outcome in terms of planning decisions. The weight, however, 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.

4.18. Some air quality assessments will be undertaken for development that falls within the scope of the Environmental Impact Assessment Regulations¹³. Such assessments will need to recognise the requirements of these Regulations, in respect of the need to define likely significant effects and identify mitigation, for example. This guidance has been written to take into account the EIA regulations, although it is not written purely for their requirements. It is also possible that the Habitats Regulations would invoke the need for an air quality assessment, should the development have potential for affecting a designated site of nature conservation at the European level, i.e. a Special Area of Conservation (SAC), a Special Protection Area (SPA) or a Ramsar site. Such an assessment is not part of this guidance, however.

Linkages with other relevant issues

4.19. 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 through vehicles braking and then accelerating 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. This may require the input of other specialists.

¹³ The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 SI no. 1824

5. Better by Design - better placemaking and better air quality

Introduction

5.1. This Section explains how all development proposals can adopt good design principles that reduce emissions and contribute to better air quality management. The roles of the planning authority and developer/applicant in the process by which air quality and planning decisions are taken are set out and commentary is given on how both the development planning and development management processes can contribute to good practice for all new development. The flow chart in Box 1 below provides an overview of the whole process, defining the roles of the various parties and identifying opportunities for optimising the development proposal so as to reduce emissions. The concepts outlined in this Section are applicable to all development and can be applied regardless of the outcome of any air quality assessment, as described in Section 6.

Box 1. The planning process and reducing air quality impacts

<u>Development Plans</u>	<u>Supplementary Guidance</u>	<u>Development Management</u>
<ul style="list-style-type: none"> Major applications may be approved subject to conditions AQAs should be prepared and considered by the planners and committee as part of processing the application. If an AQA is required by the air quality officer, this should be identified early in the process AQAs should not be required through planning conditions as the issues cannot then be fully taken account of before a decision is made Councils have different approval processes with may mean applications are decided by planning committees dealing with all or part of a council area or the planning committee may assess the application and make a decision which is referred to a full meeting of the whole council for ratification. Planning conditions should be time-bound. If conditions require further submissions before the development starts, the reports should be referred to the air quality officer and the conditions should be formally discharged. Applicant should be clear on the scope of the AQA, including base levels, sources of information, modelling, and any additional monitoring 		

Overarching Concepts in Planning for Better Air Quality

5.2. The planning and development management system has an important role to play in driving forwards improvements in local air quality, minimising exposure to pollution, and improving the health and well-being of the population.

5.3. Whilst land-use planning and development management rarely provide immediate solutions to improving air quality, they can ensure that future problems are prevented or minimised by policies that improve placemaking, through reducing the need for motorised transport and the design of developments in areas of poorer air quality

5.4. This guidance deals primarily with the development management process that is applied to determining individual applications. The role of planning at the development plan level must

not be understated. Planning applications are decided based on the content of the approved Local (and Strategic) Development Plans and related Supplementary Guidance. Effective planning can reduce the need to travel by car to the workplace, schools, shopping and leisure facilities by ensuring new dwellings are located in areas where such facilities are readily available, or where alternative sustainable transport modes are available or can be made available through planned infrastructure or as required by planning conditions. Careful consideration of building design and layout can assist in minimising exposure to future occupants. Policies that enforce high building standards can play an important role in reducing emissions from services that provide heating and hot water – an increasingly important sector as measures to tackle transport emissions are tightened.

Making Better Use of the Planning System

5.5. The planning system has the potential to influence local air quality positively through the careful design of neighbourhoods. Some actions which are strongly encouraged include:

- Full integration of the inputs of the planning, transport, housing, education and environment functions to ensure that environmental considerations, including those related to air quality, are considered at the earliest stages of the development plan process;
- Ensuring new developments are located close to existing bus and rail services and access to stations and bus stops on foot and by cycling is well designed, safe and well lit.;
- Giving careful consideration to the location of developments (e.g. within the development of Site Allocation Policies) where particularly sensitive members of the population are likely to be present; e.g. school buildings should generally be sited 100m or more away from busy roads;
- While new housing in town centre areas meets many planning objectives, care is needed to avoid exposing town centre residents to poorer air quality on busy roads and congested junctions.

Examples of Approaches to Reducing Emissions and Impacts

5.6. A particular concern of many local authorities is that individual developments are often shown to have a very small air quality impact, and, as a consequence, there are few mechanisms available to the planning officer to require the developer to achieve lower emissions. This, in turn, leads to concerns about the potential air quality impacts of cumulative developments as many individual schemes, deemed insignificant in themselves, contribute to a “creeping baseline”. The use of modelling to assess the effect of increased road traffic associated with new developments should indicate cumulative effects and be assessed when preparing the evidence base for new Local Development Plans.

