



IPSWICH BOROUGH COUNCIL

Environmental Protection Services

Updating & Screening Assessment of Air Quality in the Borough of Ipswich

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January 2008

EXECUTIVE SUMMARY

The Governments revised National Air Quality Strategy set out a number of health-based air quality standards and objectives of which seven pollutants are of the greatest local concern: carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide, nitrogen dioxide and particulate matter (PM₁₀).

Local authorities are under a statutory duty to periodically review and assess air quality within their areas to determine whether air quality objectives will be met by specified target dates. This Updating and Screening Assessment (USA) details the method by which the Council has conducted this review and generally follows the Government's pollutant specific guidance.

Where the Updating and Screening Assessment process identifies a significant risk that a potential emission source could lead to an exceedence of an Air Quality objective, the Council must conduct a further more detailed review and report any findings to the Department of Environment, Food and Rural Affairs.

The Updating and Screening Assessment has concluded that for four of the seven prescribed pollutants the Air Quality Objectives are likely to be met and a more Detailed Assessment is not required. However, for the pollutants Benzene, Nitrogen Dioxide (NO₂) and particulates (PM₁₀) there is a need for further screening works to be completed, and a Detailed Assessment of both NO₂ and PM₁₀ at the Yarmouth Road/Bramford Road and Chevalier Street junction.

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1. INTRODUCTION

1.1 Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland was first published in January 2000 and establishes the framework for air quality improvements. The UK Government and the devolved administrations published the latest Air Quality Strategy in July 2007. Measures agreed at the national and international level are the foundations on which the strategy is based but it is recognised, however, that despite these measures, areas of poor air quality will remain. These will best be dealt with using local measures implemented through the Local Air Quality Management (LAQM) regime.

Central to the Air Quality Strategy are health-based standards for seven air pollutants of current greatest local concern i.e. benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide, particulate matter (PM₁₀), and sulphur dioxide. These standards are based on recommendations made by the Government's Expert Panel on Air Quality Standards. From these standards, Air Quality Objectives have been derived, which take account of the costs and benefits, as well as of the feasibility and practicality, of moving towards the standards. The Air Quality Objectives are specified in the Air Quality Regulations 2000, and the Air Quality (Amendment) Regulations 2002. In addition, the EU has set limit values for certain pollutants. Local authorities currently have no statutory obligation to assess air quality against these limit values.

1.2 The Review and Assessment Process

Part IV of the Environment Act 1995 placed a requirement on local authorities to periodically review and assess air quality in their districts. This involves identifying those areas where it is considered likely that the Air Quality Objectives will be exceeded. Local authorities have a duty to designate any such locations as Air Quality Management Areas (hereinafter termed AQMAs) and pursue improvements in air quality in those areas.

Ipswich Borough Council has carried out two previous rounds of review and assessment commencing in 1999 and 2003. In 2003 the Council identified three areas where it was considered air quality objectives for Nitrogen Dioxide were likely to be exceeded. Further more detailed assessments were carried out which verified that air quality standards objectives were not being met. The Council subsequently declared three AQMA's in 2006 and have begun to develop Air Quality Management Action Plans to improve air quality in these areas and work towards meeting national objectives.

The Council is now required to carry out a third, 'Borough' wide, round of review and assessments and this report fulfils this requirement.

The Government has recommended a phased approach to the review and assessment process. The first step is an *Updating & Screening Assessment*, which is to be undertaken by all authorities. This is based on a checklist to identify those matters that have changed since the last round was completed, and which may now require further assessment. This Updating & Screening Assessment should consider new monitoring data, new sources or significant changes to existing sources (either locally or in neighbouring authorities), or any other local changes that may be significant. Authorities should also consider any relevant changes to public exposure eg new residential developments alongside busy roads. If there is a risk that these changes may be significant, then a simple screening assessment should be carried out.

Where the Updating & Screening Assessment identifies a risk that an Air Quality Objective will be exceeded at a location with relevant public exposure, then a *Detailed Assessment* must be carried out. The aim of the Detailed Assessment should be to identify with reasonable certainty whether or not a likely exceedence will occur. The assumptions within the Detailed Assessment will need to be considered in depth, and the data that are collected or used, should be quality-assured to a high standard. Where a likely exceedence is identified, then the assessment should be sufficiently detailed to determine both its magnitude and geographical extent. Local authorities should not declare an AQMA unless a Detailed Assessment has been completed.

1.3 **Methodology**

Guidance has been issued by the Department for Environment, Food and Rural Affairs (DEFRA) to assist local authorities in completing their reviews and assessments. Specifically, the Government's Technical Guidance LAQM.TG(03), (hereinafter referred to as TG(03)) specifies the procedures and methods for completing the review and assessment. This guidance can be viewed on the Internet at www.defra.gov.uk/environment/airquality/laqm.htm.

The checklists in TG(03) for completing the Updating & Screening phase have been updated for the current round of review and assessments. The revised checklists can be viewed at www.uwe.ac.uk/aqm/review/guidance_05.html. In using the revised checklists DEFRA advised that authorities *do not* need to re-assess the issues that have already been adequately considered in previous rounds, but they should make it clear that due consideration has been given to each item in the checklist, and as a minimum confirm that the item is not relevant or has not changed.

TG(03) makes it clear that likely exceedences of the Air Quality Objectives should be assessed in relation to 'the quality of the air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present'. Reviews and assessments should thus be focussed on those locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective – hereinafter termed 'relevant receptor locations'. Authorities should not consider exceedences of the objectives at any location where relevant public exposure would not be realistic. Further guidance on what constitutes a relevant receptor location for the purposes of this Updating & Screening Assessment is given in **Appendix I**.

This authority's 2003 Updating & Screening Assessment described the main sources of the prescribed pollutants and their effects on human health and it is not intended to repeat that information in this report.

2. CARBON MONOXIDE

2.1 Introduction

The Government's Air Quality Objective for carbon monoxide is 10.0mg/m³ measured as a maximum daily 8-hour mean concentration. The objective was to have been achieved by the end of 2003.

Studies at a national level based on both measured and modelling data, suggest that there is little likelihood of the objective for carbon monoxide being exceeded. Carbon monoxide concentrations were expected to continue to decline to 2003 and the likelihood of any exceedence is considered to be low. However, whilst national studies suggest that the objective will be achieved, it is important that local circumstances are fully taken into consideration. All local authorities are therefore required to carry out a review and assessment for carbon monoxide. This authority's 2003 Updating & Screening Assessment concluded that there were unlikely to be any exceedences of the Air Quality Objective for carbon monoxide.

2.2 Updating & Screening Assessment

2.2.1 Monitoring Data

The Council has not conducted any monitoring campaigns of carbon monoxide concentrations in the district. The Council is not aware of any monitoring campaigns having been carried out by other agencies.

Accordingly, there is no data to review under this category.

2.2.2 Very Busy Roads or Junctions in Built-up Areas

TG(03) requires local authorities to identify 'very busy' roads and junctions in areas where the current year background concentration of carbon monoxide is expected to be above 1mg/m³. The following criteria are specified to define 'very busy':

- Single carriageway roads with daily traffic flows which exceed 80,000 vehicles per day.
- Dual carriageway (2 or 3 lane) roads with daily average traffic flows which exceed 120,000 vehicles per day.
- Motorways with daily average traffic flows exceed 140,000 vehicles per day.
- Traffic flows should be added to junctions in accordance with the guidance in TG(03).

Traffic flow data for roads in the Ipswich Borough are given in **Appendix II**. There are no roads or junctions falling within the 'very busy' criteria specified in TG(03). **No further assessment is therefore necessary at this time.**

2.3 Conclusion for Carbon Monoxide

The Updating & Screening Assessment confirms that there are no sources of carbon monoxide either within the Ipswich Borough or in neighbouring areas which will cause an exceedence of the Air Quality Objective. **No further assessment of carbon monoxide is therefore required at this time.**

3. BENZENE

3.1 Introduction

The Government's Air Quality Objectives for benzene are:

- A running annual mean concentration of $16.25\mu\text{g}/\text{m}^3$. This objective was to have been achieved by the end of 2003;
- A fixed annual mean of $5\mu\text{g}/\text{m}^3$ to be achieved by the end of 2010.

The second Air Quality Daughter Directive also sets a limit value for benzene, which has been transposed into UK legislation. The Directive includes an annual mean limit of $5\mu\text{g}/\text{m}^3$ to be achieved by 1 January 2010.

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 exceedances, which will require additional measures at a local level. Local authorities are therefore required to complete the review and assessment for benzene. This authority's 2003 Updating & Screening Assessment concluded that there were unlikely to be any exceedances of the Air Quality Objectives for benzene.

3.2 Updating & Screening Assessment

3.2.1 **Monitoring Data – Within and Outside an AQMA**

The Council has not designated any AQMAs with respect to benzene, and since the first round of reviews and assessments, it has not conducted any monitoring campaigns of benzene concentrations in the borough. The Council is not aware of any monitoring campaigns having been carried out by other agencies. **Accordingly, there is no data to review under this category.**

3.2.2 **Very Busy Roads or Junctions in Built-up Areas**

TG(03) required local authorities to identify 'very busy' roads and junctions in areas where the 2010 background concentration of benzene is expected to be above $2\mu\text{g}/\text{m}^3$. The following criteria are specified to define 'very busy':

- Single carriageway roads with daily average traffic flows which exceed 80,000 vehicles per day.
- Dual carriageway (2 or 3 lane) roads with daily average traffic flows which exceed 120,000 vehicles per day.
- Motorways with daily average traffic flows which exceed 140,000 vehicles per day.
- Traffic flows should be added at junctions in accordance with the guidance in TG(03).

