Air Quality and Land Use Planning Guide

1 Introduction

Everyone has a right to live, work and relax in a healthy environment. Air quality is a measure of how good our air is in terms of the type and quantity of pollution contained within it. Good air quality is an important factor in protecting people's health.

Our modern lifestyles mean that pollutants can be produced depending on how we travel, consume goods and heat our homes. It is important that we do everything we can to reduce our emissions and to prevent people being exposed to unacceptable levels of pollution.

The planning system can help us to manage our local air quality. The Environment Act 1995 places a duty on local authorities to review the quality of the air within their area. Where it is predicted that the UK Air Quality Objectives are unlikely to be met the local authority must declare an Air Quality Management Area (AQMA) and develop an action plan to improve air quality in that area.

The purpose of this guide is therefore to: -

- Help to prevent people from being exposed to unacceptable levels of air pollution.
- Prevent the need to designate new AQMA's.
- Prevent an increase of pollution, particularly within AQMA's.
- Ensure that air quality is considered appropriately in the decision making process.
- Assist planners in dealing with air quality considerations in applications.
- Assist developers in assessing air quality in their application.

2 Planning Policy for Air Quality in Bristol

Air quality is a material planning consideration. Air quality issues must be given due weight when determining an application. An appropriate assessment of air quality must therefore be included with any application that may adversely affect local air quality or be significantly affected by existing poor levels of air quality. It is vital that the applicant considers the need for an assessment before any application is submitted. Failure to include appropriate information on air quality could result in the application being refused or delayed.

The documents listed below contribute to and underpin the overall policy on planning and air quality in the city.

BDF Core Strategy

The core strategy for the Bristol Development Framework (BDF) was adopted in June 2011. One of the overarching environmental issues is:

> Reducing pollution throughout the city and improving air and water quality, noise and light pollution particularly in the inner city and within the Air Quality Management Areas.

Policy BCS 23 covers planning and pollution control and is summarized as follows:

> **Policy BCS23**
>
> Development should be sited and designed in a way as to avoid adversely impacting upon:
>
> - Environmental amenity or biodiversity of the surrounding area by reason of fumes, dust, noise, vibration, smell, light or other forms of air, land, water pollution, or creating exposure to contaminated land.
> - The quality of underground or surface water bodies.
>
> In locating and designing development, account should also be taken of:
>
> - The impact of existing sources of noise or other pollution on the new development; and
> - The impact of the new development on the viability of existing uses by reason of its sensitivity to noise or other pollution.

The policy is delivered through the development management process and through the Site Allocations & Development Management Policies document. Policy DM33 deals specifically with air and water pollution and should be referred to by developers when considering air quality impacts of development.

The council's Air Quality Action Plan and the Joint Local Transport Plan 3 seek to implement broad ranging measures to improve air quality in the Air Quality Management Area. This policy can contribute to delivering certain of these measures through the development management process.

The Planning Protocol

Bristol City Council has developed a protocol in consultation with developers, property agents and planning consultants to clarify the process for dealing with "super major" applications. The Protocol outlines what each party can expect from the others, and what those parties can expect back in return, to achieve sustainable, accessible and viable development. The protocol includes guidance on Planning Performance Agreements (PPAs), which set out an agreed way of working between developers, stakeholders and Bristol City Council. Air quality will need to be considered at the earliest stage possible, as it will usually be a significant consideration in a "super major" development.

Validation of Planning Applications (Local List of Requirements)

This document has been produced in order to assist users of Bristol City Council's Development Control service when making applications for planning permission or other similar consents. It complements the national list of mandatory information required by government to be submitted for planning applications

The Local List formalises the submission of sources of information that are often either submitted anyway with applications or requested by the Council during the life of the application. The main difference is that the Local List will require the submission of specified documents before applications are registered, rather than requested after registration.

3 National Planning Policy

The following documents comprise national planning policy in relation to air quality.

National Planning Policy Framework

The National Planning Policy Framework (NPPF) (National Planning Policy Framework 2012) replaces PPS23. The NPPF states that local plans are the key to delivering sustainable development that reflects the vision and aspirations of the local communities. It sets out 12 principles that should underpin plan-making and decision making, one of which states that planning should *'contribute to conserving and enhancing the natural environment and reducing pollution.'*

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

Environmental Impact Assessment

Certain types of development, listed in the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, require an Environmental Impact Assessment to be submitted.

