Air Quality

Supplementary Planning Guidance to the Hillingdon Unitary Development Plan

Planning & Transportation Services
London Borough of Hillingdon

May 2002
# Supplementary Planning Guidance

## Air Quality

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ASSESSMENT OF THE IMPACT OF NEW DEVELOPMENT ON AIR QUALITY

Aims of this Supplementary Planning Guidance

The aims 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 assessment (see Technical Appendix 1).

iii. To provide guidance on the circumstances when air quality conditions and S106 planning obligations will be sought in accordance with national guidance and Hillingdon’s UDP policies for air quality. The guidance is aimed at ensuring that air quality has been considered in enough depth and to help minimise any potential impacts.
Section 1:

Introduction

1.2 Poor air quality affects human health and the environment. As part of its approach to sustainable development the Government has adopted the UK National Air Quality Strategy [NAQS] to deal with the assessment and management of air quality. Although national policies on air pollution are expected to deliver countrywide improvement on air quality, it is recognised that in some local hotspots, because of transport, commercial and industrial activities, air quality will remain poor and will require a more focussed approach to improve air quality.

1.3 In order to identify these “hot spots”, 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 to the end of 2005 and assess whether the prescribed objectives are likely to be achieved by the end of 2005\(^1\). Where the prescribed air quality objectives are unlikely to 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 quality standards and objectives in the area.

1.4 One such “hotspot” in the London Borough of Hillingdon is an area which covers the south of the Borough to the north of Heathrow Airport. A detailed air quality review and assessment of the area has been undertaken and the Council has declared an AQMA in Hillingdon. The Order to declare the AQMA commenced on the 1\(^{st}\) May 2001. A map showing the boundary of the AQMA is presented in Figure 1. It is clear that the road network in the AQMA carries a very high volume of traffic and congestion. Emissions from road traffic are recognised to be a major contributor to poor air quality in the area. Heathrow airport is also a major source of emissions. The result of these activities is that the area is subjected to levels of air pollution worse than many other UK towns and cities.

\(^1\) For some pollutants the compliance periods have been brought forward to 2003 or 2004 respectively.
Air Quality and Land Use Planning Guidance

1.5 The land use planning system has a vital role to play to ensure that the objectives of the NAQS are met. To ensure that the land use planning system makes an appropriate contribution, it is important to recognise the links between air quality and land use planning and traffic management; they are particularly important tools for local authorities in their AQMA action plans.

“...action plans will need to be closely integrated with and reflected in local transport plans and other local and regional planning and transport strategies” – para 11- PPG13 [March 2001]

1.6 Guidance relevant to local planning authorities’ air quality responsibilities is set out in the following national Planning Policy Guidance Notes (PPGs):

- PPG13: ‘Transport’ (March 2001)

Although PPG23 makes it clear that Local Planning Authorities (LPAs) should not seek to duplicate the pollution control responsibilities of other bodies, it also states that the planning system has “an important role to play in determining the location of development which may give rise to pollution” (para 1.31). PPG6 and PPG13 deal with air quality indirectly by promoting sustainable forms of development i.e. development in locations such as town centres that are well served by public transport in order to reduce traffic generation and emissions. Revised PPG13 emphasises the importance of local air quality as “a key consideration in the integration between planning and transport” (paragraph 9). It also states the importance of well designed traffic management as a measure to reduce local air pollution (paragraph 45).

1.7 In the Department of the Environment Transport and the Regions (DETR) Local Air Quality Management Guidance Notes: ‘LAQM G4(00), Air Quality and Land Use Planning’, it is stressed that “any air quality consideration that relates to land use and its development can be a material planning consideration” (para 39). The guidance also makes it clear that in determining a planning application “local planning authority should consider the development’s likely effect not only in terms of the air pollution it may cause directly, but also in terms of any increase or decrease in traffic that it generates” (para 41).
1.8 RPG3 (para 9.20) highlights that London Boroughs “will need to take into account the planning and transport implications of the Act and the National Air Quality Strategy”. In para 9.25 it recommends that Boroughs should carry out a range of measures including the following:

- Monitor air quality and maintain inventories of air pollutants and formulate strategic policies to minimise pollution.
- Consider the effects of transport emissions in relation to other forms of pollution, to inform traffic management and transport policies and proposals.
- Identify environmental constraints on polluting activities to ensure the protection of the air, water and land environment.
- Set out criteria in respect of different pollutants against which plans and policies can be appraised and proposals assessed, using local knowledge where possible.

This SPG has taken into account relevant Government and ALG guidance documents and has been developed to account for local conditions specific to Hillingdon. A list of guidance and contact names relevant to this SPG is contained in Appendix 2 at the end of the document.
When an air quality assessment will be required

2.1 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. For these applications, air quality assessments may form part of the (ES). In addition to this requirement an air quality assessment would be normally expected for the following types of development proposal:-

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)\(^2\) of 5% or more on individual road links with more than 10,000 vehicles per day\(^3\)

b) Industrial development/commercial development with a floor space of more than 2500m\(^2\)

c) Proposals which may result in increased congestion and lower vehicle speeds than is present 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) Any major employment generators likely to have an adverse impact direct/indirect on air quality, particularly in sensitive areas. See exceedance areas on Fig 1. These include developments: -

i. Involving industrial activities with the potential to produce significant air emissions.

ii. With the potential to generate significant traffic. A detailed traffic impact assessment is normally required in these cases.

\(^2\) annual average daily traffic/flow

\(^3\) Roads with lower flows but higher percentage increases in flows may still require an environmental assessment
iii. Which is likely to lead to a significant increase in the emission of one or more of the prescribed pollutants as specified in the National Air Quality Strategy.