5.7. To tackle this issue, a number of authorities have developed various approaches to identify the requirement for good practice and design requirements at an early stage of the assessment process. The basic concept is that good practice to reduce emissions and exposure is incorporated into **all developments** at the outset, at a scale commensurate with the emissions. This should include sites for major land release for new housing such as

Community Growth Areas and air quality should be a consideration in master planning these areas. Developments in an area of existing poor air quality (e.g. an AQMA or LEZ) should include a modelling assessment (using the national modelling framework) of the potential impacts in this context.

BOX 2: Examples of Approaches to Reducing Emissions and Impacts

1. Where new housing developments are proposed in urban areas with biomass boilers to supply power and heat there is a need to ensure that only approved appliances will be used and that appropriate mitigation measure to disperse and/or remove fine particulate matter emissions. The cumulative impact of the emissions on fine PM and NO_x levels should be determined using approved modelling methodology
2. Where new roads are proposed in close proximity to housing an adequate modelling exercise to predict exposure of local residents to air pollution should be undertaken using approved modelling methods and take account of vulnerable sectors of the population e.g. schools and hospitals.

Principles of Good Practice

- 5.8. Good practice principles should be applied to all developments that have not been screened out using criteria such as those described in paragraphs 5.6/5.7. Good practice should cover both emissions and exposure, and address both the design and operational phases. Some examples of such principles include the following.

Design phase

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new "street canyon" or building layouts that inhibit effective dispersion of pollutants;
- Delivering sustainable development should be the key theme for the assessment of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads, or directing combustion exhaust through well-sited vents or chimney stacks.

Operational phase

- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000m² of commercial floor space. Where on-site parking is provided for residential dwellings outside individual driveways, these should include EV charging points to the standard of one point per 10 residential units or a higher standard if set out in the LDP.
- Where development generates significant additional traffic, provision of a travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised

or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety. Where bus services are limited or non-existent the Travel Plan should consider the need to fund and subsidise bus services for at least the first 5 years of the development. Bus operators, the Councils Transport function and the Regional Transport Partnership should be asked to provide costs and operational advice where bus services are limited or non-existent

- The Travel Plan should consider the need to fund or subsidise bus services for at least the first 5 years of the development. Bus operators, the Councils Transport Department and the Regional Transport Partnership should be asked to provide costs and operational advice

5.9. Typical measures that may be considered to offset emissions include:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructure.

Measures to offset emissions may also be applied as post assessment mitigation. Typical measures that may be considered to offset emissions, include:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.
- All gas-fired boilers to meet a minimum standard of <40 mgNO_x/kWh.
- Where emissions are likely to impact on an AQMA, all gas-fired Combined Heat and Power (CHP) plant to meet a minimum emissions standard of:
 - Spark ignition engine: 250 mgNO_x/Nm³¹⁴
 - Compression ignition engine: 400 mgNO_x/Nm³¹⁵
 - Gas turbine: 50 mgNO_x/Nm³¹⁶
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of
- Solid biomass boiler: 275 mgNO_x/Nm³ and 25 mgPM/Nm³¹⁷

¹⁴ At reference conditions of 273K, 101.3 kPa, 5%O₂ and 0% H₂O

¹⁵ At reference conditions of 273K, 101.3kPa, 5%O₂ and 0% H₂O

¹⁶ At reference conditions of 273K, 101.3 kPa, 15% O₂ and 0% H₂O

¹⁷ At reference conditions of 273K, 101.3 kPa, 6%O₂ and 0%O₂

6. Undertaking an Air Quality Assessment

Purpose

- 6.1. An air quality assessment is undertaken to inform the decision-making with regard to the development. It does not, of itself, provide a reason for granting or refusing planning permission. Almost all development will be associated with new emissions if the development is considered in isolation. In most cases, therefore, development will be associated with adverse impacts. These impacts require quantification and evaluation in the context of air quality objectives and existing air quality. The significance of the effects arising from the impacts on air quality will depend on a number of factors and will need to be considered alongside the benefits of the development in question. Development under current planning policy is required to be sustainable and the definition of this includes social and economic dimensions, as well as environmental. Development brings opportunities for reducing emissions at a wider level through the use of more efficient technologies and better designed buildings, which could well displace emissions elsewhere, even if they increase at the development site. Conversely, development can also have adverse consequences for air quality at a wider level through its effects on trip generation.
- 6.2. Where a development requires an air quality assessment (proximity to an existing or proposed AQMA and/or LEZ being a key criteria), this should be undertaken using an approach that is robust and appropriate to the scale of the likely impacts. Modelling should use be undertaken using Transport Scotland/SEPA approved methods (the NMF). 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). As set out in the introduction in Chapter 1, this guidance document is not intended to *replace* existing guidance that exists for certain types of development, notably:
- industrial developments that require a Permit;
 - highways schemes promoted by Transport Scotland; or
 - activities associated with sources of dust (e.g. mineral extraction, waste handling, construction) or odours.
- 6.3. Separate guidance is available for these sources. Clearly, where new developments are located in the vicinity of such sources, the potential impacts of their operation on the proposed development will need to be considered. This should make use of the guidance for these other sources, adapted as necessary using professional judgement. In the case of industrial development and its regulation SEPA needs to be considered in the planning context. The 'H1' guidance provided by the Environment Agency is intended (in part) to assist in the determination of Best Available Techniques (BAT) for an installation regulated under the Industrial Emissions Directive (IED) or IPPC¹⁸. In Scotland, this guidance is not statutory, but should be referred to in determining BAT. This guidance document has been written so as to be complementary to H1 and not a substitute for it. The H1 methodology has not been designed for conducting an assessment to accompany a planning application, especially one

