SUPPLEMENTARY PLANNING GUIDANCE

The Adopted 2004 Plan for the Environment, Ealing's Unitary Development Plan, provides the policy context for decisions on planning applications and other proposals concerning development and transport in the London Borough of Ealing.

These policies are clarified and amplified where appropriate by Supplementary Planning Guidance (SPG). This Guidance may bring together planning and other considerations (e.g. Building Regulations, Environmental Health, Transport) which need to be taken into account by people proposing development or affected by development. The guidance can be used in determining planning applications, and it has the legal status of a 'material consideration', which the local planning authority is entitled to take into account in making decisions.

Supplementary Planning Guidance (SPG) continues in force as long as the Unitary Development Plan policy that it supplements is in force. Under the Planning and Compulsory Purchase Act 2004, unitary development plans will be progressively replaced by new Development Plan Documents in a Local Development Framework. The local planning authority may choose to produce Supplementary Planning Documents (SPD) to supplement development plan policies in the Local Development Framework.

DRAFT SPG 3

Air Quality and Pollution

Approved for Development Control Purposes

CONTENTS

POLICY CONTEXT

This guidance supplements a number of policies contained within the UDP, Ealing's Adopted 2004 Plan for the Environment.

Of particular relevance to this Supplementary guidance is Policy 2.6 'Air Pollution and Quality'. Indirectly, a number of other policies within the UDP, including Policy 9.1 'Development, Access and Parking' will also influence air quality in the borough.

AIMS OF THIS SUPPLEMENTARY PLANNING GUIDANCE

The key aims of this guidance are as follows:

i) To identify those circumstances when an air quality assessment will be required to accompany a development proposal.

ii) To provide technical guidance on the process of air quality assessments (see Technical Appendix).

iii) To provide guidance with regard to the circumstances in which air quality conditions and S106 planning obligations will be sought in accordance with national guidance and Ealing's UDP policies for air quality. This guidance aims to ensure that air quality is considered in sufficient depth, to help minimise the potential impacts.

INTRODUCTION

The levels of pollutants present in the atmosphere directly affects the quality of the environment and the health of an area. The Local Air Quality Management process under Part IV of the Environment Act 1995 requires local authorities to review and assess air quality in their area from time to time. The Act also required the preparation of a national air quality strategy setting out air quality standards and objectives for specified pollutants and outlining measures to be taken by local authorities in pursuit of the achievement of these objectives. The UK National Air Quality Strategy[1] (NAQS) provides a framework for the assessment and management of air quality at a local and regional level. Although national policies on air pollution are expected to deliver countrywide improvement on air quality, it is recognised that in some areas air quality will remain poor, and will require a more focused approach to achieve improvements.

In order to identify these "hotspots", local authorities have been required to carry out a review and assessment of air quality within their areas. Local authorities have had to consider the present quality of air and the likely future quality of air up until the end of 2005 and assess whether the prescribed objectives (outlined in NAQS) are likely to be achieved by the end of 2005[2]. Where it is unlikely that these objectives will be met, local authorities must by order designate such areas as Air Quality Management Areas (AQMAs). Following the designation of an AQMA, the local authority is required to prepare a written action plan to achieve air

[1] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland published in January 2000.
[2] For some pollutants the compliance period has been brought forward to 2003 or 2004 respectively.

quality standards and objectives in the area. Hotspots are defined as areas where one or more of the Air Quality Objectives are exceeded.

Following a detailed air quality review and assessment of the borough the Council resolved to designate the whole borough as an Air Quality Management Area, with this designation coming into effect on the 14th December 2002. The decision to designate the whole borough has arisen in response to the findings that the level of two pollutants PM10 (fine particles) and nitrogen dioxide were predicted to fail to meet the nationally set objectives. It is clear that the road network in the borough carries a very high volume of traffic and congestion, with emissions from road traffic being recognised to be a major contributor to poor air quality in the area. The major roads affected were found to include the A40 Western Avenue, A406 North Circular Road, A4020 Uxbridge Road and the A4000 Gunnersbury Lane/Horn Lane.

AIR QUALITY AND LAND USE PLANNING GUIDANCE

The Government's National Air Quality Strategy (NAQS), identifies the planning system as one of the key mechanisms for achieving improvements in UK air quality. The land use planning system regulates the development of land, and through determining the location & design of new developments, it can lead to long-term improvements in air quality. Accordingly the land use planning system has a vital role to play to ensure that the objectives of the NAQS are met.

