South Oxfordshire District Council

Air Quality Developer's Guidance

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Listening Learning Leading

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Executive Summary

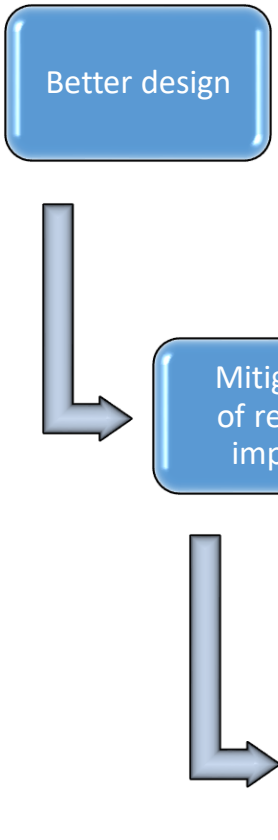
South Oxfordshire District Council have declared three Air Quality Management Areas (AQMA), where air pollution levels exceed the national objectives and EU limit values for nitrogen dioxide (NO_2). Levels of particulate matter (especially PM_{10} and $PM_{2.5}$, defined by their small size) are also present throughout the district, and there is no level of particulates which do not damage health.

The built environment is a key source of pollution, and where most people are exposed to pollution. There are emissions from buildings, especially from heating and energy generation (including biomass), industrial and commercial activities, and other residential sources. Emissions from transport associated with developments can often have a significant local impact on air pollution and contribute to wider impacts.

Although not formally adopted as Supplementary Planning Guidance, this Developer Guidance supports the South Oxfordshire District Council Air Quality Action Plan, Low Emission Strategy and Local Plan, by setting out an ambitious approach to addressing air pollution through development management , by improving the quality of all new developments, then taking additional measures to address specific issues.

When proposing development within South Oxfordshire, developers should consider the local air quality impact. A full air quality assessment will be required where air quality is likely to be a 'material consideration' in the planning decision. This is based on the severity of the impact of the development on air quality and exposure to harmful pollution, and the existing local air quality, including proximity to an existing or potential AQMA. Cumulative impacts might need to be considered for all proposals, regardless of size, if there are other committed or completed developments in the area. This Developer's Guidance outlines minimum conditions for a detailed air quality assessment, scope and approach to addressing local air quality in development proposals

South Oxfordshire District Council have set a hierarchy for addressing air pollution issues (including exposure) from new and proposed developments; developers should fully address each step and embed it within their development, before moving on to the next. Planning conditions can be used to enforce these measures where necessary.



All developments should be designed, constructed and operated to minimise their contribution to poor air quality and exposure. Section 5.2 gives examples of better design.

For developments which require a full air quality assessment, and which still have air pollution or exposure issues after better design principles have been used, appropriate mitigation measures should be embedded in the proposed development (examples in Section 5.3).

If these measures cannot fully eliminate the air pollution issues, an offsetting approach can be taken to provide funds for Council-led measures to improve local and wider air quality, through Section 106 or CIL funding (see Section 5.4).

1 Introduction

1.1 PURPOSE

South Oxfordshire District Council (SODC) has produced new Developers Guidance to set out the vision and approaches required for developments in the area, to protect people and the built and natural environment from the impacts of air pollution.

SODC previously produced Air Quality Guidance: "Developer Guidance on Air Quality" in 2014. Since that time, the national framework and other key government documents have been changed and updated.

In addition, over recent years there have been a number of Planning Guidance documents produced by other local authorities in the UK, with new and innovative examples of best practice, and experience in implementing more effective planning policies to improve environment quality and health, through reduced air pollution and exposure.

Many of these Planning Guidance documents focus on large urban areas, which have a different range of challenges, to South Oxfordshire, which has a number of historic market towns, villages and rural areas. Although these may have lower overall emissions to large cities, there are still significant local hotspots, due to traffic congestion, the historic layout of the towns with narrow streets and street canyons and limited alternative routes and modes of travel. This planning guidance is tailored to this type of area and aims to develop and customise best practice to towns and villages with air pollution issues.

This document does not constitute official Supplementary Planning Guidance, and therefore has not been subject to public consultation.

1.2 AUDIENCE

This Developer's Guidance is aimed at professionals involved in developing the built environment, including decision makers, developers, planners and planning consultants, and environmental and air pollution specialists.

It also sets out SODC's vision for the area, for a wider audience, in terms of a sustaining and further promoting healthier and improved environment in local towns and villages, and the steps to achieve this.

This document may also be of interest to other local authorities with similar issues.

1.3 AIMS OF THE AIR QUALITY DEVELOPERS GUIDANCE

Overarching Aims**:**

- To set out an ambitious approach to addressing the air pollution impacts of developments, and the drivers for better design and mitigation;
- To implement the Air Quality Action Plan and Low Emission Strategy through planning;
- To provide clarification and extra detail on the air quality aspects of the Local Plan;
- To translate Local Air Quality Management (LAQM) requirements (and other local air quality measures, such as Clean Air Zones, if they arise) for planning officers;
- To provide clarity for developers on requirements;
- To set out better design principles to improve all new buildings, complementing SODC's Design Guide; and
- To ensure robust assessment and mitigation of air quality impacts.

