

# Appendix 1:

## Developers guidance

### INTRODUCTION

The planning system can help us manage our local air quality when considering new development. It can be used to help prevent people from being exposed to unacceptable levels of air pollution, and to prevent an increase of pollution, reducing the potential requirement to designate new AQMA's. When considering a particular development, the priority given to air quality will depend on a number of factors, including the significance of impacts on air quality and local air quality conditions, and will be weighed against positive benefits of other considerations.

The aim of this guidance is to achieve sustainable development in the district that achieves the best balance of social, economic and environmental considerations.

Air quality must be considered prior to submission of a planning application and this document sets out a progressive approach to achieve this. It provides technical advice on how to deal with planning applications that could have an impact on air quality and human health.

It highlights when an air quality assessment or more detailed emissions assessment may be required, and recommends appropriate methods for undertaking such an assessment within the district of South Oxfordshire.

In line with the national sustainable development strategy it follows the principle that environmental costs should fall on those who impose them. This is known as the "polluter pays principle". Therefore developers will need to consider air quality where: it may have an adverse effect on the proposed use, for example, the development of housing or a school adjacent to busy roads or significant industrial sources, or emissions from a proposed development may have adverse effects on existing local air quality, for example, a proposed development will lead to significant emissions to air or will generate a significant increase in emissions from road traffic.

### OBJECTIVES

The 5 main objectives of this guidance are:

- 1) To aid developers and planners in pre application discussions and application submissions
- 2) To determine if an air quality assessment is required
- 3) To determine if a more detailed emissions assessment is required
- 4) To provide guidance on the required content of the relevant assessment
- 5) To provide guidance as to emissions mitigation requirements.

## Legislative Background

This document has been produced in line with the requirements laid out in the National Planning Policy Framework (NPPF) which states “the planning system should play an active role in guiding development to sustainable solutions. Concerns over the potential air quality impact of developments are also highlighted by the NPPF as shown below;

“ the planning system should contribute to and enhance the natural and local environment by...preventing both new and existing development from contributing to or being put at risk from, or being adversely affected by unacceptable levels of air pollution” (Para 109)

“Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of air quality management areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan” (Paragraph 124):

The framework also shows a clear steer towards encouraging more sustainable development and modes of transport as highlighted in the following statements;

which “support reductions in greenhouse gas emissions... and facilitate the use of sustainable modes of transport” (Para 30)

“developments should be located and designed where practical to... incorporate facilities for charging plug-in and other ultra-low emission vehicles”. (Para 35)

“smarter use of technologies can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.” (Para 29)

### **Our local planning policy also supports the aims of the NPPF:**

Policy EP1 of local plan – Proposals which would (by reason of smell, fumes, smoke, soot, ash, dust grit or other forms of polluting emissions) have an adverse effect on people and other living organisms, the atmosphere, the land, underground water supplies or watercourses will not be permitted, unless effective mitigation measures will be implemented. In addition, development will not be permitted near to an existing or proposed polluting use, unless effective mitigation measures will be implemented to ensure that there would be no adverse effect on the health and amenity of future occupiers

Policy CSQ1 of core strategy relating to Renewable Energy

Proposals for development for the generation of energy from renewable resources will be permitted provided any adverse impact on the landscape, heritage and biodiversity of an area, traffic generation or the amenities of local communities is outweighed by wider environmental, social, economic or other benefits.

Policy CSQ2 Sustainable Design and Construction which details specific sustainability criteria for housing development.

## BEST PRACTICE MEASURES

All developments should adhere to, as a minimum the best practice measures detailed during the design, application and construction phases.

### The design stage

The design points listed below will help in lowering the overall emissions from the development from the offset, potentially negating the need for further mitigation;

- Not to contravene the actions on the Councils action plan or render any of the actions unworkable
- Developers must take into account and be compliant with an authorities own SPG or air quality planning guidance before an application is submitted. In some cases it will also be necessary to discuss the application with the LA's air quality officer before the application is submitted to ensure the correct approach is being taken
- Meet the current accepted carbon standard
- When locating new developments the developer should take account of the impact of existing pollution sources on the new development
- The development should not lead to the creation of a street canyon
- The cumulative effects of local developments should be taken into consideration
- Ventillation provision and the location of opening windows and doors should be used to improve the air quality and reduce exposure
- The aim of a development should be that it leads to an overall reduction in emissions in relation to the current land use, where this is not possible every effort should be made to ensure the development is as low impact as possible in terms of emissions and environmental impact
- Delivering sustainable development should be the key theme in the application and be demonstrated wherever possible
- The development should be designed wherever possible so that the more sensitive elements of the development are located away from roads with high air pollution. Where this is not possible alternative measures should be implemented to minimise exposure
- Orientation and construction of developments should avoid increasing exposure whilst minimising energy demand and energy loss
- The council will require all applications that propose the use of biomass and biofuelled fuel systems to submit a detailed air quality analysis to demonstrate that they are an effective alternative to conventional fuels and do not conflict with the councils action plan.