Guidance with regard to the local planning authorities air quality responsibilities is outlined in the following regional and national guidance:

- The London Plan 2004
- The Mayor's Air Quality Strategy (September 2002)
- PPG 6 'Town Centre and Retail Developments' (1996)
- Draft PPS 6 'Planning for Town Centres' (2004)
- PPG 13 'Transport' (2001)
- PPG 23 'Planning and Pollution Control' (1997)
- PPS 23 'Planning and Pollution Control' (2005)
- LAQM G4(00), Air Quality and Land Use Planning

PPS 23 identifies the relationship that exists between land use planning and the pollution control systems. Whilst PPS 23 advises that Local Planning Authorities should not duplicate the pollution control responsibilities of other bodies, the planning system has an important complementary role to play. In particular through shaping the pattern of development and influencing the location, scale, density and mix of land uses, the planning system can influence air quality significantly. PPG 6 and PPG 13 also address the issue of air quality, through promoting sustainable forms of development, i.e. focusing development in locations such as town centres, that are well served by public transport, and thus reducing the need to travel, and the length of journeys made. PPG 13 also emphasises the importance of well designed traffic management as a measure to reduce air pollution (Para 45).

The Mayor's London Plan also provides an important source of guidance in respect of the air quality responsibilities of Local Planning Authorities. In particular policy 4A.6 states that

Boroughs should implement the Mayor's Air Quality Strategy & achieve reductions in pollutant emissions by:

- improving the integration of land use & transport policy and reducing the need to travel.
- promoting sustainable design & construction
- identifying environmental constraints on polluting activities to ensure protection of local air quality, setting out criteria in respect of different pollutants against which plans and policies can be appraised and proposals assessed
- ensuring that air quality is taken into consideration at the planning application stage
- ensuring that formal air quality assessments are undertaken where appropriate, particularly in designated Air Quality Management Areas.
- supporting the increased provision of cleaner transport fuels, particularly the refuelling infrastructure.
- working in partnership with relevant organisations, taking appropriate steps to achieve an integrated approach to air quality management and to achieve emissions reductions through improved energy efficiency and energy use.

In addition the Mayor's Air Quality Strategy (September 2002) provides further advice with regard to the function of the LPA. In particular the strategy provides guidance in respect of the content of the UDP policies and SPG. Further guidance is also given in respect of air quality assessments, the use of planning conditions and S106 agreements.

This SPG has been prepared in the context of this regional and national guidance, whilst also taking into account local conditions specific to Ealing.

When an air quality assessment will be required

An air quality assessment would normally be expected for the following types of development:

a) proposals that will result in an increase in vehicle trip generation in the local area, and which result in increases in traffic volumes (AADT) of 5% or more on individual road links with more than 10,000 vehicles per day[1].
b) Industrial/commercial development with floor space in excess of 2500 sq. m.
c) Proposals which may result in a significant increase in congestion, and lower vehicle speeds than currently experienced on the existing local road network.
d) Proposals which significantly alter the composition of traffic, such that adverse air quality impacts may arise.
e) Proposals for new developments with 300 parking spaces or more, or an increase in existing parking provision of 300 spaces or more.
f) Proposals for coach and lorry parks, distribution warehouses.
g) Proposals involving major employment generators which are likely to have an adverse impact both directly and indirectly on air quality, particularly in sensitive areas (i.e exceedance areas). These may include developments:
   i) involving industrial activities with the potential to produce significant air emissions
   ii) with the potential to generate significant traffic. A detailed impact assessment is normally required in these cases

[1] Roads with lower flows but higher percentage increases in flows may still require an environmental assessment

iii) which are likely to lead to a significant increase in the emissions of one or more of the prescribed pollutants as specified in the National Air Quality Strategy.

h) Proposals for new developments in areas of air quality exceedance, where people would be exposed for significant periods of the day.

In addition to the above, certain planning applications will need to be accompanied by an Environmental Statement (ES) under the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 1999. Where air quality is considered a significant issue or where development is in or adjacent to an air quality management area, this EIA should include an air quality assessment.

The process of an air quality assessment

Whilst there is no definitive method for carrying out an air quality impact assessment, there are certain factors which all assessments should encompass. In particular an air quality assessment should seek to demonstrate how a development would affect pollution levels relevant to the statutory air quality objectives. This would normally involve an assessment of any potential increase in emissions arising from the development, followed by dispersion modelling in three parts.

- Assessing the current air quality situation in the locality;
- Predicting statistics relevant to the air quality objectives **without** the development in place (2005 for NO2, 2004 for PM10, 2003 for CO etc), i.e. the baseline scenario
- Predicting statistics relevant to the air quality objectives **with** the development in place.

An air quality impact assessment should clearly indicate the likely change in emissions and pollutant concentrations (relevant to the air quality objectives) arising from the proposed development.

Appended to this SPG at Appendix 1 is a technical guidance document outlining the outputs required for undertaking an air quality assessment in the area. This document provides both general guidance on undertaking air quality assessment, and gives details on Ealing's air quality assessments.

