

**Ashfield District Council**  
**Local Air Quality Management**  
**Progress Report**  
**May 2011**

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# Executive Summary

Part IV of the Environment Act 1995 requires local authorities to review and assess the current and future air quality in their areas against objectives set out for eight key air pollutants, under the provisions of the National Air Quality Regulations 2000 and the Air Quality (Amendment) Regulations 2002. Review and assessment is now undertaken using a phased approach, initially conducting an 'Updating and Screening Assessment and then a 'Detailed Assessment where the updating and screening assessment indicates that an Air Quality Objective may be compromised

Progress reports are designed to ensure continuity in the LAQM process. They thus fill the gaps between the three yearly requirements to carry out a review and assessment of air quality. Progress reports are only required in years when the authority is not carrying out an Updating and Screening Assessment or a Detailed Assessment. This report forms the fifth Progress Report produced by Ashfield District Council following the most recent Updating and Screening Assessment submitted to Defra in May 2009.

The aim of this report is to detail the progress on implementing local air quality management across Ashfield by presenting new monitoring data and a review of local developments which might affect local air quality. This Progress Report represents the eleventh report on air quality produced by Ashfield District Council. It is recommended that the report is read in conjunction with the preceding reports:

A review of air quality measurement during 2010 has demonstrated that all the air quality objectives continue to be achieved across Ashfield. There is no requirement to proceed to a Detailed Assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.

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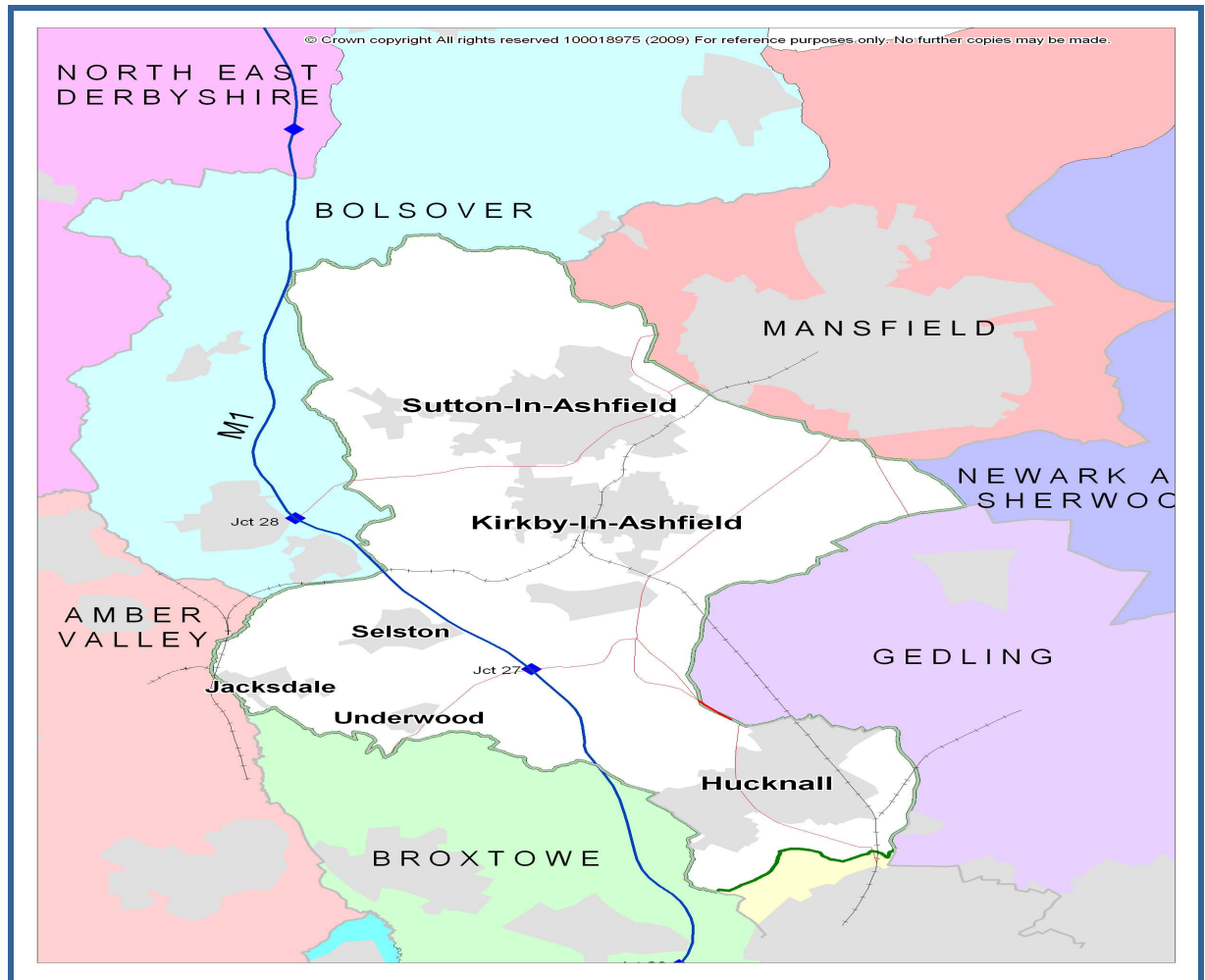
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# 1 Introduction