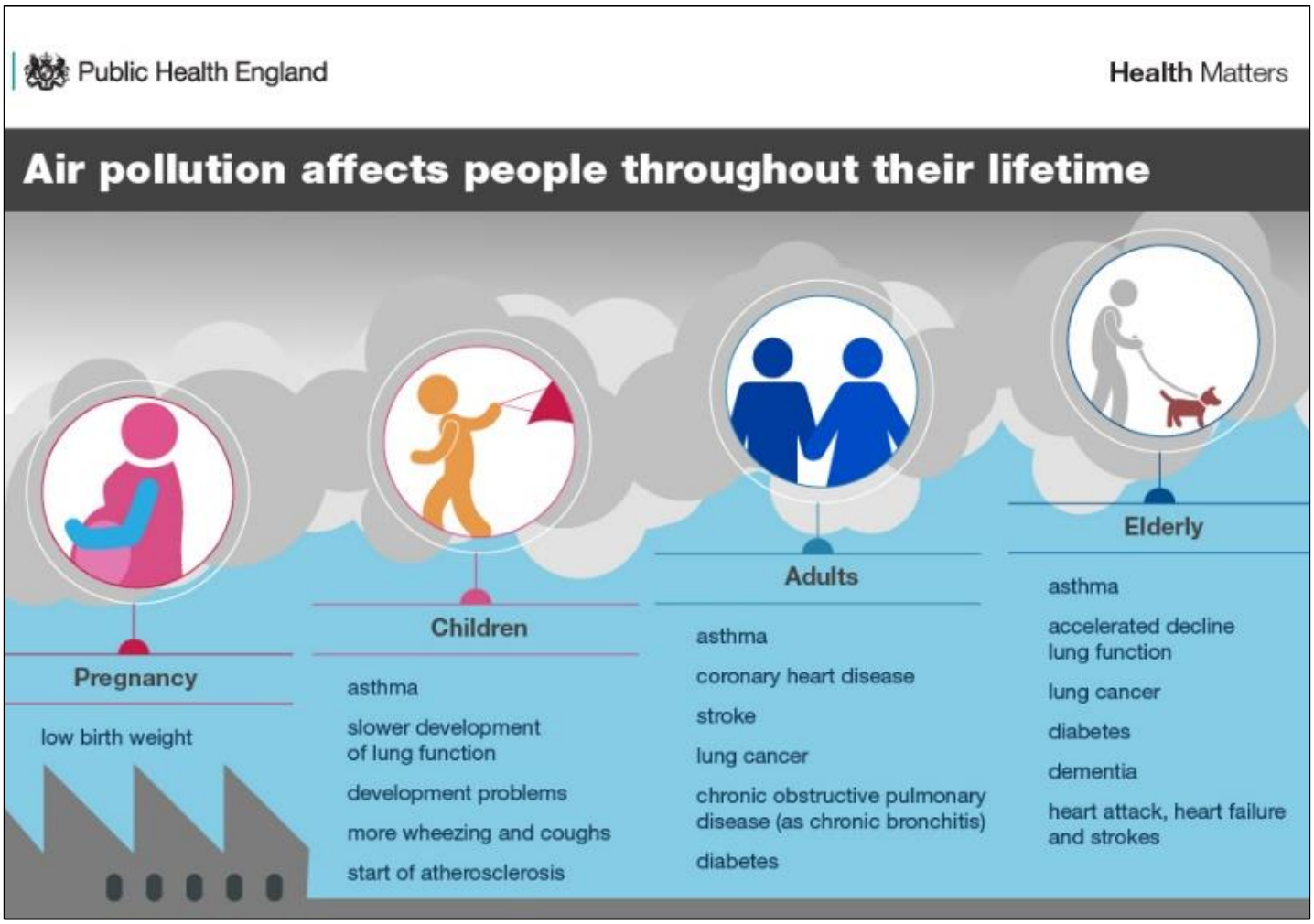
The Air Quality Developers Guidance can:

- Set out minimum standards;
- Encourage and signpost best practice;
- Future proof the built environment (e.g. capacity for low emission vehicle charging), and, where possible, this guidance;
- Ensure robust assessment of air quality impacts by developers and planning officers to help them make decisions on planning applications;
- Ensure adequate mitigation of air quality impacts is agreed (and enforced); and
- Address cumulative risks from developments.
- Assist in the plan-making process, to inform policy development in Local Plans and Neighbourhood Plans

2 Air Quality and Health

2.1 AIR POLLUTION AND HEALTH

Air pollution has been described as a "public health emergency"[i]. The World Health Organization considers it to be the greatest environmental risk to health in 2019[ii]. Each year in the UK, around 32,000[1][iii] deaths are attributable to exposure to outdoor air pollution, it kills 10 times more people than traffic accidents in the UK. Air pollution shortens lives and reduces quality of life. Average UK life expectancy is reduced by 6 months[iv], but for some it is much more than this, as it has a disproportionate impact on deprived communities, the young, elderly and ill.



[1] The Committee on the Medical Effects of Air Pollutants (COMEAP) report indicates long term exposure to air pollution had an equivalent impact of 28,000 - 36,000 deaths (at typical ages) in the UK in 2013.

Air pollution also affects crops, and the natural environment and buildings, which can be a particular concern in a rural area with historic towns and buildings. It also contributes to (and is affected by) climate change. It is estimated to cost the UK at least £20 billion a year.

Nitrogen dioxide, NO_2, and fine particulate matter (PM_{10} and $PM_{2.5}$)[2] are a particular concern. These pollutants have been linked to respiratory and cardiovascular diseases, cancer, stroke, diabetes, birth defects, obesity and dementia.

Short term exposure to NO_2 can cause inflammation of the airways. It increases susceptibility to respiratory infections and allergens and worsens symptoms of those already suffering from cardiovascular or respiratory conditions.

Particulate matter has been found in the brain, central nervous system tissue, and reproductive organs, and in unborn children. Exposure for a few hours to high levels of $PM_{2.5}$ can bring on existing illness or strokes and heart attacks in ill people, and heart and blood vessel diseases, like strokes and hardening of the arteries can be caused by a few years of even low exposure.

Other types of atmospheric pollution are important, such as carbon dioxide, CO_2, and other climate change gases. Ozone has significant health impacts at street level and is the third biggest contributor to climate change (ozone is a secondary pollutant, formed by the reaction of NO_2 and its precursor with volatile organic compounds (VOC), so measures to reduce these will also address ozone). Local Authorities have no legal duty to address these pollutants, but they are important to consider when looking at emissions and mitigation options.

South Oxfordshire District Council declared a Climate Change Emergency in 2019, acknowledging the above issues, as outlined in the published statement "Increased road building will inevitably have a serious negative impact on air quality and carbon emissions at a time when all public bodies must seek to use every part of their planning, investment and delivery mechanisms to improve air quality and reduce our carbon emission".

Following this declaration, the Climate Emergency Advisory Committee was created to make recommendations on how the council could reduce damage to the global and local environment through its policies and practices.

2.2 NATIONAL OBJECTIVES AND LOCAL AIR QUALITY

The UK Environment Act 1995 set national air quality objectives and deadlines for compliance. These objectives largely reflected the limit values set in the various European Air Quality Directives. The objectives for NO_2 and PM are shown in Table 2.1.

[2] Airborne Particulate Matter can be solid or liquid of various sizes and can be a wide variety of shapes and compositions. From an air pollution and health perspective, the most important are those which can penetrate further into the body, especially PM_{10} which has an aerodynamic diameter of less than 10μm; $PM_{2.5}$ (diameter <2.5μm), and ultrafine PM (diameter <0.1 μm).

The objectives for other pollutants have already been met in England, with localised exceptions due to heavy industry.

The 2019 Clean Air Strategy complements the Environment Act by setting out proposals to tackle all sources of air pollution, making air healthier to breathe, protecting nature and boosting the economy.