Determining significant impacts on air quality

Development control policies should have regard to the differences in the quality of the air affecting different areas of the borough, and the differences in the levels of public exposure that might occur in different areas. Those areas that are exposed to the highest concentrations of pollutants (i.e. hotspot areas) and where significant public exposure occurs will be afforded the highest level of protection. The London Borough of Ealing is determined to improve the quality of air in these areas. Consequently, development will be restricted or otherwise discouraged in these areas, if the development impedes the overriding objective to improve air quality in such areas. Moreover, where the development does not contribute to poor air quality, but would give rise significant levels of exposure for occupants of the proposed development, and these can not be mitigated, the development should be refused. In addition, steps may be taken to protect those borderline areas, where air quality targets

are only just satisfied, so as to ensure that the quality of air is not allowed to deteriorate any further.

Whether a particular proposed development will affect air quality significantly, is a matter for consideration by the local planning authority based on matters of fact and degree related to the development being proposed. The air quality impacts will be considered to be significant where the air quality objectives are likely to be breached. The acceptability of the development will depend on:

i) The scale of the emissions
ii) Whether the emissions caused by the development would impede the London Borough of Ealing's overriding objective to improve air quality in the area
iii) Whether significant public exposure occurs.

In addition to the above criteria, the following factors will need to be considered:

i) The quality of the air without the development in comparison to the air quality objectives, (In particular an assessment of the risk that any further deterioration in the quality will give rise for the need to extend the area where air quality objectives are likely to be breached).
ii) Predicted changes in the concentration of pollutants, with and without development.

The Local Planning Authority does not intend to be prescriptive about the contribution to pollution levels that should be regarded as significant; each case will be assessed on its own merits.

Cumulative Impact of Development

Development in urban areas rarely occurs in isolation. Accordingly local authorities should ensure that an air quality assessment for any new development takes into account the cumulative effect of other developments in the area (as indicated in Policy 2.6 bullet point 3 of the UDP). This will ensure that a realistic scenario of air quality in the area is presented for both the 'baseline' and the 'with development' predictions of the air quality impact of the development.

An air quality impact assessment should clearly indicate the likely change in emissions and pollutant concentrations (relevant to the air quality objectives) arising from the proposed development.

Appended to this supplementary guidance at Appendix 1 is technical guidance outlining the outputs required for undertaking an air quality assessment in the area. This appendix provides both general and Ealing-specific guidance on undertaking an air quality assessment.

Mitigation of Air Quality Impacts: Measures and Mechanisms for Implementation

The following section provides guidance on borough wide and local site specific measures, which could help achieve air quality objectives. Developers will be asked at the time of making a planning application to identify their proposed mitigation measures including the

associated costs involved. This will assist the local authority in assessing whether the mitigation for any air quality impacts has been adequately covered.

Mitigation Measures

Such measures may involve the following:

1. Evaluation of the various options available to the developer in order to mitigate and minimise the impact of the development on air quality.

2. **Road Traffic Related Action – Zoning**
   Offset the impact of the development by improving local air quality through the use of traffic management e.g. setting up of restricted zones. The Road Traffic Regulations Act 1984 gives local authorities extensive powers to make Traffic Regulation Orders to prohibit, restrict or regulate vehicular traffic or particular types of vehicular traffic. This can include the introduction of home zones, car free developments etc.

3. **Road Traffic Related Action – Public Transport**
   - Review public transport systems. The introduction of a new or improved public transport system has the potential to reduce emissions from car trips and ease congestion.
   - Location of development close to public transport.

4. **Car parking restrictions**
   Parking management to reduce the number of cars entering into an area. Options include reducing the number of spaces available, or reducing the number of spaces available, increasing charges, and or limiting the maximum stay.

5. **Road Traffic Related Action – Infrastructure**
   Potential for pedestrianisation, improved cycling and walking provision.

6. **Regulations of industrial emissions**
   This includes the use of BATNEEC/BAT or a higher standard, especially in areas of poor air quality, and the use of better technology to reduce air quality emissions.

7. **Specific Vehicle Control**
   - See Appendix 3
   - Vehicle emission testing and control over stationary vehicles. New powers are being used to stop vehicles in order to conduct roadside emissions tests and to issue fixed penalty notices to drivers of vehicles whom, without good reason, leave engines running in parked vehicles (see Appendices 1 & 2 for detailed information).
   - Implementation of a vehicle maintenance programme (e.g. Motorvate) to ensure they are operating at optimum conditions with regard to fuel usage and emissions to air.

8. **Green Travel Plans**
   Applicable to major and smaller developments which are likely to have significant transport implications especially in, or near AQMA's (para 89-91, PPG 13 – March 2001).

