

Ipswich Local Plan

Low Emissions

Supplementary Planning Document

Incorporating Parking Guidance for the IP-One
Area

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BOROUGH COUNCIL

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Our thanks are extended to them as their work has supported the development of this document.

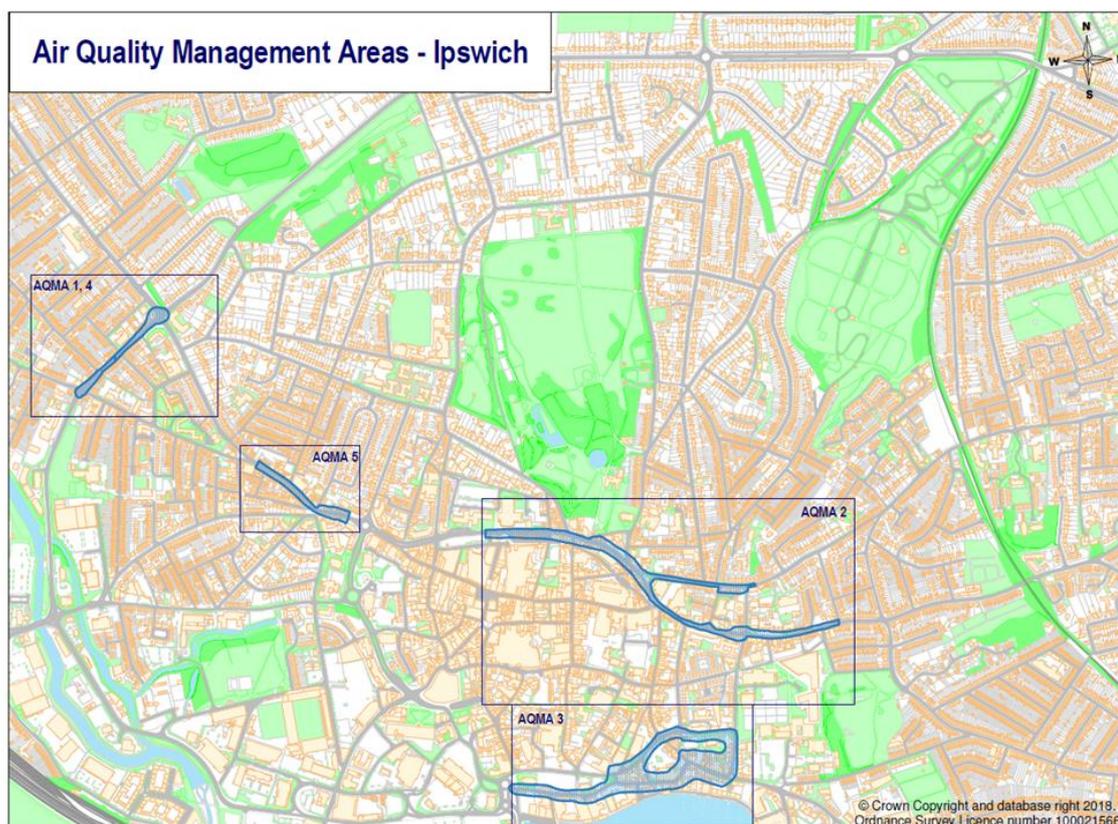
1. The Purpose of the Guidance

- 1.1 Air quality has a significant impact on public health both in terms of health and quality of life. Air pollution contributes to early death through cardiovascular disease, lung cancer and other respiratory diseases. Air pollution disproportionately affects the young, older people, those with underlying cardiopulmonary conditions and the most deprived within our communities.
- 1.2 Air quality is one of a number of material considerations in deciding planning applications. National planning policy requires planning policies to prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of air pollution. Unacceptable levels of air pollution are those which exceed the national air quality objective levels set out as part of the Government's Air Quality Strategy¹. There are many potential sources of air pollution, including:
- Natural events such as forest fires, volcanic eruptions and dust storms;
 - Agriculture;
 - Waste;
 - The energy industry;
 - Household energy consumption; and
 - Transport.
- 1.3 Five Air Quality Management Areas have been designated in Ipswich due to annual average concentrations of nitrogen dioxide (NO₂) exceeding national objective levels. The exceedances have been attributed to exhaust emissions of nitrogen oxides (NO_x) from road vehicles in locations routinely experiencing traffic congestion.
- 1.4 This supplementary planning document (SPD) directly supports the delivery of two aspects of Local Plan policy. The first concerns the impact of development on air quality, and vice versa where poor air quality could impact on the occupiers of development. The second concerns car parking guidance for development within the IP-One area of central Ipswich and how parking provision could influence travel choices and consequently affect the contribution vehicle emissions make to air pollution.
- 1.5 In light of the air quality issues identified in Ipswich and detailed in the Council's Air Quality Action Plan, there is a need for local planning guidance on air quality. This guidance aims to improve air quality across Ipswich through new development and therefore improve the environment and health of the population. This will be achieved, where possible, through either preventing new emission sources or encouraging emission reductions, physical activity and healthy lifestyle choices.
- 1.6 The SPD also sets out car parking guidance for development proposals within the IP-One area defined in central Ipswich. The reason for including car parking guidance for development within IP-One in this SPD is to ensure that the approach to parking in central Ipswich should not undermine actions to improve the Ipswich Air Quality Management Areas. This is covered in Section 7 of the SPD which can be found before the appendices.

¹ For national air quality objective levels, please refer to the National Air Quality Strategy for England, Scotland, Wales and Northern Ireland and the DEFRA website: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf and <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits>

2. Local Air Quality Management in Ipswich

- 2.1 Part IV of the Environment Act 1995 places responsibility for Local Air Quality Management (LAQM) on Ipswich Borough Council for the periodic review and assessment of local air quality within the Borough. Ipswich Borough Council has five Air Quality Management Areas (AQMAs) due to annual average concentrations of nitrogen dioxide (NO₂) exceeding the Air Quality Strategy (AQS) objective 40µg/m³ required by the 1995 Act. The exceedances have been attributed to exhaust emissions of nitrogen oxides (NO_x) from road vehicles in locations routinely experiencing traffic congestion. The AQMAs are shown below:



Map 1 – Air Quality Management Areas in Ipswich

- 2.2 As a result of declaring the AQMAs, the Council has produced an Air Quality Action Plan (AQAP) which outlines a number of measures, each aimed at improving air quality throughout Ipswich. Further information on air quality in the Borough, including details on monitoring locations and air quality data, can be found in our latest Annual Status Report (ASR). A copy of the AQAP and ASR's can be found on the Council's website².
- 2.3 The fact that a development is within or close to an AQMA does not mean that it is necessarily affecting an area of exceedance of an objective, or that it is being affected by air pollution that exceeds the objective. However conversely, a development could introduce new exposure into an existing area of poor air quality, which has not been identified and declared as an AQMA, as previously there was no relevant exposure. The presence or potential creation of an AQMA should therefore not automatically prevent

² Ipswich Borough Council, Air Quality Management: <https://www.ipswich.gov.uk/airqualitymanagement>

development but will mean that development which mitigates its effect on air quality or the impact on occupiers of the development will be expected.

3. How this SPD fits into the Planning Policy Framework

National Planning Policy

- 3.1 The purpose of the planning system is to contribute to the achievement of sustainable development. This means achieving economic, social and environmental objectives; supporting healthy communities and a healthy natural environment are key to these objectives. Poor air quality affects human health and can affect natural environments.
- 3.2 The National Planning Policy Framework (NPPF) requires planning policies to prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of air pollution. Development should, wherever possible, help to improve local environmental conditions such as air quality (paragraph 170).
- 3.3 The NPPF recognises that planning policies and decisions have an important role to play in air quality management. They should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants. Opportunities to improve air quality or mitigate impacts should be identified and may include measures such as traffic and travel management and green infrastructure provision and enhancement (paragraph 181).
- 3.4 Planning can affect local air quality through the location and design of development to support sustainable travel choices. The NPPF (paragraph 102) provides guidance on the way that transport issues should be considered from the earliest stages of plan-making and development proposals, so that:
 - the potential impacts of development on transport networks can be addressed;
 - opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
 - opportunities to promote walking, cycling and public transport use are identified and pursued;
 - the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and
 - patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.
- 3.5 The NPPF states that “The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. Traffic and travel management, and green infrastructure provision and enhancement can help to reduce congestion and emissions, and improve air quality and public health’ (paragraph 103).

- 3.6 The NPPF is clear that it is not the role of planning to seek to control processes or emissions where these are subject to separate pollution control regimes (paragraph 183).
- 3.7 The NPPF also identifies design as a key component of sustainable development and requires planning policies and decisions to ensure that developments create places which promote health and wellbeing (paragraph 127). This SPD will also examine whether there are design measures, such as the use of street trees, which could assist in mitigating the impact of traffic emissions.
- 3.8 Thus, the SPD has been developed within the context of the NPPF and is mainly focused on development and transport and on design measures that could be considered for developments within AQMAs.

Local Planning Policy

- 3.2 The adopted Ipswich Local Plan 2017 sets out the objectives, development proposals and policies for the period to 2031. The key policies relevant to this SPD are contained in (i) the Core Strategy and Policies development plan document, and (ii) the Site Allocations and Policies (incorporating IP-One Area Action Plan) Development Plan Document.
- i) The adopted Core Strategy and Policies Development Plan Document (DPD), 2017
- 3.3 Core Strategy Chapter 6 sets out a specific plan objective - Objective 11 – ‘To improve air quality and create a safer, greener, more cohesive town.’

The objective is given effect through a range of strategic policies:

- Policy CS5 emphasises the need to improve accessibility and manage travel demand and maximise sustainable transport solutions.
 - Policy CS16 seeks to protect, enhance and extend the network of open spaces, ecological networks, canopy cover, green corridors, and sports and recreation facilities. This is important in order to allow people access to green space and nature an opportunity for walking and cycling routes.
 - Policy CS20 supports important strategic transport improvements with the context of seeking to improve air quality.
- 3.4 More detailed development management policies in Part C of the Core Strategy translate this into requirements for planning applications:
- Policy DM5 Design and Character requires new buildings in or around Air Quality Management Areas to be designed to reduce, and at the very least not increase, localised retention of polluting emissions, and include suitable ventilation systems;
 - Policy DM10 Protection of trees and hedgerows recognises the contribution that trees make to air quality;
 - Policy DM17 Transport and Access in New Developments states that new development shall not result in a significant impact on air quality or an Air Quality Management Area and requires the provision of electric vehicle charging points and car clubs in appropriate developments; and

- Policy DM26 Protection of Amenity includes as part of amenity the absence of air pollution.

ii) The adopted Site Allocations and Policies (incorporating IP-One Area Action Plan) Development Plan Document (DPD), 2017

3.5 The Site Allocations and Policies (incorporating IP-One Area Action Plan) DPD makes the key land use allocations for uses such as housing, employment and retail use, and describes an indicative capacity for the residential site allocations and the other site uses. Site sheets set out in Appendix 3A of the Site Allocations and Policies DPD identify where sites lie within or close to an AQMA. DPD also sets out allocations for additional car parks (and the approach to temporary car parks) within the IP-One Area through policy SP17.

iii) Local Plan Review, 2018-2036

3.6 The Council is currently in the process of updating the adopted Ipswich Local Plan. The emerging Local Plan will look ahead to 2036 and is scheduled for adoption in 2021. It was submitted for public examination on 10th June 2020. It is an update of the current adopted plan and, as such, much of the approach and policy framework set out will not change significantly, with a few important exceptions:

- Revisions to strategic policy CS20 to align with the Suffolk County Council Transport Mitigation Strategy;
- A new development management policy DM3 Air Quality – a stand-alone policy for air quality, which reflects the importance of the issue, nationally and locally;
- A new development management policy DM34 Delivery and Expansion of Digital Communication Networks, which will ensure developments of more than ten dwellings will incorporate the most up to date digital communications technology. This is considered important for economic competitiveness and for facilitating home working, which can contribute to reduced commuting journeys;
- Through a draft statement of common ground being developed with the Highway Authority, an approach of a presumption in favour of no net increase of parking spaces other than that identified through the Ipswich Parking Strategy (3 additional spaces to 2036).

3.7 This is included for information only at this stage. The SPD will be updated at such time as weight can be attached to the emerging Local Plan policies. Appendix 6 details the specific measures already required through the adopted Ipswich Local Plan 2017, for example, requirements for electric vehicle charging infrastructure.