The Road to Zero Strategy, published in July 2018, supports the goals of the Environment Act by outlining a series of measures that aim to put the UK at the forefront of the design and manufacturing of zero emission vehicles.

The Environment Act also set up the Local Air Quality Management (LAQM) system, which requires local authorities to review and assess air pollution levels within their area. Where the objectives are exceeded or likely to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) and develop an Air Quality Action Plan (AQAP) to identify the steps required to achieve these objectives.

Table 2.1 National Air Quality Objectives

Pollutant	Period	Criteria	Deadline for Compliance
NO_2	Annual Mean	40 µg m^{-3}	31/12/2004 (1/1/2005 EU Limit Value)
	1 Hour Mean	200 µg m^{-3}, not to be exceeded more than 18 times a year	31/12/2004 (1/1/2005 EU Limit Value)
PM_{10}	Annual Mean	40 µg m^{-3}	31/12/2005 (1/1/2010 EU Limit Value)
	24 Hour Mean	50 µg m^{-3}, not to be exceeded more than 35 times a year	31/12/2005 (1/1/2010 EU Limit Value)
$PM_{2.5}$	Annual Mean	EU Exposure Reduction Target of 15% (National target) and 20% (EU) reduction in concentrations at urban background	Between 2010 and 2020

Notes:

- The national air quality objectives apply everywhere outside where there is exposure over the relevant period.
- The exposure reduction target for $PM_{2.5}$ (a reduction in concentration weighted by population) arises from EU legislation, however there is a UK based requirement for the Action Plan to consider this. The Public Health Outcomes Framework (PHOF) includes an indicator, based on the effect of $PM_{2.5}$ on mortality.
- The UK Government have also recently announced additional air pollution goals, such as reducing $PM_{2.5}$ concentrations across the UK, so that the number of people living in locations above the WHO guideline level of 10 µg m^{-3} is reduced by 50% by 2025[v].

South Oxfordshire District Council has declared three AQMAs, all based on monitored air pollution exceeding the annual national objectives for NO_2. These are in Henley, Wallingford and Watlington.

The objectives for PM_{10} are currently met in South Oxfordshire. However, as there is no safe level for PM_{10}, any reduction brings additional health benefits, so this pollutant is also addressed.

2.3 SOURCES OF AIR POLLUTION

Nitrogen dioxide (NO_2) and its pre-cursor nitrogen oxide (NO), collectively known as NO_x[3] are formed by combustion. The main source of NO_2 in SODC is road transport, although heating and other building sources are also important.

Primary particulates are released directly from the source into the atmosphere. Key sources are diesel vehicle exhausts, brake and tyre wear, domestic coal and wood burning, and industry. Other types of combustion, dust from construction work, resuspended dust, and natural sources such as sea salt, volcanoes and deserts can also be an issue. Secondary particulates are formed in the atmosphere by chemical reactions, from other pollutants such as NO_2, sulphur dioxide, and ammonia.

Road transport is the main focus of the SODC Action Plan, as the largest contributor to the air pollution exceedances. Other sources include domestic and commercial heating (including wood and other burning), construction sites, and commercial and industrial sources (e.g. biomass burners, boilers, CHP, gas turbines, and balancing plant), non-road traffic (such as rail, river services, and other red diesel users); and agriculture.

2.4 WHY USE DEVELOPMENT MANAGEMENT AS A LEVER

Development management can be a powerful tool to improve air quality, and good air quality is vital to providing a healthy built and natural environment. By setting ambitious policies, a more sustainable built environment will emerge, with a reduced need to travel, better transport options and more sustainable commercial buildings and homes.

Planning applications must comply with relevant policies in the development plan, or they may risk rejection. Air quality can be a 'material consideration' in planning decisions and appeals (to be a material consideration, the issue must relate specifically to the development and must fairly and reasonably relate to it). The weight

[3] Emissions of both NO and NO2 (as NOx) are often controlled together to manage levels of NO2 concentrations, due to the rapid conversion of NO to NO2 once emitted. In some circumstances, the emissions of Primary NO2 (which is emitted as NO2, rather than converted from NO) are also addressed

given to air pollution as a material consideration depends on the local and national policy context and depends on several factors, such as[vi]:

- the severity of the impacts on air quality, and exposure to pollution;
- the air quality in the area surrounding the proposed development;
- the likely use of the development, including the length of time people are likely to be exposed at that location; and
- any positive benefits provided through other material considerations.

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3 National and Local Air Quality and Planning Policies

3.1 NATIONAL PLANNING POLICY FRAMEWORK

The National Planning Policy Framework (NPPF, February 19 update)[vii] states that "at the heart of the Framework is a presumption in favour of sustainable development", which explicitly references protecting and enhancing the environment, including minimising pollution, and moving to a low carbon economy. Box 3.1 shows the key text from the NPPF.

Box 3.1 Key text from the NPPF on air quality and planning

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan." (paragraph 181)

"Planning policies and decisions should contribute to and enhance the natural and local environment by: … preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information …" (Paragraph 170)

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."(Paragraph 180)

The NPPF is supported by Planning Practice Guidance (PPG), including Guidance on Air Quality[viii]. This "provides guiding principles on how planning can take account of the impact of new development on air quality." This includes information on when and how air quality should be considered in a planning decision. This is discussed further later in Section 4.

3.2 NATIONAL AIR QUALITY LEGISLATION AND LOCAL AIR QUALITY MANAGEMENT

As described earlier, the Environment Act 1995 set the framework for Local Air Quality Management. Guidance for this states that "the planning and air quality functions of local authorities should be carried out in close cooperation." A change in the built environment is a major opportunity to improve air quality and environmental inequalities, by reducing emissions, providing more sustainable options (e.g. for travel), and using better designs, locations and layouts to reduce exposure**.**

In addition to considering planning within the Air Quality Action Plans, Local Authorities are required to submit Annual Progress Reports on these.

Our Annual Status Reports (ARS) can be found in Oxfordshire's Air Quality website: https://oxfordshire.air-quality.info/local-air-quality-management/south-oxfordshire

The LAQM Technical Guidance (2016)[ix] also includes information on new developments, including air quality impact screening assessments.

3.3 PERMITTING UNDER ENVIRONMENT ACT 1990

Industrial processes must apply and be granted permits to operate. These are provided by the Environment Agency (for larger Part A1 processes) and the local authority (for smaller Part A2 and Part B processes). This permitting process is independent of the planning system, which much assume that this ensures the processes comply with the Act and permits.