Other developments may also warrant an air quality assessment as part of determining the planning application. Within areas where air quality objectives are unlikely to be met (e.g. in the vicinity of Heathrow Airport) it is likely that for many developments, air quality would be a material consideration and an assessment would be required. [See air quality exceedance map in Fig 1]

**Cumulative Impacts of Developments**

2.2 Development in urban areas rarely occurs in isolation. Local authorities will normally wish to ensure that the air quality impact of any new development takes into account the cumulative effect of other developments in the area. 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 effect of all developments. These developments should normally have been agreed as part of the Transport Impact Assessment [TIA] process, but local authorities should be clear to developers which developments they are expected to include in the air quality assessment.

**The process of air quality assessment**

2.3 An 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 increases in emissions due to 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 objectives arising from the proposed development.
2.4 Appended to this SPG as Appendix 1 is a technical guidance document outlining the outputs required for undertaking an air quality assessment in the area. This provides both general guidance on undertaking air quality assessment and gives specific details on Hillingdon's air quality assessments. It contains the map of the predicted NO\(_2\) for 2005 and a map of the AADT traffic flows used in the Stage 3 Review and Assessment process. This was prepared using BAA’s most recent 1998 emission inventory as part of the Stage 3 review and assessment process leading to the declaration of the AQMA. It shows the areas where the NO\(_2\) annual average in 2005 is likely to exceed the NAQS objective of 21ppb (the three bands from 21-23 to 26-36). The major area where air quality objectives are exceeded covers an area in the south of the Borough centred on the Heathrow region [see Fig 1]

**Determining significant impacts on air quality**

2.5 Development control policies should have regard to the differences in the quality of the air affecting different areas 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 and where significant public exposure occurs will be afforded the highest level of protection. The London Borough of Hillingdon is determined to improve the quality of the air in those areas where the air quality objectives is likely to be exceeded. Consequently, development will be restricted or otherwise be discouraged in those areas, if the development impedes the overriding objective to improve air quality in such areas. In addition, steps may be taken to protect those areas, where the air quality objectives are either close to the objectives or might exceed the objectives, so as to ensure that the quality of air is not allowed to deteriorate any further.

2.6 Whether a particular proposed development will affect air quality significantly is a matter for consideration by 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:

In such cases,

i. the scale of the emissions,

ii. whether the emissions caused by the development would impede the London Borough of Hillingdon’s overriding objective to improve air quality in the area,

iii. whether significant public exposure occurs,

iv. ground level concentrations.

2.7 If an area is close to an area where the air quality objectives are likely to be breached, the air quality impacts would be significant if the
development would cause a deterioration, however small, in the quality of the air in that area. The following factors will need to be considered in the air quality assessment:

i. The quality of the air without the development in comparison to the air quality objectives. (The level of risk that any further deterioration in the quality of the air might cause an extension to the area where the air quality objectives are likely to be breached)

ii. Predicted changes in the concentration of pollutants, with and without the development

iii. the scale of the emissions

iv. whether the emissions caused by the development would impede the London Borough of Hillingdon’s overriding objective to improve air quality in the area

v. whether significant public exposure occurs.

The LPA 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 merits.
Section 3:

Mitigation of Air Quality Impacts: Measures and Mechanisms for Implementation

3.1 The quality of air in AQMAs is likely to be influenced by emissions of pollutants beyond their boundaries. The local authority will therefore apply controls outside the boundary of the AQMA as well as inside the AQMA itself. Therefore, the impact on air quality of proposed developments, which are located close to an AQMA also need to be carefully mitigated to ensure that the air quality objectives within the AQMA are not compromised.

3.2 Developers will be asked at the time of application for their proposed mitigation measures including the associated costs involved. This will assist the LA in assessing whether the mitigation for any air quality impacts has been adequately covered.

MITIGATION MEASURES

3.3 The type of action pursued by various organisations, including the local authority, may involve the following:

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

(b) 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 traffic 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.

(c) 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.

(d) Car parking restrictions. Parking management to reduce the number of cars entering into an area. Options include reducing the number of spaces available, or increasing charges, or limiting the maximum stay.
(e) **Road Traffic Related Action – Infrastructure**
Potential for pedestrianisation, improved cycling and walking provisions.

(f) **Regulation of industrial emissions**
This includes the use of BATNEEC or a higher standard than BATNEEC especially in areas of poor air quality and the use of better technology to reduce air quality emissions.

(g) **Specific Vehicle Control**
- Restrictions on certain vehicle types and/or the encouragement of cleaner vehicle types can help to achieve significant air quality improvements. The use of new and cleaner vehicle technology provides a means of achieving emissions reductions (See Appendix 3, page 32). The degree to which a developer can restrict or encourage cleaner vehicle emissions will depend on the level of control that can be exercised over the composition of the vehicle fleet. Where the applicant has direct control over the vehicle fleet, numbers and types of vehicles could be specified. The introduction of vehicles into the AQMA that do not comply currently with Euro I standards would not normally be regarded as acceptable. In the future, the aim would be to ensure that all vehicles comply with Euro III standards (or Euro II standards with retro-fitting) or of a higher standard.

- Vehicle emission testing and control over stationary vehicles. New powers are being piloted to stop vehicles in order to conduct roadside emissions tests and to issue penalty notices to drivers of vehicles whom, without good reason, leave engines running in parked vehicles.(see Appendices 1 and 2 for detailed information.

- Implementation of a vehicle maintenance programme to ensure they are operating at optimum conditions with regard to fuel usage and emissions to air.

(h) **Green Travel Plans**
Applicable to major and smaller developments likely to have significant transport implications especially in, or near AQMA's [para 89-91, PPG13 – March 2001] - See also S106 Obligations/Agreements para 4.1 – 410.
Implementation Mechanisms

Adopted Hillingdon Unitary Development Plan [UDP]

4.1 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. 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).