4. How does this SPD help new development to improve Air Quality in Ipswich?

Overview of the Approach

- 4.1 The assessment of air quality for planning applications should follow a simple four-step process:

Step 1 Ensure the best design from the outset. Making sure the development considers all of the relevant policies and other supplementary planning documents including those on Space and Design³ and Public Open Space⁴ and this Low Emissions Strategy SPD;

Step 2 Classifying the size and type of the development according to the criteria set out in this supplementary planning document (Appendix 1);

Step 3 Establish the impact of the development on the local air quality and future occupiers; and

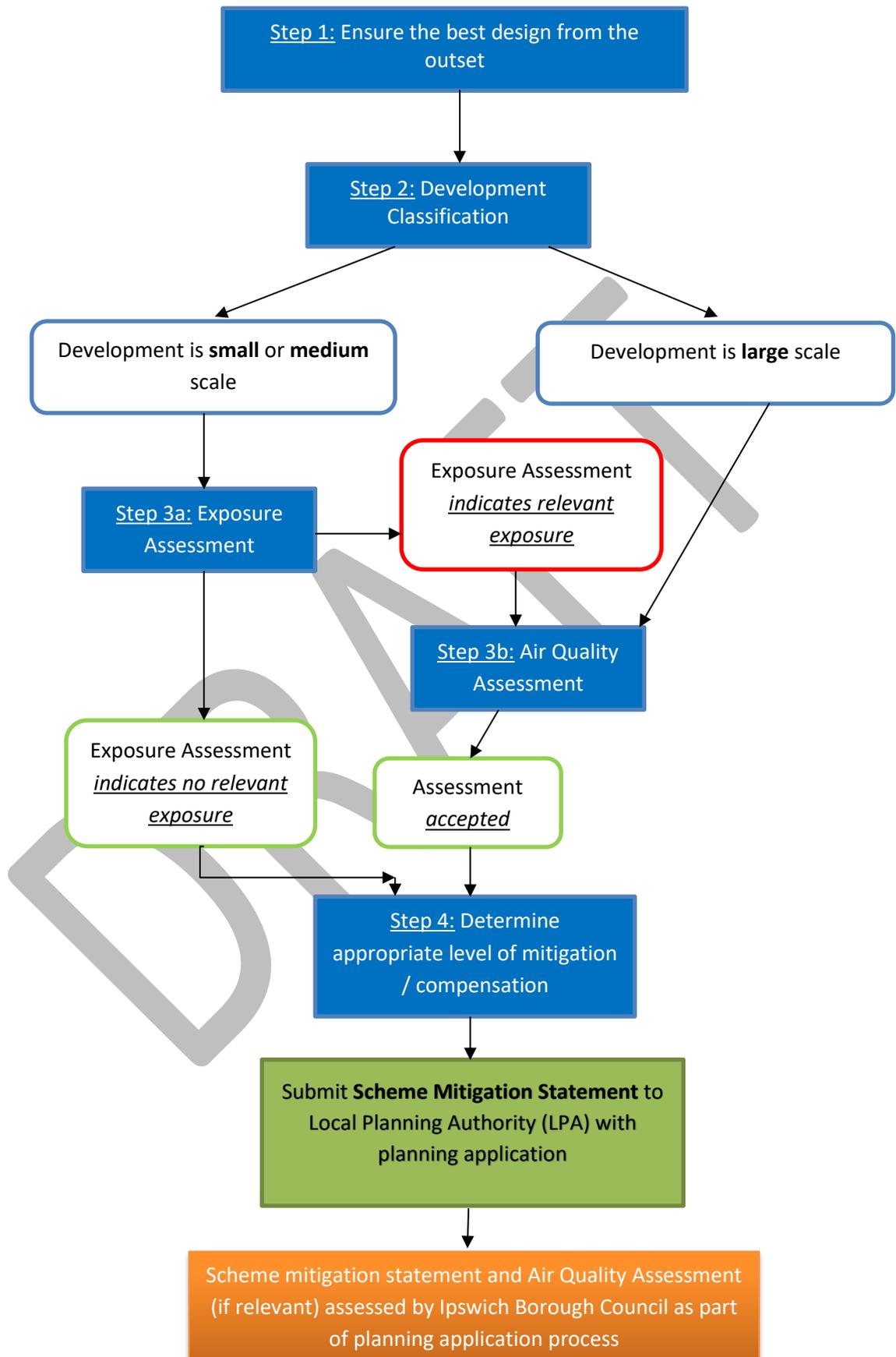
Step 4 Determine the appropriate level of mitigation to make the development acceptable.

- 4.2 **It is strongly advised that applicants enter pre-application discussions with the Local Planning Authority and Environmental Health prior to submitting a planning application. These discussions should include the Highway Authority if measures are linked to transport matters.** Steps 2 to 4 should also be conducted prior to submission of a planning application, as the mitigation will need to be set out as part of the planning application.
- 4.3 The following flow chart shows how the four steps should be followed, depending on the size, type and location of the development.

³ Space and Design Guidelines SPD 2015

https://www.ipswich.gov.uk/sites/www.ipswich.gov.uk/files/space_and_design_guides_spd.pdf

⁴ Public Open Space SPD https://www.ipswich.gov.uk/sites/www.ipswich.gov.uk/files/public_open_space_spd_22feb_2-updated_290817.pdf

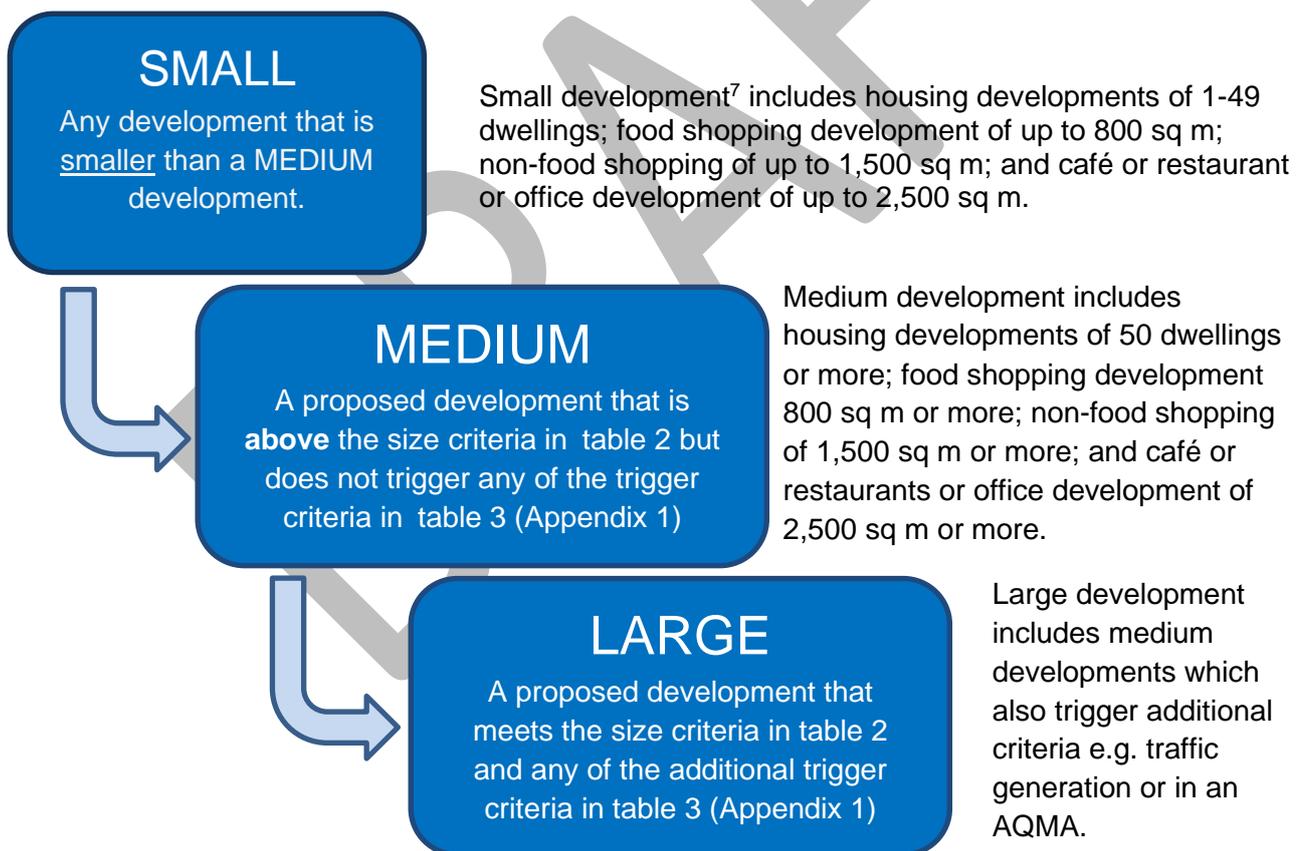


Step 1: Ensure the Best Design from the Start

- 4.4 It is advised that pre-application discussions with the Local Planning Authority, Environmental Health team and the Highway Authority take place at the outset to ensure optimum scheme design and avoid unnecessary delays in the planning process. This is particularly relevant when dealing with large developments. These discussions will help to highlight the approach to classifying the development (Small, Medium or Large), assessment and the mitigation required.
- 4.5 External agencies may also need to input into the planning process with respect to air quality, notably the Highways Authority for road traffic issues and the Environment Agency for any relevant emissions from industrial installations they may regulate.

Step 2: Development Classification

- 4.6 Three levels of development scale have been categorised into **small**, **medium** and **large** on the basis of the Department for Transport threshold Criteria for Transport Assessments⁵ in addition to DEFRA Technical Guidance LAQM.TG(16)⁶. See Appendix 1 for the thresholds and additional trigger criteria.



⁵ The Department for Transport (DfT) Threshold criteria for Transport Assessments and Travel Plans: <https://webarchive.nationalarchives.gov.uk/20100409053422/http://www.dft.gov.uk/adobe/pdf/165237/202657/guidanceontaappendixb> [accessed 12.12.19].

⁶ Department for Environment, Food and Rural Affairs (DEFRA) – Local Air Quality Management Technical Guidance. TG(16): <https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf> [accessed 12.12.19].

⁷ 'Small' development includes all development which creates additional floorspace and changes of use. Householder applications are exempt.

Step 3: Assessment of impacts on future occupiers of the development

Exposure Assessment for **SMALL and MEDIUM** developments.

- 4.7 Small development proposals may not in themselves create an additional air quality problem but may cumulatively add to local air pollution and potentially introduce more people likely to be exposed to existing levels of poor air quality.
- 4.8 Applicants for all SMALL or MEDIUM developments will need to conduct an exposure assessment. This SPD provides a simple Exposure Assessment Template at Appendix 3 for completion. The Exposure Assessment is similar to a screening exercise and looks at whether the development could potentially expose future occupants to unacceptable levels⁸ of poor air quality. The likelihood of introducing additional relevant exposure will be assessed using the following criteria. If the answer to any one of these questions is yes, then there is the potential for future occupants to be exposed to unacceptable levels of poor air quality, which will trigger the need for further action.
- Is the proposed development adjacent⁹ to or within an AQMA¹⁰?
 - Is the proposed development located in an area of concern (e.g. adjacent to an industrial site, transport depot, bus depot)?
 - Is the proposed development in an area close to exceeding Air Quality Objectives (within 10% of National Air Quality Objectives)¹¹?
 - Does the proposed development include one of the following land use types¹²:
 - C1 to C3; (hotels, residential institutions, dwelling houses)
 - C4 (Homes in Multiple Occupation);
 - D1 (non-residential institutions)and within 20m of roads with >10,000 AADT¹³.
- 4.9 Looking at whether the relevant exposure of a development can be ascertained through discussions with local authority officers dealing with air quality, and reference made to the local authority's latest Annual Status Reports.
- 4.10 Where it is unclear whether levels of NO₂ emissions may pose an unacceptable exposure risk to the occupiers of proposed development, it may be appropriate to undertake a period of monitoring at the site as part of an air quality assessment, before an application is submitted. This will help where new exposure is proposed in a location with a complex road layout and/or topography, which will be difficult to model, or where no data is available to verify the model. The requirements of such programmes are to be agreed with the Environmental Health Department prior to monitoring taking place. Typically, monitoring should be undertaken for a minimum of three to six months using

⁸ For national air quality objective levels, please refer to the National Air Quality Strategy for England, Scotland, Wales and Northern Ireland and the DEFRA website:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf and <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits>

⁹ Adjacency is defined as within 20m of the boundary of an AQMA or where development has potential to impact on concentrations in AQMA.

¹⁰ see IBC online mapping http://maps.ipswich.gov.uk/Online_Mapping/ and Map 1

¹¹ see IBC's latest Annual Status Report for details: <https://www.ipswich.gov.uk/airqualitymanagement>

¹² Town and Country Planning (Use Classes) Order 1987 (as amended)

¹³ Orwell Bridge, Wherstead Rd, Star lane + College St, Woodbridge Rd, Norwich Rd, Felixstowe Rd, Nacton Rd, Valley Rd, St Helens St, Foxhall Rd, Landseer Rd

agreed techniques and locations with any adjustments made following DEFRA Technical Guidance LAQM.TG(16).