National Air Quality Strategy

The national air quality strategy sets out the objectives for air quality in the UK and describes the arrangements for securing clean air through a range of measures. The relevant planning processes are summarised and links are made to other national planning guidance.

Health Impact Assessment

Potentially polluting developments in sensitive areas may be required to submit a Health Impact Assessment. This is an area of policy that is currently developing.

4 Determining whether an assessment is required

The Council has a legal duty to establish an AQMA where it predicts that the relevant air quality objectives will not be met and relevant exposure exists. An AQMA has been declared which covers the city centre and arterial routes, shown in Appendix 1. The boundary is under regular review and subject to change.

The Local List of Requirements refers to this document when determining whether an air quality assessment will be required. Development taking place within or adjacent to an AQMA is likely to require more rigorous assessment of potential air quality impacts during the planning process.

The following criteria trigger the need for the applicant to contact the Bristol City Council Air Quality Officer to determine whether there is a requirement for an air quality assessment:

1. Any residential development or a commercial development with > 1,000m^2 new floorspace, within or adjacent to an identified AQMA;
2. Development in excess of 100 dwellings or 10,000m^2 new floorspace (or an equivalent combination) anywhere in the city;
3. Development that falls within Class B2 of the Use Classes Order;
4. Any new residential development within 15m of a road with an AADT count >10,000 anywhere in the city.

For the purposes of development control, a buffer zone has also been defined to clarify what is meant by “adjacent”. The buffer zone is intended to screen for developments which, although outside the AQMA may have the potential to affect air quality in the AQMA by virtue of their proximity to the AQMA and the effects of the development on traffic flows.

If the development is within the buffer zone, but not the AQMA and not likely to generate significant emissions, an air quality assessment will generally not be required. However, it is important to acknowledge that the AQMA has only been declared where relevant exposure occurs in an area where air quality objective limits are exceeded. There are locations within the city where air quality exceeds objective limits but currently there is no relevant exposure and therefore an AQMA has not been declared. If the proposal will introduce relevant exposure into an area that falls into this category (see point 4 above for guidance on this), an air quality assessment would be required in order to ensure that the development does not trigger the requirement to declare a new AQMA.

Applications within the AQMA are likely to need to consider air quality, both in terms of any increase in pollution levels and in terms of the effect of existing poor air quality on the development itself.

The table below illustrates the air quality screening process for applications:

Development category	Development within an AQMA.	Development outside AQMA but within buffer zone.	Development outside both AQMA and buffer zone.
Minor works / Tree Preservation Order.	No action required.	No action required.	No action required.
Small residential development; limited car parking.	Consult BCC Air Quality Officer (Impact of air quality on receptors introduced into area of poor air quality only)	Consult BCC Air Quality Officer if site is within 15m of a road with an AADT >10,000 (Impact of air quality on receptors introduced into area of poor air quality only)	Consult BCC Air Quality Officer if site is within 15m of a road with an AADT >10,000 (Impact of air quality on receptors introduced into area of poor air quality only)
Medium residential development. (>10 dwellings or 1000 square metres floor space)	Consult BCC Air Quality Officer	Consult BCC Air Quality Officer	Consult BCC Air Quality Officer if site is within 15m of a road with an AADT >10,000 (Impact of air quality on receptors introduced into area of poor air quality only)
Large residential development. (>100 dwellings or 10K square metres floor space)	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer
Small industrial including biomass rated at >200Kw (see section 6)	Consult Pollution Control Team	Consult Pollution Control Team	Consult Pollution Control Team
Major commercial development (e.g. superstore, commercial development).	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer
Industrial development requiring PPC registration.	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer	Assessment required – Consult BCC Air Quality Officer

The AQMA and buffer zone is shown in Appendix 1.