However, the planning system can, and must, consider the exposure to pollutants and whether it is an appropriate location and land use in planning decisions for these industrial applications.

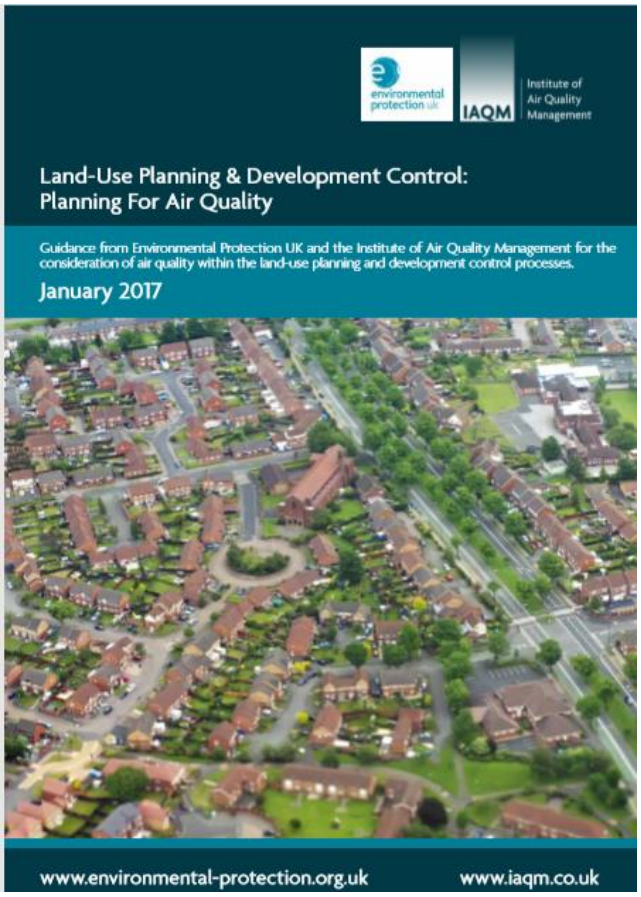
3.4 EPUK/IAQM GUIDANCE LAND USE PLANNING

The Environmental Protection UK and Institute of Air Quality Management joint Guidance "Land-Use Planning and Development Control: Planning for Air Quality"[x] is de facto national guidance commonly used by local authorities and developers. It identifies that land-use planning can play a critical role in improving local air quality.

"Planning has an important influence on air quality and also, therefore, the health of humans and ecosystems. Ideally, air quality should be a prime consideration for long term planning, so that land is used and allocated in ways that minimise emissions and that reduce the exposure of people to air pollution.

As a minimum, the planning system should not take decisions on individual proposals that lead to unacceptably poor air quality, nor should it make a series of decisions that collectively produces this undesirable outcome."

It outlines the potential of planning policies, and their implementation through planning decisions, to reduce air pollution and exposure.



"The role of planning at the strategic level must not be understated. Effective spatial 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 transport modes are available. Careful consideration to 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".

It also provides detailed advice on carrying out a robust air quality assessment.

3.5 OTHER NATIONAL GUIDANCE

Other national guidance which addresses the assessment, avoidance or mitigation of air pollution issues associated with development and planning, includes the following documents. The policies set out in this Planning Guidance builds on some elements of these existing guidance documents.

- EPUK's guidance on 'Air Quality and Climate Change: Integrating Policy Within Local Authorities'[xi];
- EPUK's guidance on Combined Heat and Power: Air Quality Guidance for Local Authorities;
- EPUK's guidance on Biomass and Air Quality Guidance for Local Authorities;[xii]
- Low CVP's "Local Measures for Encouraging the Uptake of Low Emission Vehicles"[xiii];
- IAQM Guidance on Management of Dust from Demolition and Construction[xiv];
- IAQM Guidance on the Assessment of Odour for Planning[xv];
- IAQM Position Statement on the Mitigation of Development Air Quality Impacts[xvi]
- Defra, Emissions Factor Toolkit (2014)[xvii]; and
- Low Emission Strategies Partnership tools and resources[xviii]

- Mayor of London has Supplementary Planning Guidance on the Control of Dust and Emissions from Construction and Demolition[xix], and Sustainable Design and Construction[xx].

3.6 SOUTH OXFORDSHIRE DISTRICT COUNCIL'S AIR QUALITY ACTION PLAN 2014

South Oxfordshire District Council has three Air Quality Management Areas in Henley, Wallingford and Watlington. It has a single Air Quality Action Plan (AQAP) covering district-wide issues and each of these areas specifically. Information on the area covered by the AQMAs can be found in Oxfordshire's Air Quality Website: https://oxfordshire.air-quality.info.

The aims of the AQAP are to:

- "improve air quality levels throughout the district and specifically within the AQMAs, to meet current air quality standards
- encourage a move towards more sustainable development within the district through the planning process
- encourage and enable greener transport throughout the district
- reduce air pollution and contribute to the development of more sustainable communities in order to help improve the health and wellbeing of our residents."
- Key measures include:
- a feasibility study for a low emission strategy and low emission zone within the three AQMAs, to focus on reducing transport emissions through an integrated package of measures looking at planning, procurement and transport policies;
- a feasibility study for a freight consolidation centre and freight quality partnership;
- installation of electric charging points in council carparks and new developments;
- awareness, behavioural change and community policies, including encouraging sustainable modes of transport;
- displacing traffic from the town centres, through park and stride schemes and increased use of the ring road;
- changes to the parking regime, traffic smoothing, and improved use of the weight restriction zone (WRZ) for heavy vehicles in Watlington.

South Oxfordshire District Council has three Air Quality Management Areas in Henley, Wallingford and Watlington. It has a single Air Quality Action Plan[xxi] (AQAP) covering district-wide issues and each of these areas specifically. Information on the area covered by the AQMAs can be found in Oxfordshire's Air Quality Website: https://oxfordshire.air-quality.info.

The AQAP also committed to producing Air Quality Planning Guidance, which will include information on carrying out air quality assessments in planning guidance and require electric vehicle recharging points in new developments and private car parks through planning conditions. This Guidance document is the second version of this.

In addition to the measures enacted through the planning process, funding from Section 106 agreements and the Community Infrastructure Levy will be used in order to deliver some of the SODC-led actions in this plan, which might otherwise not be funded and implemented. SODC's Community Infrastructure Levy – Spending Strategy addresses how the council will utilise the generated CIL funds.