## The application phase

The following points should be adhered to within the planning application stage as a minimum standard:

- For every 10 residential homes built and 1000m<sup>2</sup> of non residential development there should be at least 1 'rapid charge' EV charging point installed. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made;
- Every development should come with sustainable travel packs for residents/businesses
- All gas-fired boilers to meet a minimum standard of <40 mgNO<sub>x</sub>/kWh
- All gas-fired CHP to meet a minimum emissions standard of:  
Spark ignition engine: 150 mgNO<sub>x</sub>/Nm<sup>3</sup>  
Compression ignition engine: 400 mgNO<sub>x</sub>/Nm<sup>3</sup>  
Gas turbine: 50 mgNO<sub>x</sub>/Nm<sup>3</sup>
- A presumption should be to use gas-fired installations. Where biomass is proposed (normally outside of urban areas) it is to meet minimum emissions standards of;  
Solid biomass boiler: 180 mgNO<sub>x</sub>/Nm<sup>3</sup> and 15 mgPM/Nm<sup>3</sup>
- All new dwellings to meet a minimum standard of 2 levels above the current building control minimum, and non-residential to meet BREEAM "very good" standard.
- Where trees are proposed on the development the developer should consider introducing low NO<sub>x</sub> trees. Certain tree types are known to absorb higher levels of NO<sub>x</sub>.
- All developments should provide some form of cycle provision
- All developments should encourage sustainable travel and promote the use of alternative fuels.

## The construction phase

An important consideration for any planning application is activity during any demolition and site preparation phase and during the construction phase. Although these phases will have a defined beginning and end they still have the potential for bringing about exceedences of both UK air quality objectives and EU limit values for particles (PM<sub>10</sub>).

Exhaust emissions from engines powering construction-specific activities such as cranes, excavators, generators, and diesel-powered trucks involved in the transportation of materials to site can contribute significantly to local air quality.

Schemes to minimise the production of airborne dust and release of exhaust emissions during the construction period may be required by planning condition. The Greater London Authority (GLA) and the London Councils have produced guidance on the control of dust and emissions from construction sites, which sets out their approach to minimising the impact of the planned phase of re-development and growth in London, based on prevention, suppressions and containment. SODC considers the approach outlined in their '*London Code of Practice: the control of dust and emissions from construction and demolition*' (LCCP)(2006) to be best practice. The Institute of Air Quality Management (IAQM) has also released good practice guidance on 'Assessment of dust from demolition and construction (2014)' we recommend developers adhere to one of these best practice approaches.

## WHEN IS AN AIR QUALITY ASSESSMENT REQUIRED

Air quality will in particular be a material consideration where any of the following apply:

- The development provides more than 50 new parking spaces, or more than 25 if within an existing AQMA
- Is the proposed development within or in relevant proximity to an Air Quality Management Area or candidate AQMA
- Will development type exceed our large developments category size:  
Small scale = Residential >10 units or Retail 1000m<sup>2</sup>  
Large scale = Residential 10-50 units or Retail 1000m<sup>2</sup> -2000m<sup>2</sup>  
Major scale = Residential >50 units or Retail > 2000m<sup>2</sup>
- The development is a sensitive development (residential, school, healthcare, childcare etc) within an AQMA
- The development will result in increased congestion, changes in peak traffic volumes (for example 5% AADT or peak) or speeds (+/- 10 kph) on busy roads (i.e. those with greater than 10,000 vehicles per day), or any road within an AQMA
- The development will lead to a change in the modal split to a greater percentage of HGVs (including buses)
- The development might create a street canyon (defined as an urban street lined on both sides by buildings of 3 or more floors, with a height / width ratio greater than 1) or reduce dispersion of pollutants
- The development may interfere with Air Quality actions stated in the Local Air Quality Action Plan, Councils low emission strategy or Local Transport Plan
- Is the development introducing biomass energy/heating plant into an urban environment.