Traffic flow data for roads in Ipswich Borough are given in **Appendix II**. There are no roads or junctions falling within the 'very busy' criteria specified in TG(03). **No further assessment is therefore necessary at this time.**

3.2.3 **New Industrial Sources and Existing Industrial Sources with Substantially Increased Emissions or New Relevant Exposure**

A list of industrial processes with the potential to emit significant quantities of benzene are listed in TG(03). New and existing industries in the borough and neighbouring districts have been compared against this list.

Only one significant process is located within Ipswich Borough which has the potential to emit significant quantities of benzene. This is Vopak Terminal, Cliff Quay (Grid reference 617200 242800) and is authorised under the Environmental Protection Act 1990. This process was previously identified as a potential source of fugitive emissions from its vapour recovery unit, tank seals and via pressure relief valves. The current authorisation allows for up to 10,000 tonnes of petroleum to be stored and distributed by road tanker.

Emissions from this process were assessed during the previous round of review and assessment, and it was found that no further investigation was required.

It is necessary to identify if emissions from this process have substantially increased (>30%) or if there is new relevant exposure. This will be reported as an addendum to this report with the Detailed Assessment of Air Quality in the Ipswich Borough.

3.2.4 **Petrol Stations**

There is some evidence that petrol stations will emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads. TG(03) advised that a Detailed Assessment is required where there are relevant receptor locations within 10m of the pumps of petrol stations with an annual throughput of more than 2,000m³ of petrol, and with a road with more than 30,000 vehicles per day. A survey has confirmed that there are no petrol stations in the district which have relevant receptor locations within 10m of the pumps. **No further assessment is therefore necessary at this time.**

3.2.5 **Major Fuel Storage Depots (Petrol Only)**

According to TG(03), the nearest major fuel storage depots (petrol) to the Ipswich Borough are in Wymondham in Norfolk and Thurrock in Essex. Given the distance to these terminals, they are not considered to have any significant impact on air quality within Ipswich Borough. **No further assessment is therefore necessary at this time.**

3.3 **Conclusion for Benzene**

The Updating & Screening Assessment suggests that it is unlikely that there are any sources of benzene either within the Ipswich Borough or in neighbouring areas which will cause an exceedance of the Air Quality objective. **However, as a precaution, fugitive emissions from Vopak Terminal will be further assessed and reported as an addendum to this report due to proposed development within the area.**

4. 1,3-BUTADIENE

4.1 Introduction

The Government's Air Quality Objective for 1,3-butadiene is 2.25ug/m³ measured as a maximum running annual mean concentration. The objective was to have been achieved by the end of 2003.

Studies based on both measured and modelling data, suggest that the objective for 1,3-butadiene was achieved at a national level by the end of 2003. Maximum running annual mean concentrations of 1,3-butadiene measured at all urban background/centre and roadside locations are well below the objective level. However, it is important that local circumstances are fully taken into consideration within the review and assessment process. Local authorities are therefore required to complete the review and assessment for 1,3-butadiene. This authority's 2003 Updating & Screening Assessment concluded that there were unlikely to be any exceedances of the Air Quality Objective for 1,3-butadiene.

4.2 Updating & Screening Assessment

4.2.1 Monitoring Data

The Council has not conducted any monitoring campaigns of 1,3-butadiene concentrations in the district. The Council is not aware of any monitoring campaigns having been carried out by other agencies. **Accordingly there is no data to review under this category.**

4.2.2 New Industrial Sources and Existing Industrial Sources with Substantially Increased Emissions or New Relevant Exposure

TG(03) provides a list of industrial processes regulated under the Pollution Prevention and Control (England and Wales) Regulations 2000 which have the potential to emit significant quantities of 1,3-butadiene. New and existing industries in Ipswich and neighbouring districts have been compared against this list.

There are no relevant processes within the Ipswich Borough. **No further assessment is therefore necessary at this time.**

4.3 Conclusion for 1,3-butadiene

The Updating & Screening Assessment confirms that there are no sources of 1,3-butadiene either within Ipswich or in neighbouring areas which will cause an exceedance of the Air Quality Objective. **No further assessment of 1,3-butadiene is therefore required at this time.**

5. LEAD

5.1 Introduction

The Government's Air Quality Objectives for lead are:

- 0.5ug/m³ measured as an annual mean concentration. This objective was to have been achieved by the end of 2004;
- 0.25ug/m³ measured as an annual mean concentration, to be achieved by the end of 2008.

TG(03) advises that only those local authorities with relevant receptor locations in the vicinity of major industrial processes that emit significant quantities of lead, will need to progress beyond the Updating & Screening Assessment. This authority's 2003 Updating & Screening Assessment concluded that there were unlikely to be any exceedances of the Air Quality Objectives for lead.

5.2 Updating & Screening Assessment

5.2.1 **Monitoring Data**

The Council has not conducted any monitoring campaigns of lead concentrations in the borough. The Council is not aware of any monitoring campaigns having been carried out by other agencies. **Accordingly, there is no data to review under this category.**

5.2.2 **New Industrial Sources and Existing Industrial Sources with Substantially Increased Emissions or New Relevant Exposure**

TG(03) provides a list of industrial processes regulated under the Pollution Prevention and Control (England and Wales) Regulations 2000 which have the potential to emit significant quantities of lead. New and existing industries in Ipswich and neighbouring districts have been compared against this list and only the following sites have been identified as potentially significant sources of lead:

- White Rose Environmental Ltd, Heath Road, Ipswich, Suffolk, IP4 5PD. Process type: Part A (1) Clinical Waste Incinerator. Grid reference: 619400 244900.
- Cerro Manganese Bronze Ltd, Hadleigh Road Industrial Estate, Ipswich, Suffolk IP2 0EG. Process type: Part A(1) Non-ferrous metal process. Grid reference: 614800 244830.
- Crane Limited, Nacton Road, Ipswich, Suffolk, IP3 9QH. Process type A(2) Foundry process. Grid reference: 619700 242100.

In respect of existing industrial sources, TG(03) advises that local authorities need only consider those processes which have 'substantially' increased emissions since the last round of review and assessments. A substantial increase is defined as one greater than 30%.

The Council's first round of review and assessment and subsequent updating and screening assessment estimated the amount of lead input into the process operated at Crane Limited and concluded that it was unlikely that any emission would be significant. Since the last assessment in 2003 there has been no substantial change in this process.

The Environment Agency regulates emissions from the processes at Cerro Manganese Bronze Limited and Ipswich Hospital Incinerator. The local Environment Agency office has confirmed that there has been no increase in lead emissions from either process since the last round of review and assessment.

Previously, Compair UK Limited (a foundry process) was reviewed as a potential source of emissions. The process closed down completely in 2005 and no longer exists on the original site in Ipswich. **No further assessment is therefore necessary at this time.**

5.3 **Conclusion for Lead**

The Updating and Screening Assessment confirms that there are no sources of lead either within the borough or in neighbouring areas which will cause an exceedance of the Air Quality objectives. **No further assessment of lead is therefore required at this time.**

6. SULPHUR DIOXIDE

6.1 Introduction

The Government's Air Quality Objectives for sulphur dioxide are:

- A 15-minute mean of 266 ug/m³, not to be exceeded more than 35 times in a year. This objective was to have been achieved by the end of 2005;
- A 1-hour mean of 350 ug/m³, not to be exceeded more than 24 times in a year. This objective was to have been achieved by the end of 2004;
- A 24-hour mean of 125 ug/m³, not to be exceeded more than 3 times in a year. This objective was to have been achieved by the end of 2004.

Nationally, concentrations of sulphur dioxide are falling and it is likely that the objectives will be met in all but a small number of areas where there are localised sources e.g. in the vicinity of small combustion plant or areas where solid fuel is the predominant source of domestic heating. Local authorities are therefore required to complete the review and assessment for sulphur dioxide. This authority's 2003 Updating & Screening Assessment concluded that there were unlikely to be any exceedances of the Air Quality Objectives for sulphur dioxide.

6.2 Updating & Screening Assessment

6.2.1 **Monitoring Data – Within and Outside an AQMA**

The Council has not designated any AQMAs with respect to sulphur dioxide and it has not conducted any monitoring campaigns of sulphur dioxide concentrations in the district. The Council is not aware of any monitoring campaigns having been carried out by other agencies. **Accordingly, there is no data to review under this category.**

6.2.2 **New Industrial Sources and Existing Industrial Sources with Substantially Increased Emissions or New Relevant Exposure**

TG(03) provides a list of industrial processes regulated under the Pollution Prevention and Control (England and Wales) Regulations 2000 which have the potential to emit significant quantities of sulphur dioxide. New and existing industries in Ipswich and neighbouring districts have been compared against this list and only the following sites have been identified as potentially significant sources of sulphur dioxide:

- Cerro Manganese Bronze Ltd, 22 Handford Works, Hadleigh Road Industrial Estate, Ipswich, Suffolk, IP2 0EG. Process type: Part A(1) Non-ferrous metal process. Grid reference: 614800 244830.
- White Rose Environmental Ltd, Heath Road, Ipswich, Suffolk, IP4 5PD. Process type: Part A(1) Clinical Waste Incinerator. Grid reference: 619400 244900.