4.2 Consistent with national planning guidance, policies in Hillingdon’s Unitary Development Plan identify the importance of local air quality as a material planning consideration. Particularly Policy OE1 and OE6. Policy OE6 states that the LPA “will not normally grant planning permission for proposals which are likely to result in the pollution of air, land or water areas including lakes, rivers, canals and groundwater.” In addition, the supporting text to this policy makes it clear that the LPA “will seek to protect and enhance the local environment against developments which may generate pollution from traffic or other processes or operations…” and is “…committed to identify areas in the Borough where existing air quality falls below acceptable standards and to take positive measures to improve air quality in these areas.” (para 6.12)

4.3 In accordance with Policy OE6 of the UDP, the LPA will take account of advice from the Council’s Head of Consumer Protection as to the likely impact on air quality of development proposals. In many cases the impact on air quality of a particular development may be relatively small. However, it should be emphasised that any mitigating measures will be required (a) development likely to have an impact on air quality in or adjacent to areas where air quality objectives are unlikely to be met, would be regarded as being significant, and (b) where it is indicated that a development will result in increases in emissions, mitigating measures will be taken.

4.4 Guidance in ‘Air Quality and Land Use Planning’ (1997) states that when determining planning applications, it may be appropriate to impose conditions to mitigate the impact of emissions or enter into a S106 planning obligation where the planning objection cannot be overcome by condition. In line with this guidance the LPA (taking account of the advice from the Head of Consumer Protection) will seek measures to mitigate the impact on air quality by way of planning
conditions. For those developments in or adjacent to areas where air quality objectives are unlikely to be met and where the impact cannot be adequately mitigated by condition (i.e. where there is still a residual impact), the LPA will seek a S106 planning obligation. The planning obligation (which will be related to the scale of 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 OE6 of the UDP.

4.5 Hillingdon’s UDP also identifies the Council’s intention to seek where appropriate, planning obligations to achieve community benefits (Part I policy 1.35) and Chapter 10 – Local Economy – Para 10.24. Such benefits could include measures designed to improve local air quality.

Planning Conditions

4.6 One or more of the following conditions may be imposed by the LPA to any planning permission.

Operational:

(a) No development shall commence until a scheme, that will control and minimise emissions of pollutants from and attributable to the development, has been submitted and approved in writing by the local planning authority. The scheme shall set out the secure measures which can and will put in place designed to ensure that emissions of pollutants are minimised and, wherever practicable, reduced.

Note: A scheme may include such measures as set out below:

- A full emissions inventory. The emissions inventory shall be reviewed and updated annually.

- A scheme for monitoring air quality in areas affected by the application sites.

- Restrictions of certain types or classes of vehicles not meeting prescribed air quality standards. In essence, only low emission vehicles should be allowed or otherwise encouraged. See Appendix 3 for details on vehicle restrictions

- Vehicle testing to ensure that vehicles and locomotives meet prescribed standards.

- Car parking restrictions in accordance with the Council’s adopted parking standards.
• Green Travel plans that aim to minimise the use of cars and encourage the use of public transport and other alternative means of transport. [Green Plans could alternatively be part of a S106 Agreement]

• Limiting the numbers of vehicles entering and leaving the site.

• Use of low emission fuel technology.

(b) **Control of vehicle emissions**
Prior to the [commencement of use/ occupation of the development] the developer shall submit to the Local Planning Authority for its approval a plan, which shall include proposals for controlling emissions from vehicles to be used in connection with the use and operation of the development hereby approved. **Note:** The fleet management plans should include specified vehicle emissions standards and fleet maintenance programmes. The plan should incorporate time-scales and ensure that changes of use issues are covered. The degree to which the applicant can restrict or encourage cleaner vehicle emissions will depend on the level of control that can be exercised by the applicant. Where the applicant has direct control over the vehicle fleet, the applicant should specify the numbers and types of vehicles at the commencement of use and at specified times after commencement of use, with, if necessary, a rolling programme in place moving towards a vehicle fleet with increasingly tighter emissions standards. Where the applicant does not have direct control over the fleet composition, the applicant should use alternative means of encouraging and restricting different classes of vehicles.

(c) **Specified activities**
['Specified activities'] shall not take place anywhere on the site except within ['specified building(s)'] under [specified 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.

(d) **Restrictions on Vehicle Types**
All [HGVs/ Classes of vehicles] used in connection with the site that are [owned/ operated] by the [owner/ occupier/ person(s) responsible] shall meet [Euro 1/ Euro II/ Euro III] standards. **Note:** See Appendix 3 for definitions of Euro Standards.

4.7 **Construction:**

(e) **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 practise; 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 these measures that will be put in place to supervise the works so that all steps are taken so as to minimise the emission of dust.

(f) Dust
Development shall not begin until a scheme for protecting [surrounding dwellings] [sensitive] from dust emitted from the construction works, has been submitted to, and approved by the Local Planning Authority. The scheme shall include such combination of dust control measures and other measures as may be approved by the Local Planning Authority. [It is known that dust from construction works can cause nuisance by soiling surfaces and other articles in and about buildings. Dust can also cause irritation such as irritation to the eyes, noise, and throat. There is growing evidence and concern that dust, especially the very small and fine dust particles, can cause or exacerbate, respiratory ill-health]

(g) Bonfires
No bonfires shall be lit on the construction site.

(h) Plant and vehicle maintenance to minimise smoke emission
All [plant/ vehicles] 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.

Section 106 Planning Obligations/Agreements

4.8 The Department of the Environment issued Circular 1/97 – ‘Planning Obligations’ on 28th January 1997. This Circular notes that Planning Obligations have a positive role to play in the planning system and used properly can remedy genuine planning problems and enhance the quality of development. 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.” (para B9)
4.9 In the DETR guidance note LAQM G4(00), 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 G4, 2000). The strategic approach to be used to mitigate or offset the impact would involve the Council consulting and working closely with other agencies, business and local community to deliver local air quality improvements.

