Report

Air Quality Updating and Screening Assessment

A report produced for the London Borough of Hillingdon

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Executive Summary

The UK Government published its strategic policy framework for air quality management in 1995 establishing national strategies and policies on air quality which culminated in the Environment Act, 1995. The Air Quality Strategy[1] provides a framework for air quality control through air quality management and air quality standards. These and other air quality standards[1] and their objectives[2] have been enacted through the Air Quality Regulations in 1997, 2000 and 2002. The Environment Act 1995 requires Local Authorities to undertake air quality reviews. In areas where an air quality objective is not anticipated to be met, Local Authorities are required to establish Air Quality Management Areas and implement action plans to improve air quality.

The first and second round of air quality review and assessments have been completed by the London Borough of Hillingdon. The Local Authority are now required to proceed to the third round of review and assessment in which sources of emissions to air are reassessed to identify whether the situation has changed since the second round, and if so, what impact this may have on predicted exceedences of the air quality objectives.

The third round of review and assessment is to be undertaken in two steps. The first step is an Updating and Screening Assessment, which updates the Stage 1 and 2 review and assessments previously undertaken for all pollutants identified in the Air Quality Regulations. Where a significant risk of exceedence is identified for a pollutant it will be necessary for the local authority to proceed to a Detailed Assessment, equivalent to the previous Stage 3 assessments. Where a local authority does not need to undertake a Detailed Assessment, a progress report is required instead.

This report is equivalent to an Updating and Screening Assessment for the London Borough of Hillingdon as outlined in the Government's published guidance.

This Updating and Screening Assessment has concluded that the London Borough of Hillingdon is not required to carry out a Detailed Review and Assessment for carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide or sulphur dioxide and PM_{10}.

[1] Refers to standards recommended by the Expert Panel on Air Quality Standards. Recommended standards are set purely with regard to scientific and medical evidence on the effects of the particular pollutants on health, at levels at which risks to public health, including vulnerable groups, are very small or regarded as negligible.

[2] Refers to objectives in the Strategy for each of the eight pollutants. The objectives provide policy targets by outlining what should be achieved in the light of the air quality standards and other relevant factors and are expressed as a given ambient concentration to be achieved within a given timescale.

The general approach taken in this Updating and Screening Assessment was to:

- Identify the conclusions of the last round of review and assessment for each of the seven pollutants included in the air quality regulations;
- Identify significant sources of emissions to air for the seven pollutants included in the air quality regulations, including major roads and industrial plant;
- Identify new sources not previously considered in the first round of review and assessment;
- Identify any sources for which emissions have changed significantly since the last round of review and assessment;
- Identify and interpret the significance of air quality monitoring data made available since the last round of review and assessment;
- Assess the risk of exceedences of the air quality objectives in locations where relative public exposure may exist using screening models and nomograms; and
- Where necessary, identify locations and pollutants for which further detailed assessment of air quality will be required.

A checklist identifying the considerations in this report is shown at the end of each chapter and in Appendix 5.

Acronyms and definitions used in this report

AADTF	Annual Average Daily Traffic Flow
ADMS	an atmospheric dispersion model
AQDD	an EU directive (part of EU law) - Common Position on Air Quality Daughter Directives, commonly referred to as the Air Quality Daughter Directive
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
AP	Action Plan
AURN	Automatic Urban and Rural Network (defra funded network)
CO	Carbon monoxide
d.f.	degrees of freedom (in statistical analysis of data)
DETR	Department of the Environment Transport and the Regions (now defra)
defra	Department of the Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EPA	Environmental Protection Act
EPAQS	Expert Panel on Air Quality Standards (UK panel)
EU	European Union
GIS	Geographical Information System
HA	Highways Agency
HDV	Heavy Duty Vehicles (includes buses, coaches and lorries).
HGV	Heavy Goods Vehicles
kerbside	0 to 1 m from the kerb
LA	Local Authority
LAEI	London Atmospheric Emissions Inventory
Limit Value	An EU definition for an air quality standard of a pollutant listed in the air quality directives
NAEI	National Atmospheric Emissions Inventory
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NRTF	National Road Traffic Forecast
ppb	parts per billion
r	the correlation coefficient (between two variables)
receptor	In the context of this study, the relevant location where air quality is assessed or predicted (for example, houses, hospitals and schools)
roadside	1 to 5 m from the kerb
SD	standard deviation (of a range of data)
SO_2	Sulphur dioxide
TEMPRO	A piece of software produced by the DfT used to forecast traffic flow increases

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APPENDICES

1 Introduction to the Updating and Screening Assessment

This section outlines the purpose of this Updating and Screening Assessment and the scope of the assessment.

1.1 PURPOSE OF THE UPDATING AND SCREENING ASSESSMENT

The first and second rounds of air quality review and assessments is now complete and all local authorities should have completed all necessary stages. Where the likelihood of exceedences of air quality objectives have been identified in areas of significant public exposure, an air quality management area should have been declared, followed by a Further (formerly 'Stage 4') Assessment, and the formulation of an action plan to eliminate exceedences. Local authorities are now required to proceed to the third round of review and assessment in which sources of emissions to air are reassessed to identify whether the situation has changed since the previous rounds of review and assessment, and if so, what impact this may have on predicted exceedences of the air quality objectives. Such changes might include significant traffic growth on a major road, which had not been foreseen, construction of a new industrial plant with emissions to air, or significant changes in the emissions of an existing plant.

The third round of review and assessment is to be undertaken in two steps. The first step is an Updating and Screening Assessment, which updates the last 2 review and assessments previously undertaken for all pollutants identified in the Air Quality Regulations. Where a significant risk of exceedence is identified for a pollutant it will be necessary for the local authority to proceed to a Detailed Assessment, equivalent to the previous Stage 3 assessments. Where a local authority does not need to undertake a Detailed Assessment, a progress report is required instead.

1.2 OVERVIEW OF APPROACH TAKEN

The general approach taken to this Updating and Screening Assessment was to:

- Identify the conclusions of the last round of review and assessment for each of the seven pollutants included in the air quality regulations;
- Identify significant sources of emissions to air for the seven pollutants included in the air quality regulations, including major roads and industrial plant;
- Identify new sources not previously considered in the first two rounds of review and assessment;
- Identify any sources for which emissions have changed significantly since the last round of review and assessment;
- Identify and interpret the significance of air quality monitoring data made available since the last round of review and assessment;
- Assess the risk of exceedences of the air quality objectives in locations where relative public exposure may exist using screening models and nomograms; and
- Where necessary, identify locations and pollutants for which further detailed assessment of air quality will be required.

1.3 RELEVANT DEFRA DOCUMENTATION USED

This report takes into account the guidance in LAQM.TG(03), published January 2003 and the subsequent update published in January 2006.

1.4 POLLUTANTS CONSIDERED IN THIS REPORT

All pollutants included in the Air Quality Regulations for the purposes of Review and Assessment have been considered in this report (Table 1.1).

1.5 STRUCTURE OF THE REPORT

The report is structured as follows:

- **Chapter 1** summarises the aims of the updating and screening assessment, the approach adopted for the assessment, as well as relevant background information for Hillingdon, and relevant emissions-to-air sources;
- **Chapter 2** The UK Air Quality Strategy
- **Chapter 3** summarises the information used to support this assessment, identifies data used in support of this assessment and highlights significant changes in emissions to air within the borough since the second round of review and assessment;
- **Chapters 4-10** present the review and assessment for each of the seven pollutants included in the Air Quality Regulations;
- **Chapter 11** presents conclusions and recommendations for further work, where required, for each of the seven pollutants;
- **Chapter 12** presents the references and acknowledgements

The Objectives of the Air Quality strategy are shown in Table 1.1.

Table 1.1 Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
All authorities	16.25 μg/m^3	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 μg/m^3	annual mean	31.12.2010
Authorities in Scotland and Northern Ireland only[a]	3.25 μg/m^3	running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	running annual mean	31.12.2003
Carbon monoxide			
Authorities in England, Wales and Northern Ireland only[a]	10.0 mg/m^3	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m^3	running 8-hour mean	31.12.2003
Lead	0.5 μg/m^3	annual mean	31.12.2004
	0.25 μg/m^3	annual mean	31.12.2008
Nitrogen dioxide[b]	200 μg/m^3 not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 μg/m^3	annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)[c]	50 μg/m^3 not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
All authorities	40 μg/m^3	annual mean	31.12.2004
Authorities in Scotland only[d]	50 μg/m^3 not to be exceeded more than 7 times a year	24 hour mean	31.12.2010
	18 μg/m^3	annual mean	31.12.2010
Sulphur dioxide	350 μg/m^3 not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125 μg/m^3 not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266 μg/m^3 not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

a. Air Quality (Northern Ireland) Regulations 2003.
b. The objectives for nitrogen dioxide are provisional.
c. Measured using the European gravimetric transfer sampler or equivalent.
d. These 2010 Air Quality Objectives for PM_{10} apply in Scotland only, as set out in the Air Quality (Scotland) Amendment Regulations 2002.

1.5.1 The difference between 'standards' and 'objectives' in the UK AQS

Air quality *standards* (in the UK AQS) are the concentrations of pollutants in the atmosphere that can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive subgroups. The standards have been set at levels to avoid significant risks to health.

The *objectives* of the UK air quality policy are framed on the basis of the recommended standards. The objectives are based on the standards, but take into account feasibility, practicality, and the costs and benefits of fully complying with the standards.

Specific objectives relate either to achieving the full standard or, where use has been made of a short averaging period, objectives are sometimes expressed in terms of percentile compliance. The use of percentiles means that a limited number of exceedences of the air quality standard over a particular timescale, usually a year, are permitted. This is to account for unusual meteorological conditions or particular events such as November 5th. For example, if an objective is to be complied with at the 99.9th percentile, then 99.9% of measurements at each location must be at or below the level specified.

2 The UK Air Quality Strategy

2.1 NATIONAL AIR QUALITY STANDARDS

The Government prepared the Air Quality Strategy for England, Scotland, Wales and Northern Ireland for consultation in August 1999. It was published in January 2000 (DETR, 2000) with an addendum issued in February 2003. The Air Quality Strategy uses national air quality standards to enable air quality to be measured and assessed. These also provide the means by which objectives and timescales for the achievement of objectives can be set. These standards and associated specific objectives to be achieved between 2003 and 2010 are shown in Table 1.1. The table shows the standards in mass concentrations (μg m-3 or mg m-3) with the number of exceedences that are permitted (where applicable) and the equivalent percentile.

2.2 TIMESCALES TO ACHIEVE THE OBJECTIVES FOR THE POLLUTANTS IN AIR QUALITY STRATEGY

In most local authorities in the UK, objectives were (or will be) met for most of the pollutants within the timescale of the objectives shown in Table 1.1. It is important to note that the objectives for NO_2 remain provisional. The Government has recognised the problems associated with achieving the standard for ozone and this will not therefore be a statutory requirement. Ozone is a secondary pollutant and transboundary in nature and it is recognised that local authorities themselves can exert little influence on concentrations when they are the result of regional primary emission patterns.

2.3 AIR QUALITY REVIEWS – THE APPROACHES AND EXPECTED OUTCOMES

Technical Guidance has been issued in 'Review and Assessment: Technical Guidance' LAQM.TG (03)1 to enable air quality to be monitored, modelled, reviewed and assessed in an appropriate and consistent fashion. This updating and screening assessment has considered the procedures set out in this technical guidance.

The primary objective of undertaking a review of air quality is to identify any areas that are unlikely to meet national air quality objectives and ensure that air quality is considered in local authority decision-making processes. The complexity and detail required in a review depends on the risk of failing to achieve air quality objectives and it has been proposed therefore that reviews should be carried out in two steps. Both steps of review and assessment may be necessary and every authority is expected to undertake at least a first stage review and assessment of air quality in their authority area. The steps are briefly described in Table 2.1.

Table 2.1 Brief details of steps in the third Round of the Air Quality Review and Assessment process

Level of Assessment	Objective	Approach
Updating and Screening	To identify those matters that have changed since the last review and assessment, which might lead to a risk of an air quality objective being exceeded	Use a checklist to identify significant changes that require further consideration. Where such changes are identified, than apply simple screening tools to decide whether there is sufficient risk of an exceedence of an objective to justify a Detailed Assessment
Detailed Assessment	To provide an accurate assessment of the likelihood of an air quality objective being exceeded at locations with relevant exposure. This should be sufficiently detailed to allow the designation or amendment of any necessary AQMAs	Use quality-assured monitoring and validated modelling methods to determine current and future pollutant concentrations in areas where there is a significant risk of exceeding an air quality objective.
Annual Progress reports	Local authorities should prepare annual air quality Progress Reports between subsequent rounds of reviews and assessments. The concept is that this will ensure continuity in the LAQM process.	The precise format of the progress report is left up to the local authority to decide, but guidance on what it should cover is available in LAQM.PRG(03)[5], published in 2003. It is envisaged that these Progress Reports could be useful for the compilation of annual 'state of the environment' reports that many authorities already prepare.

The current deadline for completion of updating and screening assessments is April 2006, and for detailed assessments April 2007.

2.4 LOCATIONS THAT THE REVIEW AND ASSESSMENT MUST CONCENTRATE ON

For the purpose of review and assessment, the authority should focus their work on locations where members of the public are likely to be exposed over the averaging period of the objective. Table 2.2 summarises the locations where the objectives should and should not apply.

Table 2.2 Typical locations where the objectives should and should not apply

Averaging Period	Pollutants	Objectives *should* apply at …	Objectives should *not* generally apply at …
Annual mean	• 1,3 Butadiene • Benzene • Lead • Nitrogen dioxide • Particulate Matter (PM_{10})	All background locations where members of the public might be regularly exposed.	Building facades of offices or other places of work where members of the public do not have regular access.
		Building facades of residential properties, schools, hospitals, libraries etc.	Gardens of residential properties.
			Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term
24 hour mean and 8-hour mean	• Carbon monoxide • Particulate Matter (PM_{10}) • Sulphur dioxide	All locations where the annual mean objective would apply.	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
		Gardens of residential properties.	
1 hour mean	• Nitrogen dioxide • Sulphur dioxide	All locations where the annual mean and 24 and 8-hour mean objectives apply.	Kerbside sites where the public would not be expected to have regular access.
		Kerbside sites (e.g. pavements of busy shopping streets).	
		Those parts of car parks and railway stations etc. which are not fully enclosed.	
		Any outdoor locations to which the public might reasonably be expected to have access.	
15 minute mean	• Sulphur dioxide	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

It is unnecessary to consider exceedences of the objectives at any location where public exposure over the relevant averaging period would be unrealistic. Locations should also represent non-occupational exposure.

3 Information used to support this assessment

This section lists the key information used in this review and assessment.

3.1 CONCLUSIONS FROM THE SECOND ROUND OF REVIEW AND ASSESSMENT OF AIR QUALITY FOR THE LONDON BOROUGH OF HILLINGDON

The London Borough of Hillingdon has completed the following review and assessments of air quality to date:

- Stage 1: The report recommended that further examination was required for nitrogen dioxide, PM_{10}, sulphur dioxide and carbon monoxide.

- Stage 2: Further assessment of nitrogen dioxide, PM_{10}, sulphur dioxide and carbon monoxide were carried out as recommended in the Stage 1 Review and Assessment. The report concluded that the air quality objectives for NO_2, PM_{10}, CO and SO_2 would not be met in Hillingdon and that a stage 3 assessment was required.

- Stage 3: Detailed modelling of nitrogen dioxide, PM_{10}, carbon monoxide and sulphur dioxide were carried out. The report concluded that the annual mean nitrogen dioxide and 24 hour mean PM_{10} objectives would not be met in the borough and that an air quality management area should be declared.

- Stage 4: Further modelling and source apportionment were undertaken in the form of a stage 4 assessment.

As a result, the London Borough of Hillingdon has declared an air quality management area and developed an action plan.

2003 Review and Assessment:

- The report concluded the strategy objectives for nitrogen dioxide are not likely to be achieved by 2005. There is a need to progress to a detailed review and assessment for this pollutant as an AQMA had already been declared for this area during the previous round of Assessment. However DEFRA and the GLA advised that a full Detailed Assessment was not required at this stage. The main area of difference from previous review and assessment work was the release of a new Heathrow Emission Inventory by BAA Heathrow. Given the release of the Aviation White Paper and its recommendations to refine air quality modelling around Heathrow, L B Hillingdon are waiting to use the recommendations from this process before proceeding with modelling.

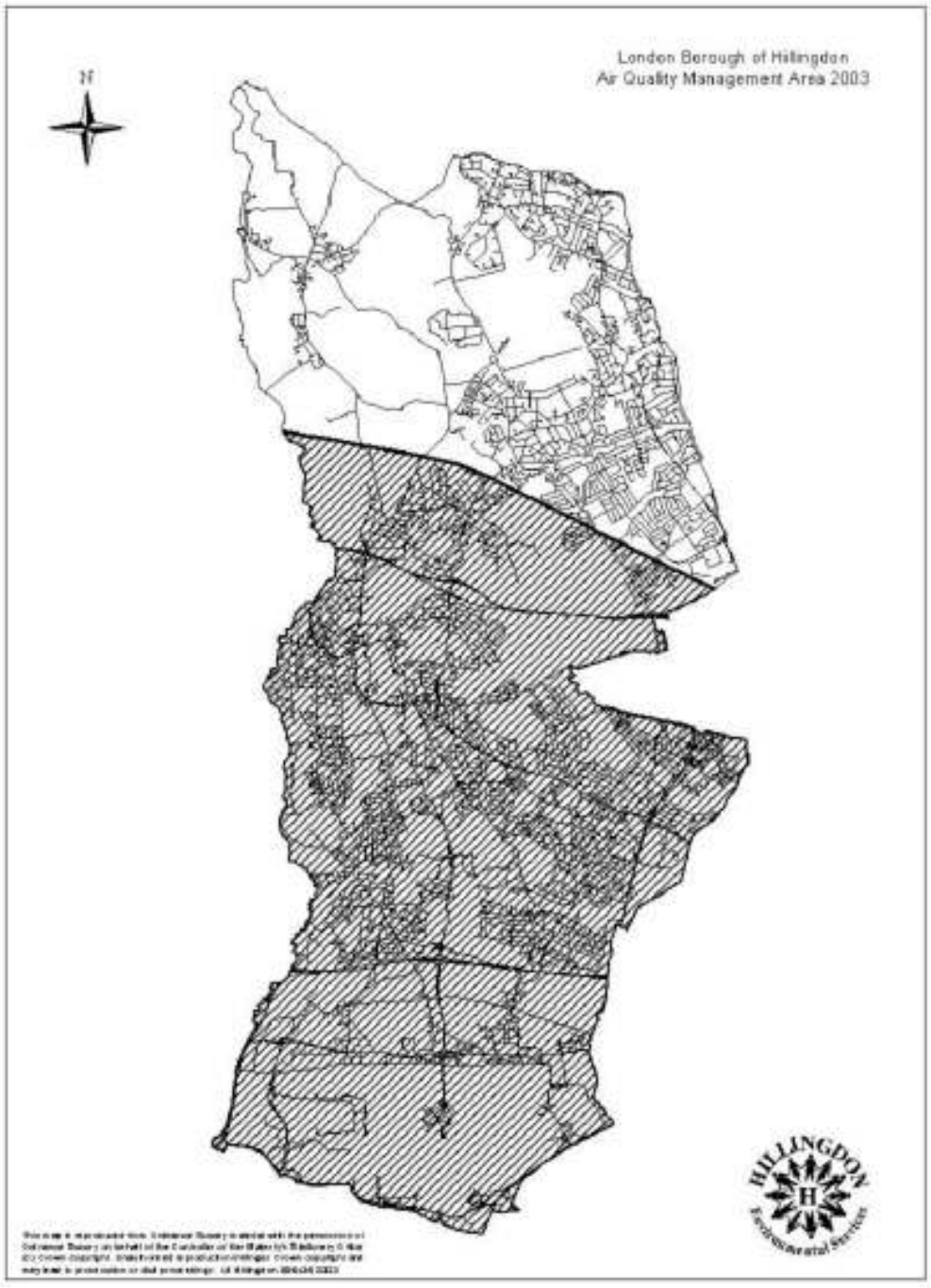
- It is concluded that the strategy objectives for PM10 as a result of road transport emission are not likely to be achieved by 2004 or 2010. However, modelling around the major road corridors showed that the exceedences were confined to the major road corridors and there was no relevant public exposure. The 2010 objectives are not yet in legislation.