IMPLEMENTATION MECHANISMS

Ealing Unitary Development Plan (UDP)

Under section 54A of the Town and Country Planning Act 1990, decisions on planning applications have to be determined in accordance with the development plan, unless material considerations indicate otherwise (please note: the 1990 Act will be progressively updated as Commencement Orders are issued for the 2004 Planning and Compulsory Purchase Act). Guidance on air quality and land use planning (LAQM G4 (00)) states that development plans should reflect any constraints on development as a result of the need to comply with any statutory environmental quality standards or objectives. This includes the air quality objectives set out under Part IV of the Environment Act 1995 and the action plans designed to achieve them in designated air quality management areas. They also need to take account of trends in air quality over time and identify, where necessary, constraints on developments in particular areas arising from the cumulative impact of existing and future polluting uses of land (LAQM G4 (00) para 17).

Consistent with national guidance, policies in Ealings Unitary Development Plan identify the importance of air quality as a material consideration. Policy 2.6 'Air Pollution and Quality' states:

1. *The Council will seek reductions in the level of the air pollutants referred to in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland, and will seek to achieve the statutory limits and the tolerability of increased air pollution when considering proposals for development.*

2. *Development proposals will be considered for their effect on air quality and the exposure of people to air pollutants. A formal Air Quality Assessment will be required where there is potential for significant increases in air pollutants. Permission will be refused where development hinders the achievement of local air quality objectives, or there is likely to be a significant increase in air pollutants. Developments will not be permitted in areas where air quality objectives are not currently being achieved unless the effects on people can be demonstrated as acceptable in relation to air quality objectives.*

3. *The cumulative effect of individual developments will be taken into account, both in terms of impact and remedial measures.*

Policy 2.6 is a specific response to the issues raised by the Air Quality Strategy. Other policies within the plan will also have a positive impact in terms of air quality. In particular policies encouraging a shift in transport modes, i.e. 9.4, 9.5, 9.6 and 9.8, will indirectly effect air quality. In addition Policy 2.9 'Energy' which promotes energy efficiency and the use of renewables would contribute to a reduction in emissions. Supplementary Guidance 22 'A40' also addresses the issue of air quality in a specific part of the borough.

In addition to the policies identified above, the LPA will also take into account advice from the Environmental Health section of the Council as to the likely impact of a development on air quality. It is acknowledged that the impact of a particular development in isolation may be relatively small. However, development which is likely to effect air quality in or adjacent to

areas where air quality objectives are unlikely to be met, would be regarded as significant. Moreover, where development would result in an increase in emissions, mitigating measures will be sought. In determining a planning application it will be important to consider the impact of a development in terms of the air quality caused by both the operational characteristics (industrial, commercial and domestic) and the traffic generated by it.

Guidance outlined in 'Local Air Quality Management' (LAQM.PG(03)) states that when determining planning applications, it may be appropriate to impose conditions to mitigate the impact of emissions. Where this impact can not be adequately mitigated by condition (i.e. where there remains a residual impact), or where the development is located in or adjacent to areas where air quality objectives are unlikely to be met, the LPA should enter into a S106 planning obligation. The planning obligation (which will be related to the scale of the residual impact on air quality) will be directed towards measures designed to improve air quality in the area. In the absence of adequate mitigation and/or a planning obligation that offsets the impact on air quality, the LPA will be likely to refuse planning permission under Policy 2.6 of the UDP.

Ealing's UDP also identifies the Council's intention to enter into S106 agreements, to achieve community benefits (see policy 8.2 part ii). Moreover strategic Policy 1.10 'Legal Agreements and Partnerships' describes the use of legal agreements. Such agreement could be used to secure measures to improve local air quality.

Notwithstanding the need to enter into legal agreements where appropriate, conditions may be imposed by the LPA to any planning consent. Conditions may be imposed for example to achieve the following:

- Secure the submission of a full emissions inventory.
- Secure the submission of a scheme for monitoring air quality in areas affected by the development.
- To restrict certain types/class of vehicles which do not meet prescribed air quality standards.
- To secure vehicle testing to ensure that vehicles and locomotives meet prescribed standards.
- To secure the submission of a Green Travel Plan and Transport Assessment.

Either through conditions or as part of a Travel Plan the Council will also seek to secure the use of low emission fuel technology and establish city car clubs. Travel plans may also require details of vehicle testing to ensure that vehicles and locomotives meet prescribed standards.

Conditions could also be used to secure adequate mitigation measures in respect of safeguarding sensitive uses, which are proposed in areas of poor air quality.

In addition to the range of planning conditions noted above, the Pollution Control section of the Council may also impose one or more of the following conditions through implementing their **own powers.**

1. **Construction Projects**

All construction projects will be subject to codes of practice designed to minimise the impact of emissions to air. Control of construction dust should be proportionate to the scale of the potential impacts and relevant to the circumstances of each construction site. Generally dust can be controlled by: good management practice; proper handling and storage of dusty materials; regular sweeping and cleaning of areas and roads; sheeting, enclosure or covering dusty materials, HGV's and dust generating activities; wind sheeting; wetting down activities which generate significant emissions of dust; siting dust generating materials and activities away from sensitive receiver locations and the use of plant with dust arrestment equipment. For large construction sites, assessment and monitoring of dust levels may be appropriate. The scheme should also include those measures which will be put in place to supervise the works so that all steps are taken to minimise the emission of dust.