4.10 PPG13 strongly advocates the development of Green Travel Plans [para 89] ‘…travels plans should be submitted alongside planning applications which are likely to have significant transport implications…’. A green transport plan is a package of practical measures tailored to the circumstances of individual firms and offices. They aim to reduce:

a) Car use for travel to work and for travel on business
b) The environmental impact of travel; and
c) The need to travel at all for work.

Given that business and commuting travel accounts for approximately 30% of all car miles travelled and that 70% of all journeys to work are 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.

[Please note that the Council draft S106 Strategy is scheduled for consideration in Autumn 2002]
REFERENCES AND GUIDANCE NOTES

2. Selection and use of dispersion models LAQM. TG3 (00) published by DETR
3. Review and Assessment: Estimate Emissions LAQM. TG2 (00)
4. Air quality and land use planning LAQM. G4(97)
5. Framework for review and assessment of air quality LAQM. G1(00)
6. Developing local air quality action plans and strategies LAQM. G2(00)
7. Good practice guide: Air quality and land use planning, prepared by ARUP Environmental on behalf of the Royal Town Planning Institute.
Figure 1

Nitrogen Dioxide Annual Mean Objective for 2005
Predicted Modelled Concentrations across the Borough

Source: LBHillingdon EPU Stage 3 Review and Assessment 2001

Please note that Figure 1 will be updated when the Stage 3 Review and Assessment of Air Quality is reviewed and updated
Figure 2

Map of London Borough of Hillingdon showing 1998 Annual Average Daily Traffic Flows used in Stage 3 Review and Assessment

Data Source - CERC 1998

AADT flows 1998
- 7 - 10000
- 10001 - 20000
- 20001 - 40000
- 40001 - 65000
- 65001 - 101030

Source: L B Hillingdon EPU 2001

Please note that Figure 2 will be updated when the Stage 3 Review and Assessment of Air Quality is reviewed and updated
APPENDIX 1

Technical Guidance for Air Quality Assessments

[Please note that Appendix 1 will be updated when the Stage 3 Review and Assessment is updated]

Part A: Hillingdon’s Stage Three Review and Assessment

Background

A1 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.

A2 The Boroughs around Heathrow Airport have completed the final stage of the air quality review and assessment. The map of predicted NO2 concentrations for Hillingdon is attached as Figure 1. The air quality in the vicinity of Heathrow Airport has been predicted by the use of dispersion model ADMS-Urban (Version 1.52) for the current emissions of pollutants. British Airport Authority (BAA) is also using the same model, to predict air quality within the airport, which clearly is an important regional emission source. The whole study area was at the western extreme of the London conurbation and includes Heathrow Airport. The airport study area extended about 20km to the northern boundary of the London Borough of Hillingdon, about 10km to the southern boundary of the Borough of Spelthorne, and about 15km to the eastern boundary of the London Borough of Hounslow and about 13km to the western boundary of the Borough of Slough, so this approach to air quality assessment is relevant to all of these boroughs.

A3 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 (NO2) and small particulate material (PM10).

The base line case

A4 The emissions used for the study were compiled from two data sources:

1. Heathrow Emissions Inventory for 1998
2. London Resource Centre (LRC) emissions inventory for London.
1. Heathrow Emissions Inventory

A5 This inventory includes all of the significant emissions arising from the airport and from the major roads surrounding the airport during 1998. It provides data for emissions from aircraft movement, other aircraft emissions such as engine testing, refuelling etc, major road traffic emissions, vehicle emissions other than major roads such as airside vehicles, staff car parks, taxi ranks etc and heating emissions.

Diurnal Emissions Profile

A6 Certain emissions were modified using a diurnal profile comprised of hour by hour emissions variation during a typical week-day, typical Saturday and typical Sunday. The main use of this was to take into account the significant variation in traffic emissions during the day but was applied to other sources which broadly follow similar variation. The emissions provided were for 1998 and an estimated growth factor of 5% over the 1998 case was supplied by BAA Heathrow for the 2005 cases. This growth was not added to the heating emissions.

Traffic Emissions and Traffic Profile.

A7 Traffic emissions were provided by AEA Technology NETCEN and the breakdown of vehicles into major categories was based upon earlier studies in central and west London:

<table>
<thead>
<tr>
<th>Category</th>
<th>% of total</th>
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</thead>
<tbody>
<tr>
<td>Petrol cars</td>
<td>67</td>
</tr>
<tr>
<td>Diesel cars</td>
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<tr>
<td>Petrol light goods vehicles</td>
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</tr>
<tr>
<td>Diesel light goods vehicles</td>
<td>6</td>
</tr>
<tr>
<td>Buses and heavy goods vehicles</td>
<td>9</td>
</tr>
</tbody>
</table>

2. LRC Emissions Inventory

A8 The nominal base year for this was 1995 although road traffic emissions were 1997. This was used for the area outside of that covered within the Heathrow Emissions Inventory apart from the minor roads emissions. These were not included in the Heathrow Inventory therefore all the minor roads emissions were used across the entire study

Line Sources

A9 Roads within 500m of the modelled area with traffic counts over 20,000 vehicles/day were modelled explicitly. The roads were modelled with a default width of 20m but changed to 40m for dual carriageways and 50m for motorways. Diurnal traffic variations for typical weekday, Saturday and Sunday were used.

Point Sources

A10 Industrial sources with emissions of 10g/s or above for SO₂ were modelled specifically with adjustments made for the year 2005. All other industrial sources were included in the grid sources.
Grid Sources
A11 These are the aggregations of all the sources that are not explicitly modelled, with total emissions being assigned to 1 square kilometre grids as an area source.

Background Concentrations
A12 Pollutant concentrations within the study area will not only be affected by the emissions within the area but also by the pollution in air entering the area from outside. For this study data were used from Bottesford, Lullington Heath, Harwell, Rochester, Sibton and Wicken Fen. The exception was PM10 where the secondary component was determined from sulphate monitoring from Bridge Place in London. A factor of 2.45 was applied for the nitrate contribution.