2005 Progress Report:

- During 2004, the annual mean standard for NO_2 was exceeded at both roadside and background sites within the Borough

- These results support the earlier decision to declare an AQMA (Air Quality Management Area) across the southern half of the Borough, and to adopt the AQAP based on the exposure of parts of the Hillingdon population to these levels of NO_2.

Figure 1 shows the AQMA in the London Borough of Hillingdon



Description: Area from the Chiltern-Marylebone railway line and then east along the railway line to the southern borough boundary.

Pollutants Declared: Nitrogen dioxide (NO_2)

3.2 PROPOSED DEVELOPMENTS WHICH MAY AFFECT AIR QUALITY

Any new developments in the local authority area, or outside the LA that may impact on local air quality need to be considered. Key considerations should include:

- **Industry** – There are no significant industrial developments planned in the London Borough of Hillingdon or the neighbouring authorities.

- **Housing and redevelopment** – There are no known confirmed housing and redevelopment schemes planned in the London Borough of Hillingdon or the neighbouring authorities.

  - **Road Network changes** –The Highways Agency is planning an improvement to Junction 4 of the M4 which, according to Highways Agency, may have slight beneficial effects to the local air quality as it will be designed to reduce queuing. This issue should be considered in the next round of Update and Screening Assessment.

Consultations with surrounding Boroughs regarding new Part As/PartBs/developments showed that there are no new Part As/PartBs/developments, which might likely have an impact on the air quality in Hillingdon Borough Council

There are no significant industrial, housing or road transport development schemes planned in Hillingdon, which will be completed in the timescale relevant to the air quality objectives within the current round of review and assessment (2006-2008). The next round will need to include:

- ⇨ The current widening of the M25 may affect future traffic levels around the south of Hillingdon on the M4 and M25. At this stage there are insufficient data (traffic count data) available for a more detailed analysis. Thus, this issue should be picked up during the next round of Update and Screening Assessment as the widening of the M25 may cause increasing traffic flow.
- ⇨ The construction of Terminal 5 is currently underway (Phase 1 of Terminal 5 development) and has planning conditions attached to it for the suppression of dust and particulate matter. The terminal is due to be operational by 2008. A full years data from the associated monitoring stations is not yet fully ratified for 2005. Thus, the analysis is based on 2004 figures.
- ⇨ Close to the Hillingdon boundary at Colnbrook, a new incinerator, which is a plant Part A process, has been granted permission which could result in increased emissions. This will not be fully operational until 2008.
- ⇨ The extension of N3 car park at Longford has been agreed and will be operational end of 2007. A planning application has been agreed for a 2300 space car park within Heathrow airport boundary with an operational date of 2007.
- ⇨ RAF Northolt proposed development to expand the site is due to start in 2007 and will be completed in 2011.

Air Quality Assessments have been performed for these planned developments and the proposed sources should be assessed in the next round of Review and Assessment.

3.3 ROAD TRAFFIC DATA

This section summarises the information used in this report; more detailed information is given in Section 7.7.

Data were collated from a range of sources, including:

- Data provided by the London Borough of Hillingdon from the London Atmospheric Emissions Inventory 2003
- Data held in the National Atmospheric Emissions Inventory (NAEI, 2004).

Where no average speed data were available, estimated speeds were used near receptors and junctions. Speeds slower than the national speed limits have been assigned to sections of roads in areas close to junctions and adjustments made to take account of congestion.

3.3.1 Fraction of HDVs

Percentages of Cars, LGVs, HGV and buses were available from the London Atmospheric Emissions Inventory. For other road links, the percentage of HDVs was calculated from the data held in the 2004 National Atmospheric Emissions Inventory.

3.3.2 Traffic growth

Traffic projections for 2010 were obtained from the London Atmospheric Emissions Inventory (LAEI). No data were available for 2005 and so a conservative estimate was taken and data for 2003 were used. For 2005, growth factors from NRTF were used.

3.3.3 Distance from the centre of the road to the kerbside and to the receptors

Initially a minimum distance for the receptor to the road was assumed. This therefore tests the road contribution to receptors as a worst-case scenario. Where any problems were identified the distances of receptors from the road were then taken from digital landline maps of the Council area. This strategy is a conservative approach.

3.4 PART A AND B PROCESSES

There are Part A and Part B Industrial processes in the Borough of Hillingdon. A full list of Part A processes is given in Appendix 2.

3.5 AMBIENT MONITORING

3.5.1 Diffusion tubes

Diffusion tube monitoring was carried out at 19 locations for NO_2 and 5 Location for Benzene in the London Borough of Hillingdon. Analysis and preparation of the tubes has been carried out by Casella Stanger using 50% TEA in Acetone. In addition three diffusion tubes were co-located with each continuous monitor in the borough.

3.5.2 Continuous monitoring

There is continuous monitoring of nitrogen dioxide, PM_{10}, sulphur dioxide and carbon monoxide at West Drayton (Appendix 1), Heathrow Airport and London Harlington. Continuous monitoring of nitrogen dioxide and PM_{10} is also carried out at Hillingdon Hospital, South Ruislip, and Hillingdon Oxford Avenue.

4 Updating and Screening Assessment for Carbon Monoxide

4.1 THE NATIONAL PERSPECTIVE

The main source of carbon monoxide in the United Kingdom is road transport, which accounted for 49% of total releases in 2003. Annual emissions of carbon monoxide have been falling steadily since the 1970s, and are expected to continue to do so. Current projections indicate that road transport emissions will decline by a further 53% between 2000 and 2005. Existing policies will be sufficient to reduce maximum daily 8-hour mean concentrations of carbon monoxide below 10 mgm^{-3} by about 2003.

4.2 STANDARD AND OBJECTIVE FOR CARBON MONOXIDE

The Government and the Devolved Administrations have been adopted an 8-hour running mean concentration of 11.6 mgm^{-3} as the air quality standard for carbon monoxide. The new objective has been set at a slightly tighter level of 10 mgm^{-3} as a maximum daily running 8-hour mean concentration had to be achieved by the end of 2003, bringing it into line with the second Air Quality Daughter Directive limit value.

4.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR CARBON MONOXIDE

The following conclusions were given for carbon monoxide in the earlier stages of Review and Assessment for the London Borough of Hillingdon

- Carbon monoxide was assessed in Stage 3 of the second round of the Review and Assessment process. The report concluded that the air quality objectives for carbon monoxide would be met in the London Borough of Hillingdon.

4.4 SCREENING ASSESSMENT OF CARBON MONOXIDE

The Technical Guidance LAQM TG (03) requires assessment of carbon monoxide to consider the following sources, data or locations:

- Monitoring Data
- Very Busy Roads (Table A2.1)

These are described in the following sections.

4.5 BACKGROUND CONCENTRATIONS FOR CARBON MONOXIDE

The average background carbon monoxide concentration estimated from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) was 0.29 mgm^{-3} in 2005 with a maximum concentration of 0.35mgm^{-3} in 2005. The predicted average value for 2010 is 0.20 mgm^{-3} with a maximum concentration of 0.24 0.35mgm^{-3} in 2010.

4.6 SCREENING ASSESSMENT OF MONITORING DATA

There is continuous monitoring of carbon monoxide at West Drayton, Harlington (LH0 AURN) and Heathrow Airport (LH2) in the borough. In 2005 concentrations were well below the 10 mg/m^3 objective as a maximum daily eight hour mean (table 4.6 and 4.7).

The monitoring station in West Drayton is in a suburban area close to the M4. Table 3.6 below shows the annual mean CO concentrations over the past 6 years for Hillingdon.

Table 4.1 – Annual mean CO concentrations

Year	Annual Mean CO (mg m^{-3})	Exceedence of 8 hour running mean > 10 mg m^{-3}
2000	0.6	No
2001	0.6	No
2002	0.5	No
2003	0.5	No
2004	0.5	No
2005	0.5	No

Table 4.2 – Maximum rolling 8 hour mean CO concentration in μgm^{-3} between 01-01-2005 and 31-12-2005

Site Code	Site Type	Site Name	Result (µgm-3)
LH0	Urban background	Harlington - AURN	2.68 μgm^{-3}
LH2	Urban background	Heathrow Airport	2.45 μgm^{-3}

4.7 SCREENING ASSESSMENT OF VERY BUSY ROADS

The guidance document LAQM TG (03) requires assessment of CO only at 'very busy roads' (See Box 2.2 in the Guidance) where the 2003 background concentration is expected to be above $1mgm^{-3}$. The maximum predicted background CO concentration in the borough in 2005 is $0.35mgm^{-3}$. Consequently, the CO objective is met in the London Borough of Hillingdon.

4.8 CONCLUSIONS FOR CARBON MONOXIDE CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON AREA

There are no areas in the London Borough of Hillingdon where the estimated background CO concentration in 2005 or predicted values for 2010 are greater than $1mgm^{-3}$. A detailed assessment is not required for carbon monoxide in the London Borough of Hillingdon.

Item	Response
• Monitoring data	Monitoring data indicates no exceedence of the objective for CO
• Very busy roads or junctions in built-up areas	No 'very busy roads,' and background concentration is below the threshold

Updating and Screening Assessment Summary Checklist for Carbon Monoxide

5 Updating and Screening Assessment for Benzene

5.1 THE NATIONAL PERSPECTIVE

The main sources of benzene emissions in the UK are petrol-engined vehicles, petrol refining, and the distribution and uncontrolled emissions from petrol station forecourts without vapour recovery systems. A number of policy measures already in place, or planned for future years, will continue to reduce emissions of benzene. Since January 2000, EU legislation has reduced the maximum benzene content of petrol to 1%, from a previous upper limit of 5%. The European Auto-Oil programme will further reduce emissions for cars and light-duty vehicles, and emissions of benzene from the storage and distribution of petrol are controlled by vapour recovery systems.

Forecasts based on national mapping suggest that the policy measures currently in place will achieve the 2003 objective at all urban background and roadside/kerbside locations. Whilst the 2010 objectives are expected to be met at all urban background, and most roadside locations, there is the possibility for some remaining exceedences, which will require additional measures at a local level.

5.2 STANDARD AND OBJECTIVE FOR BENZENE

The Government and the Devolved Administrations adopted a running annual mean concentration of 16.25 μgm^{-3} as the air quality standard for benzene, with an objective for the standard to have been achieved by the end of 2003. However, in light of the health advice from EPAQS and the Department of Health's Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC) to reduce concentrations of benzene in air to as low a level as possible, additional tighter objectives have also been set. The additional objective is for an annual mean of 5 μgm^{-3} to be achieved by the end of 2010 in England and Wales. In Scotland and Northern Ireland, a running annual mean of 3.25 μgm^{-3} has been adopted as an additional objective, to be achieved by the end of 2010.

5.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR BENZENE

The following conclusions were given for benzene in of the 2003 Review and Assessment Report for the London Borough of Hillingdon.

- Benzene was assessed in Stage 1 of the first round of the Review and Assessment process. The report concluded that the air quality objectives for benzene would be met in the London Borough of Hillingdon.

5.4 SCREENING ASSESSMENT OF BENZENE

The Technical Guidance LAQM.TG (03) requires assessment of benzene to consider the following sources, data or locations:

- Monitoring Data
- Very Busy Roads or Junctions in Built-up Areas
- Industrial Sources
- Petrol Stations
- Major Fuel Storage Depots (Petroleum only)

These are described in the following sections.

5.5 BACKGROUND CONCENTRATIONS FOR BENZENE

The average background benzene concentration estimated from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) was 0.6 μgm^{-3} in 2005 with a maximum concentration of 0.8μgm^{-3}. In 2010 an average of 0.5μgm^{-3} and maximum of 0.7μgm^{-3} are expected.

5.6 SCREENING ASSESSMENT OF MONITORING DATA

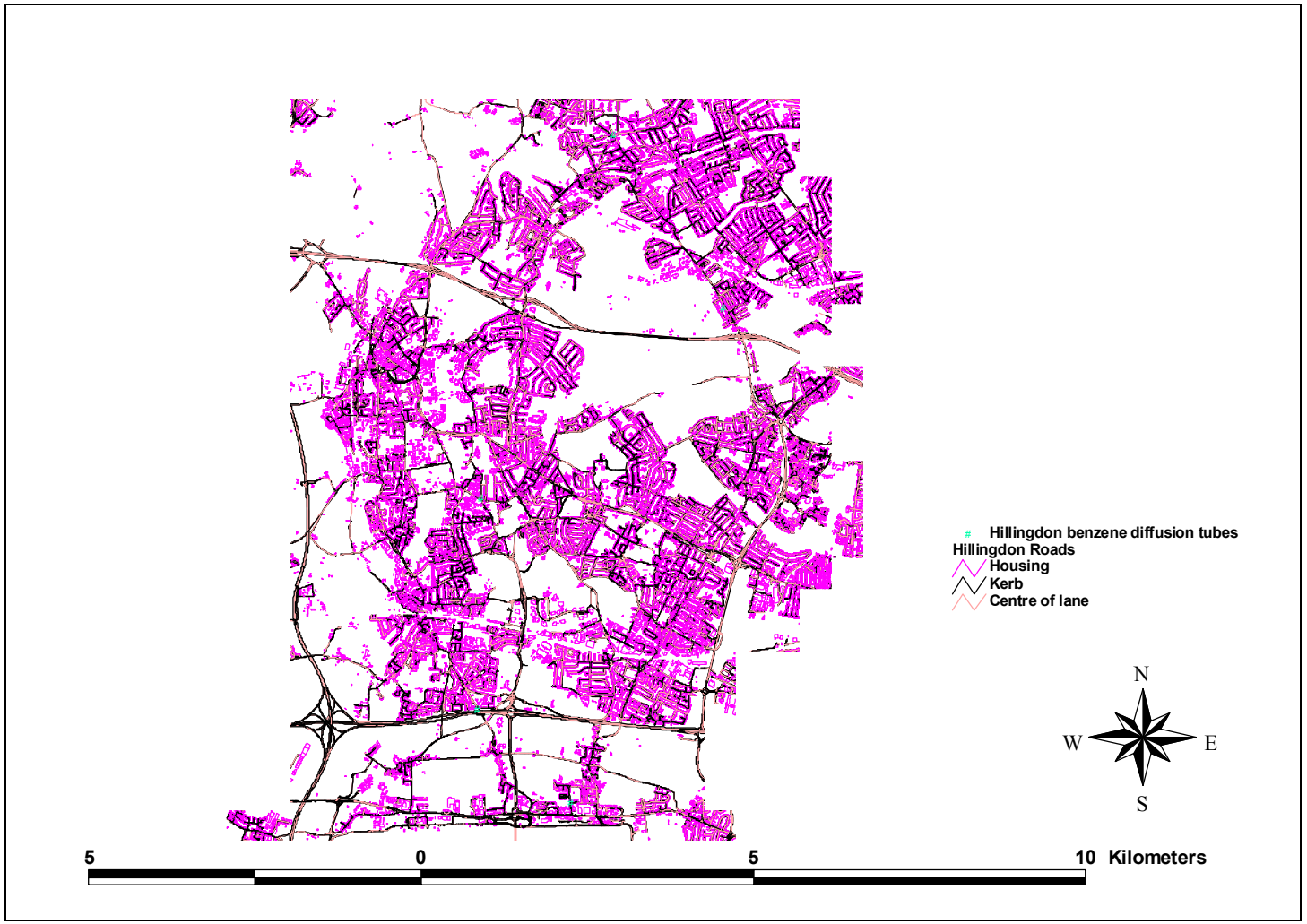
There has been monitoring of benzene by diffusion tubes at five sites in Hillingdon since November 2002. Data is available up until December 2005. This is sufficient to demonstrate that the risk of exceedence of the objectives is negligible. A summary of the results is shown in Table 4.6 below.

Table 5.1 Average benzene concentrations recorded by diffusion tubes in Hillingdon between January 2005 and December 2005 ($\mu g/m^3$).

Location	Easting (X)	Northing (Y)	Site type	Annual mean concentration
AURN Monitoring Station	506940	178601	S	1.5
South Ruislip Monitoring Station	510821	184923	R	2.0
Citizens Advice, High Street, Ruislip	509094	187645	B	2.0
Hillingdon Hospital Monitoring Station	506989	181920	R	1.9
Brendon Close, Harlington	508414	177125	B	1.7

The results show that where monitoring is taking place there are no exceedences of the running annual mean objective of 16.25 $\mu g/m^3$ to have been achieved by 31st December 2003 or the annual mean of 5 $\mu g/m^3$ to be achieved by 2010. Please see figure 4.6 for a map of the monitoring locations. All monitoring Stations are within the AQMA except the station at Citizens Advice, High Street, Ruislip.

Figure 2 Locations of benzene diffusion tubes in the London Borough of Hillingdon



5.7 SCREENING ASSESSMENT OF VERY BUSY ROADS

The guidance document LAQM.TG (03) requires assessment of benzene only at 'very busy roads' where the 2010 background concentrations are expected to be above 2 μgm^{-3}. In the London Borough of Hillingdon background concentrations in 2010 are not expected to exceed 0.7 μgm^{-3} (see section 4.5). Therefore, no further assessment is required for this source.

5.8 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM.TG (03) lists the following processes as significant potential sources of benzene:

Part A (The number provided in brackets is the percentage of total emissions from all UK plant in this sector to the total UK Part A emissions)
Petroleum processes (73)
Petrochemical processes (2)
Carbonisation processes (12)
Cement/lime manufacture (7)
Gasification processes (5)

Part B
Processes for the storage and unloading of petrol at terminals

The part A and B processes in the London Borough of Hillingdon and neighbouring authorities have been checked against Tables A2.181 and A2.182 respectively in the Technical guidance. None of these processes are operating in Hillingdon Borough Council or have the potential to emit benzene.

5.9 SCREENING ASSESSMENT OF PETROL STATIONS

There are petrol stations in Hillingdon authorised as Part B processes. The guidance requires petrol stations to be considered only if they are near a busy road, i.e. with more than 30,000 vehicles per day, a throughput greater than 2 million litres and a relevant exposure within 10m of the pumps. Petrol stations with Stage 2 recovery systems can be ignored. It is not thought that any of the petrol stations in the London Borough of Hillingdon fulfil the criteria necessary to warrant a detailed assessment therefore a detailed assessment for benzene is not required.

5.10 SCREENING ASSESSMENT OF FUEL STORAGE DEPOTS

There are no major fuel storage depots in the London Borough of Hillingdon.

5.11 CONCLUSIONS FOR BENZENE CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON

There are no significant industrial sources of benzene in the London Borough of Hillingdon. Also, monitoring of benzene in 2005 indicates that the 2003 and 2010 objective for benzene is likely to be met in the London Borough of Hillingdon.

Updating and Screening Assessment Summary Checklist for Benzene

Item	Response
• Monitoring data outside an AQMA	Benzene diffusion tubes indicated no exceedence of benzene at any of the monitoring locations
• Monitoring data within an AQMA	No AQMAs for benzene in area
• Very busy roads or junctions in built up areas	Hillingdon does not host any roads that are classified as 'very busy' according to the criteria given in the guidance
• New industrial sources.	None present
• Industrial sources with substantially increased emissions, or new relevant exposure	None present
• Petrol stations	None meeting the criteria with relevant exposure
• Major fuel storage depots (petrol only)	None

A detailed assessment is, therefore, not required for benzene in the London Borough of Hillingdon.