It is possible that air quality will need to be considered outside of the AQMA and buffer zone if the scheme is likely to result in significant emissions or introduce new relevant exposure into an area of potentially poor air quality. Professional judgment is required to decide whether an assessment is required and the applicant is strongly advised to contact us to check. However the indicative criteria for the requirement of an assessment in the Institute of Air Quality Management/Environmental Protection UK guidance document provide a useful first screen and are as follows:

- A change of LDV flows of:
  - More than 100 AADT within or adjacent to an AQMA
  - More than 500 AADT elsewhere

- A change of HDV flows of:
  - More than 25 AADT within or adjacent to an AQMA
  - More than 100 AADT elsewhere

- Realignment of roads where the change is 5m or more and the road is within an AQMA

- Introduce a new junction or remove an existing junction near to relevant receptors. This applies to vehicles to significantly change acceleration/deceleration

- Introduction of a bus station where bus flows will change by:
  - More than 25 AADT within or adjacent to an AQMA
  - More than 100 AADT

- Have an underground car park with extraction system where the ventilation extract will be within 20m of a relevant receptor combined with car park having > 100 vehicle movements per day

- Have one or more substantial combustion processes where the combustion unit is:
  - Any centralised unit using biofuel
  - Any combustion unit with a single or combined thermal input >300kWh
  - A standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours per year)

- Have combustion process of any size where the pollutants are exhausted from a vent or stack in a location or at a height which may give rise to impacts at receptors through insufficient dispersion.

Certain types of application will automatically be required to consider air quality under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011. The Council can offer an opinion on whether a full assessment is likely to be required. Some industrial applications will also require the company to apply for a permit to operate.

For developments that will introduce people into an area of existing poor air quality (e.g. residential uses, schools, care homes) the assessment should evaluate the exposure to key pollutants of these receptors. The key pollutants in Bristol are NO_2 and PM_{10}. For developments that may introduce significant emissions the assessment should calculate the effect of these emissions on ambient concentrations of key pollutants at relevant receptors (usually the façade

of residential property) and propose suitable mitigation. Some projects will fall into both of these categories, e.g. large residential development.

There is no moratorium against development in the AQMA and the assessment does not have to be unduly complicated. The nature of the assessment will instead depend upon the type of application and the likely significance of the impact on air quality.

5 Assessment Approaches and Tools

The type of approach and rigour of the assessment is largely dependent on the nature of the proposed scheme and what is known about the area. A professional air quality consultant should conduct the assessment and should contact the Air Quality Officer for advice on the detailed requirements of the assessment.

The statutory review and assessment reports of air quality in Bristol will provide a valuable source of information for air quality assessments. These are available from www.bristol.gov.uk/airquality.

The Air Quality Officer will appraise all air quality assessments broadly in line with the checklist provided in Table 6 of the now superseded "Planning for Air Quality" guidance published by Environmental Protection UK. If air quality assessments fall short of the standard required the relevant items will need to be revisited, which may cause a delay in determining the application.

The table below describes some approaches to air quality assessment, which may be appropriate. Early discussion with the Air Quality Officer is advised so that the approach can be agreed.

POSSIBLE APPROACHES TO ASSESSMENT

Assessment	Situation
Qualitative risk assessment	All assessments should include a qualitative risk assessment to identify the likely pollutant levels with or without the scheme and the likely nature of exposure, e.g. short or long term with regard to the national objectives. The council has published various reports on air quality and these may provide valuable information. The checklists in LAQM.TG(16) can be used to discount sources. All sources discounted on this basis must be stated.
Design Manual for Roads and Bridges.	Its use is accepted for the assessment of transport sources only, where other emission sources are unlikely to make a significant contribution. It cannot be used to assess short-term exposure. All input and output sheets must be included in the report. The authority may request more detailed modelling depending upon the results and/or the complexity of the situation. See checklist for assessment.
Road transport models	There are various road transport models available. It is vital that the applicant justifies the use of the model prior to its use.
Detailed dispersion models	It may be necessary to use a detailed dispersion model where there are a number of different emission sources, where the results from the screening models are close to or higher than the national standards, where the situation is complex or where the authority has already undertaken dispersion modelling to a higher standard to the screening model.
Monitoring	Monitoring can be extremely useful in identifying the existing levels and in validating any modelled results. Relevant existing monitoring data should be reviewed as part of the assessment. Data from the city council's extensive monitoring network is available from the council web site and should be the starting point for an assessment. A minimum of three months data is required and the data must be corrected to provide a 12-month equivalent to allow for any seasonal variation in air quality levels. Passive diffusion tubes can be used but these should be corrected for bias. Equipment such as chemiluminescent analysers can be hired although siting of equipment can be problematic due to the requirement for a power supply and for the site to be representative of the likely exposure. Sometimes post - development monitoring may be required as part of a planning condition.
Environmental and Health Impact Assessments	An Environmental Impact Assessment may be required depending upon whether there is likely to be a significant environmental effect. This is described in the relevant regulations but it generally takes account of the importance of the development, its locations and its likely effects. A scoping opinion may be sought from the council. The Council may request a full Health Impact Assessment if it considers that the local community may be affected by the proposed development.