3.7 SODC LOW EMISSIONS STRATEGY

The SODC Low Emissions Strategy (LES)[xxii] focuses on transport emissions, as a key component of both air quality and climate change related emissions, in particular passenger cars and freight vehicles, (especially diesel vehicles)."

The five core themes (and key measures for developers) of the LES are as follows. New developments can play an important role in developing the LES programme and aims.

- **promoting low emission behaviours**: promoting low emission vehicles and encouraging eco-driving behaviours;
- **supporting the uptake of electric vehicles**: using the planning system to require that vehicle charging infrastructure is included in new developments;
- **a bus emission strategy**: requiring all buses to meet emission standards and encouraging eco-driving;
- **a freight emission strategy**: requiring delivery and service plans (DSPs) and Construction Logistics Plans (CLPs); developing ideas around freight consolidation; encouraging freight journey planning to avoid roads with poor air quality where possible; HGV eco-driving and anti-idling campaign; and working with Oxfordshire County Council to address through-traffic freight in Watlington.
- **low emission planning and procurement**: address air quality and climate change within the new Local Plan; work with local communities to explore community level solutions, especially in AQMAs; produce Air Quality Planning Guidance; use procurement strategies to improve air quality; promote the use of Low Emission Vehicles and eco-driving behaviours (in council operations and contracts).

3.8 SUPPLEMENTARY PLANNING GUIDANCE POLICIES

While there have been other approaches to planning guidance on air quality and development management, these have often covered issues relating to large urban areas. The South Oxfordshire comprises of small towns, villages and rural areas. This guidance is therefore tailored to these types of areas and their issues.

Other examples of planning guidance considered here are the:

- West Midlands Low Emissions Towns & Cities Programme, "Good Practice Air Quality Planning Guidance"[xxiii]; and
- West Yorkshire Low Emissions Group, "Air Quality & Emissions: Technical Planning Guidance"[xxiv] .

These aim to reduce pollution and exposure related to transport associated with developments. These Strategies took a new approach to addressing air pollution issues from planning, and some of their approaches and proposed measures have been included in Section 5.

4 Air Quality Assessments

4.1 WHEN IS AN AIR QUALITY ASSESSMENT NEEDED

When submitting a planning application, an assessment must be made of the impacts the development will have on its inhabitants and users, and the surrounding area. The extent of this assessment level of assessment will depend upon the nature, extent and location of the development proposed. For many developments this will include impacts on air quality and exposure to pollution (including both human and natural habitats).

The importance of air quality in a planning decision will depend on the type of development and the severity of the impact of the development on air quality and exposure to harmful pollution, and the existing local air quality, including proximity to an AQMA.

It is likely that many minor developments will have a negligible impact on the local air quality and exposure. These will not need a full air quality assessment (see Table 4.1 for assessment trigger criteria), although cumulative impacts may need to be considered if there are other committed developments in the area.

These minor developments will be required to use best practice design, which is discussed further in Section 5.2. Many best practice measures for air quality will have additional benefits on the quality of the development and help build a low carbon economy and deliver SODC's vision of the area being a beautiful and prosperous place to live, and an attractive place for people to work and spend their leisure time.

A more detailed assessment will be required where air quality is likely to be a 'material consideration' for an application. This is likely where the conditions set out in Table 4.1 are met or exceeded. These conditions are based on current best practice, building on the previous SODC guidance, and the EPUK/IAQM, West Midlands and West Yorkshire guidance listed in Section 3.

In rural areas, odour can sometimes be an in issue. Where this is the case, for example for some agricultural activities or certain industries, an odour assessment should be carried out, in line with the IAQM Guidance on the Assessment of Odour for Planning[xxv], and appropriate mitigation taken.

Table 4.1 Minimum Conditions for a Detailed Air Quality Assessment

Location	• The proposed development is within an AQMA (or candidate AQMA), or or there is a likelihood of an increase in air pollution. • The proposed development is within 20 m of a road at or above the relevant national objective highlighted in the Defra compliance modelling[4xxvi];
Size	• The development is classed as 'major' under the Town and Country Planning (Development Management) Procedure Order 2015 • The development provides more than 50 new parking spaces, or more than 25 if within an existing AQMA; • Where the development might create a street canyon[5] or reduce dispersion of pollutants;
Traffic impacts	• The development will result in o changes in peak traffic volumes (>5% AADT or peak), o changes in speeds (+/- 10 kph), or o increases in percentages of HDVs (lorries, coaches and buses) on roads with more than 10,000 vehicles per day, or any road within an AQMA; • Proposals that increase traffic 5% on street canyons[5] with >5000AADT; • The development requires a Transport Assessment or Statement and HGV movements are at least 10% of total trips; • Proposals which include substantial road infrastructure changes; • Proposals which will substantially increase congestion on major and/or local roads;
Building emissions	• The development introduces biomass energy/heating plant into an urban environment;
Construction	• One of the following is met o other criteria in this table are met, or o substantial demolition or construction works are proposed, • and there is a 'human receptor' or 'ecological receptor'[6] within: o 50 m of the boundary of the site[6XIV], or • 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance.
Other	• The proposed development falls within the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, and includes air quality and/or transport as a specific likely impact; • The development may conflict with air quality actions stated in the SODC Air Quality Action Plan, the Low Emission Strategy, or other strategic plans.

[4]At present there are no areas of non-compliance identified in Defra' compliance modelling in South Oxfordshire, although there were in the wider South-East zone. However, SODC's more detailed modelling and monitoring have identified several areas of non-compliance. These are addressed with through the LAQM system, with AQMA and Action Plans.

[5] A street canyon is defined as an urban street lined on both sides by buildings of 3 or more floors, with a height / width ratio greater than 1. These inhibit the dispersion of pollution.

[6] There are no sites designated under the Habitats Directive and associated UK regulation within South Oxfordshire. However, there are a number of other conservation sites, including Sites of Special Scientific Interest and nature reserves. Air pollution has wider effects on agricultural land use too. An 'ecological receptor' refers to any sensitive habitat, including also non-statutory sites (i.e. local wildlife sites) and/or locations with very specific sensitivities (as per IAQM Guidance [XIV]). The inclusion or exclusion of sites should be justified in the assessment.

4.2 WHAT SHOULD A DETAILED AIR QUALITY ASSESSMENT CONSIDER

A detailed air quality assessment should consider all sources of pollution, including

- pollution from construction and demolition (dust, emissions from construction plant such as generators and non-road mobile machinery, and construction traffic);
- emissions from the buildings (heating and gas boilers, solid fuel burning appliances, local energy generation, issues specific to development type e.g. car parks or light industry);
- emissions from traffic associated with the buildings; and
- human exposure to this pollution and impacts on natural habitats.