6 Updating and Screening Assessment for 1,3-Butadiene

6.1 THE NATIONAL PERSPECTIVE

The main source of 1,3-butadiene in the United Kingdom is emissions from motor vehicle exhausts. 1,3-butadiene is also an important industrial chemical and is handled in bulk at a small number of industrial premises. Maximum running annual mean concentrations of 1,3-butadiene measured at all urban background/centre and roadside locations in the national network are already well below the 2003 objective of 2.25 μgm^{-3}. The increasing numbers of vehicles equipped with three way catalysts will significantly reduce emissions of 1,3-butadiene in future years. Recently agreed further reductions in vehicle emissions and improvements to fuel quality are expected to further reduce emissions of 1,3-butadiene from vehicle exhausts.

6.2 STANDARD AND OBJECTIVE FOR 1,3-BUTADIENE

The Government and the Devolved Administrations adopted a maximum running annual mean concentration of 2.25 μgm^{-3} as an air quality standard for 1,3-butadiene. The objective is for the standard to have been achieved by the end of 2003.

6.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR 1,3-BUTADIENE

The following conclusions were given for 1,3-butadiene in the 2003 of Review and Assessment Report for Hillingdon:

- Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene is likely to be achieved by the end of 2003. There are no industrial processes, current or proposed, in Hillingdon that have the potential to emit 1,3-butadiene. A detailed assessment is not required for 1,3-butadiene in the London Borough of Hillingdon.

Emissions from vehicles are expected to decrease over the relevant period. National policy measures are expected to deliver the national air quality objective for 1,3-butadiene by the end of 2003.

6.4 SCREENING ASSESSMENT OF 1,3-BUTADIENE

The Technical Guidance LAQM.TG (03) requires assessment of 1,3-butadiene to consider the following sources, data or locations:

- Monitoring Data
- New Industrial Sources
- Existing Industrial Sources with Significantly Increased Emissions

These are described in the following sections.

6.5 BACKGROUND CONCENTRATIONS FOR 1,3-BUTADIENE

The average background 1,3-butadiene concentration estimated from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) was 0.3μgm^{-3} in 2005 with a maximum concentration of 0.4μgm^{-3}. In 2010, the average is predicted at 0.2μgm^{-3} and the maximum 0.3μgm^{-3}.

6.6 SCREENING ASSESSMENT OF MONITORING DATA

No monitoring of 1,3-butadiene has been undertaken in the London Borough of Hillingdon.

6.7 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM TG. (03) lists the following processes as significant potential sources of 1,3-butadiene:

Part A (percentage of total emissions from all UK plant in this sector to the UK total in brackets)
Petroleum processes (2)
Petrochemical processes (95)
Organic chemical manufacture (3)

Part B
Rubber processes

The part A and B processes have been checked against Tables A2.181 and A2.182 in the Technical Guidance. There are no other industrial processes, in neighbouring areas that have the potential to emit 1,3-butadiene.
Within Slough BC, close to the Hillingdon boundary at Colnbrook, a new incinerator, which is a plant Part A process, has been granted permission which could result in increased emissions. However, this will not be fully operational until 2008.

Air Quality Assessments have been performed for these planned developments but there are no additional data or other information available for further assessments.
The proposed sources should be assessed in the next round of Review and Assessment.

6.8 CONCLUSIONS FOR 1,3-BUTADIENE CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON AREA

Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene is likely to be achieved by the end of 2005. There are no industrial processes, current or proposed, in Hillingdon that have the potential to emit 1,3-butadiene.

Updating and Screening Assessment Summary Checklist for 1,3-butadiene

Item	Response
• Monitoring data	None – background maps indicate below the objective
• New industrial sources.	None present
• Industrial sources with substantially increased emissions, or new relevant exposure	Energy to waste incinerator at Colnbrook

A detailed assessment is not required for 1,3-butadiene in the London Borough of Hillingdon.

7 Updating and Screening Assessment for Lead

7.1 THE NATIONAL PERSPECTIVE

The agreement reached between the European Parliament and the Environment Council on the Directive on the Quality of Petrol and Diesel Fuels (part of the Auto-Oil Programme) has led to the ban on sales of leaded petrol in the United Kingdom with effect from 1 January 2000. Emissions of lead are now restricted to a variety of industrial activities, such as battery manufacture, pigments in paints and glazes, alloys, radiation shielding, tank lining and piping.

Detailed assessments of the potential impact of lead emissions from industrial processes have been undertaken by the Government and the Devolved Administrations, based upon both monitoring and sector analysis studies. The former has included a 12-month monitoring survey in the vicinity of 30 key industrial sites in the UK, which has been used to supplement information already provided from the non-automatic monitoring networks. These monitoring data have generally indicated no exceedences of the 2004 or 2008 objectives, although locations in proximity to non-ferrous metal production and foundry processes were deemed to be at risk.

7.2 STANDARD AND OBJECTIVE FOR LEAD

The Government and the Devolved Administrations adopted an annual mean concentration of 0.5 μgm^{-3} as the air quality standard for lead, with an objective for the standard to have been achieved by the end of 2004. In addition, a lower air quality objective of 0.25 μgm^{-3} to be achieved by the end of 2008 has also been set.

7.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR LEAD

The following conclusions were given for lead in 2003 Review and Assessment Report for the London Borough of Hillingdon.

- The report concluded that the air quality objectives for Lead would be met in the London Borough of Hillingdon.

7.4 SCREENING ASSESSMENT OF LEAD

The Technical Guidance LAQM TG (03) requires assessment of lead to consider the following sources, data or locations:

- Monitoring Data outside an AQMA
- New Industrial Sources
- Existing Industrial Sources with Significantly Increased Emissions

These are described in the following sections.

7.5 SCREENING ASSESSMENT OF MONITORING DATA

No monitoring of lead has been undertaken in the London Borough of Hillingdon.

7.6 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM.TG (03) lists the following processes as significant potential sources of lead:

Part A (percentage of total emissions from all UK plant in this sector to the UK total in brackets)
Iron and steel (37)
Non-ferrous metals (23)
Manufacture of organic chemicals (35)

Part B
Non-ferrous metal furnaces
Electrical furnaces
Blast cupolas
Aluminium processes
Zinc Processes
Copper processes
Lead glass manufacture

The part A and B processes have been checked against Tables A2.181 and A2.182 in the Technical guidance. New Pro Foundries and Harvern Form Foundries have the potential to emit lead. However, there has been no substantial change in their emissions since the last review and assessment was carried out and therefore no further assessment is required.

There are no industrial processes, current or proposed, in neighbouring areas that have the potential to emit lead.

7.7 CONCLUSIONS FOR LEAD CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON

Emissions of lead from industrial processes in Hillingdon are not likely to exceed the objectives for lead to be achieved in 2004 and 2008.

Updating and Screening Assessment Summary Checklist for Lead

Item	Response
• Monitoring data	None
• New industrial sources.	None
• Industrial sources with substantially increased emissions, or new relevant exposure	None

A detailed assessment is not required for lead in the London Borough of Hillingdon.

8 Updating and Screening Assessment for Nitrogen Dioxide

8.1 INTRODUCTION

The principal source of NO_x emissions is road transport, which accounted for about 40% of total UK emissions in 2003. Major roads carrying large volumes of high-speed traffic (such as motorways and other primary routes) are a predominant source, as are conurbations and city centres with congested traffic. Within most urban areas, the contribution of road transport to local emissions will be much greater than for the national picture.

Meeting the annual mean objective in 2005, and the limit value in 2010, is expected to be considerably more demanding than achieving the 1-hour objective. National studies have indicated that the annual mean objective is likely to be achieved at all urban background locations outside of London by 2005, but that the objective may be exceeded more widely at roadside sites throughout the UK in close proximity to busy road links. Projections for 2010 indicate that the EU limit value may still be exceeded at urban background sites in London, and at roadside locations in other cities.

8.2 STANDARDS AND OBJECTIVES FOR NITROGEN DIOXIDE

The Government and the Devolved Administrations adopted two Air Quality Objectives for nitrogen dioxide, as an annual mean concentration of 40 μgm^{-3}, and a 1-hour mean concentration of 200 μgm^{-3} not to be exceeded more than 18 times per year. The objectives are to be achieved by the end of 2005.

8.3 CONCLUSIONS OF THE FIRST AND SECOND ROUND OF REVIEW AND ASSESSMENT FOR NITROGEN DIOXIDE

The following conclusions were given for nitrogen oxides in the 2003 Review and Assessment reports for the London Borough of Hillingdon:

- The conclusion of that report was that it was likely that air quality objectives for NO_2 would not be met in Hillingdon. An Air Quality Management Area (AQMA) has already been declared after the first round of Review and Assessment, in accordance with regulations, covering the southern 2/3 of the Borough.

A detailed assessment was required for nitrogen dioxide for Heathrow Airport including the bus station at Heathrow and for various road traffic sources.
Given the release of the Aviation White Paper and the commitment given by DfT to refine the Heathrow Emissions Inventory and modelling of air quality around Heathrow, L B Hillingdon, on advice from DEFRA will use outputs from this process to inform future review and assessment work with regards to Heathrow.

8.4 SCREENING ASSESSMENT OF NITROGEN DIOXIDE

The Technical Guidance LAQM TG.(03) requires assessment of nitrogen dioxide to consider the following sources, data or locations:

- Monitoring data outside an AQMA
- Monitoring data within an AQMA
- Narrow congested streets with residential properties close to the kerb
- Junctions
- Busy streets where people may spend 1-hour or more close to traffic
- Roads with high flow of buses and/or HGVs
- New roads constructed or proposed since first round of review and assessment
- Roads close to the objective during the first round of review and assessment
- Roads with significantly changed traffic flows
- Bus Stations
- New industrial sources
- Industrial sources with substantially increased emissions
- Aircraft

These are evaluated in the following sections.

8.5 BACKGROUND CONCENTRATIONS FOR NITROGEN DIOXIDE

The average background nitrogen dioxide concentration estimated from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) In 2005 the estimated annual average of NO_2 was 27 μgm^{-3} with a maximum of 43,5 μgm^{-3}. In 2010 the predicted estimated average of NO_2 is 24 μgm^{-3} with a maximum of 41 μgm^{-3}.

8.6 SCREENING ASSESSMENT OF MONITORING DATA

8.6.1 Diffusion tube monitoring

Nitrogen dioxide was measured at 19 sites in the London Borough of Hillingdon (details in Appendix 1) by diffusion tubes. The Citizens Advice site is outside the AQMA.
Diffusion tubes can under or over read and if possible should be referred to continuous measurements. This may be done in two ways: either by using results from tubes co-located with a continuous analyser or by using the results from studies carried out nationwide and collated by UWE (2006).

There has been diffusion tubes co-located with the continuous monitors at the South Ruislip Monitoring Station, Hillingdon Hospital monitoring station and the AURN site. Both South Ruislip and the Hillingdon Hospital are roadside sites. The AURN site is in a suburban location. The Hillingdon Hospital site will not be used due to poor data capture. The following table shows the bias calculation using the netcen_DifTPAB spreadsheet[3].

Table 8.6.1A Bias calculation. Concentrations are shown in $\mu g/m^3$.

Name of monitoring site	Average conc. recorded by cont. monitor from Jan 2005 - Dec 2005	Average conc. recorded by diffusion tubes from Jan 2005 - Dec 2005	Bias
South Ruislip (roadside)	46	47	0.939
AURN site (suburban)	44	46	0.985

[3] http://www.airquality.co.uk/archive/laqm/tools.php

The figures shown in the above table have been used to bias correct the diffusion tube results in Hillingdon. The two factors are in very good agreement with each other. The diffusion tubes have been corrected by multiplying with 0.985 as the more conservative factor of the two to represent a worst-case scenario.
Table 8.6.1D shows a comparison of the Hillingdon Bias Adjustment factor calculation and factors from other nearby London Boroughs and the overall UWE factor, using the same Laboratory (Gradko, 50% TEA in Acetone). UWE didn't provide a 2005 bias adjustment factor for the London Borough of Hillingdon, only an overall factor for 2005 (1.18). As there is a large discrepancy between the overall UWE fact (1.18) and the two locally ones, measured factors in Hillingdon, 0.985 will be used (see Table 8.6.1D).
The Guidance LAQM.TG (03) provides factors to project forward concentrations, based on the concentrations measured in recent years. The following factors have been used in this assessment for nitrogen dioxide:

Roadside
- 2005 to 2010 0.734/0.892 = 0.82

Background
- 2005 to 2010 0.778/0.0.908 = 0.86

The measurement data for January 2005 - December 2005 (the latest 12 month period available) is shown in Table 8.6.1C below. Results are only shown where there are more than 9 months of data available as recommended in TG (03). Appendix 1 provides data for other years where available and a breakdown on a monthly basis.

Table 8.6.1C Diffusion tube measurements in the London Borough of Hillingdon between January 2005 and December 2005 corrected for bias and predictions for 2010. All results are in µ/gm^{-3}.

Location	Site Type	Annual average 2005 unadjusted	Annual average bias adjusted 2005	Uncertainty	Prediction for 2010
83 Hayes End Drive	B	30.2	29.7	+/- 3	25.6
Uxbridge Day Nursery	R	45.1	**44.4**	+/- 4	36.4
Citizens Advice Bureau	B	32.5	32.0	+/- 3	27.5
Hillingdon Primary School	R	38.4	37.8	+/- 3	31.0
4 Colham Avenue	R	36.3	35.8	+/- 3	29.3
101 Cowley Mill Road	B	41.5	**40.9**	+/- 4	35.2
Warren Road	B	44.1	**43.4**	+/- 4	37.4
Harold Avenue	B	41.3	**40.7**	+/- 4	35.0
15 Phelps Way	B	37.6	37.0	+/- 3	31.9
25 Cranford Lane	B	39.5	38.9	+/- 3	33.5
Brendan Close	B	43.4	**42.7**	+/- 4	36.8
7 Bomber Close	B	37.2	36.6	+/- 3	31.5
Harmonsworth Green	B	33.9	33.4	+/- 3	28.7
Heathrow Close	B	38.1	37.5	+/- 3	32.3
1 North Hyde Gardens, Hayes	R	43.8	**43.1**	+/- 4	35.4
370 Sipson Road, Sipson	R	36.9	36.3	+/- 3	29.8
34 Hatch Lane, Sipson	R	36.5	36.0	+/- 3	29.5
28 Pinglestone Close, Sipson	R	33.6	33.1	+/- 3	27.1
486 Sipson Road, Sipson	R	35.3	34.8	+/- 3	28.5

R = Roadside
B = background
Note: Figures in bold denote a predicted exceedence of the NO_2 annual mean objective.

6 Diffusion tubes show an exceedence in 2005 of the annual mean nitrogen dioxide objective when corrected for bias. All diffusion tubes are within close distance to residential receptors (within 10m) and located within the already existing AQMA. An action plan has been developed. In 2010, no diffusion tube location shows a predicted exceedence of the annual mean nitrogen dioxide objective.

Table 8.6.1D Comparison of bias adjustment factors. All results are in µ/gm^{-3}.

Location	Site Type	Annual average 2005 unadjusted	Annual average bias adjusted 2005			
			LB Hillingdon (**0.985**)	Overall UWE (**1.18**)	LB Richmond (**1.19**)	Hammersmith and Fulham (**0.88**)
83 Hayes End Drive	B	30.2	29.7	35.6	35.9	26.6
Uxbridge Day Nursery	R	**45.1**	**44.4**	**53.2**	**53.7**	39.7
Citizens Advice Bureau	B	32.5	32.0	38.4	38.7	28.6
Hillingdon Primary School	R	38.4	37.8	**45.3**	**45.7**	33.8
4 Colham Avenue	R	36.3	35.8	**42.8**	**43.2**	31.9
101 Cowley Mill Road	B	**41.5**	**40.9**	**49.0**	**49.4**	36.5
Warren Road	B	**44.1**	**43.4**	**52.0**	**52.5**	38.8
Harold Avenue	B	**41.3**	**40.7**	**48.7**	**49.1**	36.3
15 Phelps Way	B	37.6	37.0	**44.4**	**44.7**	33.1
25 Cranford Lane	B	39.5	38.9	**46.6**	**47.0**	34.8
Brendan Close	B	**43.4**	**42.7**	**51.2**	**51.6**	38.2
7 Bomber Close	B	37.2	36.6	**43.9**	**44.3**	32.7
Harmonsworth Green	B	33.9	33.4	**40.0**	**40.3**	29.8
Heathrow Close	B	38.1	37.5	**45.0**	**45.3**	33.5
1 North Hyde Gardens, Hayes	R	**43.8**	**43.1**	**51.7**	**52.1**	38.5
370 Sipson Road, Sipson	R	36.9	36.3	**43.5**	**43.9**	32.5
34 Hatch Lane, Sipson	R	36.5	36.0	**43.1**	**43.4**	32.1
28 Pinglestone Close, Sipson	R	33.6	33.1	39.6	**40.0**	29.6
486 Sipson Road, Sipson	R	35.3	34.8	**41.7**	**42.0**	31.1

R = Roadside
B = background
Note: Figures in bold denote a predicted exceedence of the NO_2 annual mean objective.

8.6.2 Automatic Monitoring

There has been continuous monitoring at six locations in the London Borough of Hillingdon for nitrogen dioxide. The chemiluminescence monitors are located at Hillingdon Hospital, South Ruislip, Oxford Avenue, London Hillingdon at West Drayton, London Harlington and Heathrow Airport (http://www.londonair.org.uk/london/asp/advstats.asp). The concentrations recorded by the monitors are shown in Table 8.6.2 below. Results for five of the six stations are provisional to the QA/QC standards used in the DEFRA network by ERG, King's College London.

- ⇨ Data for West Drayton have not been fully ratified after 01/07/2005[4],
- ⇨ Data for Hillingdon Hospital have not been fully ratified after 09/09/2005[5],
- ⇨ Data for South Ruislip have not been fully ratified after 22/02/2005[6],
- ⇨ Data for Oxford Avenue have not been fully ratified after 29/07/2005[7]
- ⇨ Data for Heathrow Airport have not been fully ratified after 01 Jan 2005[8]

4 http://www.londonair.org.uk/london/asp/advstats.asp

5 http://www.londonair.org.uk/london/asp/advstats.asp

6 http://www.londonair.org.uk/london/asp/advstats.asp

7 http://www.londonair.org.uk/london/asp/advstats.asp

8 http://www.londonair.org.uk/london/asp/advstats.asp

Table 8.6.2 Concentrations recorded by continuous monitors in the London Borough of Hillingdon between January 2005 and December 2005. All results are in µgm^{-3}.

Location	Site Type	Annual average 2005	Number of exceedences of hourly mean	Prediction for 2010
Hillingdon Hospital	R	38.5	0	31.7
South Ruislip	R	**46**	4	37.9
West Drayton (AURN site)	S	**45**	0	39
Harlington (AURN site)	B	38.4	1	32.9
Heathrow Airport	B	**50**	3	**42.8**

S/B = suburban/background
R = roadside

Data from the monitoring station at Oxford Avenue were not used due to a data capture rate of less then 75% for the chosen time span. This site has only been in full operation since March 2005. The concentrations recorded at three sites (South Ruislip, West Drayton (AURN site), Heathrow Airport) show that it is likely that the annual mean NO_2 objective in 2005 was exceeded. South Ruislip, West Drayton (AURN site) is within close distance (within10m) to residential receptors and located within the already existing AQMA. There are no relevant receptors close to the site located at Heathrow Airport.

8.7 SCREENING ASSESSMENT OF ROAD TRAFFIC SOURCES

Traffic flow data for 2010 was taken from the 2003 LAEI. For 2005 traffic flow was estimated using growth factors provided by NRTF. Table 8.7A & B show predicted nitrogen dioxide concentrations in 2005 and 2010 calculated using DMRB for roads in the London Borough of Hillingdon.
Predicted 2010 emissions in table 8.7B are based on roads showing an exceedence in 2005 or show emissions close to the 2004 air quality objective.
All roads in the LAEI have been assessed, covering most of the main roads within Hillingdon Borough Council area, such as narrow congested streets with residential properties close to the kerb, busy streets where people spend an hour or more close to traffic, roads with a high proportion of HGVs and buses, roads close to the objective in the last round and those with significantly changed traffic flows.