## 1.1 Description of Local Authority Area

Ashfield District Council was formed on the 1st April, 1974, and comprises the former Urban Districts of Hucknall, Kirkby-in-Ashfield and Sutton-in-Ashfield, together with the parishes of Annesley, Felley and Selston, which were part of the Basford Rural District.

The district covers an area of 10,956 hectares and is located on the western side of Nottinghamshire. It adjoins five Districts within the County, including Nottingham City to the south and Mansfield to the north, and also adjoins Derbyshire. It has an estimated population of 115,650 (mid-2006 ONS). The majority of this population, together with associated housing, jobs and services, are concentrated within the three main towns of Sutton-in-Ashfield, Hucknall and Kirkby-in-Ashfield, together with 3 large villages in the substantial rural area mainly to the west of the M1 motorway.



The District is well served by road links, notably the M1, A38 and the Mansfield Ashfield Regeneration Route (MARR). The Robin Hood railway line (which runs from Nottingham to Worksop) has stations at Kirkby-in-Ashfield, Hucknall and Sutton Parkway. Hucknall is also a terminus for the recently constructed Nottingham Express Transit (NET) tram route to Nottingham.

The main settlements share strong historic, economic and cultural links based around the growth and subsequent decline of coal mining, textiles and engineering industries. Approximately one third of the District lies within the Nottingham-Derby Green Belt. Large parts of the landscape have been recovered from the era of mineral extraction, with many areas successfully reclaimed for recreational use or development land. The District has three significant retail centres in each of the main towns.

## 1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

## 1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (for carbon monoxide the units used are milligrammes per cubic metre,  $\text{mg}/\text{m}^3$ ). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

**Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.**

Pollutant	Concentration		Measured as	Date to be achieved by
<b>Benzene</b>	16.25 $\mu\text{g}/\text{m}^3$		Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$		Running annual mean	31.12.2010
<b>1,3-Butadiene</b>	2.25 $\mu\text{g}/\text{m}^3$		Running annual mean	31.12.2003
<b>Carbon monoxide</b>	10.0 $\text{mg}/\text{m}^3$		Running 8-hour mean	31.12.2003
<b>Lead</b>	0.5 $\mu\text{g}/\text{m}^3$		Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$		Annual mean	31.12.2008
<b>Nitrogen dioxide</b>	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year		1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$		Annual mean	31.12.2005
<b>Particles (PM<sub>10</sub>) (gravimetric)</b>	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year		24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$		Annual mean	31.12.2004
<b>Sulphur dioxide</b>	350 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 24 times a year		1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 3 times a year		24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year		15-minute mean	31.12.2005



## 1.4 Summary of Previous Review and Assessments

This Progress Report represents the twelfth report on air quality produced by Ashfield District Council. It is recommended that the report is read in conjunction with the preceding reports, Air Quality Review and Assessment August 2001, Updating and Screening Assessment May 2003, Detailed Assessment April 2004, Detailed Assessment December 2004, Progress Report April 2005, Update and Screening Assessment May 2006, Progress Reports 2007, 2008 and Update and Screening Assessment May 2009, Progress Report 2010, Progress Report 2011.

Table 1.4 provides details of the abovementioned reports and highlights their respective outcomes.

**Table 1.2: Previous Review and Assessments**

Report	Date of Report	Outcomes
<p><b>Stage One and Two Air Quality Assessment</b></p>	<p>May 2000</p>	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead:</b></p> <p>No need for further assessment</p> <p><b>Nitrogen Dioxide:</b></p> <p>Further review and assessment immediately adjacent to Rolls Royce Fuel Burning Engine Facility, Hucknall.</p> <p><b>Particles PM<sub>10</sub>:</b></p> <p>Further review and assessment adjacent to M1 Motorway.</p> <p><b>Sulphur Dioxide:</b></p> <p>Further review and assessment immediately adjacent to Kings Mill Hospital Boiler Plant</p>
<p><b>Stage Three Air Quality Assessment</b></p>	<p>August 2001</p>	<p><b>Nitrogen Dioxide:</b></p> <p>Further review and assessment undertaken immediately adjacent to Rolls Royce Fuel Burning Engine Facility, Hucknall. Monitoring/Modelling identified no need to declare an AQMA.</p> <p><b>Particles PM<sub>10</sub>:</b></p> <p>Further review and assessment undertaken at two locations adjacent to M1 Motorway. Monitoring/Modelling identified no need to declare an AQMA.</p>