- 4.11 The outcome of the exposure assessment will determine the level of mitigation required to make the development acceptable. Should there be no acceptable mitigation or the proposed mitigation would not mitigate the impact of the development fully, the recommendation from Environmental Health to the Local Planning Authority will be to consider refusing the proposal on air quality grounds.

Next steps if the Exposure Assessment indicates relevant exposure will occur.

- 4.12 Where the above exposure criteria are triggered and proposals may expose new receptors to unacceptable levels of air pollution (i.e. exceeding air quality objective levels), applicants will need to conduct an Air Quality Assessment. Further details of the steps necessary to undertake an air quality assessment are shown in 'Appendix 4 – Air Quality Assessment Protocol'. Emissions and Damage Cost Calculations are not required for small and medium scale proposals.

- 4.13 Where relevant exposure has been identified, it is important that careful consideration is given to proposed mitigation, to prevent exposing occupants and existing residents to poor air quality. To reduce exposure, consideration should be given to the following mitigation measures:

- Increasing the set back distance between the development facade and the pollution source;
- Reducing opening windows/doors facing the roadside but including appropriate mechanical ventilation;
- Re-organising main habitable rooms including bedrooms away from facing the roadside;
- Taking account of the height separation of living accommodation from a road source e.g. can residential dwellings be provided on higher floors.
- Design of schemes to avoid the creation of canyons¹⁴, allowing a greater degree of pollutant dispersal;
- The use of green infrastructure and planting such as living walls or hedges to provide a barrier to an adjacent pollution source;

- 4.14 The above list of potential mitigation measures is not exhaustive and further options may be suggested where the Council feel it is appropriate, depending on the scale of development and air quality issues within an area. For example, further mitigation may be required to reduce on-site exposure where a development will be in an existing area of poor air quality.

Next steps if the Exposure Assessment indicates no relevant exposure

- 4.15 Where the above exposure criteria are not triggered and relevant exposure is not a concern, applicants will not need to conduct an Air Quality Assessment. However, applicants should still ensure development complies with other policies in the Local Plan to provide sustainable design including DM1 and DM2 and contributing towards biodiversity net gain and open space provision, which will all contribute towards improving air quality and include appropriate, proportionate mitigation to make the development sustainable as per the information detailed in the chapter 'Step 4: Air Quality Mitigation' below, as all development has the potential to affect air quality.

¹⁴ LAQM.TG(16) generally defines a street canyon as "narrow streets where the height of buildings on both sides of the road is greater than the road width"

- 4.16 A detailed air quality assessment will be required for LARGE developments and will need to be submitted alongside a planning application. This SPD provides an Air Quality Assessment Protocol and Damage Cost Calculator at Appendices 4 and 5.
- 4.17 The purpose of an air quality assessment is to determine the significance of the impact of a development on local air quality and/or the significance of the impact of local air quality on a development. The significance of either impact, in accordance with EPUK/IAQM Guidance, will enable the air quality officer to make appropriate recommendations to the LPA in relation to the determination of the planning application.
- 4.18 Applicants are expected to complete an air quality assessment in accordance with the EPUK/IAQM Planning Guidance – ‘*Land-Use Planning & Development Control: Planning For Air Quality*’¹⁵.
- 4.19 For assessing demolition and construction dust effects, applicants are expected to complete the assessment in accordance with the IAQM Guidance - ‘*Guidance on the assessment of dust from demolition and construction*’¹⁶

Essentially, an Air Quality Assessment requires:

1. The identification of the level of exposure through the change in pollutant concentrations, including cumulative impacts arising from the proposal, during both demolition/construction operations and operational phases. Mitigation measures should be identified and modelled where practicable.
2. The calculation of pollutant emissions costs from the development:
 - a. The methodology to be used for the determination of pollutant concentration change should meet the requirements of the DEFRA Technical Guidance Note LAQM.TG(16).

Further details of the air quality assessment requirements are shown in ‘**Appendix 4 – Air Quality Assessment Protocol**’.

- b. The pollutant emissions costs calculation will identify the environmental damage costs associated with the proposal and determine the amount (value) of mitigation that is expected to be spent on measures to mitigate the impacts. The calculation should utilise the most recent DEFRA Emissions Factor Toolkit¹⁷ to estimate the additional pollutant emissions from a proposed development and the latest DEFRA IGCB Air Quality Damage Costs¹⁸ for the specific pollutant of interest, to calculate the resultant damage cost. See ‘**Appendix 5 - Emissions and Damage Cost Calculations**’ for further information.
- 4.20 As the need for and Air Quality Assessment will usually only apply to major development it is anticipated that these will require input from specialists. Developers are strongly advised to confirm the scope of any assessment with the Local Planning Authority before

¹⁵Environmental Protection UK (EPUK)/ Institute of Air Quality Management (IAQM)– ‘Land-Use Planning & Development Control: Planning For Air Quality’: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [accessed 13.12.19]

¹⁶ Institute of Air Quality Management (IAQM), Guidance on the assessment of dust from demolition and construction: <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf> [accessed 18.12.2019].

¹⁷ Department for Environment, Food and Rural Affairs (DEFRA), Emissions Factors Toolkit: <https://iaqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

¹⁸ DEFRA Interdepartmental Group on Costs and Benefits (IGCB), Air Quality: economic analysis: <https://www.gov.uk/guidance/air-quality-economic-analysis>

undertaking the assessment. Failure to agree the scope of an assessment may result in delay and unnecessary expense.

Step 4: Mitigating the effects of development on Air Quality

- 4.21 To reduce the cumulative impacts of development on air quality and render it sustainable, mitigation measures are required for **all developments** (with the exception of householder developments). This applies irrespective of whether they are sited in an area which exceeds the air quality objectives or what the outcome of the Exposure Assessment was. This is about the impact of the development on air quality, individually or cumulatively.
- 4.22 This SPD provides some examples of what type of mitigation may be required. Appendix 2 shows tables that set out three levels of mitigation measures for the air quality effects of development according to the development's scale – Type 1, Type 2 and Type 3.
- 4.23 All scales of development will need to incorporate Type 1 mitigation measures. Many of these measures relate to Local Plan policy requirements which are expected in all development.
- 4.24 Medium scale development will need to incorporate Type 1 and Type 2 mitigation measures.
- 4.25 The guidance in this SPD assumes that, if the appropriate mitigation measures are incorporated into development proposals, small and medium schemes should not have a significant impact on air quality.
- 4.26 In addition to Type 1 and Type 2 mitigation, the largest schemes may require additional Type 3 mitigation which is determined in scale by the calculation of emission damage costs associated with the scheme.
- 4.27 The lists of potential mitigation measures are not exhaustive and further options may be suggested where the Council feel it is appropriate, depending on the scale of development and air quality issues within an area. For example, further mitigation may be required to reduce an adverse impact off-site. The Council welcomes the opportunity to work with developers to devise innovative measures that will lead to improving local air quality.
- 4.28 It is important to note that mitigation is no substitute for good environmental design. This SPD assumes good design should be the starting point for development and seeks to address the remaining impacts with additional interventions. Principles of good design are therefore not normally considered as part of site mitigation. However, good design which makes best use of location and site layout can play a role in reducing trip demand and total emissions generated by a development, therefore reducing the scale of mitigation required.
- 4.29 In any event, the mitigation options agreed should be relevant and appropriate to:
- The type, size and location of the development
 - Local policies (e.g. Planning Policy, Highways Authority policies)
 - Current and future Air Quality Guidance (e.g. from DEFRA)
 - The local authority's Air Quality Action Plan

Transport mitigation should align with the Suffolk County Council Transport Mitigation Strategy.

5. IP-One Parking Guidance

Background

- 5.1 Central Ipswich is an important employment and service centre, fulfilling a central role for much of Suffolk. Local Plans for the Borough and the Districts around Ipswich identify levels of growth which will enhance Ipswich town centre's role as a key centre. Increasingly, the centre of Ipswich also fulfils a role as a place where people live, particularly at the Waterfront and the Portman Quarter (formerly Ipswich Village).
- 5.2 The IP-One area lies at the heart of Ipswich, consisting primarily of retail and commercial office developments, with increasing amounts of residential property. It is defined on the map below (Figure 3). The IP-One area has good transport hubs, with bus interchanges at Tower Ramparts and the Old Cattle Market. Ipswich Railway Station is also accessible for much of the central area. Transport and public realm improvements, such as the remodelling of the Princes Street/Civic Drive junction, are helping to further connect the town centre with the railway station via improved walking and cycling routes.
- 5.3 The Central Car Parking Core is defined through adopted Local Plan policy SP17. Within this core, adopted Local Plan policy DM18 (emerging policy DM22) controls the provision of long stay public car parking and limits parking provision to that needed for operational purposes. The provision of new public car parks is not covered by this SPD, as this will be addressed through the Ipswich Area Parking Plan which is under preparation. Further guidance on operational car parking is provided below.
- 5.4 Guidance for the provision of residential car parking spaces outside IP-One and non-residential car parking across the Borough is provided through the Suffolk County Council Suffolk Guidance for Parking, 2019. For various use classes, the Suffolk Guidance recognises that lower car parking provision may be appropriate in urban areas (including town centre locations) where there is good access to alternative forms of transport and existing car parking facilities.
- 5.5 The IP-One guidance set out in this section of the SPD aims to add detail to adopted Local Plan 2017 policies by:
- addressing the car and cycle parking needs of residential development within the defined IP-One area by applying a maximum car parking standard.
 - Providing further information on operational car parking for non-residential development.
 - Identifying car parking guidance for non-residential uses within IP-One where more than operational parking is permitted (i.e. outside the Central Car Parking Core).
- 5.6 It is recognised that households resident in the town centre, and visitors to the town centre, need to be able to make sustainable travel choices if they are to have limited car parking opportunities. Therefore, to support sustainable travel choices, the Council is working with Suffolk County Council to develop an action plan to support the developing Suffolk County Council Transport Mitigation Strategy for the Ipswich Strategic Planning Area, 2019.

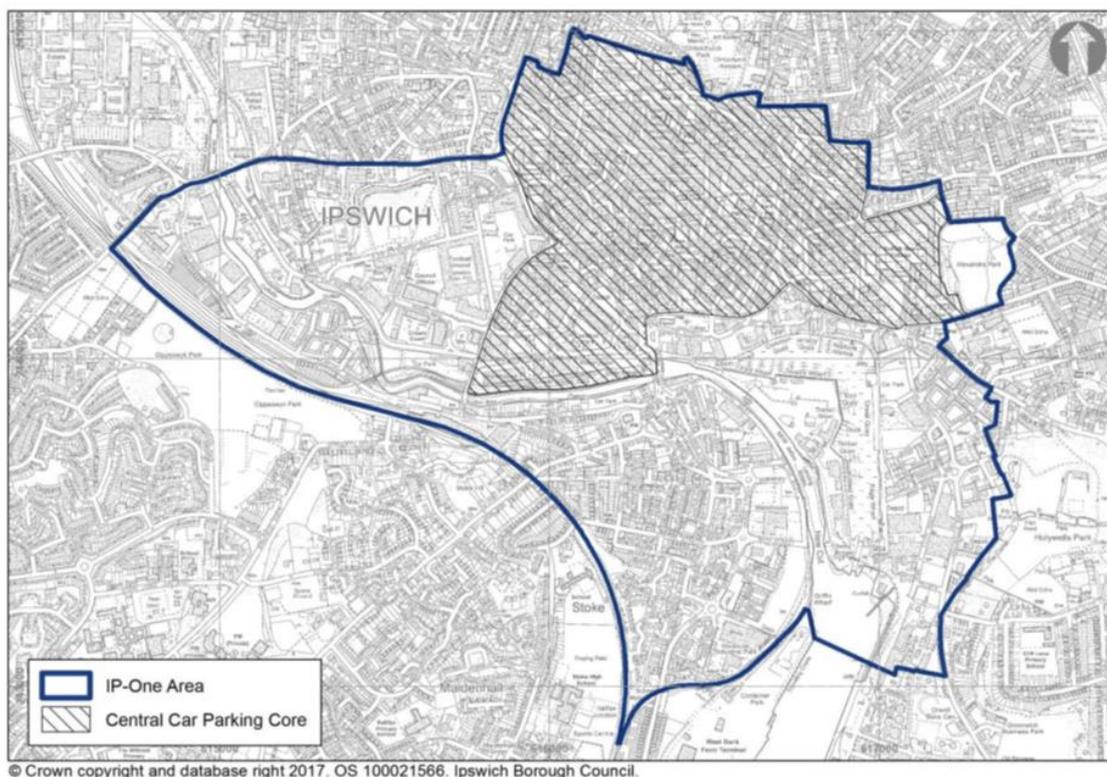


Figure 3 The IP-One Area and Central Car Parking Core (NB: Adoption of the Local Plan Review will update the Central Car park Core boundary).