### What level of assessment is required?

There are two main types of air quality assessment that may be appropriate dependant upon individual circumstances such as the nature, extent and location of the development.

### Screening assessment

This may be appropriate as:

- A first step to identify whether more detailed assessment is required
- For smaller scale developments generating little traffic or emissions
- Where air quality constraints have not been identified
- Where complex factors (e.g. street canyons, receptor/road heights; etc) do not need to be modelled.

This type of assessment will involve use of screening methods such as those set out in the Design Manual for Roads and Bridges (DMRB) (highways Agency 2007) for the assessment of traffic related sources. However, the shortcomings of such methods should be noted.

## Detailed assessment

This may be appropriate where:

- A screening assessment has identified potential problems and more detailed modelling or monitoring is required
- For larger scale developments generating significant traffic
- Where air quality constraints have already been identified e.g. likely to impact on AQMA
- Where complex factors (e.g. street canyons, stack emissions, receptor/road heights;etc) need to be modelled
- Where cumulative impacts need to be considered.

This type of assessment typically make use of dispersion models such as ADMS-roads ADMS – urban and AEROMOD. These models predict a pollution concentration associated with a development which is then added to a background pollutant concentration, results in a total predicted pollutant concentration at certain locations. This concentration can be compared to the Air Quality Objectives such models should be verified with local measured data.

You are strongly recommended to agree the proposals for your Air Quality Assessment with the environmental protection team in advance, they will also be happy to assist you, wherever possible, with any other queries.

Before embarking on the Air Quality Assessment, you are strongly advised to ensure that The Highways Development Department has approved the TA for the development.

Where this guide indicates a requirement for an air quality assessment and one has not been submitted with the application, we will either:

- A) require an assessment as a condition of planning permission, which we could only do if we know that the assessed impacts can be mitigated or compensated to an appropriate degree
- B) request such an assessment to help inform our decision, pending which we may refuse or seek the withdrawal of the application for later resubmission.

If the development fits within our major scale development category then it may also be necessary to submit an emissions assessment alongside or as part of your air quality assessment that considers the emissions from the building and operations in comparison to the existing emissions from the current use. For this we recommend the use of such tools as Croydon development emissions tool (CDET) and the low emissions toolkit. You are advised to speak to the environmental protection team at an early stage to see if this type of assessment is required.

## AIR QUALITY ASSESSMENTS

Technical guidance TG(09) provides more detailed information as to what should be included in an assessment and how this should be carried out, however the air quality assessment in brief should include the following:

- Locality of the development – identify local receptors, pollution sources and sensitive areas and define an agreed study area with the LA
- Nature and scale of development -
  - Small scale = Residential >10 units or Retail 1000m<sup>2</sup>
  - Large scale = Residential 10-50 units or Retail 1000m<sup>2</sup> -2000m<sup>2</sup>
  - Major scale = Residential >50 units or Retail > 2000m<sup>2</sup>
- Timescale and phasing – for example if development occurs in a piecemeal fashion, each individual development might only have a minor impact on air quality but the total contribution might be more significant
- Determine the type of assessment – e.g. screening, detailed or to include an emissions assessment
- Choice of model – reasons, methods, assumptions, limitations or omissions
- Assessment of the baseline conditions – The existing air quality situation in the study area, verified with local data
- Pollutants to be modelled – with justification of considerations
- Choice of receptors – to be agreed with the LA
- Model inputs requirements – including details of any conversion factors used (e.g. for NO<sub>x</sub> or NO<sub>2</sub>)
- Emission factors – must be the latest emissions factors available
- Traffic data – Any transport assessment to be agreed with the highways authority
- Weather data – the station chosen should be the closest available to the study area
- Background data – to be agreed with or provided by the LA, as DEFRA background maps may not always be appropriate if more detailed realtime data is available
- Site specific considerations – such as local pollution sources (source apportionment may be required), layouts, sensitive areas, receptors etc.
- Years and scenarios to be modelled - agreement on the baseline year is essential along with year development is to be completed
- Cumulative impacts – address the cumulative impact of the development with other potentially significant developments in the area.
- Model verification – it is important that where possible model outputs are verified with actual monitoring data, so as to highlight the level of accuracy of the model and subsequent confidence in its predictions and any adjustments required
- Assessing model results – mitigation measures – a comprehensive summary of the results as an outcome of detailing the level of change in emissions as a result of the development, the impact of this change on who and where, see page 7 for criteria
- Mitigation measures – Details of any redesign, mitigation or offsetting measures proposed as part of the application. The measures should be assessed either quantitatively or qualitatively to determine their likely effectiveness. See pages 8-9 for a list of recommended measures, page10 provides a damage cost calculator to help inform any contribution levels that may be sought under section 106 or CIL

where offsetting is required.