Meteorological Data
A13 For consistency with the Heathrow 1998 Emissions Inventory the meteorological data used in this study was obtained from Heathrow Airport also for 1998. The data is summarised below.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>11.5</td>
<td>-3.5</td>
<td>30.3</td>
</tr>
<tr>
<td>Wind speed (m/s)</td>
<td>2.8</td>
<td>0</td>
<td>12.9</td>
</tr>
<tr>
<td>Precipitation (mm/hr)</td>
<td>0.08</td>
<td>0</td>
<td>9.4</td>
</tr>
<tr>
<td>Cloud cover (oktas)</td>
<td>5.8</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

The meteorological data was used hour by hour in conjunction with the background data and compared with monitoring data for the corresponding time period.

Monitoring Data for validation
A14 Suitable monitoring data was identified from twelve locations. This comprised of five continuous monitoring data sets and annual mean nitrogen dioxide concentrations from diffusion tubes. The continuous monitoring sites used were as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Source</th>
<th>Data used</th>
<th>Grid Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heathrow Airport</td>
<td>BAA Heathrow</td>
<td>NO₂, PM₁₀, CO</td>
<td>508400, 176700</td>
</tr>
<tr>
<td>LB Brentwood</td>
<td>AURN</td>
<td>NO₂, PM₁₀</td>
<td>520000, 184000</td>
</tr>
<tr>
<td>LB Hounslow</td>
<td>AURN</td>
<td>NO₂</td>
<td>517500, 178100</td>
</tr>
<tr>
<td>LB Teddington</td>
<td>AURN</td>
<td>NO₂</td>
<td>515600, 170600</td>
</tr>
<tr>
<td>LB Hillingdon</td>
<td>AURN</td>
<td>NO₂</td>
<td>506900, 178600</td>
</tr>
</tbody>
</table>

The data was used for 1998 for comparison.
Results of the Stage 3 Review and Assessment

A15 The results of the modelling for the annual mean nitrogen dioxide objective for 2005 are shown in Figure 1, in the main report.

Hillingdon’s Stage 3 review and assessment report is available for viewing at the Environmental Services Reception, Civic Centre, Uxbridge UB8 1UW. Alternatively copies can be ordered for £25.00 via the Environmental Protection Unit (FAO Val Beale), 3W 01, Civic Centre, High Street, Uxbridge. Cheques should be made payable to the London Borough of Hillingdon and be accompanied by a letter stating the request and address to be sent to.
Part B: Outline for an Air Quality Assessment for future developments

General Principles

B1 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.

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 increases in emissions due to 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.

B2 An air quality dispersion model covers a wide range of applications, from simple nomograms and spreadsheets to sophisticated computer programs. For the Heathrow area, more advanced models should be considered for the following reasons:

- Complexity of the 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 and the following are examples of some of them:

- CAL3QHC
- California Line Source Model (CALINE)
- Breeze Roads
- Point, Area and Line (PAL) Source Model
- Rough Terrain Diffusion Model (RTDM)
- Industrial Source Complex (ISC)
- 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 the Regions (DETR) Guidance Notes on Selection and use of dispersion models, LAQM.T.G3 (00), May 2000 from the Stationery Office.

Input Data

B2 Emissions Data
The GLA has updated the London Emissions Inventory and this revised emissions inventory (dated February 2002) for is available from the GLA. There is a handling charge of £100 for the provision of data to developers and their consultants.

B3 Time-varying emissions
Traffic flows and speed, and hence emissions, vary throughout the day. Emissions from vehicles should vary within the model, by time of day and by day of the week where appropriate. Where possible, time-varying traffic movements should be based upon local information, for instance 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.

B4 Supplementary traffic data
Where a traffic impact assessment (TIA) has been prepared for a proposed development, modelled or predicted development traffic flows in the TIA 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 TIA for the development. By liaising with traffic engineers and dispersion model users, it is usually possible to obtain traffic data in a suitable format to perform an emissions calculation.

B5 Meteorological data
The format required will depend on the model to be used, and should be checked with the supplier of the dispersion model.

- Take data from an appropriate site (within reasonable distance of the area to be modelled, and with similar topography)
- Use at least one year of hourly-sequential data
- Agree with the local authority whether ‘typical’ or ‘worst-case’ meteorological data should be used.
B6  **Other input data**
Depending on the model used and the area in question, there are many parameters that should be agreed prior to 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)

B7  **‘Background’ pollution from outside London**
Pollution can travel large distances, and pollution carried into London must be taken into account. This can be estimated from rural monitoring stations around London.

B8  **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 a number of air quality monitoring stations in Hillingdon and the adjoining boroughs and the data produced are available for validation of air quality dispersion models. Below are details of continuous monitoring stations within and close to the London Borough of Hillingdon:

**B9  Hillingdon**

[a]  **London Hillingdon site**
- **Commissioned:** 3.7.96
- **Location:** Junction between Sipson Road and Keats Way, West Drayton, about 30m from the M4 Motorway
- **Grid Reference:** TQ 078 806
- **AEA Classification:** Suburban
- **Pollutant Monitored:** Carbon monoxide, sulphur dioxide, NOx and PM10
  - Data available on the Internet
  - [http://www.aeat.co.uk/netcen/aqarchive/hil.html](http://www.aeat.co.uk/netcen/aqarchive/hil.html) (raw data)
  - [http://www.tbvsci.co.uk/sites/summary.html](http://www.tbvsci.co.uk/sites/summary.html) (summary statistics for the previous 24 hours for all automatic sites)

[b]  **South Ruislip site**
- **Commissioned:** September 1999
- **Location:** on the A4180, West End Road, Ruislip
- **Grid Reference:** E 510843, N 184916
- **AEA Classification:** Roadside
- **Pollutant Monitored:** NOx and PM10
- **Internet Address:** [http://www.seiph.umds.ac.uk](http://www.seiph.umds.ac.uk)
B10 Spelthorne
Transport Research Laboratories run a real time monitoring site for the Highways Agency on the clockwise hard shoulder of the M25 at Runnymede cottages between Junction 13 and 14. The OS co-ordinates are 502726, 173407.