Table 8.7A Predicted nitrogen dioxide concentrations in 2005 calculated using DMRB for roads/junctions in the London Borough of Hillingdon (µgm^{-3}).

Receptor	Road name	AADTF	% HDV	Distance from nearest receptor (m)	Annual average speed (km/h)	Predicted annual mean NO_2 concentration 2005
1	**M4**	**115305**	**6.6**	**30**	**113**	**41.3**
8	M4	141843	6.1	30	113	31.8
9	**A4**	**31175**	**7.8**	**20**	**60**	**42.0**
10	A40	107715	7.8	20	60	37.2
12	A437	15822	6.0	20	50	37.8
14	**A4**	**22148**	**10.7**	**20**	**60**	**43.7**
15	**A4**	**36726**	**5.3**	**20**	**60**	**42.4**
18	**M25**	**167276**	**10.2**	**30**	**113**	**49.0**
20	A4020	38590	5.0	10	30	38.4
22	A30	53084	5.8	20	50	43.4
25	A408	20778	7.8	20	50	36.5
29	A40	106164	6.3	20	50	36.8
30	**A3044**	**31000**	**7.1**	**20**	**50**	**43.6**
32	**A3044**	**30156**	**8.0**	**20**	**60**	**42.5**
33	A312	61485	5.6	20	50	37.7
34	A312	61638	5.7	20	50	37.4
35	**A4**	**26356**	**6.0**	**20**	**60**	**45.8**

41	A312	14559	8.7	20	60	38.7
43	A312	14559	8.7	20	60	38.6
44	**M4**	**141843**	**6.1**	**30**	**113**	**44.3**
50	A40	92582	7.5	20	60	35.6
51	A40	100071	7.5	20	60	35.8
54	A40	108921	7.5	20	60	36.1
61	A40	109423	5.4	20	60	34.5
295	WESTERN AVENUE A40(T)	120453	0.2	20	95	36.1
296	WESTERN AVENUE A40(T)	104294	0.2	20	94	35.8

Note: a distance to road centre of 2.5 m was modelled as a worst-case scenario. Where an exceedence was found, the area was remodelled with actual distances. Speed data were taken from the LAEI 2003.
Those roads / junctions where the annual mean NO_2 concentration in 2005 is predicted to be greater then 40μg/m^3 are shown in bold.

Table 8.7B Predicted nitrogen dioxide concentrations in 2010 calculated using DMRB for roads/ junctions in the London Borough of Hillingdon (μgm^{-3}).

Receptor	Road name	AADTF	% HDV	Distance from nearest receptor (m)	Annual average speed (km/h)	Predicted annual mean NO_2 concentration 2010
4	A3113	50728	8.7	30	113	37.6
9	A4	33626	7.8	20	60	36.9
14	A4	23889	10.7	20	60	37.0
15	A4	39614	5.3	20	60	36.1
18	**M25**	**180430**	**10.2**	**30**	**113**	**40.4**
30	A3044	33438	7.1	20	50	39.0
32	A3044	32528	8.0	20	60	38.2
35	**A4**	**28428**	**6.0**	**20**	**60**	**42.1**
41	A312	15704	8.7	20	50	33.9
43	A312	15704	8.7	20	60	33.8
44	M4	152996	6.1	30	113	36.4
45	M25	180430	10.2	30	113	38.9

Note: a distance to road centre of 2.5 m was modelled as a worst-case scenario. Where an exceedence was found, the area was remodelled with actual distances. Speed data were taken from the LAEI 2003.
Those roads / junctions where the annual mean NO_2 concentration in 2005 is predicted to be greater then 40μg/m^3 are shown in bold.

The DMRB model indicates that the 2005 objective of 40 μgm-3 is likely to be exceeded at receptors near the M25 and M4 motorways and the A4 at Heathrow Airport.
In 2010, predicted values show 2 exceedences for NO_2 (at receptors close to the A4 (between A3044 and A408/ Heathrow Airport) and M25). All locations indicating exceedences are located within the already existing AQMA.

8.7.1 Street Canyons

The DMRB model may significantly under-predict concentrations of nitrogen dioxide alongside urban city-centre roads classified as 'street canyons'. In this context a street canyon may be described as a relatively narrow street with buildings on either sides, where the height of the buildings is generally greater than the width of the road. To avoid missing potential exceedences of the objective in such locations the predicted annual mean NO_2 'road traffic component' concentration, in the 'local output' sheet of DMRB, is increased by a factor of 2, to take account of the model under-prediction. This is then added to the background to give total concentration (as advised in TG. (03)). There are no street canyon locations in the London Borough of Hillingdon.

8.7.2 Busy Junctions

Annual average NO_2 concentrations at the busiest road junctions in the London Borough of Hillingdon have been estimated for 2005 and 2010 using DMRB (See Table 8.7A & B above).

8.8 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM TG (03) lists the following processes as significant potential sources of nitrogen dioxide:

Part A (the number provided in brackets is the percentage of total emissions from all UK plant in this sector to the UK Part A total)
Iron and steel (19)
Petroleum processes (16)
Combustion processes (34)
Cement/lime manufacture (9)
Carbonisation (6)
Gasification (4)
Inorganic chemicals (4)

Part B
Glass manufacture

Industrial sources were assessed in rounds one and two. None of the sources were shown to be a problem in terms of the NO_2 objectives.

New sources that are due to come into operation within 2006-2008 since the last round of Review and Assessment are:

- ⇨ Warehouse and Distribution development with 150 residential dwellings covering 57400m^2 with an predicted 0.1$\mu g/m^{-3}$ increase in annual mean NO_2 at Stockley Bypass.
- ⇨ Phase 1 of Terminal 5 development is due to open in 2008 (construction phase has moved from earthworks movements to fitting out operation which are potentially less dust generating).
- ⇨ close to the Hillingdon boundary at Colnbrook, a new incinerator, which is a plant Part A process, has been granted permission which could result in increased emissions. This will not be fully operational until 2008.

Proposed projects that have the potential to emit significant quantities of NO_2:

- ⇨ Extension of N3 car park at Longford with a predicated 0.08 $\mu g/m^{-3}$ increase in mean annual NO_2.
- ⇨ 2300 space car park within Heathrow airport boundary with an operational date of 2007
- ⇨ RAF Northolt proposal to increase site, which predicted a 1.63 $\mu g/m^{-3}$ increase in NO_2 in 2011 at nearest receptor point

Air Quality Assessments have been performed for these planned developments but there are no additional data or other information available for further assessments.
The proposed sources should be assessed in the next round of Review and Assessment. All of them are located within the AQMA.

8.9 SCREENING ASSESSMENT OF OTHER TRANSPORT SOURCES

8.9.1 Bus Stations

The bus station at Heathrow airport has 455,900[9] movements per annum. A flow of 1000 per day is given in the Guidance as the level requiring further investigation. Further investigation in USA requires the use of DMRB to predict the NO_2 annual mean at relevant locations. When DMRB is applied to this bus station an annual average NO_2 concentration of 41$\mu g/m^3$ is obtained. The DMRB screening model does not estimate the hourly concentrations. However, the guidance states that if

[9] Source: Transport for London

the annual mean does not exceed 40 μg/m^3, then there should be no more than 18 hours above 200 μg/m^3 (the objective to be achieved by 31st December 2005). In this case, DMRB predicts an annual mean concentration of 41 μg/m^3.
Heathrow Airport is located within the already existing AQMA and a detailed assessment is not necessary.

The bus station at Hatton Cross is estimated to have 364,400[10] bus movements a year. This averages out at 999 bus movements per day. This is just below the threshold set out in the guidance for requiring further assessment (1000 movements a day) and therefore Hillingdon Borough Council do not need to proceed for to a detailed assessment for this source. When DMRB is applied to this bus station an annual average NO_2 concentration of 39μg/m3 is obtained, which does not exceed 40 μg/m^3.

8.9.2 Airports

Heathrow airport is located within the London Borough of Hillingdon. It will have total equivalent passenger throughput in 2005 greater than 5 million passengers per annum (mppa). The Air pollution Report 2004[11] which has been carried out within the airport boundary (LHR2) shows that an annual mean nitrogen dioxide value of 55 μg/m^3 in 2004, indicating an exceedence of the annual mean nitrogen dioxide objective of 40 μg/m^3.
According to the Guidance (LAQM.TG (03) Update – January 2006) airports with a predicated total equivalent passenger throughput more than 5 mppa should proceed to a 'Detailed Assessment' for NO_2. However Heathrow Airport is located in the already existing AQMA and thus a detailed assessment is not necessary.

8.9.10 Railways

Latest modelling sent out by ERG of the LAEI showed exceedences of NO_2 by trains using the Paddington to South West route. This should be taken into consideration during the next round of Update and Screening Assessment.

8.10 CONCLUSIONS FOR NITROGEN DIOXIDE CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON

Predicted concentrations of nitrogen dioxide indicate that the annual average objective is likely to be exceeded in 2005 in various locations in the borough. This has been confirmed by the diffusion tube and continuous monitoring.

Updating and Screening Assessment Summary Checklist for Nitrogen Dioxide

Item	Response
Monitoring data outside an AQMA	Monitoring data (Citizens Advice Bureau) indicates no exceedence of the objective for NO_2
Monitoring data within an AQMA	Some exceedences within AQMA
Narrow congested streets with residential properties close to the kerb	No street canyon located in the London Borough of Hillingdon
Junctions.	DMRB indicates exceedences at locations close to the M4, M25, A3044. All locations are within the AQMA.
Busy streets where people may spend 1-hour or more close to traffic	DMRB indicates exceedences at 6 locations close to the M4, M25, A3044. All locations are within the AQMA.
Roads with high flow of buses and/or HGVs.	DMRB indicates exceedences at M25, M4. All locations are within the AQMA.
New roads constructed or proposed since the previous round of R&A	No major road changes (except for motorway M4, junction 4 improvement)

[10] Source: Transport for London
[11] netcen, Air Pollution Report – HEATHROW LHR 2 01 January to 31 December 2004, 2004

round of R&A	
Roads with significantly changed traffic flows, or new relevant exposure	DMRB indicates no exceedences
Bus Stations	There are more than 1000 bus movements per day, but there are currently no residential properties within 10m of the bus station.
New industrial sources.	Heathrow Terminal 5, Warehouse and Distribution development, Colnbrook new incinerator
Industrial sources with substantially increased emissions, or new relevant exposure	None present
Aircraft	Heathrow Airport is above the 5mppa threshold.

All location showing exceedences are with the already existing AQMA and thus Hillingdon is not required to proceed to a detailed assessment for NO_2.

9 Updating and Screening Assessment for Sulphur Dioxide

9.1 INTRODUCTION

The main source of sulphur dioxide in the United Kingdom is power stations, which accounted for more than 69% of emissions in 2003. There are also significant emissions from other industrial combustion sources. Domestic sources now only account for 3% of emissions, but can be locally much more significant. Road transport currently accounts for less than 1% of emissions.

Local exceedences of the objectives (principally the 15-minute mean objective) may occur in the vicinity of small combustion plant (less than 20 MW) which burn coal or oil, in areas where solid fuels are the predominant form of domestic heating, and in the vicinity of major ports.

9.2 STANDARD AND OBJECTIVE FOR SULPHUR DIOXIDE

The Government and the Devolved Administrations have adopted a 15-minute mean of 266 μgm^{-3} as an air quality standard for sulphur dioxide, with an objective for the standard not to be exceeded more than 35 times in a year by the end of 2005.
Additional objectives have also been set which are equivalent to the EU limit values specified in the First Air Quality Daughter Directive. These are for a 1-hour mean objective of 350 μgm^{-3}, to be exceeded no more than 24 times per year, and a 24-hour objective of 125 μgm^{-3}, to be exceeded no more than 3 times per year, to be achieved by the end of 2004.

9.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR SULPHUR DIOXIDE

The following conclusions were given for SO_2 in the 2003 of Review and Assessment Report for the London Borough of Hillingdon

- There are no significant industrial or domestic sources of sulphur dioxide in the London Borough of Hillingdon that are expected to exceed the SO_2 objectives. A detailed assessment is not required for sulphur dioxide.

9.4 SCREENING ASSESSMENT OF SULPHUR DIOXIDE

The Technical Guidance LAQM.TG (03) requires assessment of sulphur dioxide to consider the following sources, data or locations:

- Monitoring data within an AQMA
- Monitoring data outside an AQMA
- New industrial sources
- Industrial sources with substantially increased emissions
- Areas of domestic coal burning
- Small boilers (>5MW (thermal) burning coal or oil
- Shipping
- Railway Locomotives

These are evaluated in the following sections.

9.5 BACKGROUND CONCENTRATIONS FOR SULPHUR DIOXIDE

The estimated average background sulphur dioxide concentration taken from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) for 2001 was 5.9 μgm^{-3}, the maximum concentration was 33 μgm^{-3}.

9.6 SCREENING ASSESSMENT OF MONITORING DATA

There is continuous monitoring of sulphur dioxide at the West Drayton site. A comparison with the SO_2 objectives is shown in Table 8.6 below.

Table 9.6 Comparison with the SO_2 objectives at West Drayton in 2005

Pollutant	Objective	Result	Objective achieved
Sulphur dioxide	No more than 24 occurrences of hourly mean >=132ppb	0	YES
Sulphur dioxide	No more than 3 days where daily mean >=47ppb	0	YES
Sulphur dioxide	No more than 35 occurrences of 15min mean >=100ppb	0	YES

Note: Sulphur Dioxide achieved a capture rate less than 75% for the year 2005 (44%). Results may not be representative of the full year and should be used for guidance only.

9.7 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM.TG (03) lists the following processes as significant potential sources of sulphur dioxide:

Part A (percentage of total emissions from all UK plant in this sector to the UK Part A total in brackets)
Iron and steel (9)
Petroleum processes (15)
Combustion processes (45)
Cement/lime manufacture (3)
Carbonisation (10)
Non-ferrous metals (7)
Ceramic Production (9)

Part B
Combustion plant 20-50 mwth
Furnaces 20-50 mwth
Copper processes
Refractory goods
Glass manufacture
Roadstone coating

There are no new industrial sources or sources with substantially increased emissions in the London Borough of Hillingdon since the last review was completed.

9.7.1 Small Boilers

No small boiler processes were identified by the London Borough of Hillingdon greater than 5MW which are relevant to this assessment.

9.8 SCREENING ASSESSMENT OF DOMESTIC SOURCES

9.8.1 Domestic coal burning

There is no data for domestic coal burning available but solid fuel use continues to decline throughout the area. It believed that there are no areas with over 100 houses using these fuels in a 500m x 500m square.

9.9 SCREENING ASSESSMENT OF OTHER TRANSPORT SOURCES

9.9.1 Railways

According to information supplied there are no areas where railway engines are run for more than 15 minutes continuously and where members of the public might be exposed.

9.10 CONCLUSIONS FOR SULPHUR DIOXIDE CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON

There are no significant industrial or domestic sources of sulphur dioxide in the London Borough of Hillingdon that are expected to exceed the SO_2 objectives.

Updating and Screening Assessment Summary Checklist for Sulphur Dioxide

Item	**Response**
Monitoring data outside an AQMA	Monitoring data indicates no exceedences of any of the objectives
Monitoring data within an AQMA	No AQMAs declared for SO2
New industrial sources.	None present
Industrial sources with substantially increased emissions, or new relevant exposure	None present
Areas of domestic coal burning	Not relevant
Small Boilers > 5 MW (thermal).	None identified
Shipping	Not relevant
Railway Locomotives	Not relevant

A detailed assessment is not required for sulphur dioxide.

10 Updating and Screening Assessment for PM_{10}

10.1 THE NATIONAL PERSPECTIVE

National UK emissions of primary PM_{10} have been estimated as totalling 147830 tonnes in 2003. The main sources of primary PM_{10} are road transport (all road transport emits PM10, but diesel vehicles emit a greater mass of particulate per vehicle kilometre), stationary combustion (domestic coal combustion has traditionally been the major source of particulate emissions in the UK) and industrial processes (including bulk handling, construction, mining and quarrying). Emissions of PM10 from the UK have declined since 1970. This is due mainly to the reduction in coal use.

The Government established the Airborne Particles Expert Group (APEG) to advise on sources of PM_{10} in the UK and current and future ambient concentrations. Their conclusions were published in January 1999 (APEG, 1999). APEG concluded that a significant proportion of the current annual average PM_{10} is due to the secondary formation of particulate sulphates and nitrates, resulting from the oxidation of sulphur and nitrogen oxides. These are regional scale pollutants and the annual concentrations do not vary greatly over a scale of tens of kilometres. There are also natural or semi-natural sources such as wind-blown dust and sea salt particles. The impact of local urban sources is superimposed on this regional background. Such local sources are generally responsible for winter episodes of hourly mean concentrations of PM_{10} above 100 $\mu g\ m^{-3}$ associated with poor dispersion. However, it is clear that many of the sources of PM_{10} are outside the control of individual local authorities and the estimation of future concentrations of PM_{10} are in part dependent on predictions of the secondary particle component.

10.2 STANDARD AND OBJECTIVE FOR PM_{10}

The Government and the Devolved Administrations have adopted two Air Quality Objectives for fine particles (PM10), which are equivalent to the EU Stage 1 limit values in the first Air Quality Daughter Directive. The objectives are 40 µgm-3 as the annual mean, and 50 µgm-3 as the fixed 24-hour mean to be exceeded on no more than 35 days per year, to have been achieved by the end of 2004. In addition there is an objective of 50 µgm-3 as the fixed 24-hour mean to be exceeded on no more than 7 days per year and 20 µgm-3 as the annual mean to be achieved by the end of 2010. The objectives are based upon measurements carried out using the European gravimetric transfer reference sampler or equivalent.

It should be noted that the objectives for 2010, based on the Stage 2 EU Limit Values have not been included in the Air Quality Regulations for England, and local authorities are not currently required to assess against them. In addition, they were the subject of the European Commission's recent review of the First Daughter Directive.

The Commission is currently consulting on a new consolidated Directive on Ambient Air Quality, which is likely to see changes to the above Limit Values, though the nature of these changes cannot be confirmed at this time.

10.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR PM_{10}

The following conclusions were given for PM_{10} in the 2003 Review and Assessment Report for the London Borough of Hillingdon:

- The DMRB screening model indicated that the annual mean objective for PM_{10} will be not met in 2004, and that exceedences of the 2010 objective are very likely. It is not yet possible to declare an AQMA for the 2010 PM_{10} objective, as it is not yet in regulation. Therefore it is advised that the London Borough of Hillingdon proceed to a Detailed Assessment for this source based on the 2004 objective. It is also recommended that

they bear in mind the possibility of having to comply with the 2010 objective and how this may affect their monitoring strategies in the region.
- A detailed assessment is also required for PM_{10} from Heathrow Airport.

Given the conclusions for nitrogen dioxide regarding the review of the Heathrow Emissions Inventory by DfT, LB Hillingdon will use the outputs from this process for future review and assessment work of PM_{10}.

10.4 SCREENING ASSESSMENT OF PM_{10}

The Technical Guidance LAQM.TG (03) requires assessment of PM_{10} to consider the following sources, data or locations:

- Monitoring data outside an AQMA
- Monitoring data within an AQMA
- Junctions
- Roads with high flow of buses and/or HGVs
- New roads constructed or proposed since first round of review and assessment
- Roads close to the objective during the first round of review and assessment
- Roads with significantly changed traffic flows
- New industrial sources
- Industrial sources with substantially increased emissions
- Areas with domestic solid fuel burning
- Quarries, landfill sites, opencast coal, handling of dusty cargoes at ports etc
- Aircraft

These are evaluated in the following sections.