Guidance on modelling roadside NO_2 in future years

It is now understood and accepted that concentrations of nitrogen oxides (NO_X) and nitrogen dioxide (NO_2) have not been declining as expected, especially near roads, due to the failure of diesel vehicles to comply with Euro emission standards in real world driving conditions. An appropriate assessment of predicted future pollution levels should include some form of sensitivity analysis to ensure the discrepancy between official Emission Factor Toolkit emissions and likely real world emissions has been accounted for.

6 Biomass

Local authorities must screen all new biomass plant for air quality impacts. This is in addition to the requirements of the Clean Air Act. EPUK and LACORS provide

guidance on assessing air quality impacts of biomass plant. A simple tool is provided for this purpose that shows whether the plant will require a more detailed assessment for NO_2 and PM_{10}.

The developer will be required to provide a screening assessment for new biomass installations of over 200kW rated thermal capacity using the spreadsheet tool. If the screening assessment shows that the threshold limits for PM_{10} or NO_2 are breached, it will be necessary to provide a more detailed assessment of the plant's impacts. This may involve a dispersion modelling study. The study should take account of the impact on nearby receptors, including those that might be above the stack.

Appropriate mitigation for air quality impacts of biomass could include: increasing stack height, repositioning the stack, alternative fuels or selection of cleaner plant. The significance criteria applied to other air pollution sources will be used for biomass plant.

7 How will the local authority assess the significance of the impact of the development on air quality?

The Council will consider the relative merits of the application with regard to national and local planning policy and it may choose to secure appropriate mitigation depending on the significance of impact. The Council is committed to reducing air pollution in places where people live, work and relax but it accepts that the National Air Quality Objectives provide the basis for assessing significance.

The relative weight given to air quality will depend on the significance of any impact. The scale of impact of the development on air quality will be guided by the assessment and the descriptors of impact magnitude as defined in the IAQM/EPUK guidance on air quality and planning. Where the air quality impact descriptor is moderate or above, a contribution may be sought from the developer. Mitigation can be delivered through either planning conditions or Section 106/community infrastructure levy (CIL) agreements.

8 What mitigation will be appropriate?

A range of mitigation measures may be appropriate, depending on the scale of impact of the scheme. General contributions to funding the air quality action plan may be appropriate form some developments, whereas specific changes to a development could be required where impact is more localised and severe.

With the advent of the CIL developer contributions collected through S106 will have to be applied to measures within the locality of the application site so that there is a direct and identifiable link between the proposed development and the mitigation proposed. Contributions to citywide schemes will have to be made through CIL,

which will be calculated and spent on the basis of a standard charging schedule rather than an assessment of any one site's specific impact.

The Council will consider whether any road improvements are required, particularly junction improvements. It may restrict the layout of the building or insist on non-opening windows and mechanical ventilation for new residential properties within an area of poor air quality. Employers may be required to develop workplace travel plans and provide facilities for cyclists and walkers. The provision of additional air quality equipment may be appropriate in certain circumstances. The developer may be required to provide air quality monitoring at their own cost and fund suitable mitigation depending on the results of the monitoring.