The EPUK/IAQM Guidance[xxvii] (Section 6) includes information on how to carry out an air quality assessment. This should identify the current baseline environmental conditions, then assess the future conditions with and without the development. In summary, the following information is required (and should be agreed with SODC in pre-application discussions):

a. Relevant details of the proposed development;

b. The policy context for the assessment;

c. Description of the relevant air quality standards and objectives;

d. The basis for determining significance of effects arising from the impacts;

e. Details of the assessment methods (including details of the model and all local input data used, e.g. emissions, meteorological, background and baseline pollution concentrations, year and NO_x conversion methods), plus any assumptions that have been made; this should also include details about what is already included in the design, for example the benefits of travel planning is often included in Traffic Assessments;

f. Model verification;

g. Identification of sensitive locations;

h. Description of baseline conditions, including monitoring where available;

i. Assessment of impacts, comparing with and without development scenarios, and descriptions of the impacts at receptors (especially sensitive receptors);

j. Description of construction phase impacts, including likely sources of dust and other emissions;

k. Cumulative impacts and effects (the contribution of other nearby developments which have been granted planning permissions, or are likely to, should be taken into account in the 'future baseline' to get a full assessment of the cumulative impacts; this is particularly important where these developments could add traffic to the same roads);

l. Mitigation measures;

m. Summary of the assessment results (including impacts during the construction phase, impacts on existing receptors and of existing sources on new receptors during operation, any exceedances of the air quality objectives arising as a result of the development, or any worsening of a current breach, the significance of the effect of any impacts identified, and whether the development will conflict with measures in the Local Plan, AQAP or LES).

The assessment of the development should include the elements of better design set out in Section 5.2. Where these are not included in the assessment, SODC may ask the developer to reassess the scheme including these elements. Measures which reduce air pollution from the scheme and are included in the assessment must be implemented in the final development (or substituted with measures of at least equal impacts on air quality and exposure).

The impacts on individual receptors can described using the EPUK/IAQM Guidance criteria (Table 6.3 in the Guidance). These are summarised in

Table **4.2**.

Table 4.2 Impact descriptors for individual receptors (from EPUK/IAQM Guidance[xxviii])

Long term average concentration at receptor in assessment year	**% 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, or an Environment Agency 'Environmental Assessment Level (EAL)'.
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 use is encouraged to treat the

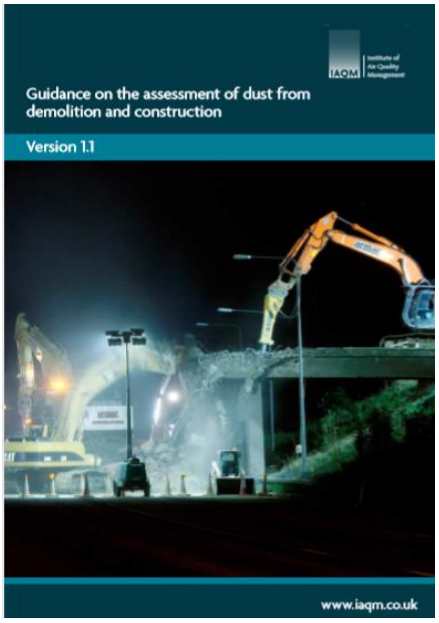
numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.

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 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 concentration, 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.

If construction and demolition are likely to cause significant impacts, a further assessment should be carried out. This can be based on the IAQM Guidance on the assessment of dust from demolition and construction (and construction monitoring guidance)[xxix] or the Mayor of London's Supplementary Planning Guidance on the Control of Dust and Emissions during Construction and Demolition[xxx].

Where there are uncertainties in data inputs and assumptions, a worst-case approach should be taken, to ensure all impacts are covered.

An element of professional judgement is required for these assessments, so they should be carried out by a competent professional air quality expert.



4.3 PRE-APPLICATION DISCUSSIONS

It is strongly recommended that developers engage with the SODC Environmental Protection Service Team at the earliest opportunity, prior to submission of a planning application, to agree the approach and inputs, such as those listed in Section 4.2.

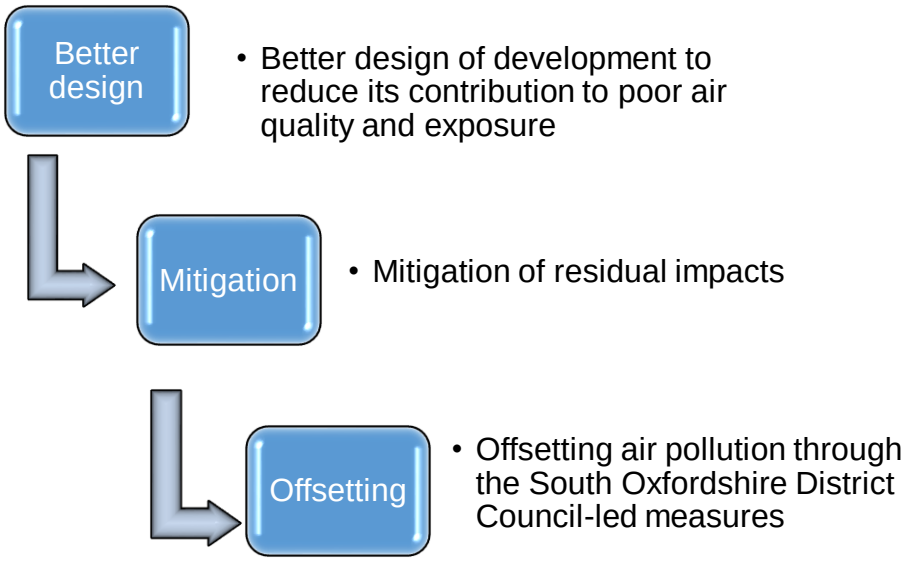
If an air quality assessment is to be carried out for road transport issues, the Transport Assessment should be agreed with Oxfordshire County Council as the Highways Authority prior to use in the air quality assessment. This Air Quality Assessment should be undertaken by a competent person or company, in line with both best practice and this guidance.

5 Better Design and Mitigation

5.1 HIERARCHY FOR ADDRESSING AIR POLLUTION

SODC have set a hierarchy for addressing air pollution issues (including exposure) from new and proposed developments. Developers should fully address each step and embed it in their development, before moving on to the next.

Box 5.1 SODC Hierarchy for Addressing Air Pollution in New Developments



All developments in SODC should be designed, constructed and operated to minimise pollution and environmental impacts on human health and local biodiversity. Section 5.2 sets out some examples of best practice in design, these can be applied to all types and sizes of developments.