¹⁸ Integrated Pollution Prevention and Control

undertaken for the EIA Regulations. In these circumstances, a framework is required that allows the assessor to describe the degree of impacts before reaching a conclusion on significance of the effects. The H1 methodology provides some useful elements of such a framework and, where relevant, these have been used in this guidance, partly for reasons of consistency. It must be recognised, however, that the H1 assessment methodology and the assessment guidance in this document serve different purposes. The former is intended for the purpose of screening out insignificant emissions of individual pollutants and identifying where there is a *risk* of a potentially significant effect on the environment through the release of some pollutants, as part of the impact assessment in support of an application under the Environmental Permitting Regulations. The latter is intended to provide a means of reaching a conclusion on whether the proposed development has a likely significant effect on local air quality, taking into account the overall degree of the impacts and other factors as appropriate. In each case, the term ‘significant effect’ has a deliberately different meaning and context. This document is not intended to address impacts on nature conservation sites, for which a different form of assessment is required.

The need for an air quality assessment

- 6.4. It is established good practice to consult with the Local Planning Authority (and/or its air quality specialists) to gain agreement on the need for an air quality assessment in support of a planning application and if one is required, the approach and methodology that will be used. The Planning Practice Guidance at paragraph 6 makes this point. There is however a prior step in the consultation process, which is to determine the very need for an assessment. If an assessment is required, the approach and methodology can then be constructed to deal with the key issues driving the need for the assessment.
- 6.5. To inform the consultation process, it will be important to identify the locations of any AQMAs and LEZs relative to the proposed development, the main existing and proposed sources of atmospheric pollution and the location of existing and proposed human-health sensitive receptors.
- 6.6. It is reasonable to expect that an assessment will be required where there is the risk of a significant air quality effect, either from a new development causing an air quality impact or creating exposure to high concentrations of pollutants for new residents. To a large extent, professional judgement will be required to determine whether an air quality assessment is necessary as it is not possible to apply an exact and precise set of threshold criteria to cover the wide variety of development proposals. The following tables provide criteria that may be useful to guide the consultation process in establishing the need for an assessment. They separately consider:
- the impacts of existing sources in the local area on the development; and
 - the impacts of the development on the local area.

- 6.7. Where an air quality assessment is identified as being required, this may be either a Simple or a Detailed Assessment. A Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that is completed with the aid of a predictive technique, such as a dispersion model. Much of the discussion in this section relates to Detailed Assessments.
- 6.8. The criteria provided are precautionary and should be treated as indicative. In some instances, it may be appropriate to amend them on the basis of professional judgement.

Impacts of the Local Area on the Development

- 6.9. There may be a requirement to carry out an air quality assessment for the impacts of the local area's air quality on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:
- the background and future baseline air quality and whether this will be likely to approach or exceed Scottish air quality objectives;
 - the presence and location of Air Quality Management Areas and Low Emission Zones as an indicator of local hotspots where the air quality objectives may be exceeded;
 - the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO₂ & fine PM), that would cause unacceptably high exposure for users of the new development; and
 - the presence of a source of odour and/or dust that may affect amenity for future occupants of the development.

Impacts of the Development on the Local Area

- 6.10. In the case of an assessment of the impacts of a development in the local area, a two-stage approach is suggested. The **first stage** is intended to screen out smaller development and/or developments where impacts can be considered to have insignificant effects¹⁹. The **second stage** relates to specific details regarding the proposed development and the likelihood of air quality impacts.
- 6.11. **Stage 1** requires any of the criteria under (A) coupled with any of the criteria under (B) in Table 6.1 to apply before it is considered appropriate to proceed to Stage 2. If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the proposed development on the local area, and the impacts can be considered to have insignificant effects. Table 6.1 sets out the Stage 1 criteria designed to remove the need to assess impacts arising from small developments.