2. **Dust**

No development shall commence until a scheme for protecting dwellings or other uses sensitive to dust emitted from the construction works, is submitted. Such a scheme could include a combination of dust control and other measures. It is known that dust from construction sites can form a nuisance. Moreover dust can cause irritation to eyes, nose and throat. There is also growing concern that dust, comprising of very fine particles, can cause or exacerbate respiratory problems.

3. **Bonfires**

No bonfires shall be lit on the construction site

4. **Plant maintenance to minimise smoke emission**

All plant shall be regularly maintained to ensure that emissions of smoke are minimised. No plant shall be operated on the construction site which emits black smoke.

5. **Control of vehicle emissions**

All commercial vehicles will be asked to submit fleet management plans to include specified vehicle emissions standards and fleet maintenance programmes. This will include any 'speculative' developments and incorporate time-scales to ensure that change of use issues are covered.

6. **Specified activities**

(specify activities) shall not take place anywhere on the site within (specify building(s) under (specify conditions). Note the condition should describe precisely the activities to be controlled as well as the particular building(s) and/or conditions in which they are permitted to take place.

Section 106 Planning Obligations/Agreements

The DoE published Circular 1/97 'Planning Obligations' recognises the important role that planning obligations can perform as part of the planning process. In particular if used properly, planning obligations can remedy genuine planning problems and enhance the quality of the development. Moreover, they can provide a means of reconciling the aims and interests of developers with the need to safeguard the local environment, or to meet the costs imposed as a result of development. The Circular also notes that 'where a proposed

development would, if implemented, create a need for particular facilities or would have a damaging impact on the environment or local amenity or would adversely affect national or local policies, and these matters cannot be satisfactorily resolved through the use of planning conditions, it will usually be reasonable for planning obligations to be sought or offered to overcome these difficulties.

As part of the DETR guidance note LAQM PG(03), it is recognised that where the impact of air emissions from a proposed development cannot be addressed by the imposition of planning conditions, it may be appropriate to enter into a planning obligation under Section 106, whereby a contribution is made to mitigate or offset the impact on air quality (para 20, DETR guidance note LAQM PG(03). The strategic approach used to mitigate or offset the impact would involve the Council consulting and working closely with other agencies, business and the local community, to deliver local air quality improvements.

Green Travel Plans

PPG 13 'Transport' strongly advocates that use of and preparation of Green Travel Plans. Paragraph 18 of PPG 13 states '…travel plans should be submitted alongside planning applications which are likely to have significant transport implications…'. A Green Travel Plan should comprise a package of practical measures tailored to the circumstances of individual firms and offices. They should aim to reduce:

- Car use for travel to & from work, and business travel
- The environmental impact of travel; and
- The need to travel at all for work.

Given that business travel and commuting accounts for approximately 30% of all car miles travelled, and that 70% of all journeys to work are made by car (with 80% of these single occupancy), it is clear that targeting these groups to reduce their travel by car could have a significant impact on improving traffic congestion and in turn improving air quality. Advice on the development and implementation of green travel plans is available via the Government's Energy and Environment Helpline on 0800 585794.

REFERENCE AND GUIDANCE NOTES

(2000) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*

DETR (2000), *LAQM. TG3 Selection and use of dispersion models,* DETR

DETR (2000), *LAQM. TG2 Review and Assessment: Estimate Emissions*, DETR

DETR (1997), *LAQM. G4 Air Quality and Land Use Planning*, DETR

DETR (2000), *LAQM. G1 Framework for review and assessment of air quality*, DETR

Arup Environmental (1997) *Good practice guide: Air quality and land use planning*, RTPI

Association of London Government (2001) *Air Quality Guidance*, ALG

LB of Hillingdon (2001) *Air Quality Supplementary Planning Guidance*, LB Hillingdon

DETR (1999) Circular 2/99, HMSO

DETR (1999) *Town and Country Planning (Environmental Impact Assessments) England & Wales Regulations 1999*

DETR (1996) *Town Centre and Retail Developments*, HMSO

ODPM (2004) *Planning for Town Centres*, HMSO

DETR (2001) *Planning Policy Guidance Note 13 – Transport*, HMSO

DoE (1997) *Planning Policy Guidance Note 23 – Planning and Pollution Control,* HMSO

ODPM (2005) *Planning Policy Statement 23 – Planning and Pollution Control*

Greater London Authority (2004) *The London Plan,* GLA

Greater London Authority (2002) *Air Quality Strategy*, GLA

APPENDIX 1

Technical Guidance on Air Quality Assessments

Part A: Ealing Stage Three & Four Review and Assessment

Under the 1995 Environment Act, local authorities are required to periodically review and assess air quality in their areas. It was recommended that a phased approach be taken commencing with an initial screening process. The final stage of the review required detailed assessment using accurate monitoring data and air quality dispersion models.