## **EMISSIONS ASSESSMENTS**

If an emissions assessment has been highlighted as a requirement the methodology needs to be agreed with the LA, an emissions mitigation scheme should be submitted alongside the assessment (see DEFRA LES good practice guide). Page 9 details some mitigation measures, building efficiency measures should also be considered. All mitigation should be assessed either quantitatively or qualitatively to determine their likely effectiveness. Page 10 provides a damage cost calculation to help inform any contribution levels that may be bought under section 106 or CIL where offsetting is necessary.

## **ASSESSING THE SIGNIFICANCE OF A DEVELOPMENT ON AIR QUALITY**

Once the modelled outputs are agreed by the planning officer/air quality officer, then the scale or “magnitude” of change in pollutant concentration can be used to determine the significance of the air quality impact from a development.

Any air quality issue may be a material planning consideration. However, air quality will in particular be a material consideration where any of the following apply:

- *A national air quality objective or an EU Limit Value may be exceeded for the first time on a specific site if a development is permitted*
- *The level of exceedance over a national air quality objective or an EU Limit value will be made significantly worse if a development is permitted*
- *The concentration of an air pollutant for which a national air quality objective or an EU Limit Value has been prescribed will approach an exceedance such that other developments in the area might be prevented*
- *The number of people potentially exposed to exceedances of national air quality objectives or EU Limit values is increased if a development is permitted*
- *To grant permission for the development would lead to a conflict with measures that the Council intends to include in its Air Quality Action Plan (or Local Transport Plan), thus rendering any improvement in air quality unworkable.*

It should be noted that the process is iterative and that, ultimately, decision making will depend upon the extent to which a developer is able to design out or mitigate the air quality issues.

The principle that should be adopted is:

### **REDESIGN – MITIGATE – OFFSET**

Where redesign cannot reasonably reduce the significance of the air quality issue, it may be acceptable to include measures to mitigate as far as possible, air quality issues that arise. These measures should not be considered as an alternative option to fundamental redesign but as a fall back position. By definition mitigation, will still result in a significant air quality impact remaining and therefore additional measures to offset the potential consequence of a development should also be considered.

Refusal of a planning application can only be based on “over riding” impacts from a developments impact on air quality; after all reasonable means to mitigate the impacts on air quality have been exhausted.

Where uncertainty exists over the likely impact upon air quality or the expected concentrations, we will take a precautionary approach.

Table 1 below defines how we categorise the magnitude of change in pollution level:

<b>Magnitude of change due to development</b>	<b>Concentration change due to development (% of national objective)</b>	<b>Or If development contribution causes</b>
Very High / Overriding	Increase >10%	Breach of AQO
High	Increase 5-10-%	Exposure to be within 5% of AQO
Medium	Increase 1-5%	Exposure within 10% of AQO
Low/Imperceptible	Increase <1%	

## **REDESIGN OPTIONS**

Examples of potential adjustments to the design of a proposed development that may result in a reduced impact on air quality are summarised below

- Car free development
- Reduced car parking provision
- Remove populated spaces away from busy roads
- Arrange site to separate polluting and sensitive uses
- Design to ensure that cars are not the dominant mode of travel
- Design in walking and cycling routes and/or upgrade existing routes and provision of facilities for walkers and cyclists, and
- Avoid creation of non-dispersive canyons
- Provide and maintain mechanical ventilation ensuring inlet from non roadside location
- Avoid installing balconies (particularly at ground and first floor levels)
- Consider placing habitable rooms away from the façade fronting the pollution source e.g. in flats place corridors, stairwells, bathrooms etc in these locations
- Consider the use of non-opening front windows in worst affected locations.

## MITIGATION OPTIONS

If redesign is not possible or sufficient then further mitigation may be required. The table below indicates the band of mitigation a development is likely to require based on its size, location and the magnitude of change in air quality identified.

Mitigation level	Development size	In AQMA or likely to affect AQMA	Magnitude of change
Band 1	Small scale	Yes	low
	Large scale	No	Low - medium
Band 2	Large Scale	Yes	Medium
	Major scale	No	Low - Medium
	Major Scale	Yes	Low
Band 3	Large Scale	Yes	High – Very High
	Major Scale	Yes	Medium-Very High

Please note any development that indicates a very high / overriding magnitude of change that is not suitably mitigated against will be recommended for refusal.