¹⁹ Taking account of criteria published in: a) The Town and Country Planning (Development Management Procedure) (England) Order 2010 – 2010 No. 2184 [(Wales) Order 2012, No 801(W11)] (HMSO), b) The GLA's Supplementary Planning Guidance (SPG) on Sustainable Design and Construction (2014) and c) The Sussex Air Quality Partnership's Air Quality and Emissions Mitigation Guidance for Sussex Authorities (2013) v January 2014. The latter still requires a calculation of emissions even if an assessment is not required

Table 6.1. Stage 1 Criteria

Criteria to Proceed to Stage 2
<p>A. If any of the following apply:</p> <ul style="list-style-type: none"> – 10 or more residential units or a site area of more than 0.5ha more than 1,000 m² of floor space for all other uses or a site area greater than 1ha
<p>B. Coupled with either of the following:</p> <ul style="list-style-type: none"> – the development has more than 10 parking spaces the development will have a centralised energy facility or other centralised

Note: Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

- 6.12. **Stage 2.** The criteria in Table 6.2 provide more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area. The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the Scottish air quality objectives. The presence of an AQMA or a LEZ is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.
- 6.13. Where an air quality assessment is identified as being required, then this may take the form of either a Simple Assessment or a Detailed Assessment (see paragraph 6.7 for more details). In other words, passing a screening criterion in Table 6.2 does not automatically lead to the requirement for a Detailed Assessment.
- 6.14. If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered to be insignificant. This should be agreed with the local planning authority. It may still be necessary to carry out calculations of emissions, if required by some local authorities .

Table 6.2. Indicative Criteria for Requiring an Air Quality Assessment

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: <ul style="list-style-type: none"> – more than 100 AADT within or adjacent to an AQMA /LEZ – more than 500 AADT elsewhere
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight)	A change of HDV flows of <ul style="list-style-type: none"> – more than 25 AADT within or adjacent to an AQMA /LEZ – more than 100 AADT elsewhere
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA/LEZ
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights, or roundabouts
5. Introduce or change a bus station.	Where bus flows will change by: <ul style="list-style-type: none"> – more than 25 AADT within or adjacent to an AQMA/LEZ – more than 100 AADT elsewhere
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor Coupled with the car park having more than 100 movements per day (total in and out)
7. Have one or more substantial combustion processes	Where the combustion unit is: <ul style="list-style-type: none"> – any centralised plant using bio fuel – any combustion plant with single or combined thermal input >300kW – a standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours a year)

Content of an air quality impact assessment report

- 6.15. The intent of an air quality assessment is to demonstrate the likely changes in air quality or exposure to air pollution, as a result of a proposed development. Often these changes will be quantified, although in some instances a qualitative assessment will be sufficient. Ultimately, the planning authority has to use this information to form its own view on the “significance” of the effects of 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.
- 6.16. In some circumstances, there will be an existing permission for development on the site that has not yet been exercised. In the planning system, the estimated emissions from the existing permission could be considered as part of the future baseline and thus a revised application for the site would give rise to an incremental change emission from that associated with the extant permission. This guidance recommends that impacts be assessed for the new permission sought against the current baseline for the site, disregarding the extant permission; this will reflect the ‘real world’ increase experienced by receptors.
- 6.17. It is important that an agreement is reached between the applicant and the local authority as to the proposed assessment methodology. Reference to modelling and assessment methods developed by SEPA and TS under CAFS (2015) should be made. 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 (the future ‘baseline’). Comparison with existing conditions will also be required, as current conditions are those with which people are familiar. There are 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, which may or may not include the contribution of committed development);
 - (iii) Predict the future air quality with the development in place (with development).
- 6.18. The possibility of **cumulative impacts** should also be considered. Therefore, there may be a case for modelling another future scenario, with committed development excluded, to allow the cumulative impact of all such future developments with planning permission to be assessed as one combined impact at selected receptors. In most circumstances, it is more difficult to include other planning applications as the outcome is not certain. The report prepared detailing the results of the assessment should contain the following information (but not necessarily in this order):
- 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/LEZ and any nearby sources that may affect the local air quality. 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 that have been scoped out of further assessment.

- b) *The policy context for the assessment.* This should summarise the national and local policies that should be taken into account in the assessment. This is especially important where there are local policies designed to improve air quality.
- 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.
- d) *The basis for determining significance of effects arising from the impacts.* The descriptors used for describing the severity of impacts should be set out, together with the basis for determining the significance of the effects arising from air quality impacts.
- e) *Details of the assessment methods.* This section should provide details of the methods, including the model used and the input data used for the assessment and any assumptions that have been made. Where a commonly applied method is used (such as the national modelling framework for Scotland), a detailed description of the model itself is not required. Details should be provided on all local input data and assumptions, including:
 - the emission data and their source, 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;

There will be some variation between requirements for reporting data relating to point sources and road traffic. The former will have some physical properties of the emission to be reported, i.e. stack height, diameter, emission velocity and exit temperature. The latter will require details of assumptions made regarding emission factors and features of the traffic flows used in the model, such as speeds and vehicles types, e.g. percentage of heavy duty vehicles (HDVs) in the traffic.