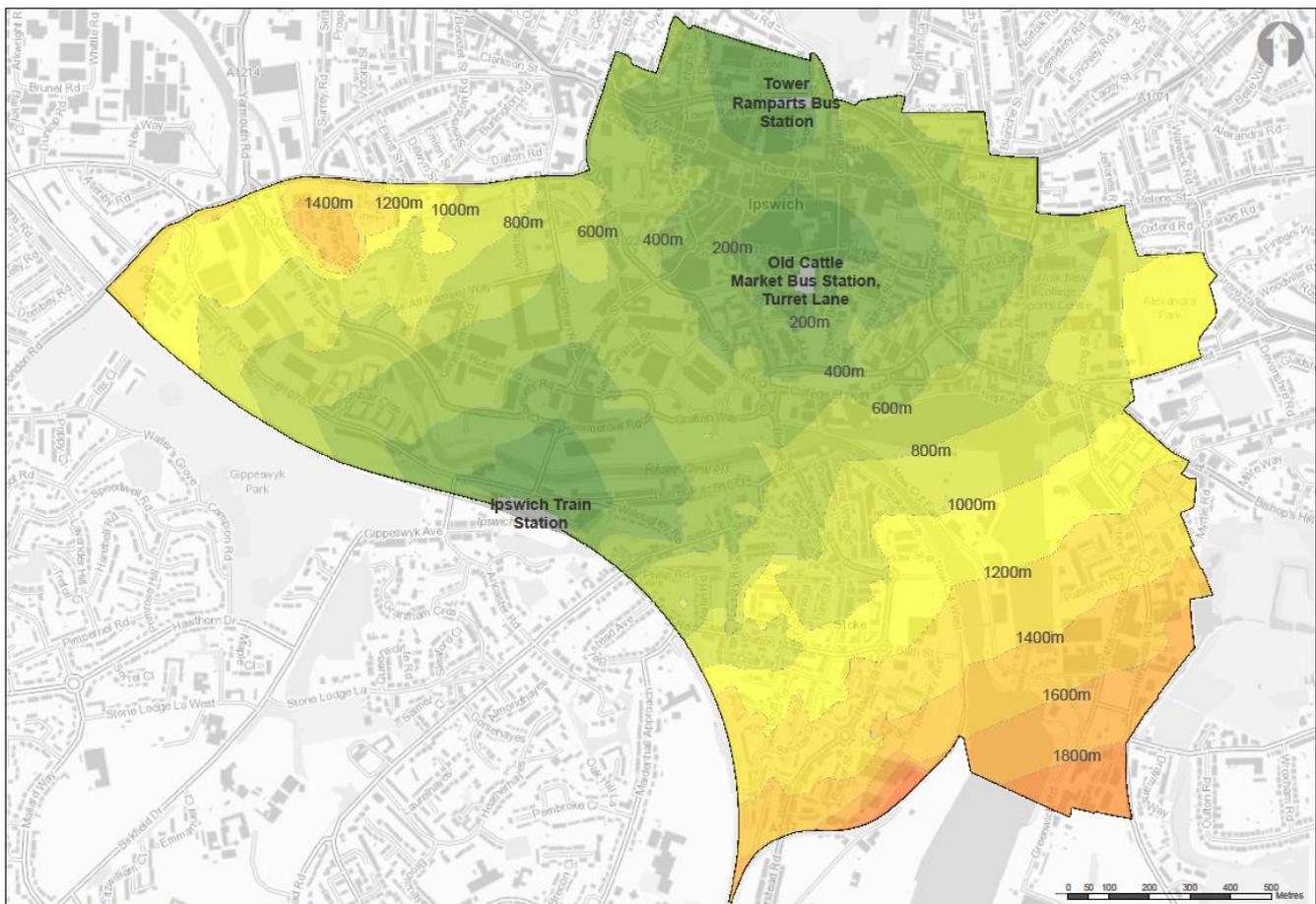
National Planning Policy Framework (NPPF)

- 5.7 The NPPF requires that significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes (para. 103). The IP-One area is a highly sustainable location and has been the focus for urban regeneration in Ipswich for many years.
- 5.8 The NPPF allows for the setting of local parking standards for residential and non-residential development (para. 105). In doing so, the following should be taken into account:
- a) the accessibility of the development;
 - b) the type, mix and use of development;
 - c) the availability of and opportunities for public transport;
 - d) local car ownership levels; and
 - e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.
- 5.9 The NPPF goes on to state that maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport (para. 106).

Addressing the NPPF criteria for local parking standards

Accessibility

- 5.10 IP-One provides a varied mix of uses which has the potential to meet many of residents' daily needs, largely within walking distance. This includes uses such as offices, shops, leisure and sports facilities, open spaces, and higher and further education facilities. Other facilities, such as Ipswich's main hospital, are well served by bus services which run from one of the two town centre bus stations: Tower Ramparts for town-based services and Old Cattle Market for rural or inter-urban ones.
- 5.11 The map below shows straight line distances within IP-One from the key transport hubs of the two bus stations and the railway station, in 100m increments. The adopted Local Plan identifies 800m as the distance considered an acceptable walking distance from a transport or facilities hub such as the railway station or a district centre and this informs the approach to policy requirements such as housing density (see e.g. adopted policy CS2 and paragraph 9.140). The map shows that only the north-western and south-eastern edges of the IP-One area exceed this distance.
- 5.12 Adopted Local Plan policy DM17 Transport and Access in New Developments requires that new development should be located within 400m of public transport, which includes bus routes and not just hubs. Multiple bus routes serve the areas showing yellow/orange in the map below, for example routes 1 and 2 run along Holywells Road and routes 3 and 4 on Bishop's Hill.



Map 2 Proximity of IP-One to main transport hubs

Type, Mix and Use of development

- 5.13 The residential car parking guidance for the IP-One area would apply to 100% residential schemes or to residential elements of mixed-use schemes. Local Plan Policy CS2 requires major development within Ipswich town centre and the Ipswich Village (or the 'Portman Quarter' in the emerging Local Plan) to provide a mix of uses to achieve integrated, vibrant and sustainable communities.

Car Ownership Levels

- 5.14 The Census indicates that Ipswich has lower car ownership levels than adjacent districts and Suffolk as a whole, as would be expected given the size and urban character of the Borough and the proximity of many areas to regularly served public transport routes. At the 2011 Census, over one quarter (27.8%) of Ipswich households did not have a car or van. This compares with 14% in Babergh, 14% in the Suffolk Coastal area of East Suffolk and 11% in Mid Suffolk.

Provision of spaces for charging vehicles

- 5.15 The adopted Local Plan 2017 already requires the provision of electric vehicle charging points in appropriate developments and publicly accessible provision has already been made in the Borough, for example through the redeveloped Crown Car Park.

Residential Car Parking Guidance

- 5.16 It is important to set residential parking guidance at a level which works for residents without using land inefficiently or leading to increased impact on air quality and congestion and reduced use of sustainable travel options.
- 5.17 As in the Suffolk Guidance for Parking, allowance should be made for visitor car and cycle parking. A 0.25 space per dwelling allowance should be made for visitor car parking in connection with larger homes, but a lower value is appropriate for smaller, higher density dwellings in central Ipswich with good accessibility by non-car modes and where public parking is available and on-street parking is controlled. The guidance in the SPD does not apply to disabled car parking provision which will be maintained at those levels in the SCC guidance and will be applied on a case by case basis.
- 5.18 The residential car parking guidance which will be applied in the whole of IP-One by the Council in conjunction with the Highway Authority is as follows:

Size of dwelling within IP-One	Residential parking minimum	Residential parking maximum	Visitor Parking	Sustainable transport measures available	Servicing requirements
1 & 2 bed flats or houses	Car free development is acceptable 2 secure covered cycle spaces per dwelling	1 car parking space per dwelling maximum No maximum for cycle parking	0.1 car parking spaces per dwelling 2 cycle parking spaces per 8 dwellings for visitors	High quality, secure, covered cycle storage Depending on scale of scheme: EV charging points-on-site for houses but in general parking areas for flats, or infrastructure to	Access required for emergency services, removal lorries and refuse lorries

				enable future provision; Car Club provision; Travel Plan.	
3 bed flats or houses	Car free development is acceptable 3 secure covered cycle spaces per dwelling	1.5 car parking spaces per dwelling maximum where communal provision or 1 space per dwelling otherwise No maximum for cycle parking	0.2 car parking spaces per dwelling 3 cycle parking spaces per 8 dwellings for visitors	High quality, secure cycle storage; Depending on scale of scheme: EV charging points or infrastructure to enable future provision; Car Club provision; Travel Plan.	Access required for emergency services, removal lorries and refuse lorries
4 + bed houses	Car free development is acceptable 4 secure covered cycle spaces per dwelling	2 car parking space per dwelling maximum No maximum for cycle parking	0.25 car parking spaces per dwelling 4 cycle parking spaces per 8 dwellings for visitors	High quality, secure cycle storage; Depending on scale of scheme: EV charging points or infrastructure to enable future provision; Car Club provision; Travel Plan.	Access required for emergency services, removal lorries and refuse lorries

5.19 The Government is clear through the NPPF that increasing the provision of homes is a national priority. The Local Plan spatial strategy relies on the provision of homes within IP-One to support urban regeneration and sustainable development and complement the urban extension at Ipswich Garden Suburb. Therefore, it is essential that parking guidance is set at an appropriate level to support housing delivery and support sustainable transport choices. Because the shape of the IP-One area means accessibility varies slightly across the area, distance from the Central Car Parking Core and public transport accessibility will also be considered.

Cycle Parking

5.20 It is important that secure cycle parking is provided as an integral part of new development, to encourage use of this mode. Local Plan Policy DM18 requires provision to be secure, sheltered, conveniently located, adequately lit, step-free and accessible. This means cycle parking should be located as close as possible to the building's entrance for convenience, well overlooked and of the right type.

5.21 The Ipswich Cycling Strategy SPD 2916 sets out the following guidance:

- For new dwellings, secure cycle parking should take the form of a lockable storage area of sufficient size to store two cargo bikes (i.e. at least 2.8m x 1.5m).

- For flatted development, communal storage areas should be avoided. Where they are the only feasible option, for security purposes access to each storage area should be restricted to a maximum of 10 dwellings.
 - In accordance with the Suffolk Guidance for Parking, cycle storage should be designed and located so that the cycle can be accessed as easily, or more easily, than the car. Provision for storing a cycle at the back of a garage is not appropriate as invariably the resident will need to move the car to access the bike.
 - At flatted development there should be a combination of secure cycle storage and open cycle parking. Secure cycle storage provides for residents or visitors who wish to store their bike for longer periods of time, whereas open cycle parking would cater for short stay visitors.
 - Secure cycle storage is that which can only be physically accessed by those authorised to use it, such as through a key or token being provided to residents and their visitors only. It should also have good natural surveillance, and the cycle storage area and access to it should be lit. A cycle stand(s) with no other facilities is not classed as secure. For new dwellings, the requirement for secure cycle storage could be met through provision of a shed in the private grounds of the dwelling.
- 5.22 Visitor cycle parking should be provided in well-overlooked areas, convenient for access to the building. Sheffield stands or similar should be used and there should be a minimum of 1m between cycle stands to allow bikes to be parked either side. However, consideration should be given to how larger cycles such as cargo bikes or bikes with trailers can access the parking spaces. On sites with limited space, a two-tier cycle parking system can be provided, provided that the upper tier can be accessed by all. The longer cycles are expected to be parked at a location, the higher the level of weather protection and security is required. Cycle spaces/stands need to be conveniently located close to destination points, but clear of the direct pedestrian desire lines. They should be detectable by blind or partially sighted people.
- 5.23 E-bikes are an increasingly popular option. Most models allow the battery to be detached and taken inside for charging. However, consideration should be given to the provision of charging points within secure, covered cycle parking facilities. Policy DM17 also requires the provision of high-quality shower and locker facilities in non-residential developments of more than 1,000 sq m of where more than 50 people will be employed.

Car clubs

- 5.24 Car clubs offer an alternative to private car ownership and can be a good transport alternative in high density residential areas where there is a limit on parking provision. The Car Club Annual Survey England and Wales Report for 2017-18 found that each car club car displaces 6.1 private cars. The survey indicates the four main purposes of car club car use to be for business trips, leisure trips, visiting family and friends and shopping trips.
- 5.25 There are currently two car clubs known to be operating in Ipswich. Parking provision for exclusive use by Car Club vehicles will be supported where appropriate and on a case by case basis. It should be visible and easily accessible to occupiers of a development. Where possible, electric vehicle charging infrastructure should be provided. Car clubs should be promoted in areas of low car parking provision or car free residential developments. The Suffolk Guidance for Parking recommends that a suitable car club operator is approached at the early stages of the planning application to ensure that a scheme is viable for the size and nature of the proposed development.