Two additional air quality monitoring stations are being considered to monitor Nox and PM10 in Stanwell and Staines town centre. Likely to be commissioned in 2001.

B11 Slough
[a] Station 1
Commissioned: October 2000
Location 1: Salt Hill Park, Corner of Windmill Road off the A4 Bath Road
Grid Reference: 496598 180155

[b] Station 2
Location 2: Pippins School, Raymond Close, Colnbrook
Grid Reference: 503544 176830
Pollutant Monitored: NOx and PM10

Data available on the Internet
Internet Address: http://www.slough.gov.uk

B12 Hounslow
[a] Brentford Site
Commissioned: 1993
Location: At Brentford adjacent to the A4/M4 flyover in the Council offices at Glenhurst Road
Grid Reference: 174781
AEA Classification: Urban Roadside
Pollutant Monitored: Carbon monoxide, Nox and PM10 (since November 98)

[b] Cranford Site
Commissioned: 11.11.98
Location: Close to Heathrow Airport, 500 metres from flight path of Heathrow northern runway
Grid Reference: 104772
AEA Classification: Urban background
Pollutant Monitored: Nox, PM10 and ozone

[c] Chiswick Site
Commissioned: 2.7.99
Location: Public car park, Chiswick High Road
Grid Reference: 211785
AEA Classification: Urban roadside
Pollutant Monitored: Sulphur dioxide, NOx and PM10
Data available on the Internet
B13 Pollutant-specific concerns

SO\textsubscript{2}

The objective for SO\textsubscript{2} that is likely to be hardest to meet is the 15-minute objective.

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

NO\textsubscript{2}

NO\textsubscript{2} is derived from NO\textsubscript{x} via a series of complex chemical reactions. An empirical method or a chemistry scheme may be used to derive NO\textsubscript{2} from NO\textsubscript{x}.

- Use all inputs relevant to the NO\textsubscript{x}:NO\textsubscript{2} method/scheme chosen.
- Show the model’s NO\textsubscript{x} outputs.

PM\textsubscript{10}

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

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

For further information on modelling PM\textsubscript{10}, consult “Assistance with the review and assessment of PM10 concentrations in relation to the proposed EU Stage 1 Limit Values.”

- Calculate PM\textsubscript{10} as a gravimetric equivalent.
- Include secondary and coarse PM10 components.

Output data

B14 Pollutants to be modelled.

If a development is expected to affect traffic flows, PM\textsubscript{10} and NO\textsubscript{2} would normally be modelled, since widespread exceedances of these pollutants are predicted across much of London, and motor vehicles are a significant source of each. CO will also need to be considered if there is an AQMA for CO in the vicinity.

If the development is itself a significant emitter, pollutants relevant to the type of development should be considered (for instance, SO\textsubscript{2} and NO\textsubscript{2} should be considered for an oil-burning process).

When NO\textsubscript{2} is modelled, NO\textsubscript{x} concentrations should also be predicted.
B15 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 is 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 Ordnance Survey or similar map.

- Is the area affected by the development adequately covered?
- Is the output on an Ordnance Survey map or similar?

B16 Exposure
The key concern with regard to assessing the air quality impact of a development in London is 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

B17 Committed Developments
Development in urban areas rarely occurs in isolation. The Council will wish to ensure that the air quality impact of any 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 and 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 effect 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.

B18 Reporting the assessment
The report should include 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.
- Discussion of results.
- Conclusions and significance.
B19 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.
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Email: nigeld@slough.gov.uk

Spelthorne Borough Council

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Email: T.Willmott-French@spelthorne.gov.uk

Further Information
Attached to this Appendix is an example of a checklist that could be used by Local Authority Officers to assess the quality of air quality assessments submitted. This could also be of use to developers as a guide when commissioning consultants to carry out an assessment.
Checklist for Air Quality Assessments

The following list gives a guide as to the potential inputs a modelling assessment is likely to require plus what should be expected from the output of the assessment. It should be noted that some of the inputs mentioned refer to more complex dispersion modelling however the more general points will be relevant to most modelling assessments.