In respect of existing industrial sources, TG(03) advises that local authorities need only consider those processes which have ‘substantially’ increased emissions since the last round of review and assessment. A ‘substantial’ increase is defined as one greater than 30%.

The Environment Agency regulates emissions from the process at Cerro Manganese Bronze Limited and Ipswich Hospital. The local Environment Agency office has confirmed that there has been no increase in sulphur dioxide emissions from either process since the last round of review and assessment. **No further assessment of this potential source is therefore necessary at this time.**

6.2.3 Areas of Domestic Coal Burning

Domestic coal burning can be a significant source of sulphur dioxide. TG(03) requires local authorities to identify areas where ‘significant’ coal burning still takes place which were not covered by previous reviews and assessments, or where there is new relevant exposure. ‘Significant’ is defined as any area of about 0.25 KM² where there may be more than 100 houses burning solid fuel as their primary source of heating.

Officer experience of the borough suggests that there are no areas of the town where there is significant coal burning taking place. The Southern England Regional Co-ordinator of the Approved Coal Merchants scheme has also confirmed that since 2003, “two merchants have ceased trading, two others no longer offer a delivery service and none have increased their tonnage band, and the overall burn of solid fuel in domestic appliances in Suffolk has reduced”. **No further assessment is therefore necessary at this time.**

6.2.4 Small Boilers >5MW (thermal) that Burn Coal or Oil

TG (03) advises that boiler plant (>5MW thermal) burning coal or fuel oil can give rise to high short-term concentrations, with risk that the 15-minute Air Quality Objective may be exceeded. A survey of industries and other premises likely to have such plant has been carried out in previous Updating and Screening Assessment in 2003. The following places were contacted; Ipswich Hospital, Northgate School, Crown House, Civic Centre. No relevant plant was identified. **No further assessment is therefore necessary at this time.**

6.2.5 Shipping

Large ships generally burn oils with a high sulphur content in their main engines. TG(03) advises that if there are sufficient movements of large ships in a port they can give rise to short-term concentrations above the 15-minute objective. TG(03) advises that a Detailed Assessment should be undertaken if:

- There is relevant exposure within 250m of the berths and main areas of manoeuvring and the total number of shipping movements per year from ‘large’ ships is between 5,000 and 15,000 movements per year.

The Port of Ipswich is located in the centre of Ipswich Town and has docking facilities at Wet Dock, Cliff Quay and West Bank terminals. Since 2003 the Wet Dock has undergone rapid change being redeveloped for residential and educational uses. Much of the warehousing associated with dock use has been relocated with a proportionate reduction in use of Wet Dock quays.

Shipping movement within this port for 2006 were 3,386 as supplied by Associated British Ports. Whilst there is relevant exposure within 250m of the Port, the actual number of ship movements is well below that given in the guidance as requiring further investigation.

The Port of Felixstowe is within the Suffolk Coastal District and is the largest container port within the UK. It is however, over 8km from the Ipswich borough boundary. **No further assessment of the current shipping operations is necessary at this time.**

6.2.6 **Railway Locomotives**

Diesel and coal-fired locomotives emit sulphur dioxide. Moving locomotives do not make a significant contribution to short-term concentrations and do not need to be considered further. However, exposure to stationary locomotives may be more significant, but only in terms of the 15-minute objective. TG(03) requires local authorities to identify locations where diesel or steam locomotives are regularly stationary for periods of 15 minutes or more with their engines running, and locations where there is the potential for regular outdoor exposure within 15m.

Generally, locomotives entering/leaving Ipswich mainline station are unlikely to be regularly stationary for periods of 15 minutes or more. However, there are two locations where Freightliner operates diesel locomotives; Freightliner Top Yard (sidings beyond the station towards Norwich) and Ipswich Fuel Point (with associated sidings at Ipswich Station).

There are no locations within 15m of Top Yard or the Fuel Point where members of the public will be present.

No further assessment is therefore necessary at this time.

6.3 **Conclusion for Sulphur Dioxide**

The Updating and Screening Assessment confirms that there are no sources of sulphur dioxide within Ipswich Borough or in neighbouring areas which will cause an exceedance of the Air Quality Objectives. **No further assessment of sulphur dioxide is therefore required at this time.**

7. NITROGEN DIOXIDE

7.1 Introduction

The Government's Air Quality Objectives for nitrogen dioxide (NO₂) are:

- An annual mean concentration of 40 ug/m³. This objective was to have been achieved by the end of 2005;
- A 1-hour mean of 200 ug/m³, not to be exceeded more than 18 times in a year. This objective was to have been achieved by the end of 2005.

The first Air Quality Daughter Directive also sets limit values for nitrogen dioxide, which have been transposed into UK legislation. The Directive includes:

- An annual mean limit value of 40 ug/m³ to be achieved by 1 January 2010.
- A 1-hour limit value of 200 ug/m³, not to be exceeded more than 18 times in a year, to be achieved by 1 January 2010.

Meeting the 2005 annual mean objective 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 2005 annual mean objective is likely to be achieved at all urban background locations outside of London, 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.

This authority's 2003 Updating and Screening Assessment concluded that further detailed assessments were required to study the impact of traffic on concentrations of nitrogen dioxide. The result of the detailed assessments, previously reported to Defra in 2005, led to the declaration of three Air Quality Management Areas in the town in April 2006.

7.2 Updating and Screening Assessment

7.2.1 Monitoring Data outside an AQMA - Ipswich Borough Council Diffusion Tube Survey

The Borough Council has continued with the ongoing diffusion tube monitoring programme. The results of the diffusion tube survey for 2004, 2005 and 2006 are presented in [Appendix III](#). These results have been bias corrected as per government guidance. A summary of the annual average bias corrected results is given below.

Table 1: Annual Average Nitrogen Dioxide Concentrations from Diffusion Tube Monitoring 2004 – 2006

Location		Average Concentration ($\mu\text{g}/\text{m}^3$)	
		Uncorrected Mean	Bias Corrected Mean
Civic Drive 1:	2004	31.50	34.52
	2005	32.22	35.76
	2006	27.34	27.60
Civic Drive 2:	2004	30.24	33.14
	2005	30.37	33.71
	2006	28.36	28.60
Stoke Bridge:	2004	34.92	38.28
	2005	33.39	37.06
	2006	27.40	27.60
Wherstead Road:	2004	32.27	35.37
	2005	31.04	34.46
	2006	26.24	26.50
Kings Avenue:	2004	21.55	23.61
	2005	19.87	22.06
	2006	18.53	18.70
Nacton Road:	2004	26.46	29.00
	2005	27.63	30.67
	2006	23.32	23.50
A14/Nacton Road1:	2004	34.24	37.53
	2005	40.31	44.74
	2006	36.13	36.50
A14/Nacton Road2:	2004	34.57	37.90
	2005	36.34	40.33
	2006	36.90	37.30
Woodbridge Road East:	2004	34.80	38.14
	2005	41.82	46.42
	2006	39.69	40.10
Tavern Street:	2004	28.69	31.44
	2005	30.34	33.68
	2006	27.56	27.80
331 Norwich Road:	2004	-	-
	2005	38.56	42.80
	2006	35.98	36.30

The 2006 results confirm that the objective level for Nitrogen Dioxide is likely to be met at all but the following locations outside of the AQMAs:

- Heath Road Roundabout (Woodbridge Road East)

The diffusion tube at this site is located nearer to roadside than is ideal and does not truly represent a relevant receptor location. The location of this tube will be altered and the monitoring results reported on as part of the Detailed Assessment Report.

The diffusion tube results for 2005 at 331 Norwich Road and the A14/Nacton Road junction show levels above the objective level. Whilst these had fallen in 2006 the Council will continue to monitor the levels of NO₂ at these locations and consider in more detail if results remain high.

Further monitoring results to be reported.

7.2.2 Monitoring Data within an AQMA.

Since the 2003 Updating and Screening Assessment the Ipswich Borough Council has, by Order, declared three Air Quality Management Areas within the town. These Air Quality Management Areas are as listed below:

- AQMA1: Land in or around the junction of Norwich Road, Chevallier Street and Valley Road
- AQMA2: Land in or around the junction of Crown Street with Fonnereau Road and St Margaret's Street and St Margaret's Plain
- AQMA3: Land in or around the junction of Grimwade Street with St Helens Street, the Star Lane Gyratory System, including Fore Street, Salthouse Street, Key Street, College Street, Bridge Street, Foundation Street and Slade Street

Within the three AQMAs, the Council has monitored two using a continuous NO_x monitor, and one using diffusion tubes. All data has been ratified/bias adjusted and the results are presented below.