10.5 BACKGROUND CONCENTRATIONS FOR PM_{10}

The estimated average background and maximum PM_{10} concentrations estimated from the UK background maps (http://www.airquality.co.uk/archive/laqm/tools.php) in μgm^{-3} are:

Table 10.5 Estimated Current and Future Background PM_{10} Concentrations in the London Borough of Hillingdon

Background PM_{10} ($\mu g/m^3$)	2005	2010
Average	21.7	19.7
Maximum	22.63	21.1

10.6 SCREENING ASSESSMENT OF MONITORING DATA

Monitoring for PM_{10} has been undertaken at 4 locations in the London Borough of Hillingdon. A comparison with the objectives is shown in Table 10.6 below. This monitoring is based on TEOM instrumentation, which was multiplied by 1.3 to derive estimated gravimetric concentrations.

Table 10.6 Comparison of 2005 PM_{10} data with the 2004 objectives.

Site	Pollutant	Objective	Result	2004 Objective achieved
Hillingdon - AURN	PM_{10} Particulate	Annual Mean less than $40\mu g/m^3$	27	YES
Hillingdon - AURN	PM_{10} Particulate	No more than 35 days where daily mean >=$50\mu g/m^3$	13	YES
South Ruislip	PM_{10} Particulate	Annual Mean less than $40\mu g/m^3$	28	YES
South Ruislip	PM_{10} Particulate	No more than 35 days where daily mean >=$50\mu g/m^3$	16	YES
Hillingdon Hospital	PM_{10} Particulate	Annual Mean less than $40\mu g/m^3$	27	YES
Hillingdon Hospital	PM_{10} Particulate	No more than 35 days where	10	YES

		daily mean >=50μg/m^3		
Harlington - AURN	PM_{10}Particulate	Annual mean less than 40ug/m3	25	YES
Harlington - AURN	PM_{10}Particulate	No more than 35 days where daily mean >50ug/m3	3	YES
Heathrow LHR2	PM_{10} Particulate	Annual Mean less than 40μg/m^3	30	YES
Heathrow LHR2	PM_{10} Particulate	No more than 35 days where daily mean >=50μg/m^3	19	YES

10.7 SCREENING ASSESSMENT OF ROAD TRAFFIC SOURCES

Traffic flow data were taken from manual and automatic traffic count data in the London Atmospheric Emission Inventory. The results of the DMRB modelling are shown in Table 10.7 below. Both the annual mean and 24 hour mean PM_{10} results are presented for 2005. Results are also shown for 2010.
All the roads provided in the LAEI have been assessed using DMRB, covering most of the roads within Hillingdon Borough Council borough. Therefore this will cover roads with a high proportion of HGVs / buses, roads that have significantly changed traffic flows since the last assessment, roads close to the PM_{10} objectives in the last assessment and any new roads.

Table 10.7 Predicted PM_{10} concentrations in 2005 and 2010 calculated using DMRB for roads in the London Borough of Hillingdon (μgm^{-3}).

Road Name	Receptor Distance	AADT combined veh/day	Annual average speed (km/h)	Predicted annual mean PM_{10} concentration in 2005	Predicted number of exceedences of 24 hr objective in 2005	Predicted annual mean PM_{10} concentration in 2010	Predicted number of exceedences of 24 hr objective in 2010
M4	30	52330	80	28,5	22	26.4	16
A3113	20	47030	60	30.0	28	28.3	22
A4	20	31175	60	30.0	27	27.9	20
A40	20	107715	60	29.4	25	27.9	20
A437	20	15823	50	28.9	24	26.5	16
A4	20	22148	60	29,9	27	27.8	20
A4	20	36726	60	29,4	25	27.4	19
A4020	10	30938	30	31,1	32	26.4	16
A4020	20	32369	80	28,4	22	26.4	16
M25	100	167276	113	27.7	20	24.8	12
A4020	10	29782	30	29,4	25	26.4	16
A30	20	53084	50	29,1	24	27.0	18
A408	20	20778	50	28,4	22	26.2	16
A437	10	19680	30	30,3	29	26.4	16
A40	20	106164	50	29,5	26	27.5	19
A3044	20	31000	50	28,1	21	26.1	15
A40	20	99573	50	28.4	22	24.2	11
A3044	20	30157	60	27,7	20	26.0	15
A312	20	61485	50	29,3	25	27.2	18
A312	20	61638	50	29,4	25	27.3	19
A4	20	26356	60	28,0	21	26.2	15
A4020	10	42065	30	30.8	31	26.2	16
A312	20	14559	50	29,2	25	27.0	18
A312	20	14559	60	29,0	24	27.0	18
M4	60	141843	113	28.6	23	25.4	13
A40	20	92582	60	28,8	23	26.5	16

A40	20	100071	60	28,9	24	26.6	17
A40	10	79658	30	31,5	33	26.0	15
A40	20	108921	60	29,1	24	27.7	20
A4020	10	27301	30	30.1	28	25.9	15
WESTERN AVENUE A40(T)	5	114323	35,16	30,4	29	26.4	16

Note: a distance to road centre of 2 m was modelled as a worst-case scenario but was then refined to actual distances where exceedences were located. Speed data was taken from the LAEI 2003.

The DMRB run shows no exceedences of the annual or 24 hour 2004 air quality objective.
There is the possibility of exceeding the annual mean 2010 objective of 23μg m^{-3}.

The following items from the checklist for PM_{10} have also been considered:

- Roads with a high flow of buses and/or HGVs were considered in the above screening assessment for road transport sources.
- New roads constructed or proposed since the last round of review and assessment – no new roads have been constructed, except M4, Junction 4 improvements.
- Roads close to the objective during the last round of review and assessment – there were no roads that were close to the objective during the last round of review and assessment.
- Roads with significantly changed traffic flows or new, relevant exposure – changes to the traffic flows since the last round of review and assessment have been considered in the above screening assessment

10.7.1 Busy Junctions

Annual average PM_{10} concentrations at the busiest road junctions in the London Borough of Hillingdon have been estimated for 2005 and 2010 using DMRB (See Table 10.7 above).

10.7.2 Street Canyons

The DMRB model may significantly under-predict concentrations of nitrogen dioxide alongside urban city-centre roads classified as 'street canyons' but there is no clear evidence that this is the case for PM_{10} (Section 8.32 TG (04)) and therefore no correction should be made for PM_{10} in street canyons. It is not thought that there are any street canyon environments in the London Borough of Hillingdon.

10.8 SCREENING ASSESSMENT OF INDUSTRIAL SOURCES

The Guidance LAQM TG (03) lists the following processes as significant potential sources of PM_{10}:

Part A (percentage of total emissions from all UK plant in this sector to the UK total in brackets)
Iron and steel (61)
Petroleum processes (4)
Combustion processes (13)
Cement/lime manufacture (7)
Carbonisation (2)
Gasification (4)
Non-ferrous metals (4)
Fertilizer production

Part B
Combustion plant 20-50 mwth
Furnaces 20-50 mwth
Coal and coke processes
Quarry Process
Roadstone coating
Rubber processes
China and clay processes
Coating powder
Coil coating

New sources that started operating since the last round of Review and Assessment are:

- ⇨ Warehouse and Distribution development with 150 residential dwellings covering 57400m^2 with a predicted 0.4μg/m^{-3} increase in annual mean PM_{10} at Stockley Bypass.
- ⇨ Phase 1 of Terminal 5 development is due to open in 2008 (constriction phase has moved from earthworks movements to fitting out operation which are potentially less dust generating).
- ⇨ Close to the Hillingdon boundary at Colnbrook, a new incinerator, which is a plant Part A process, has been granted permission which could result in increased emissions. This will not be fully operational until 2008.

Proposed projects with that have the potential to emit significant quantities of PM_{10}:

- ⇨ Extension of N3 car park at Longford with a predicated 0.07 μg/m^{-3} increase in mean annual PM_{10}.
- ⇨ 2300 space car park within Heathrow airport boundary with an operational date of 2007.
- ⇨ RAF Northolt proposal to increase site, which predicted a 0.75μg/m^{-3} increase in PM_{10} in 2011 at nearest receptor point

Air Quality Assessments have been performed for these planned developments but there are no additional data or other information available for further assessments.
The proposed sources should be assessed in the next round of Review and Assessment.

10.9 SCREENING ASSESSMENT OF FUGITIVE AND UNCONTROLLED SOURCES

10.9.1 Quarries and landfill sites

There are no recorded quarries or landfill sites with relevant locations for public exposure within 200m.

10.9.2 Domestic solid fuel burning

There are no data for domestic coal burning available but solid fuel use continues to decline throughout the area. It is believed that there are no areas with 50 or more houses using these fuels in a 500m square.

10.10 SCREENING ASSESSMENT OF OTHER TRANSPORT SOURCES

10.10.1 Airports

Heathrow airport lies within the London Borough of Hillingdon. There is relevant exposure within 500 metres of the airport boundary and there are predicted to be 67.7 million[12] passengers per annum in 2006.
There is considerable construction work at the airport due to the construction of terminal five. This development has planning conditions attached to it for the suppression of dust and particulate matter.

The 2004 Air Pollution Report – HEATHROW LHR 2 shows that the 2004 PM_{10} objective of was met in 2004 (Table 10.8).

Table 10.8 PM_{10} concentrations in 2004 taken from the 2004 Air Pollution Report – HEATHROW LHR 2 (μgm^{-3})

	2004
Average	21 μg/m^{-3}
Maximum daily mean	57 μg/m^{-3}
Exceedences of daily mean > 50 μg m-3	12 days

[12] http://www.heathrowairport.com

10.11 CONCLUSIONS FOR PM10 CONCENTRATIONS IN THE LONDON BOROUGH OF HILLINGDON

The DMRB screening model indicates that the 2004 annual mean objective for PM_{10} will be met in 2005, and that exceedences of the 2010 objective are very likely. It is not yet possible to declare an AQMA for the 2010 PM_{10} objective, as it is not yet in regulation.

It is also recommended that they bear in mind the possibility of having to comply with the 2010 objective and how this may affect their monitoring strategies in the region.

Updating and Screening Assessment Summary Checklist for **PM_{10}**

Item	**Response**
Monitoring data outside an AQMA	Monitoring data indicates no exceedences
Monitoring data within an AQMA	No AQMAs declared for PM_{10}
Busy roads and junctions in Scotland	Not in Scotland
Junctions.	Junctions assessed using DMRB – exceedences of the 24-hour mean objective
Roads with high flow of buses and/or HGVs.	M25 and A4 – no exceedences of annual or the 24 hour mean objective
New roads constructed or proposed since last round of R&A	No major road changes (except for M4, junction 4 improvement)
Roads with significantly changed traffic flows, or new relevant exposure.	All roads assessed using DMRB with up to date traffic data.
Roads close to the objective during the second round of Review and Assessment	All roads assessed using DMRB with up to date traffic data. There were no roads close to the objective in the last updating and screening assessment
New industrial sources.	Heathrow Terminal 5, Warehouse and Distribution development, Colnbrook new incinerator
Industrial sources with substantially increased emissions, or new relevant exposure	None present
Areas of domestic solid fuel burning	None present
Quarries / landfill sites / opencast coal / handling of dusty cargoes at ports etc.	None present
Aircraft	Heathrow Airport is above the 5mppa threshold. No exceedences.

No detailed assessment is required for PM_{10} for Hillingdon.

Conclusions

CARBON MONOXIDE

It is concluded that the strategy objectives for carbon monoxide are likely to have been achieved by 2005. There is no need to progress to a detailed review and assessment for this pollutant.

BENZENE

It is concluded that the strategy objectives for benzene are likely to have been achieved by 2005. There is no need to progress to a detailed review and assessment for this pollutant.

1,3-BUTADIENE

It is concluded that the strategy objectives for 1,3-Butadiene are likely to have been achieved by 2005. There is no need to progress to a detailed review and assessment for this pollutant.

LEAD

It is concluded that the strategy objectives for lead are likely to have been achieved by 2005. There is no need to progress to a detailed review and assessment for this pollutant.

NITROGEN DIOXIDE

It is concluded that the strategy objectives for nitrogen dioxide are not likely to have been achieved by 2005. All locations exceeding the NO_2 objective are within the already existing AQMA, thus there is a no need to progress to a detailed review and assessment for this pollutant.

SULPHUR DIOXIDE

It is concluded that the strategy objectives for sulphur dioxide are likely to have been achieved by 2004/5. There is no need to progress to a detailed review and assessment for this pollutant.

PM_{10}

It is concluded that the strategy objectives for PM_{10} from road transport are not likely to be exceeded by 2005 as a result of road transport. The 2010 assessment indicates likely exceedences but this is for information purposes only ~~as~~ at the present time as the 2010 objectives are not in the Regulations.
There is no need to progress to a detailed review and assessment for this pollutant.

SUMMARY AND RECOMMENDATIONS

For all pollutants apart from NO_2 the air quality objectives are predicted to be met within the London Borough of Hillingdon.
All locations exceeding the NO_2 objective are within the already existing AQMA, thus there is a no need to progress to a detailed review and assessment for this pollutants.

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netcen, Air Pollution Report – HEATHROW LHR 2 01 January to 31 December 2004, 2004

Appendices

CONTENTS

Appendix 1
Monitoring data

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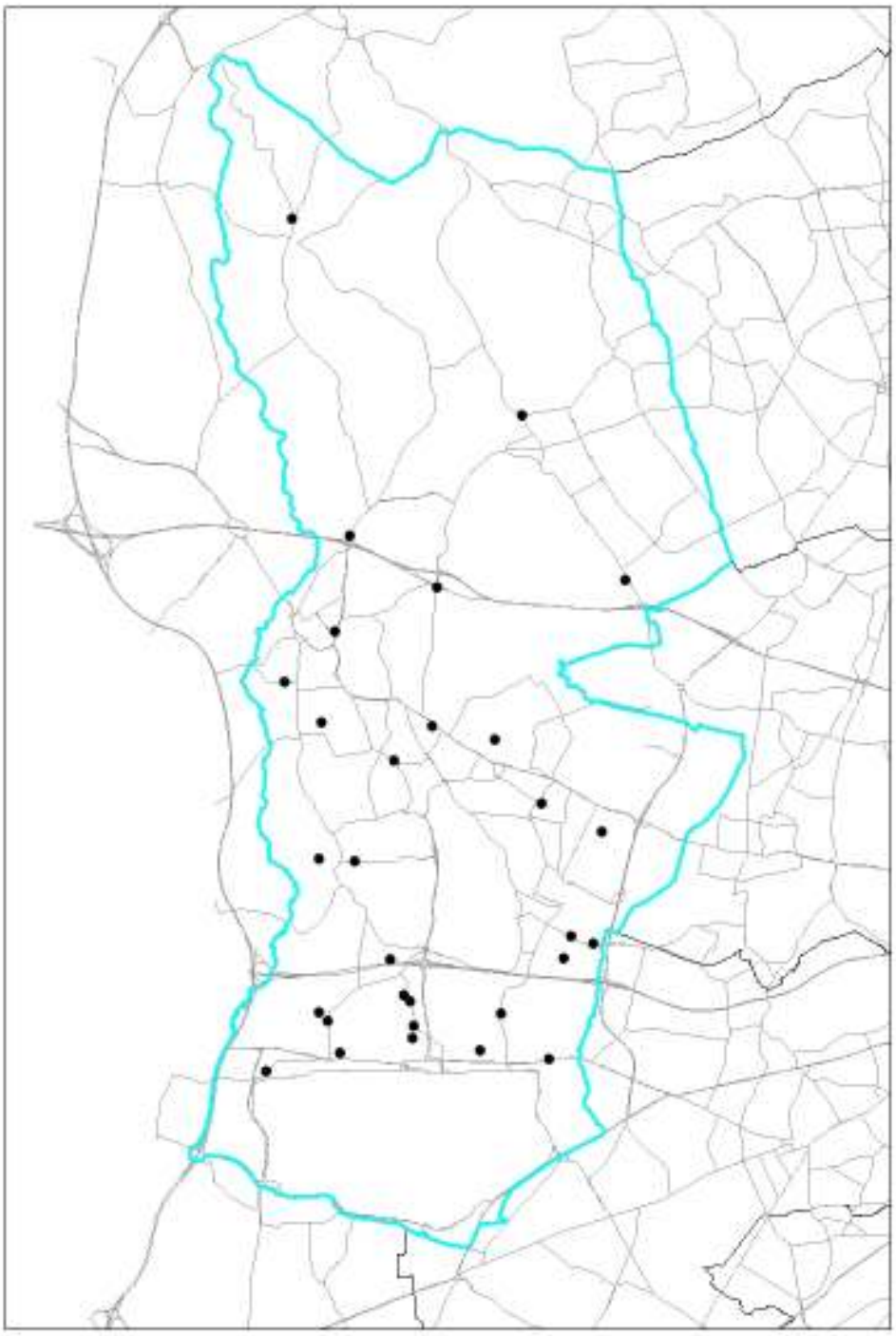
Table A1 Diffusion Tube data (unadjusted), provided by the London Borough of Hillingdon

LOCATION	TUBE REF	GRID REF	TYPE	JAN 05	FEB 05	MAR 05	APR 05	MAY 05	JUNE 05	JULY 05	AUG 05	SEP 05	OCT 05	NOV 05	DEC 05	ANNUAL MEAN ug/m3
83 Hayes End Drive	HD49	508651 182274	B	27.64	24.98	29.19	32.3	21.95	26.24	21.82	24.06	27.59	51.68	39.69	35.54	30.22
Uxbridge Day Nursery	HD43	505996 184058	R	39.14	50.91	-	48.51	35.86	45.87	41.51	40.66	49.29	45.69	51.28	46.86	45.05
Barra Hall (now Church Walk)	HD41	509358 181215	B	-	39.76	39.2	37.1	-	34.17	31.61	-	30.99	63.5	39.65	40.12	39.57
Uxbridge Technical College	HD42	510417 180752	R	32.13	45.81	43.03	43.92	32.19	-	-	-	-	60.66	44.84	48.2	43.85
Citizens Advice Bureau	HD48	509094 187645	B	26.79	35.57	34.7	34.47	29.79	31.75	28.47	29.62	33.6	45.95	30.86	28.78	32.53
Hillingdon Primary School	HD47	507617 182506	R	38.14			36.86	31.74	37.43	35.83	33.29	37.36	53.84	40.45	39.21	38.42
4 Colham Avenue	HD51	506333 180294	R	31.47	38.92	40.35	35.63	27.37	34.33	29.99	31.12	37.49	40.88	43.77	43.74	36.26
101 Cowley Mill Road	HD52	505159 183232	B	38.71	52.45	42.97	45.19	31.91	37.04	36.51	33.16	38.38	51.27	43.82	47.1	41.54
Warren Road	HD53	506243 185653	B	42.91	49.83	44.42	42.41	38.03	41.45	41	38.71	45.64	48.88	47.99	47.33	44.05
Harlequin Close	HD54	511636 181652	B	-	-	-	-	-	-	-	-	-	-		-	-
Harold Avenue	HD55	509918 179015	B	45.49	48.14	49.7	38.99	36.14	32.85	33.48	29.79	42.89	43.68	47.2	47.38	41.31
15 Phelps Way	HD56	509798 178634	B	43.83	46.03	44.26	37	31.5	31.76	29.44	16.84	38.07	38.62	49.34	44.41	37.59
25 Cranford Lane	HD57	508758 177718	B	39.02		44.99	40.55	35.17	33.71	35.64	26.64	42.07	41.69	49.75	45.1	39.48
Brendan Close	HD58	508414 177125	B	43.39	45.51	49.33	46.17	37.29	39.91	38.72	34.89	39.07	52.36	46.44	47.62	43.39
7 Bomber Close	HD59	507296 177323	B	35.33	42.65	48.44	38.93	23.77	35.95	28.8	19.02	36.24	55.77	37.28	44.73	37.24
Harmonsworth Green	HD60	505736 177752	B	35.27	33.02	35.57	32.86	20.97	29.11	26.87	20.4	34.07	62.34	36.32	39.52	33.86
Heathrow Close	HD61	504851 176770	B	33.67	46.95	38.72	-	26.72	29.17	31.41	31	31.35	63.36	46.5	39.79	38.06