		<p><b>Sulphur Dioxide:</b></p> <p>Further review and assessment undertaken immediately adjacent to Kings Mill Hospital Boiler Plant. Monitoring results were well below modelled predictions as the Hospital had switched to a low sulphur fuel source.</p> <p>In addition, the Hospital would be switching to a CHP plant in the near future. Therefore no need to declare an AQMA.</p>
<b>Update and Screening Assessment</b>	May 2003	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide:</b></p> <p>The updating and screening assessment for the above pollutants was completed against the checklist criteria contained in Technical Guidance LAQM.TG (03). It was concluded that the Air Quality Objectives prescribed for these pollutants would be achieved across Ashfield and therefore there was no requirement to undertake a detailed assessment for these pollutants.</p> <p><b>Particles PM<sub>10</sub>:</b></p> <p>The updating and screening assessment for PM<sub>10</sub> was completed against the criteria listed in Technical Guidance LAQM.TG (03). It was concluded that the Air Quality Objectives would be met across Ashfield, except in the location of Pinxton Green where the updating and screening assessment indicated that the 24-hour mean objective may be compromised. It was therefore recommended that a detailed assessment for PM<sub>10</sub> be undertaken at this location.</p>
<b>Detailed Assessment</b>	April 2004	<p>Detailed assessment for Particles PM<sub>10</sub> undertaken at Pinxton Green. Monitoring carried out adjacent to a single dwelling within close proximity to the M1 Motorway was completed against the criteria contained within the LAQM Technical Guidance (03). It was concluded that the air quality objectives for PM<sub>10</sub> achieved in this location and no need to declare an AQMA.</p>
<b>Detailed Assessment</b>	December 2004	<p>An initial assessment was undertaken for Oakfield Avenue and presented in the Updating and Screening Assessment (USA) reported in May 2003. The report concluded that there was no requirement for Ashfield to go to a detailed assessment based upon the data evaluated at this location. However, subsequent monitoring at this location revealed that there were three significant</p>

		<p>episodes of PM<sub>10</sub> recorded. Therefore, a detailed assessment was carried out for Particles PM<sub>10</sub>. It was concluded that the air quality objectives for PM<sub>10</sub> achieved in this location and no need to declare an AQMA.</p>
<b>Progress Report</b>	April 2005	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2003/04 demonstrated that all the air quality objectives continued to be achieved across Ashfield. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.</p>
<b>Update and Screening Report</b>	April 2006	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2003/04 demonstrated that all the air quality objectives continued to be achieved across Ashfield. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.</p>
<b>Progress Report</b>	April 2007	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2003/04 demonstrated that all the air quality objectives continued to be achieved across Ashfield. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.</p>
<b>Progress Report</b>	April 2008	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2003/04 demonstrated that all the air quality objectives continued to be achieved across Ashfield. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.</p>

<p><b>Update And Screening Assessment</b></p>	<p>May 2009</p>	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2008/09 demonstrated that Ashfield continued to meet all the air quality objectives. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants.</p> <p>The assessment did highlight the need to secure capital investment for the replacement of air monitoring equipment. Investment in automatic monitoring equipment would enable more accurate and in – depth monitoring to occur.</p>
<p><b>Progress Report</b></p>	<p>May 2010</p>	<p><b>Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM<sub>10</sub>:</b></p> <p>A review of air quality measurement during 2010 demonstrated that all the air quality objectives continued to be achieved across Ashfield. There was no requirement to proceed to a detailed assessment for any of the Air Quality Strategy pollutants as a result of air quality data reported within this Progress Report.</p>

## **2 New Monitoring Data**

### **2.1 Summary of Monitoring Undertaken**

#### **2.1.1 Automatic Monitoring Sites**

Following the refusal of a bid to defra in 2010 for a grant for the replacement of air quality equipment capital funding was provided for the purchase of new monitoring equipment. New monitoring equipment and trailer were delivered in August 2010, however problems with the data logging equipment lead to a requirement to seek further capital funding for a new data logger. Unfortunately this equipment was not commissioned in time to provide data for this report.