Table 2: Annual Average Nitrogen Dioxide Concentrations from Diffusion Tube Monitoring 2004 - 2006

Location	Average Concentration ($\mu\text{g}/\text{m}^3$)		
	Uncorrected Mean	Bias Corrected Mean	
Fore Street:	2004	44.83	49.13
	2005	45.51	50.52
	2006	40.19	40.60
St. Margaret's Street 1:	2004	45.65	50.03
	2005	44.83	49.76
	2006	46.22	46.70
St Margaret's Street 2:	2004	46.77	51.26
	2005	44.42	49.31
	2006	44.02	44.50
St Margaret's Street 3:	2004	44.66	48.94
	2005	44.05	48.90
	2006	46.50	47.00
Valley Road/ Norwich Road 1:	2004	43.95	48.17
	2005	41.83	46.43
	2006	41.03	41.40
Valley Road/ Norwich Road 2:	2004	-	-
	2005	43.25	48.01
	2006	38.76	39.10
Chevallier Street 1:	2004	49.19	53.91
	2005	48.16	53.45
	2006	46.10	46.60
Chevallier Street 2:	2004	-	-
	2005	46.71	51.84
	2006	44.73	45.10

Table 3: Continuous Monitor Results: Annual Average NO_2 2004 - 2006

	Year	Result $\mu\text{g}/\text{m}^3$	Data Capture
AQMA 1: Chevalier Street:	2004	-	-
	2005	-	-
	2006	36	9.8%
	2007	32 (provisional)	72.3%
AQMA 2: St Margaret's Street:	2004	49	59.6%
	2005	52	65.1%
	2006	64	78.1%
	2007	43 (provisional)	81.9%
AQMA 3:	No monitor		

Table 4: Continuous Monitor Results: Hourly Average NO₂ 2004-2006

	<u>Year</u>	<u>No of Exceedances</u>	<u>Data Capture</u>
AQMA1 Chevalier Street:	2004	-	-
	2005	-	-
	2006	0	9.8%
	2007 (provisional)	0	72.3%
<hr/>			
AQMA2 St Margaret's Street:	2004	0	59.6%
	2005	10 (5 days)	65.1%
	2006	4 (4 days)	78.1%
	2007 (provisional)	0	81.9%
<hr/>			
AQMA 3	No Monitor		

The Continuous Monitor Results for AQMA2, St Margaret's Street, for 2006 are unsafe and should not be used. The monitor was shown to be over-reading when comparison studies were carried out with the co-located diffusion tubes. A fault was found on the machine, corrected, and the 2007 results are as expected.

The above monitoring results confirm that concentrations of NO₂ within the current AQMAs are likely to exceed the annual average objective levels and that there is no current evidence to suggest that a detailed assessment is required to investigate the need to revoke the AQMAs. However, as part of the ongoing source apportionment exercise (modelled using new traffic data) the boundaries of the AQMAs will be verified.

The continuous monitor located within AQMA 1 has been subject to a number of faults, and as such, data capture has been poor.

No further assessment of the AQMAs is required at this time other than the ongoing source apportionment and Action Plan.

7.2.3 Narrow Congested Streets with Residential Properties close to the kerb

Concentrations of Nitrogen Dioxide are often higher where traffic is slow moving with stop/start driving, and where buildings either side reduce the dispersion.

The following roads were identified as narrow congested streets with properties within 5m of the kerb with an average speed of less than 50kmh, the carriageway is less than 10m wide, and a flow greater than 10,000 vehicles per day. Roads within the AQMAs have not been considered at this point. They are to be modelled as part of the Further Assessment exercise.

Woodbridge Road
 St Helens Street
 Handford Road
 Norwich Road
 Berners Street
 Bramford Lane
 Chevallier Street
 Vernon Street
 Wherstead Road
 Burrell Road
 Sproughton Road
 Fonnereau Road

The DMRB screening model was used to predict the annual mean Nitrogen Dioxide levels for relevant receptor locations. The results of the modelling are shown in detail in [Appendix II](#) and summarised below:

Table 5: DMRB Modelling Results – Annual Average NO₂ µg/m³

Receptor No:	Road Name	Year	NO ₂ Annual Mean
1	Woodbridge Road	2007	24.50
2	Woodbridge Road	2007	21.60
3	St Helens Street	2007	26.00
4	St Helens Street	2007	23.10
5	Handford Road	2007	26.70
6	Norwich Road	2007	25.60
8	Berners Street	2007	24.50
11	Bramford Lane	2007	20.40
12	Chevallier Street	2007	27.80
13	Vernon Street	2007	27.50
14	Wherstead Road	2007	26.00
16	Burrell Road	2007	25.60
19	Sproughton Road	2007	25.30
20	Fonnereau Road	2007	22.40

There are no predicted exceedances of the annual average objective levels. No further assessment is therefore necessary at this time.

7.2.4 Junctions

A busy junction can be taken to be one with more than 10,000 vehicles per day, and there is relevant exposure within 10m of the kerb. The following junctions were identified as requiring assessment:

Yarmouth Road/Chevallier Street/Bramford Road
 Civic Drive/St Margaret's Street/Berners Street
 Heath Road Roundabout

The DMRB Screening model was used to predict the annual mean Nitrogen Dioxide levels for relevant receptor locations. The results of the modelling are shown in detail in **Appendix II** and are summarised below:

Table 6: DMRB Modelling Results – Annual Average NO₂ µg/m³

Receptor No:	Road Name	Year	NO ₂ Annual Mean
1	Yarmouth Road/Bramford Road/Chevallier Street	2007	43.50
2.	Civic Drive/St Matthews Street/Berners Street	2007	45.10
3	Heath Road/Woodbridge Road	2007	34.30

There were two predicted exceedances of the NO₂ annual mean objective. Since the traffic data was collected, there has been a significant reduction in bus flow through the Civic Drive/St Matthews Street/Berners Street junction. As such a further screening assessment will be carried out once further traffic data is obtained. A Detailed Assessment is required of NO₂ concentrations on the Yarmouth Road/Bramford Road/Chevallier Street junction.

In addition to the above, a number of junctions were identified as requiring modelling but there was not the appropriate traffic data available. These were:

Civic Drive/Princes Street
 Landseer Road/Nacton Road/Rands Way
 Foxhall Road/Heath Road/Bixley Road

These will be assessed once traffic data is available.

More detailed assessment of predicted NO₂ concentrations at the following junction will take place: Yarmouth Road/Bramford Road/Chevalier Street.

7.2.5 Busy Streets where people may spend 1 hour or more close to traffic

There are some street locations where members of the public may regularly spend 1 hour or more within 5m of the kerb. A busy street is one with more than 10,000 vehicles per day.

The following locations were assessed as falling into this category:

Civic Drive/Princes Street roundabout – bar/café on street side
 Yarmouth Road – playing field

The results for the DMRB Screening Assessment for Yarmouth Road are shown below:

Table 7 DMRB Modelling Results – Annual Average NO₂ (µg/m³)

Receptor No:	Road Name	Year	NO₂ Annual Mean
4	Yarmouth Road	2007	26.70

There was no traffic data available for the Civic Drive/Princes Street roundabout junction. This will be assessed as traffic data becomes available.

The DMRB screening model does not calculate 1-hour concentrations. TG(03) advises that if the annual mean does not exceed 60 µg/m³ then the hourly average objective should not be exceeded.

There were no predicted exceedances of the objective levels. **No further assessment is therefore necessary at this time.**

7.2.6 Roads with a high flow of buses and/or HGVs

TG(03) advises that roads with an ‘unusually high proportion’ of buses and/or HGVs could potentially lead to exceedances of the Air Quality Objectives. The guidance advises that exceedances could occur if:

- (i) the heavy duty vehicle (HDV)/bus percentage exceeds 25%, and
- (ii) the flow of HDV is greater than 2,500 vehicles per day, and
- (iii) there is relevant exposure within 10m of the road

The transportation department of Ipswich Borough Council advises that there are no roads falling within this category.

No further assessment is therefore necessary at this time.

7.2.7 New Roads

New roads constructed or proposed since the last round of air quality review and assessment will require assessment if traffic flow is greater than 10,000 vehicles per day.

The transportation department of Ipswich Borough Council advises that there are no roads falling within these categories.

One development within the neighbouring district of Mid Suffolk District Council, SnOasis – Great Blakenham, may impact on the road network. This development is for a winter sports and entertainment complex, hotel and chalets, golf course, retail and holiday village. It is anticipated that the vast majority of traffic will arrive via the A12 and A14 carriageways. The Highways Agency and Suffolk County Council are satisfied that there is sufficient capacity to absorb any increase in traffic and a new railway station is proposed to mitigate against the increase in traffic.

As part of the Environmental Statement the applicant provided an air quality assessment, which was undertaken by Casella Stanger, using the DMRB screening model to look at ten sensitive receptors within the immediate vicinity of the development. The conclusions were that the Air Quality objectives for NO₂ would not be exceeded at any of these locations. **No further assessment is therefore necessary at this time.**

7.2.8 Roads with significantly changed traffic flows

TG(03) advises that roads with significantly changed traffic flows may lead to exceedances of the Air Quality Objectives. The guidance advises that exceedances could occur on roads with more than 10,000 vpd that experience a 'large' (>25%) increase in traffic flow. Roads with improved traffic data leading to an 'increase' in traffic flow should also be considered.

The following roads were modelled through the DMRB screening tool due to improved traffic data:

Norwich Road
 Berners Street
 Bramford Road
 Bridge Street
 Felixstowe Road
 A14
 Civic Drive
 Holywells Road

The results are shown in detail in [Appendix II](#) and summarised below:

Table 8 DMRB Modelling Results – Annual Average NO₂ (µg/m³)

Receptor No:	Road Name	Year	NO ₂ Annual Mean
6	Norwich Road	2007	25.60
7	Norwich Road	2007	26.30
8	Berners Street	2007	24.50
9	Berners Street	2007	24.20
10	Bramford Road	2007	27.20
15	Bridge Street	2007	25.80
17	Felixstowe Road	2007	23.80
18	Felixstowe Road	2007	22.90
1	A14	2007	35.30
2	A14	2007	28.30
3	A14	2007	33.60
5	Civic Drive	2007	27.00
6	Civic Drive	2007	26.20
7	Holywells Road	2007	26.00

There are no predicted exceedances of the objective levels. **No further assessment is therefore necessary at this time.**

7.2.9 Bus stations

The guidance advises that there is potential for NO_x emissions arising from vehicle movements in bus stations to cause an exceedance of the 1-hour objective. The guidance advises to only consider bus stations that are not enclosed, where the flow of vehicles is greater than 1,000 bus movements per day, and where there is relevant exposure within 10m of the bus station.