- f) *Model verification.* This will normally be expected for modelling of road traffic emissions, but is not practicable for point-source modelling. If verification is not done, then some justification or explanation will be required. 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 uncertainties in traffic flow, vehicle emission factors and estimated background concentrations, as well as limitations of the model to represent dispersion in settings where air flow is affected by roadside buildings, trees etc. Model verification will be

important, especially where predicted concentrations are close to the objective, and should be based on the most appropriate available monitoring data (and 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). 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 or LEZs. 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).
- 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. Reference should also be made to the background maps produced by the Scottish Government, together with any adjustments of these mapped values to take account of local monitoring (but only where the monitoring is at true background sites). Reference should also be made to the Scottish Government maps²⁰ showing sections of road where the limit value is exceeded, as these represent the ‘official’ exceedances of the limit value, as reported to the European Commission. These maps are only available (at the time of writing) for 2013 and not for any future years.
- 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. Descriptions of the impacts at the individual receptors should be provided (see section below), taking into account the absolute concentrations in relation to the air quality objectives. A comment on the sensitivity of the results to input choices is desirable, so that a view can be taken of the uncertainties.
- 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 need assessment. The assessment should take

²⁰ <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

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 should follow the guidance set out by the IAQM²¹.

- k) *Cumulative impacts and effects.* In many cases, the impact of the development being assessed will have a cumulative effect with other planned developments, which may or may not have planning permission. Where these developments have been granted planning consent and are therefore ‘committed’ developments, their impacts should be assessed cumulatively with those of the application site. The contribution of these committed developments should be accounted for in the ‘future baseline’, provided that their contributions can be quantified. This situation can arise when several such developments are contributing additional road traffic on one stretch of road. In some particular cases, there may be another notable proposed development (without planning permission) in close proximity that could contribute an impact at receptors in combination with the primary development being assessed. In these circumstances, it may be necessary to quantify this combined impact and assess it against the future baseline. These occasions, and the need for this form of scenario assessment, will be uncommon, and the approach to the assessment will need to be decided on a case-by-case basis.
- l) *Mitigation measures.* In those cases where a significant effect is identified then the measures to be employed to avoid, reduce and, where appropriate, offset this effect should be set out. **Even where the effect is judged to be insignificant, consideration should be given to the application of good design and good practice measures, as outlined in Chapter 5.** This is especially the case for developments that increase emissions of particulate matter, as all reductions in emissions will be beneficial for human health.
- m) *Summary of the assessment results.* This should include:
- Impacts during the construction phase of the development on coarse PM (dust), fine PM and NO_x emissions
 - Impacts on existing receptors during operation (usually on concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5});
 - Impacts of existing sources on new receptors, particularly where new receptors are being introduced into an area of high pollution;
 - Any exceedances of the air quality objectives 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 or LEZ;

²¹ <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

- The significance of the effect of any impacts identified; and
- Any apparent conflicts with planning policy.

6.19. Most assessments are carried out for the first year of the proposed development's use, as this will generally represent the worst-case scenario. This is because background concentrations are predicted to decline in future years, as emissions from new vehicles are reduced by the progressive introduction of higher emissions standards. Where development is phased, however, it may also be appropriate to assess conditions for the opening years of each new phase.

Agreement of datasets and methodologies

6.20. Before undertaking an assessment, every effort should be made to obtain agreement between the planning authority and the assessor on the appropriate datasets and methodologies to be used, and **if national methods for modelling and monitoring are available then these should be adopted.**

6.21. It is important to recognise that the focus of the procedures used by local authorities to prepare their LAQM 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, with attention given to defining the magnitude of the changes that will take place, even where objectives are not exceeded. Nevertheless, the technical guidance to help local authorities carry out their LAQM duties includes some useful information on carrying out an air quality assessment, especially the Appendices to in the Technical Guidance LAQM.TG(16).

6.22. In some cases, it may be appropriate to carry out a 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 LAQM.TG (16). This will add to the uncertainty associated with any model verification and adjustment, and this should be recognised.