There are seven key pollutants covered by the National Air Quality Strategy (NAQS) and following earlier air quality reviews and assessments, two pollutants were considered to be at sufficiently high levels to warrant further detailed study. These pollutants were nitrogen dioxide ($N0_2$) and small particulate material (PM_{10}).

Results of the Stage 3 Review and Assessment
The stage 3 report identified areas within the Borough where the annual mean nitrogen dioxide and daily mean PM_{10} concentrations were predicted to exceed government objectives.

Stage 4
Section 84(1) of the Environment Act 1995 requires local authorities to undertake a further assessment, where the local authority has designated an AQMA; this is now termed the stage 4 assessment. The stage 4 assessment allow the LBE the opportunity to confirm the original assessment of air quality; to calculate more accurately how much of an improvement in air quality would be needed to deliver air quality objectives; and to take account of any new local & national policy development.

The results of the stage 4 report confirm the findings of previous review and assessment report (stage 3) in that part of the borough will exceed the Air Quality Strategy objectives. Namely:

- Across the borough, the A 40 (Western Avenue);
- Travelling north – south, the A 406 (North Circular Road and Gunnersbury Avenue) and the A 4005 (Hanger Lane);
- In the western part of the borough, the A 312 (The Parkway and Church Road);
- In the eastern part of the borough, the A 4000 (Wales Farm Road, Victoria Road and Horn Lane)
- Along parts of the Uxbridge Road A4020.

The Stage 4 report can be downloaded from Residential Services web site, or obtained by contacting Residential Services.

Part B: Outline for an Air Quality Assessment for future developments

An air quality impact assessment should clearly indicate the likely change in emissions and pollutant concentrations relevant to the objectives arising from the proposed development.

There is no single, definitive method for carrying out a detailed air quality impact assessment. However, the method must be appropriate to both the location and the scale of the development. For some developments, screening models such as DMRB[2] and CAR will be perfectly acceptable. For the larger developments, however, dispersion modelling will usually be necessary.

An emissions inventory for the development, detailing any increases in emissions, should be completed first. The use of a dispersion model will then provide a means of calculating ground level concentrations of pollutants without the need for actual measurements over a prolonged representative period of time.

The air quality impact assessment should demonstrate how a development would affect pollution levels relevant to the statutory air quality objectives. This would normally involve an assessment of any potential change in pollutant concentrations arising from the development, followed by dispersion modelling in three parts:

- An assessment of the current air quality situation in the locality.
- Predicting statistics relevant to the air quality objectives 'without' the development in place (2005 for NO2, 2004 for PM10, 2003 for CO etc), i.e. the baseline scenario;
- Predicting statistics relevant to the air quality objectives 'with' the development in place. This should also take into account the cumulative air quality impacts.

An air quality dispersion model covers a wide range of applications, from simple nonograms and spreadsheets, to sophisticated computer programs. Within parts of the borough (*define areas*) more advanced models may be required in the following circumstances.

- Complexity of pollution sources in the area.
- The current air quality objectives are already being exceeded.
- There is presently a large number of planning applications in progress and the cumulative effects of these proposed developments on air quality needs to be carefully assessed and evaluated to ensure that the air quality would not be further compromised.

There are a number of advanced models available, which include:
- CAL3QHC
- California Line Source Model (CALINE)
- Breeze Roads
- Point, Area and Line (PAL) Source Model
- Rough Terrain Diffusion Model (RTDM)
- Industrial Source Complex (ISC)

[2] Design manual for roads and bridges Vol. 11 Environmental assessment Section 3 Environmental assessment techniques Part 1 Air quality (as amended), HMSO London 2003.

- Atmospheric Dispersion Modelling System (ADMS)
- INDIC AirViro
- AAQuIRE
- AERMOD
- Panache
- TRAQS
- Empirical models

Further information can be obtained from the Department of Environment, Transport and Regions (DETR) Technical Guidance Note, LAQM.TG(03), from the Stationary Office.

INPUT DATA

Emissions Data
The London Atmospheric Emissions Inventory, is the best basis currently available on which to prepare an air quality assessment within the borough.

Time-varying emissions
Emission levels are likely to vary throughout the day and week reflecting changes in traffic flows/speed, which will be evident within the model. Where possible, time-varying traffic movements should be based upon local information, e.g. a local network of automatic traffic counters (ATC). For industrial processes, these should be modelled to vary in time as would be expected by the authorisation.