There are five bus stations that are not enclosed within the Ipswich Borough. These are:

- Tower Ramparts Bus Station, Crown Street
- Anglia Retail park & Ride, Bury Road
- Constantine Road depot
- Star Lane depot
- Cattle Market Bus Station

It is not considered likely that relevant exposure will take place within 10m of the bus stations.

The Star Lane depot falls within an AQMA area and will therefore be assessed as part of the AQMA Further Assessment.

No further assessment is therefore necessary at this time.

7.2.10 New Industrial Sources

Industrial sources will not make a significant local contribution to annual mean concentrations, but could be significant in terms of the 1-hour objective.

There have not been any new industrial sources within the Ipswich Borough that require investigation.

No further assessment is therefore necessary at this time.

7.2.11 Industrial sources with substantially increased emissions

The guidance lists those processes which have the potential to emit significant quantities of Nitrogen Dioxide. The Council's previous Updating and Screening Assessment identified two potential sources of NO₂:

- White Rose Environmental Ltd, Ipswich Hospital Clinical Waste Incinerator
- Cerro Manganese Bronze Ltd, Hadleigh Road Industrial Estate

During this round of Review and Assessment, any process listed as above, with a substantial increase in emissions of 30% must be assessed.

The Environment Agency regulates emissions from these processes and has confirmed that there have been no increases in NO₂ emissions since the last round of review and assessment.

No further assessment is necessary at this time.

7.2.12 Aircraft

Emissions from aircraft once they are above about 200m will make a negligible contribution to ground level concentrations of Nitrogen Dioxide.

Concentrations of NO₂ fall off rapidly on moving away from the source and aircraft emissions of Nitrogen Oxides are unlikely to make a significant contribution beyond 1,000m of an airport boundary.

There are no airports within 1,000m of the Ipswich Borough, and so **no further assessment is necessary at this time.**

7.3 Conclusion for Nitrogen Dioxide

This Updating and Screening Assessment has confirmed that a further monitoring study is required to study the NO₂ levels at the Heath Road roundabout. Traffic data will be obtained for a number of areas of the Borough where none was available, and a screening exercise will be carried out and submitted as an addendum with the Detailed Assessment.

**A Detailed Assessment of NO₂ levels at the following junction is required:
Yarmouth Road/Bramford Road/Chevalier Street**

8. PARTICULATES (PM₁₀)

8.1 Introduction

The government's Air Quality Objectives for PM₁₀ are:-

- An annual mean concentration of 40 µg/m³, to be achieved by the end of 2004
- A fixed 24-hour mean of 50 µg/m³, not to be exceeded more than 35 times per year, to be achieved by the end of 2004

A significant proportion of current annual mean PM₁₀ is derived from regional (including long distance transport from Europe) background sources. The 2003 Updating and Screening Assessment concluded that further assessment was required of traffic related PM₁₀ and an industrial source of PM₁₀ from Tarmac Quarry Products (Southern) Ltd. More Detailed Assessment was carried out and was reported in the Further Update Assessment and Progress Report, Sept 2005.

8.2 Updating and Screening Assessment

8.2.1 **Monitoring data – within and outside an AQMA**

The Council has not designated any AQMAs with respect to PM₁₀. There has not been any monitoring of PM₁₀ for review and assessment purposes.

Monitoring of PM₁₀ – assessment of nuisance

Monitoring of PM₁₀ has taken place with respect to assessment of a complaint of nuisance from a railway refuelling depot.

A planning enquiry proof of evidence report 2005 considered emissions of NO₂ and PM₁₀ from the idling locomotives at a refuelling depot within Ipswich. The study used modelling (with comparison to Ipswich Borough Council monitoring results) to conclude that none of the health-based objectives would be exceeded at the nearest relevant receptor locations.

Following complaints of nuisance in July 2006, Ipswich Borough Council started an air quality monitoring programme at a residential property on Ancaster Close where the impact of idling train emissions during refuelling activities is perceived to be most significant. Nitrogen Oxides and PM₁₀ particulates were monitored for a 10 month period. A summary of these monitoring results are shown in Table 9:

**Table 9: Summary of Monitoring Results, Ancaster Close,
8th September 2006 – 4th July 2007**

	Nitrogen Dioxide $\mu\text{g}/\text{m}^3$		PM ₁₀ Particulate Matter (Gravimetric) $\mu\text{g}/\text{m}^3$	
	Annual Mean	1 hour mean	Annual Mean	Daily Average
Objective	40	200 (>18 exceedances per year)	40	50 (>35 exceedances per year)
Result	23	1 exceedance	23	5 exceedances

There is no evidence from this monitoring programme that any further assessment is required.

8.2.2 Junctions

Concentrations of PM₁₀ are often higher close to busy junctions. The following junctions were identified as requiring assessment:

Yarmouth Road/Chevallier Street/Bramford Road
Civic Drive/St Margaret's Street/Berners Street
Heath Road Roundabout

The DMRB Screening Model was used to predict the Annual and Daily Mean levels for relevant receptor locations. The results of the modelling are shown in detail in [Appendix II](#) and are summarised below:

**Table 10 DMRB Modelling Results – Annual Average and Number of 24
hour Exceedances of 50 $\mu\text{g}/\text{m}^3$**

Receptor No	Road Name	Year	PM ₁₀ Annual Mean	No. of Exceedances of PM ₁₀ Daily Mean (days >50 $\mu\text{g}/\text{m}^3$)
1	Yarmouth Road/ Chevallier Street/ Bramford Road	2007	33.32	41
2	Civic Drive/ St Matthews Street/ Berners Street	2007	38.34	44
3	Heath Road Roundabout	2007	29.75	22

In addition to the above, a number of junctions were identified as requiring modelling but there was not the appropriate traffic data available. These were:

Landseer Road/Nacton Road/Rands Way
Foxhall Road/Heath Road/Bixley Road

These will be assessed once traffic data is collected.

There are two junctions where the daily mean objective level is predicted to be exceeded – Yarmouth Road/Chevallier Street/Bramford Road and Civic Drive/St Matthews Street/Berners Street.

One explanation of the potential exceedance of the objective levels at the Civic Drive/St Matthews Street/Berners Street junction is that the Civic Drive/St Matthews Street route had a very high proportion of bus traffic at the time of the traffic counts. Some bus routes have since been diverted. It is therefore necessary to obtain traffic data and to screen this junction again.

A Detailed Assessment of PM₁₀ concentrations at the Yarmouth Road/Chevalier Street/Bramford Road junction will be required.

8.2.3 Roads with a high flow of buses and/or Heavy Duty Vehicles

TG(03) advises that roads with an unusually high proportion of Heavy Duty Vehicles (HDVs) can be an important source of PM₁₀. An ‘unusually high proportion’ is greater than 20% of the AADT flow. If the AADT is greater than 2,000 vehicles per day and there is relevant exposure within 10m of the road and there is an ‘unusually high proportion’ of HDV, then the PM₁₀ objective levels could be exceeded.

The Transportation department of Ipswich Borough Council advises that there are no roads that fall within these categories.

No further assessment is therefore necessary at this time.

8.2.4 New roads constructed or proposed since the last round of review and assessment

New roads constructed or proposed since the last round of air quality review and assessment will require assessment where:

- (i) the traffic flow on the new road is greater than 10,000 vehicles per day, or
- (ii) the new road has increased traffic flows on existing roads previously identified as having more than 30, 24-hour exceedances of 50 µg/m³ per year; and
- (iii) there are relevant receptor locations within 10m of the road.

The transportation department of Ipswich Borough Council advises that there are no roads falling within these categories.

One development within the neighbouring district of Mid Suffolk District Council, SnOasis – Great Blakenham, may impact on the road network. This development is for a winter sports and entertainment complex, hotel and chalets, golf course, retail and holiday village. It is anticipated that the vast majority of traffic will arrive via the A12 and A14 carriageways. The Highways Agency and Suffolk County Council are satisfied that there is sufficient capacity to absorb any increase in traffic and a new railway station is proposed to mitigate against the increase in traffic.

As part of an Environmental Statement the applicant provided an air quality assessment, which was undertaken by Casella Stanger, using the DMRB model to look at 10 sensitive receptors within the immediate vicinity of the development. The conclusions were that the Air Quality Objectives for PM₁₀ would not be exceeded at any of these locations.

It is therefore concluded that no further assessment is necessary at this time.

8.2.5 Roads with significantly changed traffic flows or new relevant exposure

TG(03) advises that roads with significantly changed traffic flows may lead to exceedances of the Air Quality Objectives. The guidance advises that exceedances could occur on roads with more than 10,000 vehicles per day that experience a 'large' (>25%) increase in traffic flow. Roads with improved traffic data leading to an 'increase' in traffic flow should also be considered.