- 5.26 More information is available about car clubs on the website www.como.org.uk. CoMoUK states that: 'Pay per trip car clubs, sometimes known as car sharing allows individuals and businesses to have access to a personal vehicle without being tied to ownership.' There are different models of provision, including the 'traditional' model of booking the car, driving it and then returning it to the same location.
- 5.27 Applicants must have regard the Strategic Flood Risk Assessment (SFRA) if the design and layout of parking is dependent on basement or other forms of underground parking.
- 5.28 For the design and layout of car and cycle parking, please refer to the Suffolk Guidance for Parking 2019.

Electric Vehicle (EV) charging

- 5.29 The Department for Transport's Road to Zero Strategy 2018 sets out the mission for all new cars and vans to be effectively zero emission by 2040 and at least 50%, and as many as 70%, of new car sales and up to 40% of new van sales being ultra low emission by 2030. The Government states in the Strategy that, 'It is our intention that all new homes, where appropriate, should have a chargepoint available.' Adopted Local Plan policy DM17 Transport and Access in New Developments helps to move towards this position by requiring electric vehicle charging points, or the infrastructure to secure future delivery, where consistent with the scale and location of the development. Cable routes or ducting, cabling and energy supply all need to be considered.
- 5.30 The Government is currently considering responses to public consultations on the provision of EV charging points. The Electric Vehicle Smart Charging Consultation was conducted by the Department for Transport in 2019, to explore the use of smart technologies to reduce demand on the electricity system at peak times. Electric Vehicle Charging in Residential and Non-Residential Buildings was also consulted upon in 2019. The consultation documents establish some important principles, such as the safety, security and inter-operability of electric charging systems.
- 5.31 Until national requirements are clarified, the Suffolk Guidance for Parking sets out current EV charging requirements for different classes of development.

Operational car parking

- 5.32 Adopted Local Plan policy DM18 Car and Cycle Parking sets out that only operational car parking will be permitted in connection with non-residential development within the Central Car Parking Core.
- 5.33 Operational parking space is the space required for cars and other vehicles regularly and necessarily involved in the operation of the business of particular buildings throughout the working day. It includes space for commercial vehicles delivering goods to or collecting them from the buildings, space for loading and unloading and for picking up and setting down of passengers. It does not include staff car parking.
- 5.34 Examples include: spaces for school contract buses on education sites; spaces for doctors and for setting down patients at health centres; spaces for security vans at banks or building societies; and spaces for delivery vehicles at shops.
- 5.35 Where no operational requirement is identified, adequate provision for servicing must still be provided. This should include sufficient space to allow the maximum number and

size of vehicles likely to serve the development at any one time to manoeuvre with ease and safety.

- 5.36 Many sites within IP-One are allocated for mixed use development. On these sites, scope for providing less parking overall than the guidance indicates will be considered where the uses may generate demand at different times of day, in the interests of using land efficiently.

Non-residential car parking guidance for development within IP-One but outside the Central Car Parking Core.

- 5.37 The Central Car Parking Core covers much of the defined town centre and the Central Shopping Area of central Ipswich but some areas of IP-One lie outside the boundary of the core.
- 5.38 For non-residential development in IP-One and outside the Central Car Parking Core, car free development would be welcomed. This would extend the approach of the Central Car Parking Core across the whole IP-One Area. However, the Council will apply parking guidance at half the rate of the Suffolk Guidance for Parking 2019 as a maximum level of allowable provision. In recognition that the shape of the IP-One area means accessibility varies slightly across the area, distance from the Central Car Parking Core and public transport accessibility will also be considered by the Council in determining appropriate car parking provision in new developments.
- 5.39 Public long and short stay car parking provision within IP-One will be addressed through the separate Ipswich Area Parking Plan.

6. Glossary of Terms

AADT	Annual average daily traffic flows
Air Quality Assessment (AQA)	An assessment of the impact of a development on the levels of certain pollutants in the local area and the impact of pollution levels on future occupants.
Air Quality Action Plan (AQAP)	Sets out the Councils intentions, in collaboration with other organisations, for working towards the air quality objectives within the AQMAs.
Air Quality Management Areas (AQMAs)	Areas where the air quality objectives are likely to be exceeded. Declared by way of an order issued under the Section 83(1) of the Environment Act 1995.
Air Quality Objectives	Air quality targets to be achieved locally as set out in the Air Quality Regulations 2000 and subsequent Regulations. Objectives are expressed as pollution concentrations over certain exposure periods, which should be achieved by a specific target date. Some objectives are based on long term exposure (e.g. annual averages), with some based on short term objectives. Objectives only apply where a member of the public may be exposed to pollution over the relevant averaging time.
Damage Costs	Damage costs are a simple way to value changes in air pollution. They estimate the cost to society of a change in emissions of different pollutants

Development Plan Document	A Local Development Document which forms part of the statutory development plan, examples include the Core Strategy and Area Action Plans.
Environmental Impact Assessment (EIA)	Assessment required for projects specified in Environmental Impact Assessment Directive. Governed by the Town & Country Planning (Environmental Impact Assessment) Regulations 2017
EU Limit Value	Legally binding pollutant concentration limit on Governments of EU Countries
Exceedance	Concentrations of a specified air pollutant greater than the appropriate Air Quality Objective.
Exposure Assessment	An assessment of a development where residential accommodation or other relevant exposure is proposed and there is likely to be exposure to concentrations above the air quality objective levels.
HDV	Heavy duty vehicle (lorry or bus greater than 3.5 tonnes gross vehicle weight)
LAQM TG(16)	Local Air Quality Management Technical Guidance (February 2018). This document provides national advice on how local authorities should assess air quality.
LDV	Light duty vehicle (cars and small vans less than 3.5 tonnes gross vehicle weight)
Local Development Document	Comprising two types, Development Plan Documents and Supplementary Planning Documents, which together form the Local Development Framework.
LPA	Local Planning Authority
NO ₂	Nitrogen Dioxide
NO _x	NO _x = nitrogen oxides, which includes Nitric Oxide and Nitrogen Dioxide. Most pollution sources emit nitrogen oxides primarily as nitric oxide. However, once in the atmosphere nitric oxide can be converted to nitrogen dioxide. Therefore, it is important to know the concentrations of both NO _x and NO ₂
Offsetting	Measures which 'compensate' for anticipated increases in pollution in the area but not necessarily at the exact locality. This might be for example by funding more general measures in the Air Quality Action Plan.
PM	Particulate Matter
PM 2.5	Particulate matter with a diameter of 2.5 microns or less
PM ₁₀	Particulate matter with a diameter of 10 microns or less
Point Sources	Any single identifiable source of pollution from which pollutants are discharged, such as a pipe or chimney.
Sensitive Development	A development which would allow users of the site to potentially be exposed to pollutants above the objective for the relevant period. For example, the introduction of a new residential development into an area where an air quality objective is already exceeded, would create the potential for the exposure of residents to poor air quality above the objective level. Incidentally, this type of development may also generate significant additional traffic flow and also be a polluting development.
Supplementary Planning Documents (SPDs)	Expand on or provide further guidance on policies in the Local Plan. Supplementary Planning Documents can add further detail to the policies in the development plan. They can be used to provide further guidance for development on specific sites, or on particular issues, such as design and are capable of being a material consideration in planning decisions but they are not part of the development plan.

Appendix 1- Criteria for determining Small, Medium and Large Development

Table 1: An overview of the process for classifying, assessing and mitigating a development for air quality:

Development Classification (Step 2)	Assessment Required for occupiers of the development (Step 3)	Mitigation Required for impacts of the development on air quality (Step 4)
SMALL	Exposure Assessment. If exposure assessment indicates relevant exposure, then an Air Quality Assessment is required.	Type 1 (see table 4)
MEDIUM	Exposure Assessment. If exposure assessment indicates relevant exposure, then an Air Quality Assessment is required.	Types 1 and 2 (see table 5)
LARGE	Full Air Quality Assessment, including an evaluation of changes in emissions. Assessment includes Emissions and Damage Cost Calculations.	Types 1, 2 and 3 (see table 6)

Table 2: Development Classification Thresholds for Small and Medium Sized Development

SMALL	Any development <u>below the thresholds</u> in Table 2 are classified as SMALL development.
MEDIUM	Any development indicated within the table below are classified as MEDIUM development.

Land Use	Description	Criteria
Food Retail (A1)	Retail sale of food goods to the public – supermarkets, superstore, convenience food store	>800 m ² (GFA)
Non- Food Retail (A1)	Retail sale of non-food goods to the public; but includes sandwich bars or other cold food purchased and consumed off site	>1500 m ² (GFA)
Financial and professional services (A2)	Banks, building societies and bureaux de change, professional services, estate agents, employment agencies, betting shops	>2500 m ² (GFA)
Restaurants and Cafes (A3)	Use for the sale of food for consumption on the premises	>2500 m ² (GFA)
Drinking Establishments (A4)	Use as a public house, wine-bar for consumption on or off the premises	>600 m ² (GFA)

Hot Food Takeaway (A5)	Use for the sale of hot food for consumption on or off the premises	>500 m ² (GFA)
Business (B1)	Offices other than in use within Class A2 (financial & professional). Research & development – laboratories, studios. Light industry	>2500 m ² (GFA)
General industrial (B2)	General industry (other than B1)	>4000 m ² (GFA)
Storage or Distribution (B8)	Storage or distribution centres – wholesale warehouses, distribution centres & repositories	>5000 m ² (GFA)
Hotels (C1)	Hotels, boarding houses & guest houses	>100 bedrooms
Residential Institutions (C2)	Hospitals, nursing homes used for residential accommodation and care	>50 beds
Residential Institutions (C2)	Boarding schools and training centres	>150 students
Residential Institutions (C2)	Institutional hostels, homeless centres.	>400 residents
Dwelling Houses (C3)	Dwellings for individuals, families or not more than six people in a single household.	>50 dwellings
Non-residential Institutions (D1)	Medical & health services, museums, public libraries, art galleries, non-residential education, places of worship and church halls.	>1000 m ² (GFA)
Assembly and Leisure (D2)	Cinemas, dance & concert halls, sports halls, swimming, skating, gym, bingo, and other facilities not involving motorised vehicles or firearms.	>1500 m ² (GFA)

Other Considerations

1. Any development proposing 100 or more parking spaces

Table 3: Additional Trigger Criteria for Large Developments

LARGE

Any development indicated with which meets the criteria in the table below are classified as LARGE development.

The development will:	Indicative Criteria
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); or	A change of LDV flows of: <ul style="list-style-type: none"> • more than 100 annual average daily traffic flows (AADT) within or adjacent to an AQMA • 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); or	A change of HDV flows of: <ul style="list-style-type: none"> • more than 25 AADT within or adjacent to an AQMA • more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes; or	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors; or	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station; or	Where bus flows will change by: <ul style="list-style-type: none"> • more than 25 AADT within or adjacent to an AQMA • 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).

Other Considerations – where any one of these applies

Developments that meet the criteria in table 2 which also trigger the following:

- Any development proposed in a location within or adjacent (within 20m of an AQMA or where development has potential to impact on concentrations in AQMA) to an Air Quality Management Area (AQMA);
- Where development requires an Environmental Impact Assessment and air quality is to be considered;
- In an area close to exceeding Air Quality Objectives (within 10% of National Air Quality Objectives).

Where significant demolition and construction works are proposed (significance determined by professional judgement based on scale of works and proximity of sensitive receptors)

Where a centralised combustion unit of thermal input >300kWh is proposed

All biomass boiler applications

All stand-by/short-term power generation units regulated by the Environment Agency

Appendix 2 - Mitigation

Suitable and appropriate mitigation will need to be integrated into a proposal, and this will be secured through planning conditions. Paragraph 54 of the National Planning Policy Framework (NPPF) states that planning conditions may be used to make development that would otherwise be unacceptable capable of approval. If on-site mitigation is not possible, the Council will seek off-site compensation for the identified air quality impacts through a Section 106 Agreement or similar agreement.

Tables 4, 5 and 6 below set out the three levels of mitigation.

Table 4: Examples of Type 1 Mitigation for all scales of development

Type 1 Mitigation for all scales of development – development should incorporate as many types of mitigation as are appropriate and deliverable and all those required by the Local Plan

- Provision of Electric Vehicle Charging Points and future infrastructure as per the Ipswich Local Plan, where appropriate;
- Measures to support accessibility and walking and cycling infrastructure¹⁹;
- Design measures that make the best use of location and site layout and help reduce trip demand and total emissions generated by a development (see also design measures under step 3 such as set backs);
- Adequate provision of secure cycle storage;
- Using, where appropriate, green infrastructure or planting to absorb dust and other pollutants;
- The provision of infrastructure improvements to the public transport network to help encourage the use of public transport, as appropriate;
- Low NO_x heating to meet a minimum standard of <40mgNO_x/kWh
- Adherence to Construction Good Practice, including:
 - Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction²⁰
 - Ensure all Non-Road Mobile Machinery (NRMM) comply with the requirements of the NRMM regulations.