The table below highlights some potential recommended mitigation options, this list is not exhaustive but provides a guide as to the level of mitigation expected based on the air quality impacts calculated above:

Banding	Mitigation Option
<b>Band 1</b>	Develop a travel plan for the development and provide ongoing personal travel plan support
	Develop and provide welcome packs containing public transport information
	Restrict vehicle speeds within the development
	Implementation of other measures minimising the need to travel
	Effective onsite traffic management
	Limiting the number of parking spaces associated with the development
	Provision of secure cycle parking and associated facilities (e.g.changing)
	Controlling air quality throughout the construction phase
<b>Band 2</b> (as above and including)	Provide a car share/ car pool scheme and /or bicycle pool scheme
	Introduce emission based charging for car parking / permits
	Provide electric charging points for vehicles
	Provide public transport infrastructure support
	The use of, or promoting the use of, cleaner fuels for fleets of vehicles associated with the new development, for example, electric, hybrid, liquid petroleum gas, compressed natural gas, bio-fuels or diesel fuelled vehicles fitted with particulate traps and catalytic reduction technologies
	Use of lower emission vehicles, for example, vehicles meeting specified Euro-class emission standards
	Implementation of car sharing schemes and other similar measures
	Improvements in public transport, walking and cycling in the local area
<b>Band 3</b> (as above and including)	Introduce emissions standards for delivery vehicles
	Vehicle maintenance, driver training and emissions testing regimes for fleets of cars, lorries or buses associated with a development
	Use of energy efficiency and renewable energy measures
	Contribution to wider air quality measures included in the Air Quality Action Plan or low emissions strategy

## OFFSETTING

The NPPF suggests that “where adequate mitigation measures are not possible, compensatory measures may be appropriate” thus mitigation options should be delivered through contributions. Para (152).

Therefore if satisfactory mitigation has not been agreed in line with this guidance then offsetting through financial means may be appropriate. These contributions can be sought through section 106 agreements or linked into local authority Community Infrastructure Levy (CIL), this will be at the discretion of the LA.

Alongside the guide outlined in the table below we may use DEFRA's ‘Interdepartmental Group on Costs and Benefits’ (IGCB) damage cost guidance to determine the levels of compensation they should provide in line with the following DEFRA guidance documents: ‘Impact pathway guidance for valuing changes in air quality’ (2013) ‘Valuing impacts on air quality supplementary green book guidance’ (2013).

Planning obligations are agreements made between local authorities and developers to make developments acceptable which would otherwise be unacceptable in planning terms:

- as part of the planning process, a developer may be required to enter into a legal agreement, to provide infrastructure and /or services on or off the development site where this cannot be achieved through planning conditions
- such agreements are a delivery mechanism for matters that are necessary to make the development acceptable, through mitigation or compensation.

Developers must recognise that in some cases it will be necessary to provide mitigation in a form that can only be delivered away from the development site itself. It must also be recognised that in some cases, it may not prove possible to secure acceptable air quality mitigation and in such cases the LA may deem the development unacceptable.

The table below provides a rough guide as to the value of the mitigation required based on the scale and impact the development will have;

<b>Development size</b>	<b>Magnitude of Change</b>	<b>Cost</b>
<b>Small</b>	Low	£0
	Medium	< £5,000
	High	£5,000 - £10,000
<b>Large</b>	Low	< £5,000
	Medium	£5,000 - £20,000
	High	£10,000 - £30,000
<b>Major</b>	Low	< £5,000
	Medium	£10,000 - £30,000
	High	> £30,000

For developments where an emissions assessment has been completed it may be more appropriate to use the calculation in the DEFRA IGCB air quality damage cost calculator to determine the mitigation costs required, this is a widely used approach to quantify emissions from transport: see example calculation below:

- Identify the additional trip rates (as trips/annum) generated by the proposed development (this information will normally be provided in the Transport Assessment)
- Assume an average distance travelled of 10km/trip
- Calculate the additional emissions of NO<sub>x</sub> and PM<sub>10</sub> (kg/annum), based on emissions factors in the EFT, and an assumption of an average speed of 50 kph
- Multiply the calculated emissions by 5, to assume emissions over a 5 year time frame.

$$1\text{tonne (NO}_x + \text{PM)} \times (955+48,157) \text{ (IGCB 2010)} = \text{£}49,152$$