The following roads were modelled through the DMRB screening tool due to improved traffic data:

Norwich Road
Berners Street
Bramford Road
Bridge Street
Felixstowe Road
A14
Civic Drive
Holywells Road

The results are shown in detail in **Appendix II** and are summarised below:

Table 11: DMRB Modelling Results – Annual Average and Number of 24-hour exceedances of 50 µg/m³

Receptor No	Road Name	Year	PM ₁₀ Annual Mean	No. of Exceedances of PM ₁₀ Daily Mean (days >50 µg/m ³)
6	Norwich Road	2007	25.16	13
7	Norwich Road	2007	25.34	13
8	Berners Street	2007	25.24	13
9	Berners Street	2007	25.22	13
10	Bramford Road	2007	25.86	15
15	Bridge Street	2007	25.27	13
17	Felixstowe Road	2007	24.64	12
18	Felixstowe Road	2007	24.31	11
1	A14	2007	27.45	19
2	A14	2007	20.29	4
3	A14	2007	27.63	20
5	Civic Drive	2007	25.93	15
6	Civic Drive	2007	25.58	14
7	Holywells Road	2007	25.13	13

There are no predicted exceedances of the objective levels and as such **no further assessment is required**

8.2.6 Roads close to the objective during the previous updating and screening assessment

The background PM₁₀ maps provided to help with the review and assessment has been revised to a 2004 base year. TG(03) advises that in some areas background PM₁₀ concentrations are higher than previously estimated and could change previous modelling results where it was predicted there would be between 25 and 35 days exceedance of the 24-hour objective.

Roads with traffic flows and relevant receptor locations which fall into all other categories within the guidance on assessing PM₁₀ have been considered and screened using DMRB. This is due to improved traffic data since the last round of review and assessment. **It is not therefore considered necessary to identify areas of increased predicted background concentrations as these will have been taken into consideration as part of the modelling input data.**

8.2.7 **New industrial sources and existing industrial sources with substantially increased emissions**

Industrial sources will not make a significant local contribution to annual mean concentrations, but could be significant in terms of the 24-hour objective.

There have not been any new industrial sources within the Ipswich borough that require investigation.

The Council's previous Updating and Screening Assessment identified five existing sources of PM₁₀ as identified in TG(03). These were Cemex Materials Eastern Ltd (formerly RMC), Tarmac Ltd, ABP Ipswich Port Ltd, White Rose Environmental Ltd – Ipswich Hospital Incinerator and Cerro Manganese.

Cemex Materials Eastern Ltd & ABP Ipswich Port Ltd are discussed under paragraph 8.2.9 – handling of dusty cargo at ports.

Faber Maunsell was commissioned by Ipswich Borough Council to carry out a detailed assessment of PM₁₀ concentrations arising from Tarmac Ltd. The conclusion was that emissions from Tarmac Ltd have very little impact on surrounding PM₁₀ concentrations. This was reported in the Further Update Assessment and Progress Report, September 2005.

Ipswich Hospital Incinerators and Cerro Manganese are both regulated by the Environment Agency. The Local Environment Agency has confirmed that there has been no increase in PM₁₀ emissions from either process since the last round of review and assessment.

No further assessment is therefore necessary at this time.

8.2.8 **Areas of domestic solid fuel burning**

Domestic coal burning can be a significant source of PM₁₀. TG(03) requires local authorities to identify areas where significant coal burning still takes place which are not covered by previous reviews and assessments, or where there is new relevant exposure.

'Significant' is defined as any area of about 0.25km² where there may be more than 50 houses burning solid fuel as their primary source of heating.

Officer experience of the borough suggests that there are no areas of the town where there is significant coal burning taking place. The Southern England Regional Co-ordinator of the Approved Coal Merchants scheme has also confirmed that since 2003, "two merchants have ceased trading, two others no longer offer a delivery service and none have increased their tonnage band, and the overall burn of solid fuel in domestic appliances in Suffolk has reduced". **No further assessment is therefore necessary at this time.**

8.2.9 Quarries, landfill sites, open-cast coal, handling of dusty cargoes at ports etc

Fugitive sources can be significant sources of PM₁₀. The focus is on the assessment of dust emissions, as these can be typically 20% PM₁₀.

Two potential sources of 'dust' were identified in the last round of review and assessment:

- Cemex Materials Eastern Ltd (formerly RMC)
- ABP Ipswich Port Ltd

These were assessed and no further action was required. It is not therefore necessary to consider these further.

The Council is not investigating any ongoing complaints of dust from industrial sources.

There are no significant sources of PM₁₀ in adjoining local authority areas.

No further assessment is therefore necessary at this time.

8.2.10 Aircraft

TG(03) advises that although aircraft are not major sources of PM₁₀ emissions, they may make a contribution close to source. Emissions from aircraft once they are above 200m or beyond 500m from an airport boundary will make a negligible contribution to ground-level concentrations. Only large airports with a predicted total passenger or equivalent freight throughput of more than 10million per annum have the potential to cause an exceedance of the Air Quality objectives.

There are no airports within 500m of the Ipswich Borough boundary. **No further assessment is necessary at this time.**

8.3 Conclusion for PM₁₀

The Updating and Screening Assessment has confirmed that a Detailed Assessment of PM₁₀ concentrations at the Yarmouth Road/Chevalier Street/Bramford Road junction will be required. In addition, traffic data must be obtained for a number of areas within the borough where none was available and a screening exercise will be carried out and submitted as an addendum with the Detailed Assessment. The particulate monitor will be located within the Star Lane Gyrotory System (AQMA 3) area for future reference.

9. REPORT SUMMARY AND CONCLUSIONS

The Updating and Screening Assessment of air quality has considered potential sources of the seven prescribed pollutants: carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide, nitrogen dioxide and particulate matter (PM₁₀). The assessment has followed technical guidance and builds on previous work.

The Updating and Screening Assessment has concluded that for four of the seven pollutants, the Air Quality Objectives are likely to be met within the Ipswich Borough. However, for three of the pollutants – Benzene, Nitrogen Dioxide and Particulates – there is a need for further work as listed below:

- Benzene:** Identify fugitive emissions of benzene from the industrial source Vopak and screen as per technical guidance.
- Nitrogen Dioxide:** Further monitoring of NO₂ concentrations at Heath Road roundabout, Norwich Road, A14/Nacton Road junction.
- Screening Assessment of NO₂ concentrations at Civic Drive/Princes Street junction; Landseer Road/Nacton Road/Rands Way junction, Foxhall Road/Heath Road/Bixley Road junction, Civic Drive/St Matthews Street/Berners Street junction, once traffic data is obtained.
- Detailed Assessment of NO₂ concentrations at the Yarmouth Road/Bramford Road/Chevalier Street junction.
- Particulates PM₁₀:** Screening Assessment of PM₁₀ concentrations at Landseer Road/Nacton Road/Rands Way junction; Foxhall Road/Heath Road/Bixley Road junction; Civic Drive/St Matthews Street/Berners Street junction once traffic data is obtained.
- Detailed Assessment of PM₁₀ concentrations at the Yarmouth Road/Bramford Road/Chevalier Street junction.

APPENDICES

APPENDIX 1

EXAMPLES OF WHERE THE AIR QUALITY OBJECTIVES SHOULD/ SHOULD NOT APPLY

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual Mean	<p>All locations where members of the public might be regularly exposed.</p> <p>Building facades of residential properties, schools, hospitals, libraries etc.</p>	<p>Building facades of offices or other places of work where members of the public do not have regular access.</p> <p>Gardens of residential properties.</p> <p>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.</p>
24-hour mean and 8-hour mean	<p>All locations where the annual mean objective would apply.</p> <p>Gardens of residential properties.</p>	<p>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.</p>
1-hour mean	<p>All locations where the annual mean and 24 and 8-hour objectives apply.</p> <p>Kerbside sites (eg pavements of busy shopping streets)</p> <p>Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more.</p> <p>Any outdoor locations to which the public might reasonably expect to spend 1-hour or longer.</p>	<p>Kerbside sites where the public would not be expected to have regular access.</p>
15-min mean	<p>All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.</p>	

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APPENDIX II

DMRB ASSESSMENTS AND TRAFFIC DATA

DMRB INPUTS									DMRB RESULTS ($\mu\text{g}/\text{m}^3$) (2007)		
Receptor	Distance (m)	AADT	Speed Km/h	Road Type	%LDV	%HGV	Background NO ₂	Background PM ₁₀	Annual Mean NO ₂	Annual Mean PM ₁₀ Gravimetric	Days of PM ₁₀ >50
1	8.05	6,976	38	B	93	7	21.01	23.75	24.5	24.76	12
2	4.88	3,056	38	B	96	4	20.16	23.55	21.6	23.94	10
3	6.4	8,619	38	B	92	8	21.01	23.75	26	25.31	13
4	5.9	5,526	38	B	94	6	20.16	23.55	23.1	24.45	11
5	6.8	14,277	38	B	96	4	20.82	23.65	26.7	25.69	14
6	7.1	9,433	40	B	93.5	6.5	20.82	23.65	25.6	25.16	13
7	13.7	21,122	40	B	93	7	18.73	22.96	26.3	25.34	13
8	4.95	8,550	16	B	98	2	20.82	23.65	24.5	25.24	13
9	11.25	8,550	16	B	98	2	21.01	23.84	24.2	25.22	13
10	9.5	16,801	32	B	94	6	19.68	23.25	27.2	25.86	15
11	7	1,864	32	B	98	2	19.68	23.25	20.4	23.50	9
12	12.32	15,902	24	B	95	5	21.01	23.84	27.8	26.41	16
13	8.8	14,086	48	B	93	7	20.82	23.55	27.5	25.56	14
14	6.75	17,060	48	B	93	7	17.97	22.08	26	24.43	11
15	29.5	26,723	32	B	95	5	20.82	23.55	25.8	25.27	13
16	8.75	11,310	32	B	95	5	20.44	23.45	25.6	25.26	13
17	12.75	12,395	32	B	95	5	18.54	22.86	23.8	24.64	12
18	8.9	9,103	32	B	95	5	18.54	22.86	22.9	24.31	11
19	7.9	11,812	32	B	95	5	19.68	23.25	25.3	25.18	13
20	7.7	4,726	32	B	99	1	21.01	23.75	22.4	24.36	11