Note: While there is conflicting evidence as to whether green infrastructure can help reduce concentrations of NO₂, it is acknowledged that certain types of shrubs and trees can be effective at removing particulates from the atmosphere, increasing pollutant dispersion and providing a barrier to pollutant sources such as heavily trafficked roads.

As a last resort, non-opening windows and/or mechanical ventilation (with heat recovery) into the building, with the air intake away from the road. This should not automatically be seen as providing effective mitigation against exposure and should be scrutinized carefully, not only in terms of the acceptability of providing living conditions in what could be described as a hermetically sealed unit, but also in terms of the increase in energy requirements, maintenance that is incurred and the attendant secondary noise effects that can arise.

Any proposals to incorporate green infrastructure into scheme design to assist with reducing exposure should provide evidence as to the suitability of the species chosen.

¹⁹ Reference should be made to measures set out in the Walking and Cycling Infrastructure Strategy

²⁰ Institute of Air Quality Management (IAQM), Guidance on the assessment of dust from demolition and construction: <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf> [accessed 18.12.2019].

Table 5: Examples of Type 2 additional mitigation for MEDIUM and LARGE proposals

Type 2 Additional mitigation for medium and large Proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

Type 1 mitigation required plus:

Residential

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers;
 - Eco-driver advice to aid to all residents;
 - Designation of parking spaces for low emission vehicles;
- 'Full Fibre to Property' broadband provision to enable working from home;
- EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points);
- Car club provision within development or support given to local car club/EV car clubs;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan designed to offset the impact on air quality arising from new development.

Commercial/Industrial

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - Differential parking charges depending on vehicle emissions;
 - Public transport subsidy for employees;
 - All commercial vehicles should comply with current European Emission Standard, to be progressively maintained for the lifetime of the development
 - Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies
- Use of ultra-low emission service vehicles;
- Provision of high-quality workplace shower and locker facilities;
- On-street EV recharging;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan, designed to offset the impact on air quality arising from new development.

Note: The above list is not exhaustive and further options may be suggested where appropriate and justified, depending on the scale of development and air quality issues within the local area.

The Government's Planning Policy Guidance on Air Quality (Nov 2019 Paragraph: 008 Ref ID: 32-008-20191101) states that: -

Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented. [Planning conditions](#) and [obligations](#) can be used to secure mitigation where the relevant tests are met.

Additional Mitigation Measures (Type 3) – for LARGE Proposals

This type of mitigation is only required in the case of large-scale development; in addition to Type 1 and 2 measures having been applied.

All large developments are required to quantify the emission impact(s) of the development on air quality and calculate this in terms of a monetary damage cost. The process for the calculation of damage costs is set out in Appendix 5. The damage cost calculation will be used to determine the level of Type 3 mitigation and/or compensation required to make the development acceptable in terms of air quality. In some cases, the calculated value of the air quality impact may be used on projects to 'offset' the emissions from the proposal.

Examples of Type 3 mitigation are shown in Table 6 below. Where Type 3 mitigation is required, the planning authority and developer will agree measures that are appropriate and in scale and kind to the development. Such measures may be taken forward by condition, where possible, or through the use of a Section 106 Agreement. The table sets out examples of measures that could be considered. Those selected as appropriate for a specific scheme would be identified through the scheme Air Quality Assessment.

In certain circumstances it may be justifiable to recommend refusal for development if there is an unacceptable impact on air quality and appropriate mitigation measures cannot be secured.

Table 6: Examples of Type 3 mitigation for large proposals

Type 3 Mitigation for large proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

Type 1 and 2 mitigation required plus:

- Low emission and ultra-low public transport, including bus service provision (see also SCC Transport Mitigation Strategy);
- Low emission waste collection services;
- Contribution to low emission vehicle refuelling infrastructure e.g. refuse collection and community transport services;
- Cycling hubs and corridors, including bicycle/e-bike hire schemes;
- Incentives for the take-up of low emission technologies and fuels;
- Transport network improvements (e.g. signal improvements and traffic management) – that can be shown to benefit air quality;
- Air Quality Monitoring programmes.

Currently, it is not proposed to identify Low Emission Zones or Clean Air Zones to tackle air quality in Ipswich, but these measures may need consideration in future if the mitigation identified does not deliver air quality improvement.

Construction Phase - Emissions Mitigation and Assessment

All development should consider the effect construction operations will have on emissions and the need for mitigation. Suitable mitigation should be adopted in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction. Furthermore, all applicants should ensure that all Non-Road Mobile Machinery (NRMM) complies with the requirements of the NRMM regulations.

For large scale developments, the IAQM Guidance on the assessment of dust from demolition and construction should be followed to inform the choice of assessment and mitigation measures required during construction. In the case of large-scale development, where an air

quality assessment is required, that assessment should also include an assessment of the air quality effects of the construction phase.

Scheme Mitigation Statement

All developments require a brief mitigation statement which outlines the mitigation measures proposed depending on development scale. This would also include the mitigation measures suggested from the assessment of dust from demolition and construction to minimise emissions to atmosphere during the construction phase.

In the case of large developments, the statement should include an assessment of impacts and mitigation measures associated with the demolition/construction phase, as assessed as part of the wider development's detailed air quality assessment.

The information provided in the mitigation statement will be reviewed by the Local Planning Authority alongside the exposure assessment and, if applicable, the Air Quality Assessment for the proposal. We will then use this information to determine whether the mitigation proposed is adequate; there isn't a significant increase in the likelihood of an air quality objective exceedance at an on or off-site location; and there is no conflict with the Council's Air Quality Action Plan.

Refusal of a planning application may still result if air quality impacts from a development remain; even after all reasonable means to mitigate the impacts on air quality have been exhausted.

Planning Applications

Every development application will need to be accompanied by an appropriate 'scheme air quality mitigation statement', which outlines the site and development type and the measures proposed, based on the development's scale. The requirement applies where there is new floorspace created or there are changes of use proposed. **Householder applications are exempt from this requirement.** The statement will be proportionate based on the scale of development and should include the mitigation measures proposed, from the assessment of dust from demolition and construction to minimise emissions to the atmosphere during the construction phase, through to the operational phase of the development. The scheme air quality mitigation statement should be submitted alongside a planning application. A template scheme air quality mitigation statement is provided at Appendix 3.

Implementation, enforcement and monitoring.

The mitigation agreed through the planning application process will be secured by planning conditions or section 106 agreements.

Planning conditions require compliance with the measures identified and are enforceable for the lifetime of a development.

Section 106 can be used to secure off-site measures including any financial contributions to measures where it is necessary to make the development acceptable in planning terms; directly related to the development; and fairly and reasonably related in scale and kind to the development.

Air quality monitoring will continue through the annual air quality status report.

Appendix 3 – Template Scheme Mitigation Statement

Air Quality Exposure Assessment Template

SMALL and MEDIUM

Checklist for Submission

- Exposure Assessment
- Air Quality Assessment (if relevant exposure)
- Mitigation Proposed
 - Type 1 for Small proposals
 - Type 1 & 2 for Medium proposals

Name and address of site:	
Description of proposed development: <ul style="list-style-type: none"> • Size (number of dwellings or floor area in m²) • Type (residential/commercial/industrial) 	

Air Quality Exposure Assessment

<p>Do any of the following criteria apply to the proposal?</p> <ul style="list-style-type: none"> • The proposal is adjacent to²¹ or within an AQMA (see IBC online mapping http://maps.ipswich.gov.uk/Online_Mapping/ and Map 1); or • The proposal is located in an area of concern (e.g. adjacent to an industrial site, transport depot, bus depot); or • The proposal is in an area close to exceeding Air Quality Objectives (within 10% of National Air Quality Objectives) – see IBC’s latest Annual Status Report for details: https://www.ipswich.gov.uk/airqualitymanagement; or • The proposal is one of the Land Use types: <ul style="list-style-type: none"> ○ C1 to C3; (hotels, residential institutions, dwelling houses) ○ C4 (Homes in Multiple Occupation); ○ D1 (non-residential institutions) <p>and within 20m of roads with >10,000 Annual average daily traffic flows (AADT) - (Orwell Bridge, Wherstead Road, Star lane + College St, Woodbridge Rd, Norwich Road, Felixstowe Road, Nacton Road, Valley Road, St Helens Street, Foxhall Road, Landseer Road)</p>	<p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p>
<p>Relevant exposure - If you answered ‘Yes’ to any of the above questions and it is unclear if the proposals may expose new receptors to unacceptable levels of air pollution despite suitable mitigation in place then an Air Quality Assessment will be required as part of the application. If you are unsure if an Air Quality Assessment is required, speak with the Council’s Air Quality Officer.</p>	

²¹ Adjacent is defined as within 20m of the AQMA boundary

No relevant exposure - If you answered 'No' to all of the above questions, then an Air Quality Assessment is not required.

Mitigation for relevant exposure

Where relevant exposure has been identified, it is important that careful consideration is given to proposed mitigation, to prevent exposing new receptors to poor air quality. Have the following mitigation measures been incorporated into the development?

- | | |
|---|--------|
| <ul style="list-style-type: none"> Increasing the set back distance between the development facade and the pollution source; | Yes/No |
| <ul style="list-style-type: none"> Reducing opening windows/doors facing the roadside; | Yes/No |
| <ul style="list-style-type: none"> Take account of the height separation of living accommodation from a road source (e.g. can residential dwellings be provided on higher floors?) | Yes/No |
| <ul style="list-style-type: none"> Design of schemes to avoid the creation of canyons | Yes/No |
| <ul style="list-style-type: none"> The use of green infrastructure such as living walls or hedges to provide a barrier to an adjacent pollution source; | Yes/No |
| <ul style="list-style-type: none"> Non-opening windows and/or mechanical ventilation (with heat recovery) into the building, with the air intake away from the road. Note: this measure should be seen as a last resort. | Yes/No |

Mitigation Proposed

Type 1 Mitigation for Small and Medium Proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

- | | |
|--|--------|
| <ul style="list-style-type: none"> Provision of Electric Vehicle Charging Points and future infrastructure as per the Ipswich Local Plan, where appropriate | Yes/No |
| <ul style="list-style-type: none"> Measures to support accessibility and walking and cycling infrastructure | Yes/No |
| <ul style="list-style-type: none"> Design measures which may include where appropriate building set-backs, habitable rooms away from the pollution source, use of green infrastructure (landscaping), non-opening windows and mechanical ventilation | Yes/No |
| <ul style="list-style-type: none"> Adequate provision of secure cycle storage | Yes/No |
| <ul style="list-style-type: none"> Using, where appropriate, green infrastructure or planting to absorb dust and other pollutants | Yes/No |
| <ul style="list-style-type: none"> Measures to support the use of public transport | Yes/No |
| <ul style="list-style-type: none"> Low NO_x heating to meet a minimum standard of <40mgNO_x/kWh | Yes/No |
| <ul style="list-style-type: none"> Adherence to Construction Good Practice, including: <ul style="list-style-type: none"> Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction Ensure all Non-Road Mobile Machinery (NRMM) comply with the requirements of the NRMM regulations. | Yes/No |

Any other mitigation proposed? Detail below:

Type 2 Mitigation for Medium Proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

Type 1 mitigation required plus:

Residential

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers;
 - Eco-driver advice to aid all residents;
 - Designation of parking spaces for low emission vehicles;
- 'Full Fibre to property' broadband provision to enable working from home;
- EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points);
- Car club provision within development or support given to local car club/EV car clubs;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan and low emission strategies, designed to offset the impact on air quality arising from new development.

Yes/No

Yes/No

Yes/No

Yes/No

Yes/No

Commercial/Industrial - As above plus:

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - Differential parking charges depending on vehicle emissions;
 - Public transport subsidy for employees;
 - All commercial vehicles should comply with current European Emission Standard, to be progressively maintained for the lifetime of the development
 - Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies
- Use of ultra-low emission service vehicles;
- Provision of high-quality workplace shower and locker facilities;
- On-street EV recharging;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan and low emission strategies, designed to offset the impact on air quality arising from new development.