LOCATION	TUBE REF	GRID REF	TYPE	JAN 05	FEB 05	MAR 05	APR 05	MAY 05	JUNE 05	JULY 05	AUG 05	SEP 05	OCT 05	NOV 05	DEC 05	ANNUAL MEAN ug/m3
AURN Monitoring Station	HD31	506940 178601	S	37.05	46.62	48.34	50.3	37.21	48.85	42.17	24.83	45.81	48.36	51.22	43.33	43.67
AURN Monitoring Station	HD31	506940 178601	S	34.28	39.61	48.62	47.46		41.91	41.29	27.93	43.39	49.33	44.3	41.14	41.75
AURN Monitoring Station	HD31	506940 178601	S	35.14		45.31	50.49		45.41	37.85	37.5	45.64	39.71	42.41	42.58	42.20
South Ruislip Monitoring Station	HD46	510821 184923	R	48.86	52.63	46.81	61.81	45.88	46.9	43.36	33.11	53.02	43.73	53.55	47.62	48.11
South Ruislip Monitoring Station	HD46	510821 184923	R		47.71	51.81	48.29	47.31	49.37	43.78	29.5	48.67	41.18	54.84	54.4	46.99
South Ruislip Monitoring Station	HD46	510821 184923	R	42.47		51.04	51.32	42.78	44.15	41.62	30.59	49.37	58.39	48.67	53.46	46.71
Hillingdon Hospital Monitoring Station	HD50	506989 181920	R	40.87	43.81	42.41	42.36	35.2			27.67	41.95	44.98	50.74	46.5	41.65
Hillingdon Hospital Monitoring Station	HD50	506989 181920	R	37.22	39.38	42.35	39.53	33.93			28.36	41.35	50.78	41.04	45.58	39.95
Hillingdon Hospital Monitoring Station	HD50	506989 181920	R	37.53		40.19	48.95	31.11			33.34	40.26	46.68	46.37	46.55	41.22
1 North Hyde Gardens, Hayes	HD62	510285 178880	R	34.65	46.48	50.37	46.42	43.76	42.31	39.73	38.15	46.24	46.52	46.68	44.62	43.83
370 Sipson Road, Sipson	HD63	507148 178030	R	34.96	47.11	41.99	34.63	30.08	34.86	33.48	28.47	36.46	42.37	37.7	40.77	36.91
34 Hatch Lane, Sipson	HD64	505873 177613	R	35.83	37	39.8	33.95	30.7	31.46	29.67	31.17	34.59	58.7	37.68	37.7	36.52
28 Pinglestone Close, Sipson	HD65	506079 177081	R	30.74	35.85	38.37	37.45	29.35	31.95	29.03	24.19	34.42	36.59	38.1	37.05	33.59
486 Sipson Road, Sipson	HD66	507305 177520	R	33.54	41.05	39.61	35.05	31.11	33.26	31.92	23.26	37.81	37.82	41.96	37.77	35.35

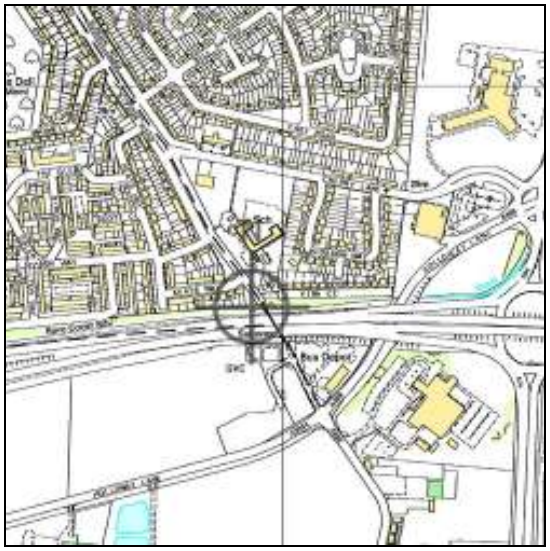
NO_2 Diffusion Tubes location



Continuous Monitoring Stations

The monitoring station at West Drayton is within a self-contained, air-conditioned housing located on an open grass area approximately 2.5 metres from the kerb of a residential road. The site is bordered on three sides by residential roads and on the fourth by the busy M4 motorway, approximately 30 metres distance. The manifold inlet is approximately 3 metres high. The general area is open and protected from the M4 by trees. The site is at the junction of Keats Way and Sipson Road, West Drayton, Middlesex. Its location is shown in the map, Figure 2 and the station is shown in Figure 3.

Figure A1.2 Location of the Continuous monitor[13] (Junction of Keats Way and Sipson Road, West Drayton, Middlesex)



Sites covered by http://www.londonair.org.uk/london/asp/advstats.asp:

Site	Address	Grid Reference
Hillingdon 1 - South Ruislip	South Ruislip	510770, 184960
Hillingdon 2 - Hillingdon Hospital	Field Heath Rd/ junction Colham Rd	506991, 181951
Hillingdon 3 - Oxford Avenue	Oxford Avenue, Hillingdon	509553, 176978
Heathrow Airport – LHR2	Heathrow Airport, North Apron	508399, 176744
Harlington - AURN	Heathrow Airport, Harlington	508300, 177800

[13] http://www.stanger.co.uk/siteinfo/MonitoringSite.asp?ID=6#

Air Pollution Report

Produced by netcen on behalf of Heathrow Airport Limited

HEATHROW LHR2

01 January to 31 December 2004

These data have been fully ratified by netcen

On Northern apron.

POLLUTANT	CO	NO_2	NO_X	PM_{10}
Number Very High	0	0	-	0
Number High	0	0	-	0
Number Moderate	0	0	-	52
Number Low	8533	8649	-	8646
Maximum 15-minute mean	4.9 mg m^{-3}	218 µg m^{-3}	1379 µg m^{-3}	206 µg m^{-3}
Maximum hourly mean	4.6 mg m^{-3}	214 µg m^{-3}	1305 µg m^{-3}	161 µg m^{-3}
Maximum running 8-hour mean	2.9 mg m^{-3}	152 µg m^{-3}	932 µg m^{-3}	84 µg m^{-3}
Maximum running 24-hour mean	1.9 mg m^{-3}	112 µg m^{-3}	652 µg m^{-3}	72 µg m^{-3}
Maximum daily mean	1.8 mg m^{-3}	102 µg m^{-3}	562 µg m^{-3}	57 µg m^{-3}
Average	0.4 mg m^{-3}	55 µg m^{-3}	124 µg m^{-3}	21 µg m^{-3}
Data capture	97.2 %	98.5 %	98.5 %	98.7 %

All mass units are at 20°C and 1013mb
NO_X mass units are NO_X as NO_2

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
Carbon Monoxide	Running 8-hour mean > 10.0 mg m^{-3}	0	0
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	3	2
Nitrogen Oxides (NO_2)	Annual mean > 30 µg m^{-3}	1	-
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	12	12
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	0	-

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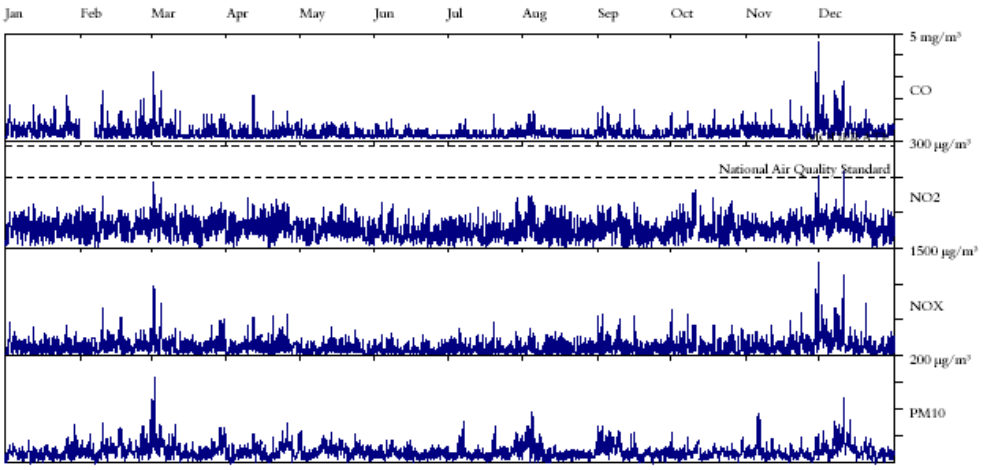
Air Pollution Report

Produced by netcen on behalf of Heathrow Airport Limited

Heathrow LHR2 Air Monitoring
Hourly Mean Data for 01 January to 31 December 2004



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Appendix 2
Traffic Flow data

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Table A2.1 Road Classifications in LAQM TG (03) – Definitions

Very busy roads	Single carriageway roads with average daily traffic flows exceeding 80,000 vehicles Dual carriageway (2- or 3-lane) roads with average daily traffic flows exceeding 120,000 vehicles Motorways with average daily flows exceeding 140,000 vehicles.
Busy Roads	Roads with more than 30,000 vehicles per day.

Table A2.2 Predicted background concentrations

Year	Predicted Background Concentrations					
	CO (mgm^{-3})	Benzene (mgm^{-3})	1,3 butadiene (mgm^{-3})	NOx (mgm^{-3})	NO_2 (mgm^{-3})	PM_{10} (mgm^{-3})
2003	0.39	0.81	0.41	54.04	31.65	30.37
2005	0.39	0.72	0.41	49.90	30.00	25.40
2010	0.39	0.62	0.41	39.80	25.90	23.10

Table A 2.3 Traffic Data for the London Borough of Hillingdon, DMRB output 2005

Receptor	Link no	Road name	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition		Total concentrations						Number of PM10 exceedances
				AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B)	Total % HDV	CO (mg/m³)	Benzene (mg/m³)	1,3-butadiene (mg/m³)	NO_x (mg/m³)	NO_2 (mg/m³)	PM_{10} (mg/m³)	
1	6013	M4	30	124371.7	80	A	6.6	0.46	0.85	0.66	71.7	34.9	26.4	16
2	7049	A404	10	21318.24	30	A	2.7	0.42	0.57	0.34	38.6	22.5	22.4	7
3	7572	A3044	10	16208.47	30	A	5.5	0.49	0.73	0.51	59.5	30.8	25.4	13
4	7969	A3113	10	50728.01	30	A	8.7	0.54	0.91	0.86	94.2	40.8	28.3	22
5	8049	A4125	10	18425.2	30	A	2.1	0.49	0.75	0.49	53.3	29.4	25.0	12
6	8090	A437	10	28762.63	30	A	3.7	0.46	0.68	0.43	51.3	27.2	24.4	11
7	8280	M4	30	56444.32	80	A	5.6	0.41	0.71	0.44	59.9	31.5	25.2	13
8	16012	M4	30	152996.1	80	A	6.1	0.46	0.92	0.74	66.3	32.3	25.6	14
9	16112	A4	10	33626.26	30	A	7.8	0.54	0.87	0.75	86.5	39.4	27.9	20
10	16405	A40	10	116185.2	30	A	7.8	0.56	1.27	1.18	86.0	34.6	27.9	20
11	17024	A408	10	12008.75	80	A	6.4	0.42	0.68	0.44	55.4	30.0	24.6	11
12	17099	A437	10	17066.63	30	A	6.0	0.49	0.72	0.49	67.5	33.9	26.5	16
13	17636	A4180	10	22029.03	30	A	3.8	0.44	0.64	0.39	49.7	26.8	24.2	11
14	18476	A4	10	23889.11	30	A	10.7	0.53	0.78	0.74	88.6	39.7	27.8	20
15	26118	A4	10	39613.63	30	A	5.3	0.55	0.90	0.77	80.8	38.2	27.4	19
16	27092	A4020	10	33370.57	30	A	7.0	0.47	0.70	0.52	65.7	31.3	26.4	16
17	27681	A4020	10	34914.6	30	A	5.3	0.50	0.81	0.55	64.8	31.7	26.4	16
18	27923	M25	30	180429.8	80	A	10.2	0.47	0.92	1.00	88.2	39.0	27.5	19
19	28118	A4020	10	32123.94	30	A	5.1	0.47	0.71	0.48	57.9	29.1	25.2	13
20	28874	A4020	10	41624.05	30	A	5.0	0.52	0.87	0.59	66.3	32.2	26.4	16
21	36013	M4	30	72184.1	80	A	2.0	0.44	0.78	0.49	53.3	29.5	24.6	12
22	36309	A30	10	57258.59	30	A	5.8	0.55	1.00	0.79	73.5	33.8	27.0	18
23	37106	A404	10	26365.92	30	A	3.8	0.51	0.80	0.56	42.8	23.5	23.0	8
24	37107	A404	10	29687.73	30	A	4.3	0.45	0.67	0.42	48.9	25.8	23.9	10
25	37118	A408	10	22412.02	30	A	7.8	0.49	0.79	0.56	68.3	32.9	26.2	16
26	37193	A437	10	21227.94	30	A	5.0	0.49	0.73	0.47	63.1	32.1	26.4	16
27	37713	A4007	10	17143.45	30	A	5.5	0.45	0.61	0.41	56.3	29.4	25.3	13
28	37720	A4020	10	25934.65	30	A	4.9	0.51	0.80	0.57	52.3	27.2	24.5	11
29	38596	A40	10	114511.7	30	A	6.3	0.57	1.29	1.07	80.8	34.0	27.5	19
30	38599	A3044	10	33437.51	30	A	7.1	0.55	0.86	0.77	90.0	41.2	26.1	15
31	46437	A40	10	107402.8	30	A	7.0	0.53	1.14	1.03	75.1	31.2	26.6	17
32	47625	A3044	10	32527.78	30	A	8.0	0.53	0.84	0.77	89.8	40.7	26.0	15
33	48810	A312	10	66319.75	30	A	5.6	0.56	1.06	0.84	74.9	34.1	27.2	18
34	49028	A312	10	66484.35	30	A	5.7	0.55	1.04	0.77	74.6	33.9	27.3	19
35	56114	A4	10	28427.92	30	A	6.0	0.54	0.82	0.73	94.8	44.0	26.2	15
36	56742	A408	10	22692.95	30	A	4.7	0.46	0.74	0.45	57.0	29.6	25.3	13
37	56944	A4020	10	45372.74	30	A	5.3	0.48	0.78	0.56	64.3	30.9	26.2	16
38	57361	A4180	10	19422.73	30	A	4.9	0.43	0.60	0.37	48.7	26.1	23.8	10
39	57771	A4180	10	17086.38	30	A	2.9	0.41	0.54	0.32	37.6	22.3	22.2	7
40	58181	A404	10	22074.83	30	A	3.3	0.50	0.77	0.52	57.0	30.3	25.3	13
41	70171	A312	10	15703.67	30	A	8.7	0.48	0.70	0.47	74.7	35.9	27.0	18
42	73630	A4125	10	18425.2	30	A	2.1	0.49	0.75	0.49	53.3	29.4	25.0	12
43	73635	A312	10	15703.67	30	A	8.7	0.48	0.70	0.47	74.7	35.9	27.0	18
44	73637	M4	60	152996.1	80	A	6.1	0.42	0.76	0.56	59.1	32.0	25.4	13
45	73638	M25	100	180429.8	113	A	10.2	0.41	0.68	0.50	54.7	30.9	25.1	13
46	74922	A437	10	16195.3	30	A	6.3	0.43	0.57	0.38	52.1	27.3	24.3	11
47	74923	A437	10	31742.04	30	A	5.5	0.46	0.68	0.47	56.6	28.4	24.9	12
48	74924	A437	10	8077.897	30	A	6.8	0.38	0.52	0.32	42.5	25.0	23.2	9
49	74925	A437	10	10868.56	30	A	5.3	0.40	0.54	0.33	44.4	25.5	23.5	9
50	74926	A40	10	99861.51	40	A	7.5	0.49	1.01	0.88	75.7	32.3	26.5	16

Receptor	Link no	Road name	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition		Total concentrations						Number of PM10 exceedences
				AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B)	Total % HDV	CO (mg/m^3)	Benzene (mg/m^3)	1,3-butadiene (mg/m^3)	NO_x (mg/m^3)	NO_2 (mg/m^3)	PM_{10} (mg/m^3)	
51	74927	A40	10	100070.6087	40	A	7.5	0.55	1.29	1.16	106.3	39.4	32.0	36
52	78345	A40	10	99573.10435	30	A	7.0	0.60	1.42	1.31	104.4	37.8	32.3	37
53	78346	A40	10	79657.66957	30	A	7.0	0.57	1.24	1.10	98.4	36.8	31.5	33
54	78347	A40	10	108920.8957	30	A	7.5	0.62	1.52	1.46	115.5	40.8	33.9	44
55	78348	A4180	10	16757.45217	30	A	3.5	0.46	0.70	0.38	56.9	28.6	26.3	16
56	78349	A4180	10	17583.57391	30	A	2.9	0.53	0.89	0.54	59.9	26.2	25.6	14
57	78403	A4020	10	25486.66957	30	A	4.9	0.55	0.96	0.64	71.6	32.8	28.4	22
58	99748	A4180	10	29105.53043	30	A	4.9	0.56	0.99	0.67	78.6	35.3	29.4	25
59	8351	A4020	10	27300.67826	30	A	5.4	0.51	0.82	0.54	80.8	36.0	30.1	28
60	28503	A4020	10	22930.98261	30	A	5.8	0.50	0.77	0.51	79.9	35.8	30.0	27
61	28522	A40	10	109423.487	30	A	5.4	0.61	1.55	1.30	101.7	38.5	32.4	37
62	48420	A4020	10	25032.91304	30	A	5.7	0.50	0.79	0.52	80.7	36.0	30.1	28
63	0	Minor road	5	3575.74905	24	A	0.1	0.43	0.77	0.44	53.4	30.9	26.1	15
64	0	Minor road	5	3059.4186	12	A	0.1	0.46	0.79	0.45	53.4	30.9	26.1	15
65	0	Minor road	5	1779.304725	23	A	0.1	0.41	0.74	0.42	51.7	30.5	25.7	14
66	0	Minor road	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
67	0	Minor road	5	1469.7207	26	A	0.1	0.40	0.74	0.42	51.3	30.4	25.7	14
68	0	Minor road	5	15010.8047	47	A	0.1	0.49	0.84	0.48	63.1	33.3	27.4	19
69	0	M4	30	160705.1745	100.08	A	0.1	0.51	1.16	0.65	75.4	36.0	29.3	25
70	0	A3044	10	2758.404375	39	A	0.1	0.41	0.74	0.42	52.2	30.6	25.8	14
71	0	A3044	10	45544.2021	20	A	0.1	0.66	1.29	0.74	70.8	35.0	29.3	25
72	0	A312	10	61621.1469	63.75	A	0.2	0.52	1.07	0.61	71.2	35.1	28.1	21
73	0	A40(T)	10	114323.2745	35.16	A	0.2	0.64	1.71	0.99	77.6	36.4	29.9	27
74	0	A40(T)	10	120452.8239	94.91	A	0.2	0.55	1.27	0.72	84.6	37.9	30.1	28
75	0	A408	10	12055.56615	37.66	A	0.1	0.48	0.82	0.47	59.7	32.4	27.0	18
76	0	A437	10	7993.48095	35.16	A	0.1	0.45	0.79	0.45	56.4	31.7	26.5	16
77	0	AIRPORT WAY A3113	10	49653.4212	51.41	A	0.1	0.53	1.05	0.60	69.1	34.6	28.1	21
78	0	ANGEL LANE	5	940.53555	33	A	0.1	0.40	0.73	0.41	50.8	30.2	25.5	14
79	0	BATH ROAD	5	344.93445	10	A	0.0	0.39	0.72	0.41	50.2	30.1	25.4	13
80	0	BATH ROAD	5	823.772025	37	A	0.2	0.40	0.73	0.41	50.7	30.2	25.5	14
81	0	BATH ROAD A4(T)	5	28534.22033	35.16	A	0.1	0.55	0.99	0.57	67.4	34.2	28.3	22
82	0	BATH ROAD A4(T)	5	31597.92383	53.16	A	0.1	0.52	0.95	0.54	67.6	34.3	27.9	20
83	0	BATH ROAD A4(T)	5	33435.0747	38.58	A	0.1	0.56	1.04	0.60	68.4	34.5	28.4	22
84	0	BATH ROAD A4(T)	5	24341.44568	42.91	A	0.1	0.53	0.93	0.53	66.0	33.9	27.9	20
85	0	BEDFONT ROAD	5	10018.8962	40	A	0.1	0.46	0.81	0.46	58.8	32.2	26.8	17
86	0	BELMONT ROAD	5	7885.287225	41	A	0.2	0.45	0.79	0.45	57.0	31.8	26.5	16
87	0	BELMONT ROAD	5	5296.1364	38	A	0.2	0.43	0.77	0.44	54.7	31.2	26.2	15
88	0	BILTON WAY	5	8765.834175	20	A	0.2	0.50	0.84	0.48	58.8	32.2	27.0	18
89	0	BLYTH ROAD	5	2468.1824	21	A	0.2	0.42	0.75	0.43	52.4	30.6	25.9	15
90	0	BLYTH ROAD	5	922.324725	31	A	0.2	0.40	0.73	0.41	50.8	30.2	25.5	14
91	0	BOTWELL LANE	5	1239.407325	30	A	0.1	0.40	0.73	0.42	51.0	30.3	25.6	14
92	0	BOTWELL LANE	5	326.723625	41	A	0.0	0.39	0.72	0.41	50.2	30.1	25.4	13
93	0	BOTWELL LANE	5	6498.05085	11	A	0.1	0.53	0.86	0.49	57.3	31.9	26.9	17
94	0	BOTWELL LANE	5	1336.8888	18	A	0.2	0.41	0.74	0.42	51.3	30.4	25.7	14
95	0	BOTWELL LANE	5	326.723625	22	A	0.0	0.39	0.72	0.41	50.2	30.1	25.5	14
96	0	BREAKSPEAR ROAD	5	7957.0593	21	A	0.1	0.49	0.83	0.47	57.8	32.0	26.9	17
97	0	BREAKSPEAR ROAD NORTH	5	1034.80335	54	A	0.1	0.39	0.73	0.41	50.8	30.2	25.5	14
98	0	BREAKSPEAR ROAD NORTH	5	7001.5266	18	A	0.1	0.50	0.84	0.48	57.1	31.8	26.8	17
99	0	BREAKSPEAR ROAD SOUTH	5	6928.6833	47	A	0.1	0.44	0.78	0.44	56.0	31.6	26.3	16
100	0	BRIDLE ROAD	5	15046.42635	25	A	0.1	0.55	0.90	0.51	64.2	33.5	28.0	21