For developments which meet the criteria set out in Table 4.1, where air pollution is likely to be a material consideration, further steps to address pollution and its impacts may need to be taken. When there are still air pollution issues (including exposure) after better design principles have been used, appropriate mitigation measures should be embedded in the proposed development.

If these measures cannot fully eliminate the air pollution issues, but the SODC wish to proceed with the development (for example if other material concerns are considered to outweigh air quality and health), an offsetting approach can be taken. This will provide funds for SODC-led measures to improve local and wider air quality, through Section 106 or Community Infrastructure Levy funding.

5.2 ADDRESSING AIR POLLUTION AT THE DESIGN AND CONSTRUCTION STAGE

The following principles should be taken into account during the design and construction phase of the development planning. These principles may be applied to all developments, regardless of type or size, unless otherwise stated, to continuously improve the quality and sustainability of the built environment in South Oxfordshire.

These principles are the minimum that should be included. These are based on current best practice (outlined in Section 3, including SODC policies and guidance), and can be updated as new technologies, techniques and guidance become available.

Overarching Principles

- New developments should not conflict with the SODC AQAP or LES or render any of the measures unworkable.
- Delivering sustainable development should be the key theme in the application and be demonstrated wherever possible.
- A development should not
    - cause or increase an exceedance of the air quality objectives,
    - lead to an overall increase in emissions (compared to the current land use), or
    - increase exposure to air pollution levels which exceed the objectives;

  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 and health impacts.
- Location, use and design of the development may need to take into consideration any cumulative effects of other local existing and planned development.

Construction

- Develop a Dust Management Plan in accordance with relevant guidance.
- Plan site layout, to ensure machinery and dust causing activities is located away from receptors.
- Put in place and maintain real-time dust and air pollutant monitors across the site.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

- Ensure adequate processes for recording and responding to all dust and air pollution complaints. Carry out regular site inspections to monitor compliance with air quality and dust control procedures (increase their frequency when polluting activities or conditions occur), and make the inspection and complaints log available to SODC.

Reduce the need to travel and car use:

- Developments should be designed to reduce the need to travel and encourage sustainable travel modes (ideally cars should not be the dominant mode of travel).
- Discourage car use by limiting the number of parking spaces associated with the development or have car free developments (while recognising that car travel and parking provision will continue to be important in this rural area).
- Developers and commercial operators to join the Freight Quality Partnership, to support and take action to improve freight efficiency and reduce emissions, e.g. through ultra-low emission freight and route agreements.
- For large developments7, hub distribution centres should be considered to reduce the number of freight trips.
- Implementation of other measures which can reduce the need to travel.

Enable walking and cycling, and better links to public transport

- All developments should provide some form of cycling and walking provision. Developments should be designed with safe and accessible walking and cycling routes (with good lighting and information points), with links to public transport stops, Park and Stride schemes, and the local cycle network; layouts to improve accessibility and safety (including e.g. speed limits); and secure cycle parking and other facilities (e.g. changing facilities for commercial developments).
- Large developments7 should provide new bus stop infrastructure including shelters, raised kerbing, and information displays on any existing bus routes in or bordering the site. They should assess the feasibility, and arrange and support, if reasonable, new or enhanced public transport services to the site.

Encouraging Ultra-Low Emission Vehicles

- Where on-site parking is provided, electric vehicle charging points of suitable

[7] Larger developments are those which exceed the size criteria in Table 4.1.

kW/h charging rate should be installed. A minimum of:

- 1 per household for each of the houses;
- 1 per every 10 flats (with unallocated parking, or 1 for every dwelling if there are allocated spaces or garages);
- 1 'rapid charge' per 1000m2 of commercial/retail/industrial floorspace (or 10% of parking spaces with electric vehicle charging[8], whichever is greater).

Reducing Pollution from Buildings

- Energy and heat efficiency measures and materials must be used.
- Solid biomass should not be proposed in or within 200 metres of an AQMA and should be avoided in all urban areas and in buildings used by vulnerable receptors (young, old, or ill).
- Any applications which propose the use of systems fuelled by biomass or biofuel must submit a detailed air quality analysis to demonstrate that they are an effective alternative to conventional fuels and do not conflict with the SODC AQAP and LES.
- All non-residential buildings should meet or exceed the current BREEAM "very good" standard[xxxi].
- Wherever possible, new developments should not create a new street canyon[5], or a building configuration or orientation that inhibits effective pollution dispersion.
- The buildings should be designed to emit any pollution from combustion through well sited and designed vents or chimney stacks.

[8] This 10% provision may be phased with 5% initial provision and the remainder at an agreed trigger level.

Reducing exposure to pollution

- Design the site (layouts, orientation and proximity of sources of pollution to receptors) to reduce exposure to pollution, especially for vulnerable receptors.
- Separate sources of air pollution from people (and ventilation inlets, and opening windows and doors) as much as possible.
- For example, on a roadside façade, especially where air pollution levels exceed the national objectives, habitable rooms and balconies should be away from this façade, windows should be non-opening and use mechanical ventilation, with inlets from less polluted locations.
- Ensure adequate air flow through the buildings to prevent build-up of indoor air pollution (balanced with energy and heat loss).

5.3 ON-SITE MITIGATION

If, after better design principles have been used, the detailed air quality assessment indicates there are still air pollution levels exceeding the national objectives and relevant exposure, these can be addressed through mitigation measures in how the development is used, operated and maintained.

This is not an exhaustive list and will need to be adapted for particular locations and issues. For example, some of these measures may be more suited to larger developments, or commercial rather than residential buildings. The mitigation measures, including type, size, ambition and timescale, need to be agreed with SODC.

In addition to measures which reduce emissions at source, additional measures can also be taken to address the pathway for emissions to receptor, and the exposure of receptors. However, addressing emissions at source should be the first priority in mitigation.

Construction

- Measures to reduce dust and emissions from construction and demolition sites, including:

O Site management
O Preparing and maintaining the site
O Operating vehicle/machinery
O Demolition
O Earthworks
O Construction
O Track out
O Operations
O Waste management

Further details on mitigation measures for these activities and issues can be found in the Mayor of London's Supplementary Planning Guidance on Construction[xxxii].

Measures and considerations to help reduce the need to travel:

- Local sourcing of staff, products and raw materials.
- Incentivise and encourage local activities, such as on-site or nearby facilities for shopping, eating, child-care, and banking/Post Office.
- Encouraging alternative working practices, such as flexitime, teleworking, homeworking, videoconferencing, compressed work periods.
- Development and use of hub distribution centres to reduce the number of freight trips, these could use low emission freight vehicles.