<table>
<thead>
<tr>
<th>Question</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the assessment consider changes to traffic flows?</td>
<td></td>
</tr>
<tr>
<td>Does the assessment consider “stack” emissions?</td>
<td></td>
</tr>
<tr>
<td>Is the proposed development in the AQMA?</td>
<td></td>
</tr>
<tr>
<td>Which pollutants are being considered?</td>
<td></td>
</tr>
<tr>
<td><strong>General</strong></td>
<td></td>
</tr>
<tr>
<td>What dispersion model was used?</td>
<td></td>
</tr>
<tr>
<td>What emissions inventory was used as the basis for emissions?</td>
<td></td>
</tr>
<tr>
<td>The GLA-TfL London Atmospheric Emissions Inventory includes the Heathrow Emissions Inventory used in Hillingdon’s Stage 3, this is available from the GLA.</td>
<td></td>
</tr>
<tr>
<td>Were model parameters agreed with the Local Authority?</td>
<td></td>
</tr>
<tr>
<td><strong>Meteorology</strong></td>
<td></td>
</tr>
<tr>
<td>Was the met site appropriate? (Heathrow?)</td>
<td></td>
</tr>
<tr>
<td>Was hourly sequential data used?</td>
<td></td>
</tr>
<tr>
<td>Was surface roughness considered?</td>
<td></td>
</tr>
<tr>
<td>Overall, was met data suitable?</td>
<td></td>
</tr>
<tr>
<td><strong>Validation</strong></td>
<td></td>
</tr>
<tr>
<td>Were all appropriate emissions data included?</td>
<td></td>
</tr>
<tr>
<td>Was validation undertaken for each pollutant?</td>
<td></td>
</tr>
<tr>
<td>Was the background added correctly?</td>
<td></td>
</tr>
<tr>
<td>For each pollutant:</td>
<td></td>
</tr>
<tr>
<td>How many met years were used?</td>
<td></td>
</tr>
<tr>
<td>How many validation sites were used</td>
<td></td>
</tr>
<tr>
<td>For each validation site:</td>
<td></td>
</tr>
<tr>
<td>Was monitoring data capture &gt;75%</td>
<td></td>
</tr>
<tr>
<td>Were all validation sites appropriate?</td>
<td></td>
</tr>
<tr>
<td>Were monitoring data network-affiliated?</td>
<td></td>
</tr>
<tr>
<td>For each year:</td>
<td></td>
</tr>
<tr>
<td>Were emissions data applicable?</td>
<td></td>
</tr>
<tr>
<td>Did the model predict statistics reasonably?</td>
<td></td>
</tr>
<tr>
<td>Did the validation indicate any requirement for scaling of the results?</td>
<td></td>
</tr>
<tr>
<td><strong>Overall, did validation demonstrate the models’ ability to predict the relevant air quality statistics in the area of concern?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Scenarios</strong></td>
<td></td>
</tr>
<tr>
<td>Were the correct years modelled for all pollutants?</td>
<td></td>
</tr>
<tr>
<td>Were all appropriate emissions data included?</td>
<td></td>
</tr>
<tr>
<td>Was the background correctly added?</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Was the background correctly scaled?</td>
<td></td>
</tr>
</tbody>
</table>

### Road Traffic

| What was the basis for the road traffic inputs (GLA-TfL EI), or were traffic counts used? |  |
| Was traffic from committed developments included? |  |
| Were appropriate roads modelled explicitly? |  |
| Were supplementary/TIA data approved? |  |
| Were emissions for extra traffic consistent with the GLA inventory? |  |
| Were suitable data used to generate time-varying emissions profiles? |  |
| Was the modal split of extra vehicles adequately modelled? |  |
| Were street canyons adequately modelled? |  |
| Were emissions scaled correctly applied? |  |

### Industrial

| Were all relevant stacks modelled explicitly? |  |
| Were time-varying emissions correctly applied? |  |

### Aggregated Emissions

| Were emissions scaled correctly for future years? |  |
| Were explicitly-modelled sources incorporated into the aggregated emissions in the correct manner for the model being used? |  |

### Outputs

| Were predictions plotted on OS maps? |  |
| Did the output area include all areas likely to be affected? |  |
| Is information provided on how the projections were done? |  |
| Were any outputs scaled? |  |
| Were differences between with- and without-development scenarios clearly shown? |  |
| Overall, did the outputs clearly show the effect on air quality relevant to the air quality objectives that the development was likely to produce? |  |
APPENDIX 2

DEVELOPMENT PLAN POLICIES FOR HILLINGDON AND SURROUNDING BOROUGHS

[Please note that Appendix 2 will be updated when the development plans have been reviewed]

1. London Borough of Hillingdon
   (Hillingdon Unitary Development Plan, adopted September 1998)

   **Policy OE1**
   Planning permission will not normally be granted for uses and associated structures which are, or are likely to become, detrimental to the character or amenities of surrounding properties or the area generally, because of:
   
   (h) the siting or appearance;
   (i) the storage or display of vehicles, goods, equipment or other merchandise;
   (j) traffic generation and congestion;
   (k) noise and vibration or the emission of dust, smell or other pollutants

   Unless sufficient measures are taken to mitigate the environmental impact of the development and ensure that it remains acceptable.

   **Policy OE2**
   The local planning authority will require, where appropriate, that an assessment of environmental impact be made for any proposed development which would have a significant environmental impact, such an assessment to be submitted to the local planning authority before consideration is given to the relevant planning application.

   **Policy OE6**
   The local planning authority taking account of advice from the environment agency and other appropriate bodies will not normally grant planning permission for proposals which are likely to result in the pollution of air, land or water areas including lakes, rivers, canals and groundwater.

2. London Borough of Hounslow
   Inquiry Autumn 2001

   **Policy ENV. P 1.6 Air Pollution**
   The Council will give detailed consideration to air pollution matters when considering development proposals, will continue to monitor air quality and will seek reductions in the levels of specific airborne pollutants, particularly pollution caused by road and air transport where possible, in line with EC guidelines, directives, and the air quality standards and objectives as stated in the most current air quality regulations and the Council’s Air Quality Management Strategy.
All developments that are potentially polluting will require a detailed air quality assessment. Developments requiring such assessments will include those, which (significantly) increase the number of vehicle trips, polluting industrial activities, incineration, energy generation projects and activities which increase the emissions from Heathrow Airport. Such an assessment will include predictions of relevant pollutants. Predictions will be required for; the base year, the projected year at which the activity will be at full capacity, the projected year without the activity taking place. In addition, the Council may require detailed sensitivity tests to be carried out.

Where the introduction of a new development, or change of use, will cause the air quality objective to be approached or exceeded, the Council will consider the effect on air quality, and, if significant, will seek measures to reduce the potential impact on air quality. In the event that such measures will not result in a satisfactory level of air quality, planning permission will not normally be granted.

Policy T.5.1 Air Quality implications of traffic
In determining a planning application, the local authority will consider the impact of the development in terms of the air quality caused by the traffic generated by it. Where the impact of the development is likely to be significant in air quality terms, an air quality assessment will be carried out.