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101	0	BURY STREET A4180	5	17465.2524	50.91	A	0.1	0.49	0.85	0.48	63.8	33.4	27.4	19
102	0	CENTRAL AVENUE	5	7844.580675	6	A	0.1	0.71	1.02	0.57	60.2	32.6	27.8	20
103	0	CENTRAL AVENUE	5	4710.176325	34	A	0.2	0.43	0.77	0.44	54.3	31.1	26.2	15
104	0	CHURCH ROAD	5	4192.77465	33	A	0.1	0.43	0.76	0.44	53.8	31.0	26.1	15
105	0	CHURCH ROAD	5	8537.66325	28	A	0.2	0.48	0.82	0.47	58.1	32.1	26.9	17
106	0	CHURCH ROAD	5	2837.675025	30	A	0.2	0.42	0.75	0.43	52.5	30.7	25.9	15
107	0	CHURCH ROAD A4125	5	17080.68263	38.66	A	0.1	0.52	0.88	0.50	64.1	33.5	27.7	20
108	0	CLAYTON ROAD	5	46.062675	33	A	0.0	0.39	0.72	0.41	49.9	30.0	25.4	13
109	0	COLHAM GREEN ROAD	5	6959.748825	26	A	0.1	0.46	0.80	0.46	56.5	31.7	26.6	16
110	0	COLNBROOK BY-PASS A4(T)	5	39281.82075	58.08	A	0.1	0.52	0.99	0.56	69.4	34.7	28.0	21
111	0	COLNBROOK BY-PASS A4(T)	5	31597.92383	53.16	A	0.1	0.52	0.95	0.54	67.6	34.3	27.9	20
112	0	COLNBROOK BY-PASS A4(T)	5	24688.52258	35.16	A	0.2	0.54	0.96	0.55	66.6	34.1	28.1	21
113	0	COWLEY MILL ROAD	5	282.8034	24	A	0.1	0.39	0.72	0.41	50.2	30.1	25.5	14
114	0	COWLEY ROAD A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20
115	0	CROSS STREET A4020	5	32872.68158	29.42	A	0.1	0.61	1.12	0.64	69.4	34.7	28.9	24
116	0	CUCKOO HILL B466	5	6521.6178	18	A	0.1	0.49	0.83	0.47	56.7	31.7	26.7	17
117	0	DAWLEY ROAD A437	5	30307.0977	30	A	0.2	0.58	1.04	0.60	68.4	34.5	28.6	23
118	0	DAWLEY ROAD A437	5	22248.27203	38.08	A	0.1	0.54	0.93	0.53	65.8	33.9	28.0	21
119	0	DICK TURPIN WAY	5	4735.885725	13	A	0.2	0.49	0.82	0.47	55.3	31.4	26.5	16
120	0	DUCK'S HILL ROAD A4180	5	17465.2524	50.91	A	0.1	0.49	0.85	0.48	63.8	33.4	27.4	19
121	0	EASTCHURCH ROAD	5	34664.841	16	A	0.1	0.53	1.00	0.57	68.2	34.4	28.1	21
122	0	EASTCOTE LANE	5	17144.95613	26	A	0.1	0.56	0.93	0.53	65.0	33.7	28.1	21
123	0	EASTCOTE ROAD B466	5	25988.64785	37	A	0.1	0.54	0.97	0.55	66.7	34.1	28.2	21
124	0	EASTCOTE ROAD B466	5	8419.8285	43	A	0.1	0.45	0.79	0.45	57.4	31.9	26.6	16
125	0	EASTERN AVENUE	5	20538.59693	22	A	0.1	0.61	1.01	0.57	66.7	34.1	28.5	22
126	0	FALLING LANE A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20
127	0	FIELD END ROAD	5	3494.33595	38	A	0.1	0.42	0.75	0.43	53.1	30.8	25.9	15
128	0	FIELD END ROAD	5	4110.290325	38	A	0.1	0.42	0.76	0.43	53.6	31.0	26.0	15
129	0	FIELD END ROAD	5	3900.6721	30	A	0.1	0.43	0.76	0.43	53.6	30.9	26.0	15
130	0	FIELD END ROAD	5	9615.4073	35	A	0.1	0.40	0.74	0.42	51.4	30.4	25.6	14
131	0	FIELD END ROAD	5	5694.6321	46	A	0.1	0.43	0.77	0.44	54.9	31.3	26.1	15
132	0	FREEMANS LANE	5	4326.677775	37	A	0.2	0.42	0.76	0.43	53.8	31.0	26.0	15
133	0	FREEZELAND WAY	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
134	0	GREAT SOUTH-WEST ROAD A30(T)	5	49218.50385	50	A	0.1	0.54	1.00	0.62	71.1	35.1	28.4	22
135	0	GREEN LANE A4125	5	17080.68263	38.66	A	0.1	0.52	0.88	0.50	64.1	33.5	27.7	20
136	0	GREEN LANE B469	5	4320.250425	35	A	0.1	0.42	0.76	0.43	53.8	31.0	26.0	15
137	0	HAREFIELD ROAD	5	5154.7347	45	A	0.1	0.42	0.76	0.43	54.5	31.2	26.1	15
138	0	HAREFIELD ROAD B467	5	9676.375425	26	A	0.2	0.49	0.84	0.48	59.2	32.3	27.1	18
139	0	HAREFIELD ROAD B467	5	25358.0382	10	A	0.1	0.80	1.28	0.72	71.0	35.0	29.7	27
140	0	HAREFIELD ROAD B467	5	762.7122	26	A	0.2	0.40	0.73	0.41	50.6	30.2	25.5	14
141	0	HAREFIELD ROAD B467	5	9998.81415	29	A	0.1	0.50	0.84	0.48	59.5	32.4	27.1	18
142	0	HARLINGTON ROAD A437	5	22248.27203	38.08	A	0.1	0.54	0.93	0.53	65.8	33.9	28.0	21
143	0	HARMONDSWORTH ROAD	5	14826.82523	22	A	0.2	0.58	0.93	0.53	64.7	33.6	28.1	21
144	0	HARVIL ROAD	5	35272.22558	47	A	0.2	0.53	1.00	0.57	68.6	34.5	28.2	21
145	0	HATCH LANE A3044	5	17831.61135	57.08	A	0.1	0.48	0.84	0.48	64.1	33.5	27.3	19
146	0	HATTON ROAD	5	11254.28985	21	A	0.1	0.53	0.88	0.50	61.0	32.8	27.5	19
147	0	HATTON ROAD	5	34664.841	16	A	0.1	0.73	1.30	0.74	71.4	35.1	29.6	26
148	0	HATTON ROAD NORTH	5	25406.24333	16	A	0.1	0.69	1.15	0.65	69.2	34.6	29.1	24
149	0	HERCIES ROAD	5	27498.34575	28	A	0.2	0.60	1.05	0.60	68.2	34.4	28.7	23
150	0	HIGH ROAD A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20

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151	0	HIGH ROAD EASTCOTE B466	5	27233.75388	5	A	0.1	1.16	1.76	0.96	74.9	35.9	31.3	33
152	0	HIGH ROAD EASTCOTE B466	5	6521.6178	32	A	0.1	0.45	0.79	0.45	55.9	31.5	26.4	16
153	0	HIGH ROAD, ICKENHAM B466	5	33848.56755	38	A	0.1	0.56	1.04	0.60	68.7	34.5	28.5	22
154	0	HIGH STREET	5	17940.8763	23	A	0.1	0.60	0.97	0.55	65.8	33.9	28.4	22
155	0	HIGH STREET A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20
156	0	HIGH STREET A4125	5	17080.68263	38.66	A	0.1	0.52	0.88	0.50	64.1	33.5	27.7	20
157	0	HIGH STREET A4180	5	17465.2524	50.91	A	0.1	0.49	0.85	0.48	63.8	33.4	27.4	19
158	0	HIGH STREET A4180	5	22328.6139	27.25	A	0.1	0.58	0.99	0.57	66.6	34.0	28.4	22
159	0	HIGH STREET A4180	5	22678.90448	36.33	A	0.1	0.54	0.94	0.54	65.9	33.9	28.0	21
160	0	HIGH STREET HARLINGTON A437	5	16560.86728	40.83	A	0.1	0.51	0.86	0.49	63.7	33.4	27.6	19
161	0	HILL END ROAD	5	4485.58375	45	A	0.1	0.42	0.76	0.43	53.8	31.0	26.0	15
162	0	HILLINGDON ROAD A4020	5	45549.55823	45.58	A	0.1	0.55	1.08	0.62	70.3	34.9	28.4	22
163	0	HILLINGDON ROAD A4020	5	17784.47745	29	A	0.2	0.56	0.93	0.53	65.3	33.8	28.1	21
164	0	HILLSIDE ROAD	5	2546.301825	32	A	0.1	0.41	0.75	0.42	52.2	30.6	25.8	14
165	0	HOLLOWAY LANE A3044	5	17831.61135	57.88	A	0.1	0.48	0.84	0.48	64.1	33.5	27.3	19
166	0	HOLLOWAY LANE A408	5	22931.71358	52.88	A	0.2	0.50	0.89	0.51	65.6	33.8	27.6	19
167	0	HONEYCROFT HILL	5	10761.52635	34	A	0.2	0.49	0.83	0.48	59.9	32.5	27.1	18
168	0	HORTON ROAD	5	2637.35595	43	A	0.1	0.41	0.74	0.42	52.2	30.6	25.8	14
169	0	HORTON ROAD	5	1809.09395	44	A	0.1	0.40	0.73	0.41	50.8	30.2	25.5	14
170	0	HORTON ROAD A3113	5	192711.2351	87.83	A	0.2	0.60	1.71	0.97	93.9	39.6	31.1	32
171	0	HORTON ROAD A3113	5	8946.8712	40	A	0.2	0.46	0.80	0.45	58.0	32.0	26.7	17
172	0	ICKENHAM ROAD B466	5	243.168075	36	A	0.1	0.39	0.72	0.41	50.1	30.1	25.4	13
173	0	ICKENHAM ROAD B466	5	13709.53755	29	A	0.1	0.54	0.89	0.51	62.9	33.2	27.7	20
174	0	IVER LANE B470	5	6747.646275	29	A	0.1	0.46	0.80	0.46	56.3	31.6	26.6	16
175	0	JOEL STREET B472	5	20700.3519	34	A	0.1	0.55	0.94	0.54	65.6	33.8	28.1	21
176	0	JUDGE HEATH LANE	5	3636.808875	26	A	0.1	0.43	0.76	0.43	53.4	30.9	26.0	15
177	0	KINGSEND	5	19866.93885	28	A	0.1	0.57	0.96	0.55	65.9	33.9	28.3	22
178	0	KINGSHILL AVENUE	5	1160.136675	33	A	0.1	0.40	0.73	0.42	51.0	30.3	25.6	14
179	0	KINGSHILL AVENUE	5	2513.09385	42	A	0.2	0.41	0.74	0.42	52.1	30.6	25.7	14
180	0	KINGSTON LANE	5	5774.973975	22	A	0.1	0.46	0.80	0.46	55.6	31.5	26.5	16
181	0	KINGSTON LANE	5	1337.960025	37	A	0.1	0.40	0.73	0.42	51.1	30.3	25.6	14
182	0	KINGSWAY	5	6530.1876	32	A	0.2	0.45	0.79	0.45	56.0	31.6	26.4	16
183	0	LANGDALE DRIVE	5	896.615325	35	A	0.1	0.40	0.73	0.41	50.7	30.2	25.5	14
184	0	LANSBURY DRIVE	5	456.34185	30	A	0.0	0.39	0.73	0.41	50.3	30.1	25.5	14
185	0	LEES ROAD	5	6221.6748	22	A	0.2	0.47	0.81	0.46	56.1	31.6	26.6	16
186	0	LONG DRIVE	5	2507.737725	38	A	0.1	0.41	0.74	0.42	52.2	30.6	25.8	14
187	0	LONG LANE A437	5	27498.34575	28	A	0.2	0.60	1.05	0.60	68.2	34.4	28.7	23
188	0	LONG LANE A437	5	28658.48243	40.66	A	0.1	0.53	0.97	0.55	67.2	34.2	28.1	21
189	0	LONG LANE A437	5	32972.3055	35.16	A	0.1	0.56	1.04	0.59	68.4	34.5	28.4	22
190	0	LONG LANE A437	5	28658.48243	40.66	A	0.1	0.53	0.97	0.55	67.2	34.2	28.1	21
191	0	LONG LANE A437	5	32972.3055	35.16	A	0.1	0.56	1.04	0.59	68.4	34.5	28.4	22
192	0	LONG LANE A437	5	28658.48243	40.66	A	0.1	0.53	0.97	0.55	67.2	34.2	28.1	21
193	0	LONG LANE B466	5	17281.6017	33	A	0.1	0.54	0.90	0.52	64.6	33.6	27.9	20
194	0	M25	30	222838.367	87.83	A	0.2	0.51	1.32	0.75	74.4	35.8	28.6	23
195	0	M4	30	160705.1745	100.08	A	0.1	0.51	1.16	0.65	75.4	36.0	29.3	25
196	0	M4	30	83143.12838	61.5	A	0.0	0.47	1.00	0.57	63.5	33.4	27.2	18
197	0	M4	30	54966.6972	28	A	0.2	0.53	1.07	0.61	62.5	33.1	27.7	20
198	0	M4	30	83143.12838	61.5	A	0.0	0.47	1.00	0.57	63.5	33.4	27.2	18
199	0	M4	30	139686.6688	83.83	A	0.1	0.48	1.10	0.63	69.1	34.6	27.8	20
200	0	MILL ROAD	5	6830.1306	34	A	0.1	0.45	0.79	0.45	56.2	31.6	26.5	16
201	0	MOORHALL ROAD	5	7463.224575	35	A	0.1	0.45	0.79	0.45	56.7	31.7	26.5	16
202	0	MORGAN'S LANE	5	9954.893925	30	A	0.2	0.48	0.83	0.47	59.3	32.3	27.0	18
203	0	MORGAN'S LANE	5	742.358925	24	A	0.1	0.40	0.73	0.41	50.6	30.2	25.5	14
204	0	NORTH HYDE ROAD A312	5	32122.82408	42.66	A	0.2	0.54	1.00	0.57	68.1	34.4	28.2	21
205	0	NORTH HYDE ROAD A437	5	22248.27203	38.88	A	0.1	0.54	0.93	0.53	65.8	33.9	28.0	21
206	0	NORTH VIEW	5	20538.59693	20	A	0.1	0.61	1.01	0.57	66.7	34.1	28.5	22
207	0	NORTHERN PERIMETER ROAD	5	34664.841	43	A	0.1	0.55	1.02	0.58	68.4	34.4	28.3	22
208	0	NORTHERN PERIMETER ROAD	5	20162.59695	9	A	0.1	1.07	1.49	0.82	72.2	35.3	30.7	30