Yes/No

Yes/No

Yes/No

Yes/No

Yes/No

Any other mitigation proposed? Detail below:

Checklist for Submission

- Air Quality Assessment (if relevant exposure)
- Damage Cost Calculations
- Mitigation Proposed
 - Types 1, 2 & 3 for Large Proposals

Name and address of site:	
Description of proposed development: <ul style="list-style-type: none"> • Size (number of dwellings or area in m²) • Type (residential/commercial/industrial) 	

Mitigation Proposed

Type 1 Mitigation for <u>Small, Medium and Large Proposals</u> – development should incorporate as many types of mitigation as are appropriate and deliverable	
<ul style="list-style-type: none"> • Provision of Electric Vehicle Charging Points and future infrastructure as per the Ipswich Local Plan, where appropriate 	Yes/No
<ul style="list-style-type: none"> • Measures to support and improve walking infrastructure (e.g. encourage links to existing Rights of Way (ROW) in order to improve opportunities for walking). 	Yes/No
<ul style="list-style-type: none"> • Design measures that make the best use of location and site layout and help reduce trip demand and total emissions generated by a development (see also design measures under step 3 such as set backs) 	Yes/No
<ul style="list-style-type: none"> • Improved cycle paths to link cycle network 	Yes/No
<ul style="list-style-type: none"> • Adequate provision of secure cycle storage 	Yes/No
<ul style="list-style-type: none"> • Using, where appropriate, green infrastructure to absorb dust and other pollutants 	Yes/No
<ul style="list-style-type: none"> • Measures to support the use of public transport 	Yes/No
<ul style="list-style-type: none"> • Low NO_x heating to meet a minimum standard of <40mgNO_x/kWh 	Yes/No
<ul style="list-style-type: none"> • Adherence to Construction Good Practice, including: <ul style="list-style-type: none"> ○ Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction ○ Ensure all Non-Road Mobile Machinery (NRMM) comply with the requirements of the NRMM regulations. 	Yes/No

Type 2 Mitigation for Medium and Large Proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

Type 1 mitigation required plus:

Residential

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers;
 - Eco-driver advice to aid to all residents;
 - Designation of parking spaces for low emission vehicles;
- 'Full Fibre to property' broadband provision to enable working from home;
- EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points);
- Car club provision within development or support given to local car club/EV car clubs;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan and low emission strategies, designed to offset the impact on air quality arising from new development.

Yes/No

Yes/No

Yes/No

Yes/No

Yes/No

Commercial/Industrial - As above plus:

- Travel plan (where required) including mechanisms for discouraging high emission vehicle use and encouraging modal shift as well as the uptake of low emission fuels and technologies, which could include:
 - Differential parking charges depending on vehicle emissions;
 - Public transport subsidy for employees;
 - All commercial vehicles should comply with current European Emission Standard, to be progressively maintained for the lifetime of the development
 - Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies
- Use of ultra-low emission service vehicles;
- Provision of high-quality workplace shower and locker facilities;
- On-street EV recharging;
- Contributing funding to measures, including those identified in the Council's current Air Quality Action Plan and low emission strategies, designed to offset the impact on air quality arising from new development.

Yes/No

Yes/No

Yes/No

Yes/No

Yes/No

Type 3 Mitigation for Large Proposals – development should incorporate as many types of mitigation as are appropriate and deliverable

Type 1 and 2 mitigation required plus:	
<ul style="list-style-type: none"> • Low emission and ultra-low public transport, including bus service provision (see also SCC Transport Mitigation Strategy); • Low emission waste collection services; • Contribution to low emission vehicle refuelling infrastructure e.g. refuse collection and community transport services; • Cycling hubs and corridors, including bicycle/e-bike hire schemes; • Incentives for the take-up of low emission technologies and fuels; • Transport network improvements (e.g. signal improvements and traffic management) – that can be shown to benefit air quality; • Air Quality Monitoring programmes. 	<p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p>
Any other mitigation proposed? Detail below:	

Appendix 4 - Air Quality Assessment Protocol

The purpose of an air quality assessment is to determine the predicted impact of a development on local air quality, public health and/or the local environment, to help determine the appropriate level of mitigation for a development.

Air quality assessments must consider the cumulative impacts associated with all planned developments, particularly those allocated in the Local Plan. They should also assess the potential impacts arising from construction and demolition activities associated with the proposed development.

An air quality assessment should consider NOx and PM emissions and NO₂ and PM concentrations.

Applicants for large schemes are expected to complete an air quality assessment in accordance with the EPUK/IAQM Planning Guidance – ‘Land-Use Planning & Development Control: Planning For Air Quality’²².

Key Components of an Air Quality Assessment

The assessment will require dispersion modelling utilising agreed monitoring data, traffic data and meteorological data. The modelling should be undertaken using recognised, verified local scale models by technically competent personnel and in accordance with DEFRA’s Technical Guidance Note LAQM.TG(16)²³

The study will comprise:

²² Environmental Protection UK / Institute of Air Quality Management – ‘Land-Use Planning & Development Control: Planning For Air Quality’: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [accessed 13.12.19]

²³ Department for Environment, Food and Rural Affairs (DEFRA) – Local Air Quality Management Technical Guidance.TG(16): <https://iaqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf> [accessed 12.12.19].

1. The assessment of the existing air quality in the study area for the baseline year with agreed receptor points and validation of any dispersion model;
2. The prediction of future air quality without the development in place (future baseline or do-nothing);
3. The prediction of future road transport emissions and air quality with the development in place (with development or do-something).
4. The prediction of future road transport emissions and air quality with the development (with development or do-something) and with identified mitigation measures in place.
5. Sensitivity test allowing for no improvement in traffic and background emissions.

The assessment report should include the following details:

A. Detailed description of the proposed development, including:

- Identify any on-site sources of pollutants;
- Overview of the expected traffic changes;
- The sensitivity of the area in terms of objective concentrations;
- Local receptors likely to be exposed; and
- Pollutants to be considered and those scoped out of the process.

B. The relevant planning and other 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. The assessment method details including model, input data and assumptions:

For traffic assessment;

- Traffic data used for the assessment;
- Emission data source;
- Meteorological data source and representation of area;
- Baseline pollutant concentration including any monitoring undertaken;
- Background pollutant concentration;
- Choice of base year;
- Basis for NO_x:NO₂ calculations;
- A modelling sensitivity test for future emissions with and without reductions;

For point source assessments:

- Type of plant;
- Source of emission data and emission assumptions;
- Stack parameters – height, diameter, emission velocity and exit temperature;
- Meteorological data source and representation of area;
- Baseline pollutant concentrations;
- Background pollutant concentrations;
- Choice of baseline year;
- Basis for deriving NO₂ from NO_x.

F. Model verification for all traffic modelling following DEFRA guidance LAQM.TG(16)

G. Identification of sensitive locations:

H. Description of baseline conditions:

I. Assessment of impacts:

- Comparisons between results of modelling the 'with development' scenario and 'no development' conditions;
- Descriptions of the impacts at the individual receptors should be provided;
- Comment on the sensitivity of the results to input choices

J. Description of demolition/construction phase impacts:

K. Cumulative impacts and effects (applicants are advised to contact the LPA to ascertain existing planning permissions in the area, to assist with cumulative impact assessment):

L. Mitigation measures:

M. Summary of the assessment results:

- Impacts during the demolition/construction phase of the development (usually on dust soiling and PM₁₀ concentrations);
- 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;
- The estimated emissions change of local air pollutants;
- 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;
- The significance of the effect of any impacts identified; and
- Any apparent conflicts with planning policy and how they will be mitigated
- Uncertainties, errors and verification

Air Quality Monitoring

In some cases it will be appropriate to carry out a short period of air quality monitoring as part of the assessment work (e.g. where it is unclear whether levels of NO₂ may pose an unacceptable exposure risk to the inhabitants of proposed dwellings). This will help where new exposure is proposed in a location with complex road layout and/or topography, which will be difficult to model or where no data is available to verify the model. The requirements of such programmes are to be agreed with the Local Planning Authority and the Environmental Health Department prior to monitoring taking place. Typically, monitoring should be undertaken for a minimum of three to six months using agreed techniques and locations with any adjustments made following DEFRA Technical Guidance LAQM.TG(16).

Assessing Demolition/Construction Impacts

The demolition and construction phases of development proposals can lead to both nuisance dust and elevated fine particulate (PM₁₀ and PM_{2.5}) concentrations. Modelling is not appropriate for this type of assessment, as emission rates vary depending on a combination of the construction activity and meteorological conditions, which cannot be reliably predicted. The assessment should focus on the distance and duration over which there is a risk that impacts may occur. The Institute of Air Quality Management (IAQM) document '*Guidance on the assessment of dust from demolition and construction*'²⁴ should be adhered to when reporting on the dust impact

²⁴ Institute of Air Quality Management (IAQM), Guidance on the assessment of dust from demolition and construction: <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf> [accessed 18.12.2019].

Appendix 5 - Emissions and Damage Cost Calculations

For development schemes that have the potential for major detrimental impact on air quality, this guidance specifies an assessment procedure to evaluate the likely change in relevant concentrations and emissions arising from the scheme using the guidance produced by HM Treasury and DEFRA.

Two approaches are used to value changes in air quality, dependent on the nature of the change. They are:

- the **impact pathway approach**, which is used in the majority of instances to value the consequences of changes in air quality such as on health, crops and buildings; and
- the **abatement cost approach**, which is used in the limited instances where the change in air quality is likely to affect compliance with a legally binding obligation (whether causing, removing or changing the extent of non-compliance).

Figure 4 illustrates how to identify the appropriate approach.

The *abatement cost approach*²⁵ is relevant for the minority of situations where the breach of legally binding obligations is an issue. In such instances, it is still only those changes in air quality in excess of the relevant obligation that should be valued using this approach. Changes below the obligation should be valued using the *impact pathway approach*.

The impact pathway approach (I-PA) is the central methodology for appraisal. It values the air quality impacts of proposed decisions by estimating how changes in the ambient concentrations of air pollutants affect a range of health and environmental outcomes.

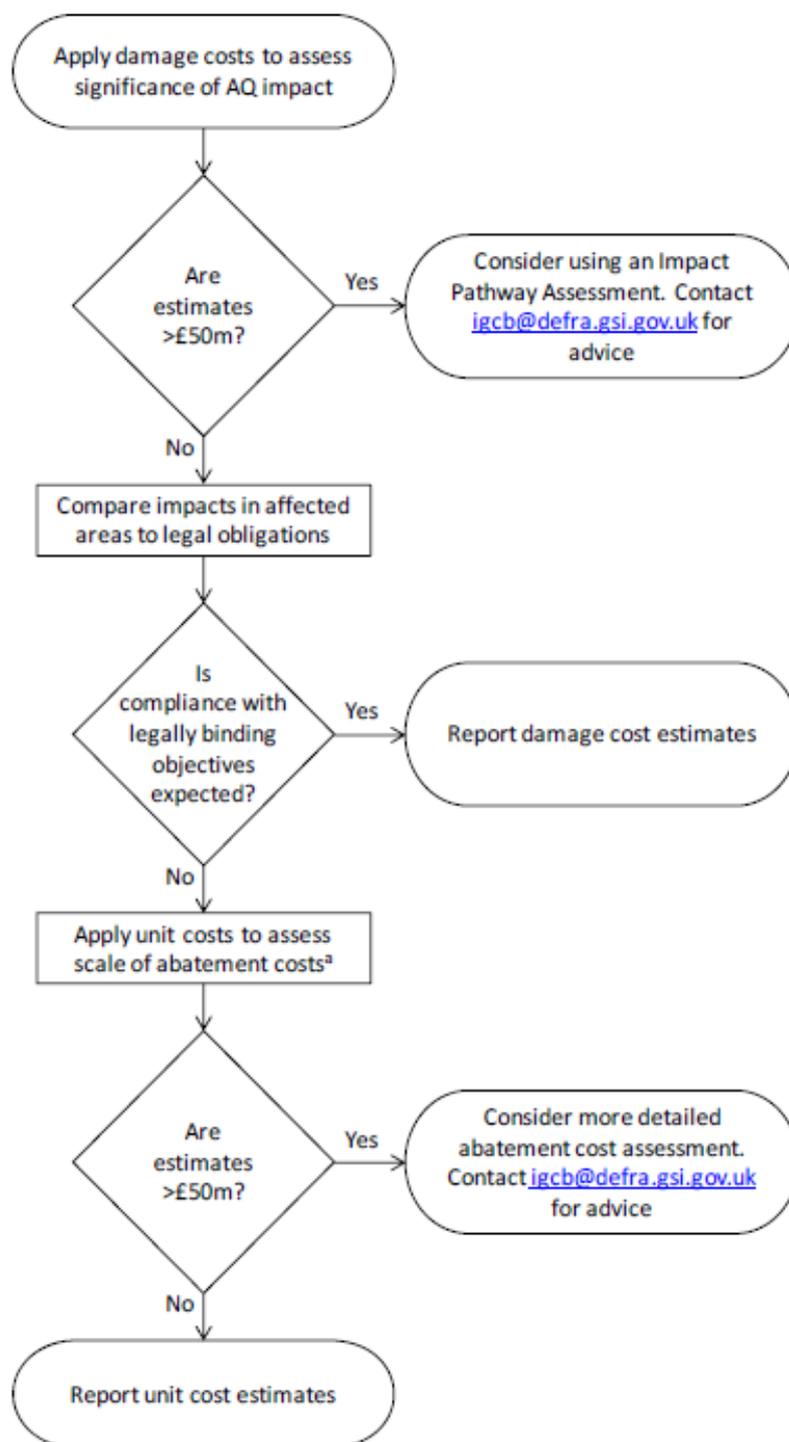
Full I-PA modelling is therefore quite resource and time intensive, requiring the estimation of emissions, dispersion, population exposure and outcomes. **Damage costs** have been developed to enable proportionate analysis when assessing the scale of air quality impacts where they are less significant. They are derived from the I-PA methodology to offer approximations of the value using representative modelling. The full I-PA uses bespoke analysis to provide a fuller assessment, suitable for cases where air quality impacts are significant (See Appendix 4 - Air Quality Assessment Protocol).