Encouraging Sustainable Transport

- Provision of a detailed travel plan setting out measures to encourage sustainable means of transport (public, cycling and walking), and provide ongoing personal travel plan support, including welcome packs containing public transport information (these should be updated as required, and at least annually). Travel plans can also link to e.g. local school travel plans and highlight the infrastructure for ultra-low emission vehicles. There should be a commitment to measure a travel plan's implementation and effect.
- Effective traffic management, with restricted vehicle speeds, within the development.
- Measures to use, or promote the use of Ultra Low Emission vehicles (e.g. zero tailpipe emission vehicles) or conventional vehicles meeting the most recent European Emission Standards (from scheme opening, to be progressively maintained for the lifetime of the development), by using them for the vehicle fleet and freight, and the use of emission based charging for car parking /

permits;

- Commercial fleet operations should provide a strategy for reducing emissions.
- Provide a bicycle pool, a car share or carpool scheme.
- Support and promote good vehicle maintenance and driver training for fleets of cars, lorries or other vehicles associated with a development.
- Implement measures to discourage vehicle idling when stationary, in line with our Turn if Off campaign (http://www.southandvale.gov.uk/turnitoff/)
- Supporting community/local organisation groups to promote sustainable travel.
- Support, and link to, wider sustainable travel measures, to address pollution from local and through traffic.

Measures to support improved public transport and promote walking and cycling:

- Promote public transport, walking and cycling, including providing information for public transport and cycle and walking routes, cycle training and awareness schemes, and bike/e-bike hiring schemes.
- For larger developments, provide new or enhanced public transport services to the site, or connections to local public transport, e.g. shuttle bus.

Measures to reduce pollution from buildings

- Use of energy and heat efficiency measures, technologies and techniques.
- Commit to operational and maintenance practices which minimise pollution, including
    - using CHP and balancing plant responsibly (for example, appropriate siting, not running CHP plants under conditions where the heat is dumped, and not testing all backup generators at the same time causing short term exceedances);

- the use of more environmentally friendly products (e.g. low-VOC products).

Other measures

- Contribution to wider air quality measures included in the Air Quality Action Plan or Low Emissions Strategy;
- All Non-Road Mobile Machinery (NRMM), including street works and construction equipment and other portable generators, to meet the latest emission standard criteria;
- Support SODC air quality monitoring programmes, and if carrying out monitoring associated with this scheme, make the data publicly available and/or provide to SODC.

5.4 OFFSETTING IMPACTS

It may be that it is not possible to fully mitigate air pollution impacts within the development site, especially for major developments and those in sensitive locations. This is likely to lead to the development application being refused planning permission.

However, there are some situations where SODC may wish to proceed with the development (for example if other material concerns are considered to outweigh air quality and health). In these cases, an offsetting approach can be taken. This is in addition to the better design and mitigation approaches set out above, each of which should be fully applied before moving to the next step.

Funding arising from offsetting, using a damage cost approach, will provide funds for SODC-led measures to improve local and wider air quality, through Section 106 agreements or the Community Infrastructure Levy. The measures funded through this route should have an air quality benefit within the vicinity of the development.

A number of planning guidance documents have set out a damage cost approach to offsetting air pollution impacts, including the West Yorkshire and West Midlands Low Emission Strategy Groups and the EPUK/IAQM Guidance. Damage costs estimated using this method can be the basis for setting a financial contribution from the developer to offset the impacts of the development or to cover 'planning gain'. This contribution will be used by the South Oxfordshire District Council to address air pollution and/or exposure near the development or over a wider area. Box 5.2 sets out the approach these take.

Damage costs estimated using this method can be the basis for setting a financial contribution from the developer to offset the impacts of the development or to cover 'planning gain'. This contribution will be used by the South Oxfordshire District Council to address air pollution and/or exposure near the development and over a wider area.

This damage cost approach should not be used as an alternative to better design and mitigation. It should also be noted, that in some cases the council-led measures

required to mitigate the impacts of a development will exceed the damage cost calculated through this method. Under these circumstances, any funding for wider measures must be agreed with the South Oxfordshire District Council and may exceed the calculated damage cost value.

Box 5.2 Approach to Offsetting Emissions

"In addition to these good practice principles, local authorities may wish to incorporate additional measures to offset emissions at an early stage. It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential.

An approach that has been widely used to quantify the costs associated with pollutant emissions from transport is to:

- 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 10 km per trip;
- Calculate the additional emissions of NO_x and PM_{10} (kg/ annum), based on emissions factors in the Emissions Factor Toolkit, and an assumption of an average speed of 50 km/h;
- Multiply the calculated emissions by 5, to assume emissions over a 5-year time frame;
- Use the HM Treasury and Defra IGCB damage cost approach[xxxiii] to provide a valuation of the excess emissions, using the currently applicable values for each pollutant; and
- Sum the NO_x and PM_{10} costs."

Source: EPUK/IAQM Guidance (paragraphs 5.11 to 5.13)[xxxiv].

The West Yorkshire Guidance[xxxv] expresses this as:

Road Transport Emission Increase = ∑ (Estimated trip rate for 5 years X Emission rate per 10 km per vehicle type X Damage Costs)

5.5 PLANNING CONDITIONS

Planning conditions can be set to ensure developers commit to good practice and implement specific measures in their work. Planning conditions can be enforced, and have additional legal strength compared to a list of potential options set out in a planning application.

Any of the principles outlined in the mitigation measures set out in Section 5.3, could be taken forward as a planning condition where necessary. This is not an exhaustive list, as no two developments are the same; each has different issues, based on its nature, scale and location, existing air pollution levels, quality of design, and users. Planning conditions should be focussed on the correct problem, add value, and be quantifiable and enforceable.

Any offsetting measures or funding can also be included as a planning condition to the development.

Abbreviations

AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
CIL	Community Infrastructure Levy
CLP	Construction Logistics Plans
COMEAP	Committee on the Medical Effects of Air Pollutants
Defra	Department for Environment, Food and Rural Affairs
DSP	Delivery Service Plan
EPUK	Environmental Protection UK
GLA	Greater London Authority
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
MHCLG	Ministry of Housing, Communities & Local Government
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
PHOF	Public Health Outcomes Framework
PPG	Planning Practice Guidance
SODC	South Oxfordshire District Council
WRZ	Weight restriction zone for heavy vehicles (e.g. in Watlington)

Contact

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