Receptor	Link no	Road name	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition		Total concentrations						Number of PM10 exceedences
				AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B)	Total % HDV	CO (mg/m^3)	Benzene (mg/m^3)	1,3-butadiene (mg/m^3)	NO_x (mg/m^3)	NO_2 (mg/m^3)	PM_{10} (mg/m^3)	
209	0	NORTHERN PERIMETER ROAD	5	34664.841	34	A	0.1	0.59	1.09	0.62	69.0	34.6	28.7	23
210	0	NORTHERN PERIMETER ROAD (WEST)	5	3831.771825	20	A	0.1	0.44	0.77	0.44	53.7	31.0	26.1	15
211	0	NORTHERN PERIMETER ROAD (WEST)	5	30480.63615	34	A	0.1	0.58	1.05	0.60	68.0	34.4	28.5	22
212	0	NORTHERN PERIMETER ROAD (WEST)	5	35097.6159	45	A	0.1	0.53	1.00	0.57	68.3	34.4	28.1	21
213	0	NORTHERN PERIMETER ROAD (WEST)	5	34664.841	34	A	0.1	0.59	1.09	0.62	69.0	34.6	28.7	23
214	0	NORTHWOOD ROAD	5	5966.72325	39	A	0.1	0.44	0.78	0.44	55.3	31.4	26.3	16
215	0	NORTHWOOD WAY	5	292.444425	39	A	0.1	0.39	0.72	0.41	50.2	30.1	25.4	13
216	0	NORTHWOOD WAY	5	2642.712075	24	A	0.1	0.42	0.76	0.43	52.5	30.7	25.9	15
217	0	OXFORD ROAD A4020	5	28206.42548	35.16	A	0.1	0.55	0.99	0.57	67.4	34.2	28.3	22
218	0	OXFORD ROAD A4020	5	19466.3087	35	A	0.2	0.53	0.91	0.52	65.0	33.7	27.9	20
219	0	PARK LANE	5	513.116775	34	A	0.1	0.39	0.73	0.41	50.4	30.1	25.5	14
220	0	PARK LANE	5	504.546975	47	A	0.1	0.39	0.72	0.41	50.3	30.1	25.5	14
221	0	PARK ROAD	5	6015.9996	36	A	0.2	0.44	0.78	0.44	55.4	31.4	26.3	16
222	0	PARK ROAD	5	7207.2018	18	A	0.2	0.50	0.84	0.48	57.5	31.9	26.9	17
223	0	PARK ROAD B483	5	177.82335	13	A	0.0	0.39	0.72	0.41	50.1	30.1	25.4	13
224	0	PARK ROAD B483	5	8060.968125	33	A	0.1	0.46	0.81	0.46	57.4	31.9	26.7	17
225	0	PARK ROAD B483	5	12517.26413	17	A	0.2	0.59	0.93	0.53	63.0	33.2	27.9	20
226	0	PARK ROAD B483	5	15739.50893	33	A	0.1	0.53	0.89	0.51	64.1	33.5	27.8	20
227	0	PARK VIEW ROAD	5	15222.10725	29	A	0.1	0.55	0.90	0.52	64.3	33.5	28.0	21
228	0	PARK VIEW ROAD A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20
229	0	PARK WAY	5	20763.55418	24	A	0.1	0.61	1.01	0.58	66.7	34.1	28.5	22
230	0	PEMBROKE ROAD	5	20285.78783	21	A	0.1	0.61	1.00	0.57	66.6	34.1	28.5	22
231	0	PIELD HEATH ROAD	5	4161.709125	14	A	0.1	0.48	0.81	0.46	54.6	31.2	26.4	16
232	0	PIELD HEATH ROAD	5	4300.968375	26	A	0.1	0.44	0.77	0.44	54.0	31.1	26.1	15
233	0	PINNER ROAD A404	5	29932.16895	40.16	A	0.1	0.54	0.98	0.56	67.4	34.2	28.1	21
234	0	POLE HILL ROAD	5	447.77205	40	A	0.1	0.39	0.72	0.41	50.3	30.1	25.5	14
235	0	POTTER STREET	5	6335.22465	32	A	0.1	0.45	0.79	0.45	55.8	31.5	26.4	16
236	0	POTTER STREET	5	5425.754625	24	A	0.1	0.46	0.80	0.45	55.2	31.4	26.4	16
237	0	POTTER STREET HILL	5	4488.43275	28	A	0.1	0.44	0.77	0.44	54.2	31.1	26.2	15
238	0	PUMP LANE	5	8765.834175	36	A	0.2	0.46	0.80	0.46	58.0	32.0	26.7	17
239	0	RICKMANSWORTH ROAD	5	5154.7347	40	A	0.1	0.43	0.76	0.44	54.5	31.2	26.1	15
240	0	RICKMANSWORTH ROAD	5	9676.375425	24	A	0.1	0.51	0.85	0.49	59.5	32.4	27.2	18
241	0	RICKMANSWORTH ROAD A404	5	26373.5595	48.41	A	0.1	0.52	0.93	0.53	66.4	34.0	27.8	20
242	0	RICKMANSWORTH ROAD A404	5	20777.4801	45.91	A	0.1	0.51	0.88	0.51	64.9	33.7	27.6	20
243	0	ROYAL LANE	5	4976.91135	33	A	0.2	0.44	0.77	0.44	54.5	31.2	26.2	15
244	0	ROYAL LANE	5	4664.11365	39	A	0.2	0.43	0.76	0.44	54.2	31.1	26.1	15
245	0	SHEPISTON LANE	5	29819.69033	46	A	0.2	0.52	0.96	0.55	67.5	34.2	28.0	21
246	0	SIPSON ROAD	5	3048.78635	10	A	0.1	0.46	0.79	0.45	53.4	30.9	26.1	15
247	0	SIPSON ROAD	5	15713.79953	32	A	0.2	0.53	0.89	0.51	64.2	33.5	27.8	20
248	0	SIPSON ROAD A408	5	12055.56615	37.66	A	0.1	0.49	0.84	0.48	60.7	32.7	27.2	18
249	0	SLOUGH ROAD A4007	5	16872.86498	35.16	A	0.2	0.52	0.88	0.50	64.3	33.5	27.7	20
250	0	SOUTHERN PERIMETER ROAD	5	2521.66365	31	A	0.2	0.41	0.75	0.42	52.3	30.6	25.8	14
251	0	SOUTHERN PERIMETER ROAD	5	3007.9998	28	A	0.2	0.42	0.76	0.43	52.8	30.8	25.9	15
252	0	SOUTHERN PERIMETER ROAD	5	1502.928675	55	A	0.1	0.40	0.73	0.41	51.2	30.3	25.6	14
253	0	SOUTHERN PERIMETER ROAD	5	3007.9998	34	A	0.2	0.42	0.75	0.43	52.7	30.7	25.9	15
254	0	SOUTHERN PERIMETER ROAD	5	38233.09148	41	A	0.1	0.55	1.05	0.60	69.4	34.7	28.4	22
255	0	SPRINGWELL LANE	5	4445.58375	8	A	0.1	0.57	0.89	0.50	55.8	31.5	26.8	17

Receptor	Link no	Road name	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition		Total concentrations						
				AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B)	Total % HDV	CO (mg/m^3)	Benzene (mg/m^3)	1,3-butadiene (mg/m^3)	NO_x (mg/m^3)	NO_2 (mg/m^3)	PM_{10} (mg/m^3)	Number of PM10 exceedences
256	0	STANWELL MOOR ROAD A3044	5	32539.5306	58.58	A	0.2	0.51	0.94	0.54	68.1	34.4	27.8	20
257	0	STANWELL MOOR ROAD A3044	5	24380.73913	35.16	A	0.1	0.54	0.95	0.55	66.4	34.0	28.1	21
258	0	STATION APPROACH	5	14019.12157	28	A	0.1	0.54	0.89	0.51	63.3	33.3	27.8	20
259	0	STATION ROAD	5	8189.515125	18	A	0.2	0.52	0.86	0.49	58.6	32.2	27.1	18
260	0	STATION ROAD	5	31158.72158	16	A	0.2	0.71	1.24	0.71	71.0	35.0	29.5	26
261	0	STATION ROAD	5	13820.94495	22	A	0.1	0.57	0.91	0.52	63.6	33.4	27.9	21
262	0	STATION ROAD	5	18236.5344	28	A	0.1	0.56	0.94	0.54	65.4	33.8	28.2	21
263	0	STATION ROAD	5	2837.675025	30	A	0.2	0.42	0.75	0.43	52.5	30.7	25.9	15
264	0	STATION ROAD A437	5	16560.06728	40.83	A	0.1	0.51	0.86	0.49	63.7	33.4	27.6	19
265	0	STOCKLEY ROAD A408	5	1009.09395	24	A	0.1	0.40	0.73	0.42	50.9	30.3	25.6	14
266	0	STOCKLEY ROAD A408	5	21709.44585	45.83	A	0.1	0.51	0.89	0.51	65.3	33.8	27.7	20
267	0	SWAKELEYS ROAD B467	5	23519.8161	35	A	0.1	0.54	0.95	0.54	66.1	33.9	28.1	21
268	0	SWAKELEYS ROAD B467	5	16586.8479	29	A	0.1	0.56	0.92	0.53	64.7	33.6	28.1	21
269	0	THE GREENWAY	5	15207.1101	15	A	0.2	0.63	0.97	0.56	65.9	33.9	28.5	22
270	0	THE PARKWAY A312	5	62674.16108	57.58	A	0.2	0.54	1.14	0.66	73.4	35.6	28.5	22
271	0	THORNEY MILL ROAD	5	6838.1306	36	A	0.1	0.45	0.79	0.45	56.1	31.6	26.4	16
272	0	TORRINGTON ROAD	5	773.42445	35	A	0.1	0.39	0.73	0.41	50.6	30.2	25.5	14
273	0	TREVOR ROAD	5	1520.068275	8	A	0.1	0.45	0.78	0.44	51.9	30.5	25.9	15
274	0	TRUMPER WAY A4020	5	32872.68158	29.42	A	0.1	0.61	1.12	0.64	69.4	34.7	28.9	24
275	0	TUNNEL ROAD EAST	5	3332.580975	12	A	0.2	0.46	0.79	0.45	53.8	31.0	26.2	15
276	0	UXBRIDGE ROAD A4020	5	45549.55823	45.58	A	0.1	0.55	1.08	0.62	70.3	34.9	28.4	22
277	0	UXBRIDGE ROAD A4020	5	38577.8464	32.58	A	0.1	0.58	1.05	0.60	68.2	34.4	28.5	22
278	0	UXBRIDGE ROAD A4020	5	38263.88578	37.66	A	0.1	0.57	1.09	0.62	69.5	34.7	28.6	23
279	0	UXBRIDGE ROAD THE BROADWAY A4020	5	39909.5586	28.57	A	0.1	0.63	1.20	0.69	71.0	35.0	29.2	25
280	0	VICTORIA ROAD	5	21069.92453	22	A	0.1	0.61	1.01	0.58	66.9	34.1	28.6	22
281	0	VICTORIA ROAD	5	9568.1817	43	A	0.1	0.46	0.80	0.46	58.4	32.1	26.7	17
282	0	VICTORIA ROAD	5	21069.92453	39	A	0.1	0.53	0.92	0.53	65.4	33.8	27.9	21
283	0	VICTORIA ROAD	5	9770.643225	21	A	0.1	0.51	0.86	0.49	59.6	32.4	27.2	18
284	0	VINE LANE	5	2959.794675	39	A	0.1	0.41	0.75	0.43	52.6	30.7	25.8	14
285	0	VINE STREET	5	24055.4286	20	A	0.1	0.62	1.06	0.60	67.8	34.3	28.7	23
286	0	WATFORD ROAD A4125	5	17080.68263	38.66	A	0.1	0.52	0.88	0.50	64.1	33.5	27.7	20
287	0	WATFORD ROAD A4125	5	19561.63973	35.16	A	0.1	0.53	0.91	0.52	64.9	33.7	27.9	20
288	0	WEST DRAYTON ROAD B465	5	8767.976625	26	A	0.1	0.48	0.83	0.47	58.3	32.1	26.9	17
289	0	WEST DRAYTON ROAD B465	5	8611.577775	23	A	0.2	0.50	0.84	0.48	58.5	32.2	27.0	18
290	0	WEST DRAYTON ROAD B465	5	2074.962825	28	A	0.1	0.41	0.75	0.42	51.9	30.5	25.8	14
291	0	WEST END ROAD A4180	5	22678.90448	36.33	A	0.1	0.54	0.94	0.54	65.9	33.9	28.0	21
292	0	WEST END ROAD A4180	5	32122.82408	42.66	A	0.2	0.54	1.00	0.57	68.1	34.4	28.2	21
293	0	WESTERN AVENUE A40(T)	5	46367.97413	25	A	0.2	0.64	1.28	0.73	72.4	35.3	29.4	25
294	0	WESTERN AVENUE A40(T)	5	114323.2745	35.16	A	0.2	0.67	1.81	1.05	80.6	37.0	30.4	29
295	0	WESTERN AVENUE A40(T)	5	120452.8239	94.91	A	0.2	0.57	1.33	0.75	88.4	38.6	30.6	30
296	0	WESTERN AVENUE A40(T)	5	104294.866	93.33	A	0.2	0.56	1.25	0.71	86.3	38.2	30.3	29
297	0	WESTERN AVENUE A437	5	11016.4779	35.16	A	0.2	0.48	0.83	0.47	59.9	32.5	27.0	18
298	0	WESTERN AVENUE A437	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
299	0	WESTERN AVENUE A437	5	11016.4779	35.16	A	0.2	0.48	0.83	0.47	59.9	32.5	27.0	18
300	0	WESTERN AVENUE A437	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
301	0	WESTERN AVENUE A437	5	11016.4779	35.16	A	0.2	0.48	0.83	0.47	59.9	32.5	27.0	18
302	0	WESTERN AVENUE A437	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
303	0	WESTERN AVENUE A437	5	11016.4779	35.16	A	0.2	0.48	0.83	0.47	59.9	32.5	27.0	18
304	0	WESTERN AVENUE A437	5	16208.70548	35.16	A	0.1	0.52	0.88	0.50	63.9	33.4	27.7	20
305	0	WESTERN PERIMETER ROAD	5	17440.61423	48	A	0.1	0.50	0.86	0.49	63.9	33.4	27.5	19
306	0	WINDMILL HILL	5	21153.48808	17	A	0.1	0.67	1.07	0.61	67.7	34.3	28.9	23
307	0	WOOD END	5	3681.880325	22	A	0.2	0.44	0.77	0.44	53.6	30.9	26.1	15
308	0	WOOD END GREEN ROAD	5	4907.281725	46	A	0.2	0.42	0.76	0.43	54.3	31.1	26.0	15
309	0	WOOD LANE	5	243.168075	20	A	0.1	0.39	0.72	0.41	50.1	30.1	25.4	13

Appendix 3

List of Part A Processes in the London Borough of Hillingdon

CONTENTS

Authorisation	Flue No.	Operator	Process		Address	Easting	Northing	Size	Throughput
AA3506	1	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	2	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	3	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	4	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	11.3 MW	Main fuel: Gas
AA3506	5	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	6	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	7	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	8	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	9	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AA3506	10	Heathrow Airport Ltd	1.3	COMBUSTION PROCESSES	HEATHROW AIRPORT NORTH	508600	176900	15 MW	Main fuel: Gas
AF8106	1	Nestle UK Ltd	1.3	COMBUSTION PROCESSES	NESTLE GROCERY DIVISION, NESTLES AVENUE	510150	179250	24MW	HFO
AF8106	2	Nestle UK Ltd	1.3	COMBUSTION PROCESSES	NESTLE GROCERY DIVISION, NESTLES AVENUE	510150	179250	24MW	HFO
AF8106	3	Nestle UK Ltd	1.3	COMBUSTION PROCESSES	NESTLE GROCERY DIVISION, NESTLES AVENUE	510150	179250	31MW	coffee

SIT005/80026	1	S I T A Products and Services Limited		Waste Landfilling	Land South of Harmondsworth Lane, Sipson, West Drayton, Middlesex.	506761	177979	-	-
AG8675	1	Clinical Energy Ltd	5.1	INCINERATION	THE HILLINGDON HOSPITAL TRUST, PIELD HEATH ROAD	506900	182100	-	-
AO0130	1	Hawker Pacific Aeropsace Ltd	4.5	INORGANIC CHEMICAL PROCESSES	HEATHROW AIRPORT, TBA S337 PO BOX 10	509500	176500	-	-

Appendix 4
Descriptions of selected models and tools

CONTENTS

Simple screening models[14]

1. Design Manual for Roads and Bridges (DMRB) - This screening method was formulated by the former Department of Transport. The method gives a preliminary indication of air quality near roads. The DMRB method requires information on vehicle flow, HDV mix, vehicle speed and receptor-road distances. It contains a useful database of vehicular emission factors for future years.

The method adopts the annual mean concentration as the base statistic. Background pollutant levels are included explicitly in the calculations by adding an amount to the annual mean traffic contribution using the Air Quality Archive (paragraph 6.09) or default values. The model also estimates, from the annual mean PM_{10} prediction, the number of days where the PM_{10} concentration exceeds the 50µg m^{-3} daily mean objective. The latest version of the DMRB nomogram (1.02, dated February 2003) has been used for this assessment. Details of the road layout cannot be specified.

2. Guidance for Estimating the Air Quality Impact of Stationary Sources (GSS); this guide provides precalculated dispersion results for stack emissions expressed as nomograms, was published by the Environment Agency (EA) in 1998. The nomograms are based on a large number of computations using ADMS. They cover 10 stack heights, 4 categories of surface roughness, 3 averaging times and 3 climate types. The predicted pollutant concentrations are comparable with the prescribed air quality objectives. The model is limited to a range of stack heights and exit velocities, and cannot treat building wake effects or non-buoyant source releases.

Where such point sources needed to be assessed, the **netcen** point source spreadsheet, based on this methodology has been used. This is available from http://www.airquality.co.uk/archive/laqm/tools.php.

[14] The information on simple screening models has been taken from LAQM.TG(03) Review and Assessment: *Selection and use of dispersion models*.

Appendix 5
Report Checklist

USA Checklist from http://www.uwe.ac.uk/aqm/review/checklists/usalist.doc

Updating and Screening Assessment Summary Checklist for **Carbon Monoxide**

Item	Response
• Monitoring data	Monitoring data indicates no exceedance of the objective for CO
• Very busy roads or junctions in built-up areas	No 'very busy roads,' and background concentration is below the threshold

Updating and Screening Assessment Summary Checklist for **Benzene**

Item	**Response**
• Monitoring data outside an AQMA	Benzene diffusion tubes indicated no exceedance of benzene at any of the monitoring locations
• Monitoring data within an AQMA	No AQMAs for benzene in area
• Very busy roads or junctions in built up areas	Hillingdon does not host any roads that are classified as 'very busy' according to the criteria given in the guidance
• New industrial sources.	None present
• Industrial sources with substantially increased emissions, or new relevant exposure	None present
• Petrol stations	None meeting the criteria with relevant exposure
• Major fuel storage depots (petrol only)	None

Updating and Screening Assessment Summary Checklist for **1,3-butadiene**

Item	Response
A) Monitoring data	None – background maps indicate below the objective
• New industrial sources.	None present
• Industrial sources with substantially increased emissions, or new relevant exposure	Energy to waste incinerator at Colnbrook

Updating and Screening Assessment Summary Checklist for **Lead**

Item	Response
A) Monitoring data	None
B) New industrial sources.	None
C) Industrial sources with substantially increased emissions, or new relevant exposure	None

Updating and Screening Assessment Summary Checklist for **Nitrogen Dioxide**

Item	**Response**
A) Monitoring data outside an AQMA	Monitoring data indicates no exceedance of the objective for NO_2
B) Monitoring data within an AQMA	Some exceedances within AQMAs
C) Narrow congested streets with residential properties close to the kerb	No street canyon located in the London Borough of Hillingdon
D) Junctions.	DMRB indicates exceedences at locations close to the M4, M25, A3113, A3044
E) Busy streets where people may spend 1-hour or more close to traffic	DMRB indicates exceedences at 6 locations close to the M4, M25, A3113, A3044
F) Roads with high flow of buses and/or HGVs.	DMRB indicates exceedences at M25, M4
G) New roads constructed or proposed since the previous round of R&A	No major road changes (except for motorway M4, junction 4 improvement)
H) Roads with significantly changed traffic flows, or new relevant exposure	DMRB indicates no exceedances
I) Bus Stations	There are more than 1000 bus movements per day, but there are currently no residential properties within 10m of the bus station.
J) New industrial sources.	Heathrow Terminal 5, Warehouse and Distribution development, Colnbrook new

	incinerator
K) Industrial sources with substantially increased emissions, or new relevant exposure	None present
L) Aircraft	Heathrow Airport is above the 5mppa threshold.

Updating and Screening Assessment Summary Checklist for **Sulphur Dioxide**

Item	**Response**
A) Monitoring data outside an AQMA	Monitoring data indicates no exceedances of any of the objectives
B) Monitoring data within an AQMA	No AQMAs declared for SO_2
C) New industrial sources.	None present
D) Industrial sources with substantially increased emissions, or new relevant exposure	None present
E) Areas of domestic coal burning	Not relevant
F) Small Boilers > 5 MW (thermal).	None identified
G) Shipping	Not relevant
H) Railway Locomotives	Not relevant

Updating and Screening Assessment Summary Checklist for **PM_{10}**

Item	**Response**
A) Monitoring data outside an AQMA	Monitoring data indicates 3 exceedances of 24-hour mean PM_{10} objective
B) Monitoring data within an AQMA	No AQMAs declared for PM_{10}
C) Busy roads and junctions in Scotland	Not in Scotland
D) Junctions.	Junctions assessed using DMRB – exceedances of the 24-hour mean objective

E) Roads with high flow of buses and/or HGVs.	M25 and A4 – exceedences of the 24 hour mean objective are indicated
F) New roads constructed or proposed since last round of R&A	No major road changes (except for M4, junction 4 improvement)
G) Roads with significantly changed traffic flows, or new relevant exposure.	All roads assessed using DMRB with up to date traffic data.
H) Roads close to the objective during the second round of Review and Assessment	All roads assessed using DMRB with up to date traffic data. There were no roads close to the objective in the last updating and screening assessment
I) New industrial sources.	Heathrow Terminal 5, Warehouse and Distribution development, Colnbrook new incinerator
J) Industrial sources with substantially increased emissions, or new relevant exposure	None present
K) Areas of domestic solid fuel burning	None present
L) Quarries / landfill sites / opencast coal / handling of dusty cargoes at ports etc.	None present
M) Aircraft	Heathrow Airport is above the 5mppa threshold. No exceedences.