When total air quality impacts are estimated to be less than £50 million (in present value terms) it is recommended that **Damage Costs are used.** Where total air quality impacts are estimated to be in excess of £50 million a *full impact pathway assessment* should be considered in consultation with Defra.

It is considered that the damage cost approach will be sufficient in the majority of cases; thus the remainder of this Appendix will concentrate on this method of impact assessment.

²⁵ Department for Environment, Food and Rural Affairs (DEFRA), Air Quality: Economic Analysis: <https://www.gov.uk/guidance/air-quality-economic-analysis> [accessed 19.12.2019]

Figure 4: Overview of air quality valuation methodologies²⁶



^aOnly emissions that occur above the legal obligation should be valued using unit costs. Emissions below this level should be valued using damage costs.

²⁶ Department for Environment, Food and Rural Affairs (DEFRA), Abatement cost guidance for valuing changes in air quality: <https://www.gov.uk/government/publications/air-quality-abatement-cost-guidance> [accessed 19.12.2019]

Damage Costs Calculation

As part of the assessment procedure a simple calculation is proposed to allow the quantification of any emission changes – the pollution impact of a scheme can then be monetised using the pollutant damage costs (per tonne) specified by the Defra Interdepartmental Group on Costs and Benefits (IGCB)²⁷.

Taking into account Type 1 and 2 Mitigation Measures built into the scheme

The Emissions Factor Toolkit detailed below provides a basic emission calculation; however, the proposal should already include some mitigation measures e.g. alternative fuels or technology (LPG, EV etc.), and these need to be taken into account during the damage costs calculation. The “advanced options” within the toolkit can accommodate inputs for alternative fuels.

Calculating Emissions

The emissions calculator provides a calculation to determine the amount of pollutant emissions a development is likely to produce. This in turn, by multiplying the damage cost for the key pollutants (PM_{2.5} and NO_x see below), determines the amount (value) of mitigation that is expected to be spent on measures to mitigate those impacts.

Road Transport Emission Increase =

\sum [Estimate trip rate (maximum for 5 years) X Emission rate per 10km per vehicle type X Damage costs per tonne]

Where:

- The calculation uses the most current DEFRA Emissions Factor Toolkit²⁸ (EFT) to estimate the additional pollutant emissions (NO_x, PM_{2.5}) from a proposed development. This will provide the relevant pollutant emissions outputs for the mitigation calculation, which is then multiplied to provide an exposure cost value.
Trip rates are sourced from Transport Assessments or Air Quality Assessments.
- A trip length of 10km should be used, which is an average derived from the DfT National Travel Surveys estimation of trip length
- The road transport emission increases should be annualised and totalled for a period of five years.
- Damage costs per tonne of air quality pollutants were updated by Defra in 2019 and are periodically reviewed to reflect the latest evidence. Current damage cost figures per tonne should be used when carrying out air quality economic appraisals. The Councils Air Quality Officer can advice on the appropriate damage cost category to be used. A 2% uplift per year is required to reflect a higher willingness to pay for health.

Example Damage Cost Calculation

The following example outlines the damage cost calculation process for a residential development outside London consisting of 10 domestic properties within an AQMA (so classed as a large development requiring an Air Quality Assessment and Damage Cost Calculations). The scheme is due to be operational in 2020.

²⁷ Department for Environment, Food and Rural Affairs (DEFRA), Air Quality: Economic Analysis – Damage Costs Approach: <https://www.gov.uk/guidance/air-quality-economic-analysis#damage-costs-approach> [accessed 19.12.19]

²⁸ Department for Environment, Food and Rural Affairs (DEFRA), Emissions Factors Toolkit: <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html> [accessed 19.12.19]

Step 1 - Using the EFT and the trip rates, calculate the annual emissions of NOx and PM_{2.5} (in tonnes) for each of the 5 years from opening.

EFT input:

10 Households (urban not London) 2020-2025 (NOx and PM_{2.5})

- X 27 (trip/traffic ration for 10 houses) – sourced from Transport Assessment/Air Quality Assessment
- X cars only (0% HGV)
- X 50 kph (average speed)
- X 10km (NTS UK average)

EFT output (tonne/annum):

	2020	2021	2022	2023	2024
NOx	0.0292	0.0269	0.0246	0.0227	0.0209
PM _{2.5}	0.00182673	0.00179336	0.00176673	0.0017664	0.00173174

Step 2 – Using the selected damage cost category, uplift the 2017 prices (given in the current 2019 DEFRA IGCB Air quality damage cost guidance) by 2% per annum to reflect the correct cost in each of the first 5 years from opening.

Damage costs (central value used £/t):

NOx Road Transport = £10,699

PM_{2.5} Road Transport = £203,331

	2017 price/tonne	2020	2021	2022	2023	2024
NOx	£10,699	£11,354	£11,581	£11,813	£12,049	£12,290
PM _{2.5}	£203,331	£215,776	£220,092	£224,494	£228,984	£233,563

Step 3 – Multiply the tonnage of emissions for each pollutant by the damage cost price for each year. Provide a cumulative total for 5 years.

	2020	2021	2022	2023	2024
NOx	£331.54	£311.53	£290.60	£273.51	£256.86
PM _{2.5}	£394.16	£394.70	£396.62	£404.48	£404.47
Totals (cumulative)	£725.70	£1,431.93 (+£706.23)	£2,119.15 (+£687.22)	£2,797.14 (+£677.99)	£3,458.47 (£661.33)

Total damage costs = £3,458.57

By establishing the damage costs arising from development scheme emission changes it is possible to assess any additional mitigation or compensation that is required to make the scheme acceptable. A suite of mitigation/compensation measures termed Type 3 mitigation for large proposals is shown in Table 6 above (see chapter - Step 4: Air Quality Mitigation).

The list in Table 6 is not exhaustive and further options may be suggested where appropriate and justified, depending on the scale of development and air quality issues within the local area.

Appendix 6 – The Council’s relevant Adopted Ipswich Local Plan 2017 Policies

Policy or paragraph	Adopted Core Strategy and Policies Development Plan Document
8.44	Green spaces also improve air quality contributing to reduced ground-level ozone, fine particulates and respiratory irritants.
8.44 and Policy CS5	The transport sector is a significant source of carbon dioxide emissions, which need to be reduced as part of a comprehensive approach to tackling climate change. It is also responsible for the pollution in the Ipswich Air Quality Management Areas. Policy CS5 emphasises the need to improve accessibility and manage travel demand and maximise sustainable transport solutions.
8.185 and Policy CS16	The reasoned justification explains that as the Borough grows, it is essential to protect, enhance and extend the network of open spaces, ecological networks, canopy cover, green corridors, and sports and recreation facilities. This is important in order to allow people access to green space and nature an opportunity for walking and cycling routes and the interrelated benefits of improved biodiversity, health and fitness, and better air quality.
8.201 and Policy CS20	Para 8.201 suggests there are concerns about highway capacity in the town centre, which are closely linked to issues associated with the wider transport network – including the A14 and the Orwell Bridge. At the time the plan was adopted, there were four Air Quality Management Areas (AQMAs) within the central area of Ipswich, as a result of pollutants from road traffic. Other areas of poor air quality have been identified in the central area and consideration is currently being given to revising the extent of the AQMAs. The Policy supports important strategic transport improvements.
8.204	Para 8.204 identifies that detailed proposals, including those for additional infrastructure for pedestrians and cyclists, are included in the Site Allocations and Policies (incorporating IP-One Area Action Plan) Development Plan Document. A Cycling Strategy Supplementary Planning Document has been adopted by the Council. The Council is also producing a Low Emission Strategy Supplementary Planning Document and an Air Quality Action Plan.
Policy DM1 9.12	DM1 requires that new build residential development should achieve reductions in CO2 emissions of 19% below the target Emission Rate of the 2013 Edition of the 2010 Building Regs (Part L).

	Paragraph 9.12 introduces the BRE Home Quality Mark and the Council encourages applicants to consider achieving a high rating under the Mark. (The Mark offers a five-star rating demonstrating a home's performance in terms of a number of factors including energy use, running costs, air quality, noise, accessibility to amenities, fast and secure internet access and the ease of use of the home by the occupants.) This is seen as an appropriate complementary measure to the traffic initiatives
Policy DM2	This policy introduces the requirement for all new build development of 10 or more dwellings or in excess of 1000 sq. m to provide at least 15% of their energy requirements from decentralised and renewable or low carbon sources.
Policy DM5	<p>Clause d. of the policy recognises that green infrastructure and planting can benefit health and wellbeing: 'Greener streets and spaces to contribute to local biodiversity, visual amenity and health and wellbeing ...'</p> <p>Clause h. of the policy refers to development in or around AQMAs: 'New buildings in or around AQMAs will be designed so that their size and layout will preferably reduce, and at the very least not increase, localised retention of polluting emissions, and will include ventilation systems that protect the health of users of the building.'</p>
Policy DM10 and DM33	The Protection of Trees and Hedgerows and delivery of Green Corridors for cycling and walking are seen as important methods of enhancing air quality.
Policy DM17	Transport and Access in New Developments promotes cycling walking, safe and convenient access to public transport and the introduction of electric car charging points and car clubs.
Policy DM18	<p>Car and Cycle Parking in New Development requires the adopted Suffolk Guidance for Parking to be complied with in all new development - parking to be fully integrated into the design of schemes to provide secure and convenient facilities and create a safe and attractive environment. The Council will also require the provision of secure cycle parking in any new car parks in the town.</p> <p>The policy also identifies a central car parking core, wherein only operational car parking will be permitted in connection with non-residential development. The stock of long-stay parking is not to be increased and new, non-residential long-stay car parks will not be permitted.</p> <p>The policy identifies that different parking guidance will apply within IP-One, including maximum provision for residential development.</p>
Policy DM26	Policy DM26 Protection of Amenity includes consideration of the absence of air pollution.

Para	Site Allocations and Policies (incorporating IP-One Area Action Plan) Development Plan Document
Para 3.2	Cross references to Objective 11 of The Core Strategy and Policies development plan document - to improve air quality (mentioned above).

Policy SP9 and Para.4.44	Provides for the retention of the park and ride site at Anglia Parkway, Ipswich which is currently disused.
Para. 5.39 and policy SP15	The extensive Air Quality Management Areas are identified as a key issue, and this is related to the delivery of measures for to support walking and cycling
Policy SP17	Policy SP17 Town Centre Car Parking aims to achieve twin objectives of supporting the town centre economy and limiting congestion. It allocates sites for public car parks within IP-One.
Site allocation details IP011a & b	Smart Street/Foundation Street - close to an Air Quality Management Area.
Site allocations details IP012	Peter's Ice Cream – close to an Air Quality Management Area
Site allocations details IP031	Burrell Road – close to an Air Quality Management Area
Site allocations details IP035	Key Street/Star Lane/Burtons site - within an Air Quality Management Area
Site allocation details IP037	Island Site – close to an Air Quality Management Area
Site allocation details IP039a	Land between Gower Street and Great Whip Street – close to an Air Quality Management Area
Site allocation details IP043	Commercial Buildings and Jewish Burial Ground – within an Air Quality Management Area
Site allocation details IP047	Commercial Road – adjacent to an Air Quality Management Area
Site allocation details IP048	Mint Quarter – close to an Air Quality Management Area
Site allocation details IP049	No. 8 Shed, Orwell Quay - close to an Air Quality Management Area.
Site allocation IP052	Land between Lower Orwell Street and Star Lane - within an Air Quality Management Area
Site allocation details IP054	Land between Old Cattle Market and Start Lane – within or close to an Air Quality Management Area.
Site allocation details IP066	JJ Wilson, White Elm Street - close to an Air Quality Management Area.

Site allocation details IP089	Waterworks Street - close to an Air Quality Management Area.
Site allocation details IP098	Transco south of Patteson Road - close to an Air Quality Management Area.
Site allocation details IP132	Former St peter's Warehouse - within an Air Quality Management Area.
Site allocation details IP136	Silo, College Street - within an Air Quality Management Area.
Site allocation details IP142	Land at Duke Street - Close to an Air Quality Management Area.
Site allocation details IP172	15-19 St Margaret's Green - within an Air Quality Management Area.
Site allocation details IP214	300 Old Foundry Road lies within an Air Quality Management Area
Site allocation details IP260	Former Odeon Cinema - close to an Air Quality Management Area.

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