Describing the impacts

6.23. It is useful for all parties involved in the planning process to use a consistent approach for the description of 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 assessment may use its own set of criteria to define magnitude, but the important matter to be concluded is the likely significant effects of the impacts on air quality. There is, therefore, a two-stage process to be followed in the assessment:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
 - a judgement on the overall significance of the effects of any impacts.
- 6.24. The impacts are usually assessed for selected ‘receptors’, normally human exposure. It can also be helpful to present the changes in concentrations across the study area as a whole, using concentration isopleths on a map of the area, as this will help to inform the decision as to whether the effect is significant or not (by describing the geographical extent over which impacts occur and by helping identify the sensitive receptors that might be affected).
- 6.25. The framework for the assessment of impacts should be capable of application to all types and scales of development. It cannot simply reflect a response to small-scale developments, or conversely, to the largest, and should be able to consider point and diffuse sources as well as traffic impacts, and a wide range of pollutants.
- 6.26. As a starting point, the changes in concentrations should be evaluated as the long-term averages (annual means). In certain circumstances, notably for point sources or where the short-term peak concentrations are already high, it will also be appropriate to consider short-term peak concentrations. The implications of these changes in concentration for the degree of impact are discussed later in this Chapter.
- 6.27. For air quality impacts arising from surrounding sources on new occupants of a development, then the impacts are best described in relation to whether or not an air quality objective will be exceeded, or is at risk of being exceeded. An exceedance is likely to be considered as being significant, an aspect that is considered further in paragraph 7.12. In the case of the impacts of a development on the surrounding area, a practical way of assigning a meaningful description to the degree of an impact is to express the magnitude of incremental change as a proportion of a relevant assessment level and then to examine this change in the context of the new total concentration and its relationship with the assessment criterion. In this document, the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. In many cases, the AQAL will be the air quality objective value. (Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.)
- 6.28. One advantage of this approach is that it avoids the need for individual pollutants to have their own tailored method of assessment. Since air quality standards are set on the basis of harm, it is reasonable to assume that the degree of harm is represented by the margin by which the AQAL is exceeded. This concept is not universally true and many pollutants exert an effect on human health at exposures that are below the standard²². It does, however, provide a sound and consistent basis for a framework for the assessment of impacts. Where legislative standards do not exist for a particular pollutant, it is common practice to adopt the Environmental Assessment Level from the Environment Agency’s list in its H1 guidance note²¹,

²¹ This is in part reflected in the description of impacts as being ‘slight’ or ‘moderate’, even when concentrations are well below the AQAL (see Table 6.1)

which can be used as the AQAL.

- 6.29. The suggested framework for describing the impacts on the basis set out above is set out below in Table 6.3. The term AQAL is used to include air quality objectives or limit values, where these exist.

Table 6.3: Impact Descriptors for Individual Receptors

	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Explanation

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value
2. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.
3. The Table is only designed to be used with annual mean concentrations
4. Descriptors for individual receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a ‘moderate’ adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.
5. When defining the concentration as a percentage of the AQAL, use the ‘without scheme’ concentration where there is a decrease in pollutant concentration and the ‘with scheme;’ concentration for an increase.
6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.
7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to

the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

- 6.30. It is recommended that PM_{2.5} is used to assess the impact of combustion sources (including road traffic) rather than PM₁₀. The AQAL²³ for PM_{2.5} is much lower on the basis of the air quality objective and EU limit value and this therefore represents a more conservative approach. Most particulate matter from combustion processes occurs in the smaller size fraction. **Scottish objectives or limit values for PM₁₀ and PM_{2.5} should be used** (CAFS, 2015).
- 6.31. The number of significant figures to which concentrations should be reported should reflect the accuracy associated with predicted changes and the knowledge of background concentrations. 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 may be appropriate, e.g. 0.403, 4.03, or 40.3 etc. There may be occasions, however, when it is better to present results to two significant figures, depending on professional judgement regarding the accuracy of the data²⁴. Any rounding of the data should only be applied after any calculations have been completed.
- 6.32. For most road transport related emissions, and diffuse emissions associated with development, long-term average concentrations are the most useful for evaluating the severity of impacts. For any point source, some consideration must also be given to the impacts resulting from short term, peak concentrations of those pollutants that can affect health through inhalation. The Environment Agency (and SEPA) uses a threshold criterion of 10% of the short term AQAL as a screening criterion for the maximum short-term impact. This is a reasonable value to take and this guidance also adopts this as a basis for defining an impact that is sufficiently small in magnitude to be regarded as having an insignificant effect. Background concentrations are less important in determining the severity of impact for short-term concentrations, not least because the peak concentrations attributable to the source and the background are not additive.
- 6.33. Short-term concentrations in this context are those averaged over periods of an hour or less. These are exposures that would be regarded as acute and will occur when a plume from an

²³ An annual mean of 20 µg/m³ for PM_{2.5}, by 1 January 2020, compared with 40 µg/m³ for PM₁₀

²⁴ This is not the case where the changes being reported are small, as it could lead to the presentation of misleading data. For example a change of 0.2 µg/m³ for the annual mean nitrogen dioxide concentration from 40.2 to 40.4 µg/m³ would be presented as 40 µg/m³ without and 40 µg/m³ with the scheme, while the same change applied to 40.4 µg/m³ without to 40.6 µg/m³ with the scheme, would be presented as 40 µg/m³ without and 41 µg/m³ with the scheme.

elevated source affects airborne concentrations experienced by a receptor over an hour or less. Impacts expressed using an averaging time of a day are not amenable to this form of assessment, since the plume spread will be much too wide over the course of a day, leading to a different kind of exposure to the peak short term concentrations. This is a problem chiefly with respect to PM₁₀ and the expression of its limit value and objective. It is preferred that the annual mean AQAL is used for this pollutant.