Supplementary traffic data
Where a transport assessment (TA) has been prepared for a proposed development, modelled or predicted development e traffic flows in the TA should generally be used as the basis for the calculation of 'with development' emissions and subsequent model runs. Before embarking on the air quality assessment, you are strongly advised to ensure that the relevant Council department has approved the TA. Through liasing with traffic engineers and dispersion model users, it is usually possible to obtain traffic data, in a suitable format, to perform an emissions calculation.

Meteorogical data
The format required will depend on the model used, and should be checked with the supplier of the dispersion model. In any event, data should be obtained from an appropriate comparative data source (i.e. a site within reasonable distance of the area to be modelled, and with similar topography). Moreover, at least one year of hourly-sequential data should be obtained. It will also be necessary to agree with the local authority whether 'typical' or 'worst-case' meteorological data should be used.

Other Input data
Depending on the model used and the area in question, there are many parameters that should be agreed prior to any modelling being undertaken. These might include:

- Site surface roughness length (typically 1m to 2m in London)
- Minimum Monin-Obukhov length (certain models only)
- The number and dimensions of any street canyons (streets where pollutant dispersal is adversely affected by surrounding buildings)

- Release height of aggregated sources (grid or volume sources)

'Background' pollution from outside London

Pollution can travel large distances, therefore pollution from sources outside London must also be taken into account. This level can be estimated from rural monitoring stations around London.

Validation of modelling

Wherever possible, it is preferable to validate the model against measured pollution concentrations using the same input parameters as for the air quality assessment. Within London, there are many continuous monitoring sites that may be used to validate a modelling exercise. There are currently 3 air quality monitoring stations in Ealing and several located in adjoining boroughs, whose data is available for validation of air quality dispersion models. The following continuous monitoring stations has been identified within the borough and the surrounding area:

Ealing 1 - Ealing Town Hall

LAQN code:	EA1
Address:	Ealing Town Hall, Uxbridge Road
O.S. Grid Ref:	517440 180700
Classification:	Urban Background
Pollutants Monitored:	Nitrogen Dioxide. Ozone. Sulphur Dioxide.

Ealing 2 - Acton Town Hall

LAQN code:	EA2
Address:	Acton Town Hall, Acton High Street
O.S. Grid Ref:	520300 180050
Classification:	Roadside
Pollutants Monitored:	Carbon Monoxide. PM10 Particulate (by TEOM). Nitrogen Dioxide. PM2.5 Particulate.

Ealing 6 - Hanger Lane

LAQN code:	EA6
Address:	Hanger Lane
O.S. Grid Ref:	518539 182709
Classification:	Roadside
Pollutants Monitored:	Nitrogen Dioxide.

Hounslow 4 - Chiswick High Rd

LAQN code:	HS4
Address:	Chiswick High Road
O.S. Grid Ref:	521070 178480
Classification:	Roadside
Pollutants Monitored:	PM10 Particulate (by TEOM). Nitrogen Dioxide. Sulphur Dioxide.

Hounslow 5 - Brentford

LAQN code:	HS5
Address:	Brentford

O.S. Grid Ref: 517425 578074
Classification: **Roadside**
Pollutants Monitored: Carbon Monoxide. PM10 Particulate (by). Nitrogen Dioxide.

Hounslow 3 - Brentford

LAQN code: HS3
Address: Env. Services Dept, Glenhurst Road, Hounslow
O.S. Grid Ref: 517500 178100
Classification: Roadside
Pollutants Monitored: PM10 Particulate (by TEOM).

Hounslow 2 - Cranford

LAQN code: HS2
Address:
O.S. Grid Ref: 510300 177200
Classification: **Suburban**
Pollutants Monitored: PM10 Particulate (by TEOM). Nitrogen Dioxide. Ozone. Sulphur Dioxide.

Hammersmith & Fulham 2 - Brook Green

LAQN code: HF2
Address: Hammersmith & Fulham 2 - Brook Green,London.
O.S. Grid Ref: 523625 179010
Classification: **Urban Background**
Pollutants Monitored: PM10 Particulate (by TEOM). Nitrogen Dioxide

H and F 1 - Hammersmith Broadway

LAQN code: HF1
Address: Hammersmith Broadway, opp tube station
O.S. Grid Ref: 523420 178590
Classification: **Roadside**
Pollutants Monitored: PM10 Particulate (by TEOM). Nitrogen Dioxide. Sulphur Dioxide.

Brent 3 - Harlesden

LAQN code: BT3
Address: Harlesden
O.S. Grid Ref: 521520 183475
Classification: **Urban Background**
Pollutants Monitored: PM10 Particulate (by TEOM). Nitrogen Dioxide. Sulphur Dioxide.

Brent 4 - Ikea

LAQN code: BT4
Address: Brent Park Ikea, Drury Way
O.S. Grid Ref: 520712 185164
Classification: Roadside
Pollutants Monitored: PM10 Particulate (by TEOM). Nitrogen Dioxide.