The Council recognises the critical role that trees and green space play as 'air conditioners'. Urban trees positively improve air quality by absorbing gaseous and particulate pollution, although tree planting alone will not mitigate significant breaches of air quality objectives. Well-treed environments attract wildlife, are more pleasant places to live, bring associated psychological benefits and tend to encourage inward investment. We need to see more trees planted in Bristol and this should be seen as public / private partnerships in improving neighbourhoods. In particular, there are significant opportunities to mitigate the wider effects of development by tree planting both on sites and close by. Whilst trees can have a positive impact, care needs to be made to ensure that street canyons are not created by tree planting which can exacerbate pollution. Nitrogen dioxide pollution tends to higher in the winter months, for this and a number of other reasons, the tree species planted is important with regards to air quality improvements.

Increasingly developers are being required to fund elements of low emissions strategies such as: electric vehicle charging points, city car clubs, emissions based parking schemes, emissions standards for delivery vehicles and data provision for low emissions plans (e.g. traffic counts).

The Council will consider any cumulative impact when reaching its decision. In order to address the issues of cumulative impact, funding for low emissions strategies and the air quality action plan may be sought for any developments that have adverse impacts on air quality as these are likely to work against the air quality action plan.

9 Bonfires and emissions control on construction and demolition sites

Fires on demolition sites are likely to be expressly forbidden by either the Environment Agency or under the building control approval. The authority can also take action under its statutory nuisance provisions. Dark smoke is also an outright offence on a commercial or trade premise, and trade premises should not burn waste.

Dust from a development site can be a major problem. It is important that you minimise the generation of dust wherever possible. A means for damping down

temporary haul roads should be provided and storage compound should be located away from housing. The local authority can take action under its statutory nuisance provisions. The IAQM has provided guidance on assessing construction dust and mitigation measures which should be followed for major developments.

All construction sites should now have a Site Waste Management Plan, which should include these issues. Developers are strongly advised to adopt the Considerate Constructors Scheme as a way of reducing pollution and nuisance.

There is growing concern about emissions of both oxides of nitrogen and fine particles from Non Road Mobile Machinery (NRMM) in general and in particular NRMM on development sites. This is of special concern in London and in order to address the issue the GLA has developed Best Practice Guidance. This should be used as the basis for mitigating potential problems during the development phase of major projects.

Bristol City Council and Air Quality Contacts

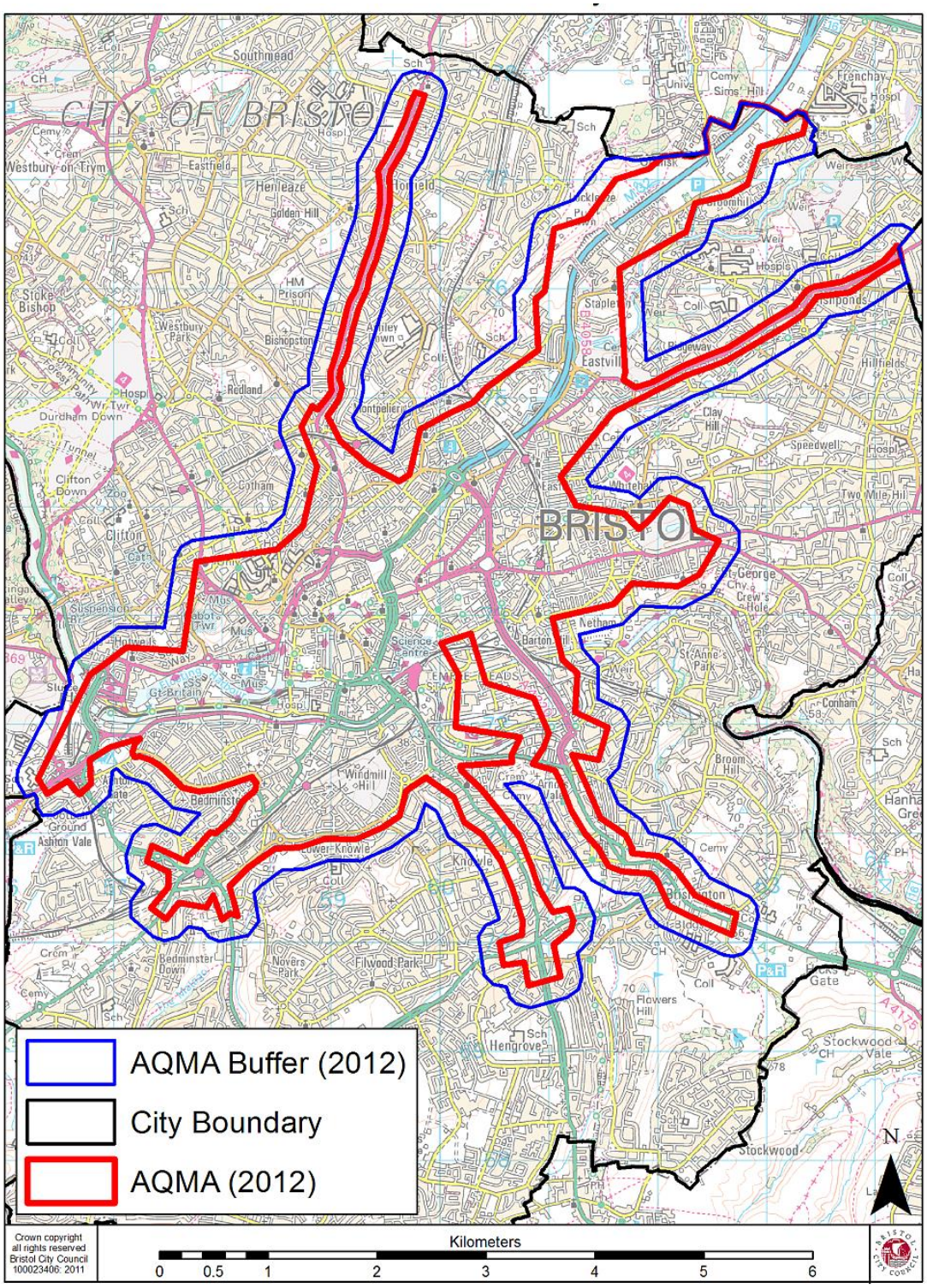
Air Quality:

Andrew Edwards
Environment Team
The CREATE Centre
t. 0117 9224331
e. a.edwards@bristol.gov.uk

Pollution Control

Pollution Control Team
Brunel House
t. 0117 9222500
e. pollutioncontrol@bristol.gov.uk

Appendix 1: Air Quality Management Area and Buffer Zone



Appendix 2: Reporting requirements for modelling assessments.

Requirement	Description
Introduction / scope	This should state why the assessment is being carried and provide a description and map of the site.
Qualitative risk assessment	This should set out the pollutants to be assessed, the sources of emissions to be assessed, the receptors to be considered, the assessment year(s) and the values against which the results will be assessed.
Ambient / background concentrations	The national emissions inventory allows background emissions to be downloaded on a 1km grid square. These, however, tend to vary from locally monitored concentrations. Local data should be used where available. This should be requested from the Air Environment team at the city council. The applicant must state clearly which values have been used. Care should also be taken to avoid any element of double counting, i.e. the inclusion of background concentrations.
Model description	The choice of model should be justified and a description given.
Emission sources	The assessment must consider all relevant emission sources. This must include any approved developments, which are yet to be built, which have the potential to either affect ambient air quality levels or to introduce sensitive receptor types. Any cumulative impact must be considered.
Industrial sources	Any assessment of a new industrial site under the planning regime must clearly state the operating conditions that have been assumed, e.g. fuel types and loading and state whether building wake algorithms have been used.
Meteorology	The choice of meteorological data should be discussed in detail and justified, including the source of the data and the year chosen. This may need to include a sensitivity analysis of the dataset. The use of a data set greater than one year should not be used without prior agreement.
Assessment of impacts.	The report must clearly state in tabular form the predicted levels at the receptors with and without development scenarios. This should allow easy comparison between the scenarios and concentrations must be stated. The findings of the assessment must take account for any uncertainties and the level of uncertainty accounted for must be clearly stated. Any correction values used, e.g. year conversions must be stated. Please refer to section 5 for details of how to apply sensitivity analysis when considering roadside NO_2 impacts in future years.
Validation	It is important to validate the results to identify the degree of modelling uncertainty, which should be applied to the results. Data can be either downloaded from our 'real-time' sites and/or diffusion tubes using bias adjustment factors from the various annual reports.