- 6.34. Where such peak short term concentrations from an elevated source are in the range 10-20% of the relevant AQAL, then their *magnitude* can be described as small, those in the range 20-50% medium and those above 50% as large. These are the maximum concentrations experienced in any year and the *severity* of this impact can be described as slight, moderate and substantial respectively, without the need to reference background or baseline concentrations. That is not to say that background concentrations are unimportant, but they will, on an annual average basis, be a much smaller quantity than the peak concentration caused by a substantial plume and it is the contribution that is being judged here, not the overall concentration at a receptor. This approach is intended to be a streamlined and pragmatic assessment procedure that avoids undue complexity.
- 6.35. In most cases, the assessment of impact severity for a proposed development will be governed by the long-term exposure experienced by receptors and it will not be a necessity to define the significance of effects by reference to short-term impacts. The severity of the impact will be substantial when there is a risk that the relevant AQAL for *short-term* concentrations is approached through the presence of the new source, taking into account the contribution of other prominent local sources.

7. Assessing Significance

- 7.1. Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as ‘significant’ or ‘not significant’. This is the primary requirement of the EIA regulations, but is also relevant to other air quality assessments. It is important to distinguish between the meaning of ‘impact’ and ‘effect’ in this context. An impact is the change in the concentration of an air pollutant, as experienced by a receptor. This may have an effect on the health of a human receptor, depending on the severity of the impact and other factors that may need to be taken into account. Judging the severity of an impact is generally easier than judging the significance of an effect.
- 7.2. The significance of effect that any proposed development might have will also be judged at two separate stages of the development control process, as follows:
- the first is within the air quality report accompanying the planning application; while
 - the second is when the local authority’s air quality specialist makes his/her recommendations to the planning officer.
- 7.3. These are mutually exclusive requirements serving different purposes. Ultimately, any disputes on these matters are dealt with by the judgement of the decision maker. A significant air quality effect is not, of itself, a reason for refusal of a planning application; that decision will be the outcome of a careful consideration of a number of factors, air quality being just one of the factors.
- 7.4. The assessment framework for describing impacts can be used as a starting point to make a judgement on significance of effect, but there will be other influences that might need to be accounted for. The impact descriptors set out in Table 6.3 are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it may be that there are ‘slight’, ‘moderate’ or ‘substantial’ impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances.
- 7.5. One of the relevant factors in the judgement of the overall significance of effect may relate to the potential for cumulative impacts and, in such circumstances, several impacts that are described as ‘slight’ individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a ‘moderate’ or ‘substantial’ impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health.
- 7.6. Often, it is possible to be very clear when an impact is sufficiently slight that it has no effect on receptors and can therefore be described unequivocally as ‘not significant’²⁵. In the opposite case, when an impact is clearly substantial, it will be obvious that there is potential

²⁵ The precise role of the development control process in delivering compliance with the EU limit values is uncertain, and clarification has been sought from Defra. In the event that unambiguous clarification from Government is provided, which confirms that **any** increase in concentration should not be permitted where an EU limit value is not met, then even a “slight adverse” impact may need to be regarded as significant if levels exceed the EU limit value

for a significant effect. The problem lies in the intermediate region where there is likely to be uncertainty on the transition from insignificant to significant. In those circumstances where a single development can be judged in isolation, it is likely that a ‘moderate’ or ‘substantial’ impact will give rise to a significant effect and a ‘negligible’ or ‘slight’ impact will not have a significant effect, but such judgements are always more likely to be valid at the two extremes of impact severity.

- 7.7. Any judgement on the overall significance of effect of a development will need to take into account such factors as:
- the existing and future air quality in the absence of the development;
 - the extent and severity of current and future population exposure to the impacts; and
 - the influence and validity of any assumptions adopted when undertaking the prediction of impacts.
- 7.8. Other factors may be relevant in individual cases. A judgement of the significance should be made by a competent professional who is suitably qualified. The reasons for reaching the conclusions should be transparent and set out logically. Whilst the starting point for the assessment of significance is the degree of impact, as defined by Table 6.3, this should be seen as one of the factors for consideration, not least because the outcome of this assessment procedure applies to a receptor and not the overall impact.
- 7.9. The judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals. In reality, therefore, it is the impact on local air quality that is used as a proxy for assessing effects on health.
- 7.10. There are no viable means of assigning significance to health outcomes as yet, even though quantification of mortality and morbidity effects from certain air pollutants at the population level has evolved to a point where reasonable confidence in the estimates exist. Part of any judgement on the significance of health effects would incorporate the size or the population exposed to changes in concentrations. Any judgement on the significance of effects on health is part of a Health Impact Assessment (HIA) and not the air quality assessment being described here.
- 7.11. For local authorities, there may also be a question of meeting air quality objectives as part of their obligations under Local Air Quality Management Regulations. As has already been noted, the presence of an AQMA that may be affected by a proposed development will increase the sensitivity of the application and any accompanying assessment. The impacts descriptor table acknowledges this and points to a conclusion of significant effect in cases where concentrations of a regulated pollutant are in excess of the objective value. Where the baseline concentrations are close to the objective value at a receptor, but not exceeding it, a case may be made for the development’s predicted contribution being significant. It will