Sulphur Dioxide.

Hillingdon 1 - South Ruislip

LAQN code:	HI1
Address:	South Ruislip
O.S. Grid Ref:	510770 184960
Classification:	Roadside
Pollutants Monitored:	PM10 Particulate (by TEOM). Nitrogen Dioxide.

Hillingdon 2 - Hillingdon Hospital

LAQN code:	HI2
Address:	Field Heath Rd jnc Colham Rd
O.S. Grid Ref:	506991 181951
Classification:	Roadside
Pollutants Monitored:	PM10 Particulate (by TEOM). Nitrogen Dioxide.

These sites are affiliated to the London Air Quality Network (LAQN) run by Environmental Research Group, Kings College London. Data can be obtained via their web site at http://www.erg.kcl.ac.uk/london/asp/home.asp

Hillingdon - AURN

LAQN code:	HI0
Address:	West Drayton
O.S. Grid Ref:	506900 178600
Classification:	Suburban
Pollutants Monitored:	Carbon Monoxide. PM10 Particulate (by TEOM). Nitrogen Dioxide. Ozone. Sulphur Dioxide.

This is a national network (AURN) site. Current readings are available from www.aeat.co.uk/netcen/aqarchive/hil.html

Pollutant-specific concerns

SO_2

The objective for SO_2 that is likely to be hardest to meet is the 15-minute interval.

- Should demonstrate that the modelling methodology is appropriate to predict a 15-minute concentration.

NO_2

NO_2 is derived from NO_x via a series of complex chemical reactions. An empirical method or chemistry scheme may be used to derive NO_2 from NO_x.

- Use all inputs relevant to the NO_x: NO_2 method/scheme chosen.
- Show the model's NO_x outputs.

PM_{10}

The objective for PM_{10} is based on a gravimetric measurement. However, most PM_{10} monitors in London are TEOMs. Any PM_{10} modelling study should present results as a gravimetric estimate.

PM_{10} can be thought of as comprising three components: primary, secondary and coarse. Emissions data comprises only primary PM_{10}. Secondary and coarse PM_{10} should be included in the modelling.

For further information on modelling PM_{10}, consult 'Assistance with the review and assessment of PM_{10} concentrations in relation to the proposed EU Stage 1 Limit Values'/

- Calculate PM_{10} as a gravimetric equivalent
- Include secondary and coarse PM_{10} components.

OUTPUT DATA

Pollutants to be modelled

If a development is expected to affect traffic flows, PM_{10} and NO_2 would normally be modelled, since widespread exceedance of these pollutants are predicted across much of London, and motor vehicles are a significant source of each.

If the development itself is a significant emitter, pollutants relevant to the type of development should be considered (for example SO_2 and NO_2 would be considered for an oil-burning process).

When NO_2 is modelled, NO_x concentrations should also be predicted.

Output area

The output results must cover the area likely to be affected by the proposed development. For a development that affects traffic movements, output should cover the area where traffic movement would be significantly affected.

This would normally be in the form of a detailed contour plot of predicted pollutant concentrations. However, the Local Authority may accept predicted concentrations at a number of carefully selected receptors. Outputs should be presented on an appropriately scaled map.

Exposure

The key concern with regard to assessing the air quality impact of a development in London relates to its impact on human health. The assessment should evaluate modelled air quality in terms of changes in pollution concentrations where people are already exposed, particularly to pollution concentration above air quality objective limits. The assessment should also highlight any changes to the predicted extent of any areas of exposure above the objective limits and assess whether the development will create new areas of exposure.

Other Considerations

Committed Developments

Development in urban area rarely occurs in isolation. Accordingly the Council will wish to ensure that the air quality impact of new development takes into account other schemes that may have recently received planning permission. These may be built in parallel or before the proposals you are modelling. Modelling scenarios therefore, need to present a realistic assessment of the future air quality situation in the locality of the development, taking into account the cumulative affect of all developments

These committed developments may have been agreed as part of the TIA process, but if you are in any doubt, please contact the Planning Department.

Reporting the assessment

The report should comprise the following:

- Emissions inventory for the development
- A description of the methodology used
- Details of model performance or validation
- Details of any extra emissions calculations
- Input data: sources included, input parameters specific to the model and site, meteorology
- Model output data, on maps where appropriate
- Discussions of results
- Conclusions and significance

Audit trail

The assessment should provide a transparent account of the modelling undertaken and all assumptions made. Should an audit of the assessment be required, extra data may be requested by the local authority.

Supplementary Guidance, as the title suggests, is to guide development. It is not meant to be definitive, and much of the guidance represents minima which are to be improved on if possible in the interests of good design.

If you would like further advice on this guide, please contact:

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