3. Slough Borough Council
(Local Plan - in deposit draft January 1999, subject to Local Plan Inquiry October 1999)

Policy EN 31 (Air Pollution)
Proposals for development, which would result in significant deterioration of air quality, either by itself or cumulatively with other generators of pollution, will not be permitted unless means of mitigating the impact can be clearly demonstrated and achieved.

4. Spelthorne Borough Council
The Spelthorne Borough Local Plan Replacement Plan, as proposed to be adopted, contains policies that aim both to safeguard and enhance the environment. In applying these policies regard will be had to the effect on air quality as an aspect of the overall effect on the environment. The plan is currently awaiting adoption.
APPENDIX 3

VEHICLE RESTRICTIONS

1. Restrictions on certain vehicle types and/or the encouragement of cleaner vehicle types can help to achieve significant air quality improvements. The use of new and cleaner vehicle technology provides a means of achieving emissions reductions. European legislation has established different emissions standards requiring each generation of vehicle to be progressively cleaner. They are European and Industry wide recognised standards and require the progressive tightening of vehicle emissions with each new standard. For example a Euro III vehicle is around 20 times cleaner than a pre-Euro I vehicle.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Directive</th>
<th>Type of vehicle</th>
<th>Date of introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro I</td>
<td>91/444/EEC 93/599/EEC 91/542/EEC</td>
<td>Passenger cars Light commercial vehicles Heavy diesels</td>
<td>31/12/92 1/10/94 1/10/93</td>
</tr>
<tr>
<td>Euro II</td>
<td>94/12/EC 96/69/EC 91/542/EEC</td>
<td>Passenger cars Light commercial vehicles Heavy diesels</td>
<td>1/1/97 1/10/97 1/10/96</td>
</tr>
<tr>
<td>Euro III</td>
<td>98/69/EC common position</td>
<td>Passenger cars and light commercial vehicles Heavy diesels</td>
<td>1/1/2001</td>
</tr>
<tr>
<td>Euro IV</td>
<td>98/69/EC common position</td>
<td>Passenger cars and light commercial vehicles Heavy diesels</td>
<td>1/1/2006</td>
</tr>
</tbody>
</table>

2. Vehicles manufactured after the date of introduction will comply with the emission standard. Engines and cleaner vehicle technology can also be fitted to older vehicles so that they comply with more recent standards. The application of these Euro standards to vehicles in a given area, via new vehicle and retrofit technologies could go a long way towards improving the air quality in Hillingdon.

As a short term measure, existing vehicle fleets can be upgraded by retro-fitting or re-engineering which may be more economical than scrapping vehicles, long term measures would be to replace the oldest vehicles via rolling fleet replacement programmes.

3. There are Government sponsored programmes in place to give grants to help organisations in reducing the air quality impact of transport. Clean Up is administered on behalf of the Government by the Energy Savings Trust. This programme aims to reduce emissions of NOx and particulates from vehicles by providing grants towards the cost of fitting them with emissions reductions equipment or converting them to run
on alternative fuels. An idea of the emissions reductions that could be achieved with different technologies is given below.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Emissions reductions gained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOx</td>
</tr>
<tr>
<td>Particulate traps</td>
<td>10%</td>
</tr>
<tr>
<td>Heavy Duty Oxidation Catalysts</td>
<td>0%</td>
</tr>
<tr>
<td>Selective Catalyst Reduction (SCR)</td>
<td>60-70%</td>
</tr>
<tr>
<td>Exhaust Gas Recirculation</td>
<td>50%</td>
</tr>
<tr>
<td>Heavy Duty Oxidation Catalysts and SCR</td>
<td>60-70%</td>
</tr>
</tbody>
</table>

Note: a needs agent to create ammonia, 32% urea solution. b also needs particulate trap and oil cleaning device.

Repowering from diesel to gas can also reduce emissions. Further information about the scheme is on the web-site, www.cleanup.org.uk.

4. Promotion of the use of alternative fuel vehicles plus the infrastructure to supply them. The use of alternative fuels and technologies may deliver lower emissions of regulated pollutants that affect air quality, noise and greenhouse gases. These alternatives are reformulated petrol and diesel, natural gas (LNG and CNG), liquefied petroleum gas (LPG) and electricity plus hybrid vehicles and, in the future, fuel cell vehicles. The infrastructure for alternative fuels is an important part of enabling these fuels to be used in the vehicle fleet and provision of such infrastructure is to be encouraged in Hillingdon. Powershift is administered on behalf of the Government by the Energy Savings Trust. This programme provides grants towards the additional cost of purchasing alternatively fuelled vehicles that offer emissions benefits compared to their petrol or diesel equivalents. Further information about Powershift and how to apply for grants can be obtained from their web-site www.est-powershift.org.uk.

5. The degree to which the applicant can restrict or encourage cleaner vehicle emissions will depend on the level of control that can be exercised by the applicant. Where the applicant has direct control over the vehicle fleet, the applicant should specify the numbers and types of vehicles at the commencement of use and at specified times after commencement of use, with, if necessary, a rolling programme in place moving towards a vehicle fleet with increasingly tighter emissions standards. Where the applicant does not have direct control over the fleet composition, the applicant should use alternative means of encouraging and restricting different classes of vehicles. The introduction of vehicles into the AQMA that do not comply currently with Euro I standards would not normally be regarded as acceptable. In the future, by 2005, the aim would be to ensure that all vehicles comply
with Euro III standards (or Euro II standards with retro-fitting) or of a higher standard.

6. The London Boroughs are considering proposals to restrict specified vehicle classes from entering the Greater London Area or other areas within London, so-called low emission zones. It is likely that, in the future, Hillingdon’s Air Quality Action Plan will seek to restrict certain classes of vehicles entering Hillingdon or parts of Hillingdon. It is sensible, therefore, that applicants seeking to locate a development in or close to the AQMA should be mindful that specific classes of vehicles may be restricted.