always be difficult, however, to attribute the exceedance of an objective to any individual source.

- 7.12. The effect on the residents or occupants of any new development where the air quality is such that an air quality objective at the building façade is not met will be judged as significant, unless provision is met to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.
- 7.13. The requirement to comply with CAFS (2015) objectives and limit values and any local LEZ initiatives are key items to consider as both have been implemented by the Scottish Government to reduce the health impacts of air pollution. If a significant impact has been evaluated as having a negative effect on the environment then this should also be raised and regulatory authorities such as SNH and SEPA should be asked for their views.

8. Mitigating Impacts

- 8.1. Developers should be encouraged to submit proposals that are consistent with the principles outlined in Chapter 5. This will assist in reducing emissions and therefore in reducing impacts. In those circumstances where the assessment concludes that there will be a significant effect, then there is a requirement for mitigating these residual impacts, where this is feasible. Where the development proposal has already adopted the best practice for its type, there may be a need to implement further measures of the kind already incorporated or provide for some form of compensating pollution control measures in the local area. Where practicable, the impact of the mitigation measures proposed should be quantified.
- 8.2. The type of measures proposed to reduce air quality impacts will depend on the nature and scale of the proposed development. Where the proposal is for a small number of new residential units in an area of high pollutant concentrations, 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 its impact on air quality greater, then wider measures could be considered, such as improvements in the emissions from public transport and funding for traffic management measures over a wider area. Large industrial developments subject to control under the Environmental Permitting Regulations should conform to best practice within the relevant sector and in consultation with the regulator. Increasing stack height may be one option for reducing impacts at specific receptors and will be an outcome of permitting.
- 8.3. For some smaller developments where biomass boilers are proposed to generate power and/or heating **there is often considerable scope for optimising the flue location and height such that dispersion is enhanced**. The LAQM technical and policy guidance documents and tools provide information and advice on how to mitigate the local and cumulative effects of emissions from such appliances. If the development is proposed in area where air quality objectives are close to being exceeded for fine PM and NO_x then due consideration of the cumulative impact of smaller scale developments should be demonstrated as having been assessed.
- 8.4. The presence of an AQMA or an LEZ 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 air quality improvement zones and where pollutant concentrations are predicted to be below the objectives/limit values, it remains important that the proposed development incorporates good design principles and best practice measures, as outlined in Chapter 5, and that emissions are fully minimised.

Glossary and Abbreviations

AADT:	Annual average daily traffic
AQA:	Air quality assessment
AQAL:	Air Quality Assessment Level
AQAP:	Air Quality Action Plan
AQMA:	Air Quality Management Area
AQO:	Air Quality Objective
CHP:	Combined Heat and Power (Plant)
Defra:	Department for Environment, Food and Rural Affairs
EA:	Environment Agency
EIA:	Environmental Impact Assessment
EPR:	Environmental Permitting (England and Wales) Regulations 2010
EPUK:	Environmental Protection UK
EU:	European Union
EV:	Electric vehicle
HDV:	Heavy Duty Vehicle
HRAPIE	Health risks of air pollution in Europe – A World Health Organisation project
IAQM:	Institute of Air Quality Management
LA:	Local Authority
LAQM:	Local Air Quality Management
LAQM.TG(16):	Local Air Quality Management: Technical Guidance (16)
LDF:	Local Development Frameworks
LDP:	Local Development Plans
LDV:	Light duty vehicle
LPA:	Local planning authority
NO₂:	Nitrogen dioxide
NO_x:	Oxides of nitrogen
NPPF:	National Planning Policy Framework
NRW:	Natural Resources Wales
PM₁₀ and PM_{2.5}:	Particulate matter with an aerodynamic diameter of less than 10 microns (μm) (PM ₁₀) or less than 2.5 μm (PM _{2.5}), expressed in units of $\mu\text{g}/\text{m}^3$.
PPG:	Planning Practice Guidance
PPW:	Planning Policy Wales
PHE:	Public Health England
SPD:	Supplementary Planning Document.
SPG:	Supplementary Planning Guidance.
SO₂:	Sulphur dioxide
TAN:	Technical Advice Note
VPD:	Vehicles per day