Notes

- The above AADT are based on 12hr counts, which have been corrected to AADT using local adjustment factors supplied by Suffolk County Council
- A growth of 1% per annum has been used to correct the year of the count data, where appropriate.
- Speed data has been taken from the nearest relevant count, or from the speed limit or expected speed.
- NO₂ annual mean concentrations calculated as per the revised guidance

Road Names:

<u>Receptor No:</u>	<u>Road Name:</u>	<u>Number:</u>
1	Woodbridge Road	41-45
2	Woodbridge Road	187
3	St Helen's Street	4-18
4	St Helen's Street	117-133
5	Handford Road	123-137
6	Norwich Road	92-118
7	Norwich Road	1 Kelvin Road
8	Berners Street	32
9	Berners Street	89-92
10	Bramford Road	271
11	Bramford Lane	30
12	Chevallier Street	34
13	Vernon Street	Flat 56
14	Wherstead Road	383
15	Bridge Street	Stokebridge Maltings
16	Burrell Road	171
17	Felixstowe Road	501
18	Felixstowe Road	122
19	Sproughton Road	1
20	Fonnereau Road	9

DMRB ASSESSMENTS AND TRAFFIC DATA

DMRB INPUTS									DMRB RESULTS ($\mu\text{g}/\text{m}^3$) (2007)		
Receptor	Distance (m)	AADT	Speed Km/h	Road Type	%LDV	%HGV	Background NO ₂	Background PM ₁₀	Annual Mean NO ₂	Annual Mean PM ₁₀ Gravimetric	Days of PM ₁₀ >50
1	8.8	16,809	32	B	94	6	21.01	23.84	43.5	33.32	41
	8.3	8,568	32	B	94	6					
	8.3	23,212	32	B	95	5					
	8.3	15,733	32	B	95	5					
2	10	26,616	32	B	96	4	20.82	23.65	45.1	33.82	44
	10	19,412	32	B	92	8					
	10	21,097	32	B	91	9					
	10	8,576	32	B	98	2					
3	11	14,739	48	B	96	4	16.73	22.18	34.3	28.36	22
	11	40,981	48	B	95	5					
	11	15,134	48	B	95	5					
4	8.65	23,350	40	B	95	5	19.11	22.86	26.7	25.40	13
5	15.55	26,032	40	A	97	3	20.82	23.65	27	25.93	15
6	15.55	26,032	40	B	95	3	20.82	23.65	26.2	25.58	14
7	8	9,978	40	B	91	9	20.06	23.35	26	25.13	13

Notes:

- The above AADT are based on 12hr counts, which have been corrected to AADT using local adjustment factors supplied by Suffolk County Council
- A growth of 1% per annum has been used to correct the year of the count data, where appropriate.
- Speed data has been taken from the nearest relevant count, or from the speed limit or expected speed.
- NO₂ annual mean concentrations calculated as per the revised guidance

Road Names:

Receptor No:

- 1** Yarmouth Rd/Bramford Rd/Chevallier St Junction
2. Civic Drive/St Matthews Street/Berners St Junction
3. Heath Road/Woodbridge Road Roundabout
4. Yarmouth Road Playing Field

Receptor No:

- 5.** Civic Drive – 29
6. Civic Drive – 29
7. Holywells Road – 9 - 15

DMRB ASSESSMENTS AND TRAFFIC DATA

DMRB INPUTS									DMRB RESULTS ($\mu\text{g}/\text{m}^3$) (2007)		
Receptor	Distance (m)	AADT	Speed Km/h	Road Type	%LDV	%HGV	Background NO ₂	Background PM ₁₀	Annual Mean NO ₂	Annual Mean PM ₁₀ Gravimetric	Days of PM ₁₀ >50
1	36.5	46,599	104	A	72.5	27.5	17.3	22.37	35.3	27.45	19
2	58	46,599	104	A	72.5	27.5	16.73	17.27	28.3	20.29	4
3	45	57,000	120	A	77	23	18.83	22.86	33.6	27.63	20

Notes

- The above AADT are based on 12hr counts, which have been corrected to AADT using local adjustment factors supplied by Suffolk County Council
- A growth of 1% per annum has been used to correct the year of the count data, where appropriate.
- Speed data has been taken from the nearest relevant count, or from the speed limit or expected speed.
- NO₂ annual mean concentrations calculated as per the revised guidance

Road Names:

Receptor No: Road Name:

- 1 A14 – Lovetofts Drive
2. A14 – West Meadows
3. A14 – Nacton Road

APPENDIX III

**NITROGEN DIOXIDE DIFFUSION TUBE
MONITORING LOCATIONS AND RESULTS**

2004/2005/2006

2004 Nitrogen Dioxide Levels in ug/m3

Diffusion Tube Data

Location: K = Kerbside, I = Intermediate, B = Background

Street	Location:	Grid Ref x/y	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Count	Min	Max	Mean	Local Bias 1.10	National Bias 1.12
Civic Drive	(K) 1	615999/244399			28.27			29.3	30.4	32.28		30.6	36.3	33.38	7	28.3	36.34	31.50	34.52	35.28
Civic Drive co-locate	(K) 2	615999/244399			26.84			22.42	26.7	32.28		31.6	37	34.87	7	22.4	36.95	30.24	33.14	33.87
Stoke Bridge	(K) 3	616315/243934	38.1				36.4	26.46	30.8	35.67		35.4	41.7		7	26.5	41.65	34.92	38.28	39.11
Wherstead Road	(K) 4	616258/242616	33.1		29.13	38.59	33.9		26.1	29.23		32.8	36.2	31.38	9	26.1	38.59	32.27	35.37	36.15
Fore Street	(K) 5	616860/244147			37.49	50.67	53.8	44.26	42.7	46.36		41.8	42.1	44.33	9	37.5	53.75	44.83	49.13	50.21
Kings Avenue	(B) 6	617299/244412	23.5	31.1	17.92			14.59	15.7	17.58			24.4	27.68	8	14.6	31.05	21.55	23.61	24.13
Nacton Road	(K) 7	618971/242296	35.1	32.1	31.08			25.63	0.95	25.11				35.33	7	0.95	35.33	26.46	29.00	29.64
Nacton Rd/A14 junction	(K) 8	620076/241281	28.1	36.6	30.5	37.67	41	26.54		34.73		33.1	40	34.13	10	26.5	41.02	34.24	37.53	38.35
Nacton Rd/A14 junction	(K) 9	620076/241281	32.1	36.8	30.22	41.34	34.9	30.48	31.4	38.4		32.3	39.8	32.63	11	30.2	41.34	34.57	37.88	38.71
Woodbridge Road East	(K) 10	619317/245127	40.1	31.9	32.58	39.51	29.9								5	29.9	40.08	34.80	38.14	38.97
St Margaret's Street	(K) 11	616578/244759	48.6		34.58	50.08	48.9	44.5	48.8	47.16		43.5	44.9		9	34.6	50.08	45.65	50.03	51.13
St Margaret's St co locate	(K) 12	616578/244759	51.1		37.29	45.94	55.8	50.46	45.1	56.02		36.1	43.1		9	36.1	56.02	46.77	51.26	52.38
St Margaret's St co locate	(K) 19	616578/244759			33.9	45.94	47.5	45.88	49.3	50		42.2	42.6		8	33.9	50	44.66	48.94	50.02
Valley/Norwich Road	(K) 13	615342/245422	41.6	44.1	41.99		45.1	45.29		45.81		42.9	48.3	40.47	9	40.5	48.29	43.95	48.17	49.22
Chevalier Street	(K) 14	615283/245391	49.1	53.9	47.05	49.16	59.2	42.99	50	47.71		48.3	52.9	40.97	11	41	59.15	49.19	53.91	55.09
Cornhill o/s No 17	(B) 15	616277/244641	30.6	35	27.46	31.69	27.9	20.77	24.4	27.23		27.2	32.4	31	11	20.8	34.98	28.69	31.44	32.13
Museum Street	(K) 16	616086/244571	38.1		21.14	39.5	36.5		29.5	35.72		33.6	39.9	32.94	9	21.1	39.89	34.09	37.37	38.18
Museum Street Co-locate	(K) 17	616086/244571	35.1	37.9	28.9	35.83			30.4	29.86		32.6	35.1	33.66	9	28.9	37.85	33.26	36.45	37.25
Museum Street Co-locate	(K) 18	616086/244571	29.1		34.07	39.5	40.8		25.8	33.6		34.9	34.9	29.68	9	25.8	40.81	33.58	36.80	37.61

2005 Nitrogen Dioxide Levels in ug/m3

Diffusion Tube Data

Location: K = Kerbside, I = Intermediate, B = Background

Street	Location	Grid Ref x/y	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Count	Min	Max	Mean	Bias 1.11
Civic Drive	(K) 1	615999/244399	29.3	38.12	36.71	30.9		28.6	25.79	24.29	25.87	50.17	32.54		10	24.29	50.2	32.22	35.76
Civic Drive co-locate	(K) 2	615999/244399	34.2	35.68	33.13	32.6		27.4	25.65	27.15	25.19	33.48	29.23		10	25.19	35.7	30.37	33.71
Stoke Bridge	(K) 3	616315/243934	33.5	53.27	35.91	32.3	27.1	30.8		24.94	27.87	37.4	30.89		10	24.94	53.3	33.39	37.06
Wherstead Road	(K) 4	616258/242616	31.5	41.17	37.04	31.1	23.9	32.2	25.68	20.42	29.4	33.84	35.14		11	20.42	41.2	31.04	34.46
Fore Street	(K) 5	616860/244147	44.2		54.18	48.7	46.3	46.2	44.16	40.19	44.51	47.61	39.09		10	39.09	54.2	45.51	50.52
Kings Avenue	(B) 6	617299/244412	21.9	25.28	26.73	20.7	14.3			14.04	18.8	13.88	23.35		9	13.88	26.7	19.87	22.06
Nacton Road	(K) 7	618971/242296	30.7		37.85				22.16	24.54	24.29	26.34	27.51		7	22.16	37.9	27.63	30.67
Nacton Rd/A14 junction	(K) 8	620076/241281	32.8		37.66		35.3	40.5	38.75	46.19	44.16	46.16	41.27		9	32.76	46.2	40.31	44.74
Nacton Rd/A14 junction	(K) 9	620076/241281	38.5		43.07		34.5	39.8	36.92	42.13		27.5	28.28		8	27.5	43.1	36.34	40.33
Woodbridge Rd East	(K) 10	619317/245127	36.7		34.68		41.1	50	46.82	35.88	47.59				7	34.68	50	41.82	46.42
St Margaret's Street	(K) 11	616578/244759	42.4	41.66	50.67	50.1				43.34	43.93		41.62		7	41.62	50.7	44.83	49.76
St Margaret's St co locate	(K) 12	616578/244759	42.4	39.28	47.47	51.5				35.72	50.87		43.75		7	35.72	51.5	44.42	49.31
St Margaret's St co locate	(K) 19	616578/244759	44	44.1	46.3	45.4				36.62	46.54		45.34		7	36.62	46.5	44.05	48.90
Valley/Norwich Road	(K) 13	615342/245422	40.2	45.13	46.67	46.2	34.6	47.5	40.92	28.78	46.41	41.83			10	28.78	47.5	41.83	46.43
Chevalier Street	(K) 14	615283/245391	47.6	50.7	53.37	50.7	34.5	55.4	47.24	40.7	56.87		44.54		10	34.53	56.9	48.16	53.45
Cornhill o/s No 17	(B) 15	616277/244641	29	38.09	34.45	28.4		25.8	28.1	22.23	28.67	32.58	36.09		10	22.23	38.1	30.34	33.68
Museum Street	(K) 16	616086/244571	13.6	40.6	37.26	40.1									4	13.59	40.6	32.88	36.49
Museum Street Co-locate	(K) 17	616086/244571	34.7	31.87	36.04	36.9	42.4								5	31.87	42.4	36.37	40.38
Museum Street Co-locate	(K) 18	616086/244571	35.1	35.51	39.37	35.9	25.1								5	25.09	39.4	34.19	37.95
Valley/Norwich Road	(K) 16	615342/245422						48.2	45.57	42.41	39.88	40.23			5	39.88	48.2	43.25	48.01
Chevalier Street	(K) 17	615283/245391						50		42.3	44.89	48.85	47.49		5	42.3	50	46.71	51.84
Norwich Road o/s 331	(K) 18	614997/245804						40		36.36	42.46		35.39		4	35.39	42.5	38.56	42.80

2006 Nitrogen Dioxide Levels in ug/m3

Diffusion Tube Data

Location: K = Kerbside, I = Intermediate, B = Background

Street	Location	Grid Ref x/y	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Count	Min	Max	Mean	Bias 1.01
Civic Drive	(K) 1	615999/244399		29.8	26.3	12.6	26.9		28.4	21.3	32.3	34.8	30.12	30.9	10	12.57	34.76	27.34	27.6
Civic Drive co-locate	(K) 2	615999/244399		31.4	24.9	12.3	27.8		28.9	24.4	33.1	33.7	35.15	32.1	10	12.31	35.15	28.36	28.6
Stoke Bridge	(K) 3	616315/243934		34.9	27.8	12.5	28.2	25.8	19.6	23.2	35.3	30.3	34.23	29.6	11	12.46	35.29	27.40	27.6
Wherstead Road	(K) 4	616258/242616		32.9	29.5	12	18.9	27.8	25.1	21.7	30	32.7		31.7	10	12.04	32.93	26.24	26.5
Fore Street	(K) 5	616860/244147		44.2	34.9	20.4	41.8	51.5	46.9	36.9	47.4	40.8	41.46	36	11	20.37	51.49	40.19	40.6
Kings Avenue	(B) 6	617299/244412		22.1			15.5	14.5	13.5	14.4	18.4	23	24.6	20.8	9	13.49	24.6	18.53	18.7
Nacton Road	(K) 7	618971/242296		30.1	21.2	10.3	24.2	22.4	26.3	19.2	27.3	26.8	22.03	26.9	11	10.27	30.1	23.32	23.5
Nacton Rd/A14 junction	(K) 8	620076/241281		41.3	30.4	16.3		47.8	48.2		38.3	32.5	37.88	32.6	9	16.25	48.19	36.13	36.5
Nacton Rd/A14 junction	(K) 9	620076/241281		40.6	29.1	15.5	38.3	42.5	50.5	37	45.5	34.5	37.49	34.8	11	15.45	50.54	36.90	37.3
Woodbridge Road East	(K) 10	619317/245127				17	41.7	42.9	35.5	35.9	50.8	48.1	46.24	39.2	9	16.96	50.75	39.69	40.1
St Margaret's Street	(K) 11	616578/244759		39.6	39.7		48.3	49.3		46.7		52.2	48.76	45.2	8	39.62	52.23	46.22	46.7
St. Marg St co-locate	(K) 12	616578/244759		38.6	37.1	22.5	48.5			46	59.5	46.6	52.91	44.5	9	22.53	59.5	44.02	44.5
St. Marg St co-locate	(K) 19	616578/244759		39.7	36.6		48.5	47.7		44.5	54	51	52.85	43.7	9	36.56	54.03	46.50	47
Valley/Norwich Road	(K) 13	615342/245422		41.7	36.3	19.1	43		50.5	34.9	49.7	44.9	48.52	41.7	10	19.09	50.45	41.03	41.4
Chevalier Street	(K) 14	615283/245391		51.3	44.4	24.2	48.8	53.2	51.1	42.4	51.1	51.1	46.94	42.5	11	24.24	53.23	46.10	46.6
Cornhill o/s No 17	(B) 15	616277/244641		32.9	28.4	11.7	25.9	28.1	23.7	20.8	34	32.9	37.04	27.7	11	11.7	37.04	27.56	27.8
Valley/Norwich Road	(K) 16	615342/245422		41.4	34.5	20.4	41.5		41.9	41.6	35.1	45.6	46.73	38.8	10	20.43	46.73	38.76	39.1
Chevalier Street	(K) 17	615283/245391		49.3	42.3	24.2	48.6	48	48.5	38.8	53.1	45	55.37	39	11	24.16	55.37	44.73	45.1
Norwich Road o/s 331	(K) 18	614997/245804			32.1	13.8	31.9	45.6	45.6	34.2	39.9	41.5	39.92	35.3	10	13.82	45.6	35.98	36.3

GLOSSARY

Air Quality Objective:

Policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specified timescale (see also Air Quality Standard)

Air Quality Standard:

The concentrations of pollutants in the atmosphere which 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 sub groups (see also Air Quality Objective)

Annual Mean:

The average of the concentrations measured for each pollutant for one year. In the case of the Air Quality Objectives this is for a calendar year

AQMA:

Air Quality Management Area, an area which a local authority has designated for action based upon predicted exceedances of Air Quality Objectives

Concentration:

The amount of a (polluting) substance in a volume (of air), typically expressed as a mass of pollutant per unit volume of air (for example, micrograms per cubic metre, $\mu\text{g}/\text{m}^3$) or a volume of gaseous pollutant per unit volume of air (parts per million, ppm)

Conservative:

Tending to over-predict the impact rather than under-predict

Data Capture:

The percentage of all the possible measurements for a given period that were validly measured

Exceedance:

A period of time where the concentration of a pollutant is greater than the appropriate Air Quality Objective.

Fine Particles, Particulate Matter, PM_{10}

Particles in air with an (equivalent aerodynamic) diameter of ten micrometres ($10\ \mu\text{m}$) or less

Microgram (μg):

One millionth of a gram

Micrometre (μm):

Also referred to as a micron, one millionth of a metre

Mg/m^3 milligrams per cubic metre of air:

A unit for describing the concentration of air pollutants in the atmosphere, as a mass of pollutant per unit volume of clean air. This unit is one thousand times larger than the $\mu\text{g}/\text{m}^3$ unit listed below

$\mu\text{g}/\text{m}^3$ micrograms per cubic metre of air:

A measure of concentration in terms of mass per unit volume. A concentration of $1 \mu\text{g}/\text{m}^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant

TEOM

Tapered Element Oscillating Microbalance. Equipment used for measuring fine particulate matter such as PM_{10}