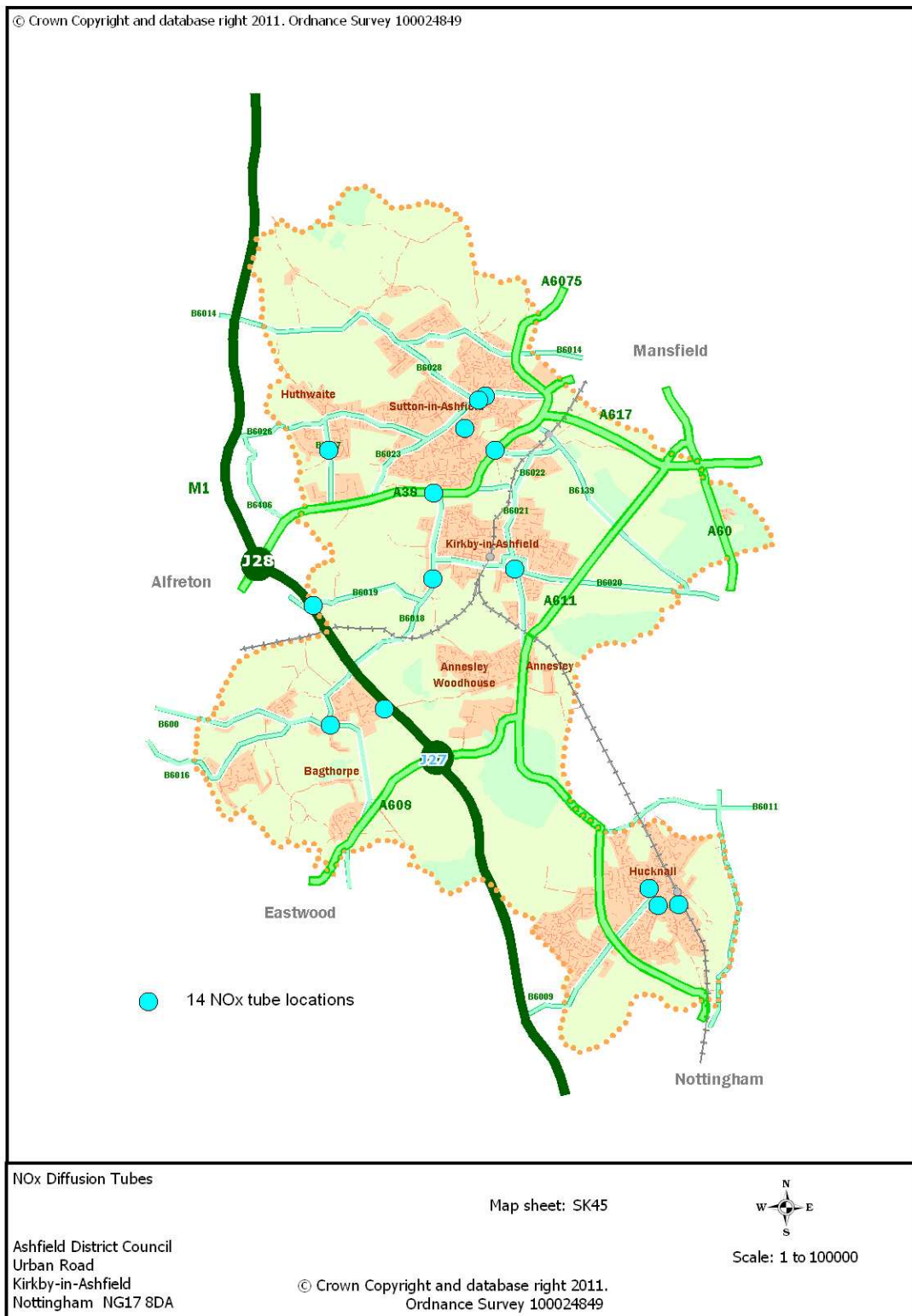
No automatic monitoring as taken place since the submission of the previous progress report which was submitted in May 2010. Therefore no automatic monitoring data is available for the period between 01/01/2010 and 05/01/2011.

#### **2.1.2 Non-Automatic Monitoring**

The Council measures Nitrogen Dioxide by non-automatic means by placing diffusion at a variety of locations throughout the district. Diffusion tubes are passive samplers: they consist of small plastic tubes containing a chemical reagent to absorb the pollutant to be measured directly from the air. They are categorised as an “indicative” monitoring technique. They are useful for indicating long-term average Nitrogen Dioxide concentrations and highlighting areas of high Nitrogen Dioxide concentration. This form of monitoring has relatively high uncertainty, in the case of diffusion tubes quoted as  $\pm 25\%$ . Although, it should be noted that a positive bias is more common than negative one (although the latter is certainly not rare).

Figure 2.1 shows a map of diffusion tube sites and Table 2.1 details the location of relevant diffusion tubes within the district.

Figure 2.1 Map of Non-Automatic Monitoring Sites



**Table 2.1 Details of Non- Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road	Worst-case Location ?
Sutton Outram Street	Roadside/ Urban Centre	449628 358967	NO <sub>2</sub>	N	3	1.5	Y
A 38 Fire Station	Near Road	448987 357610	NO <sub>2</sub>	N	5.6	10	Y
Selston Nottingham Road	Kerbside	446852 352754	NO <sub>2</sub>	N	14	1	Y
Hucknall High Street	Roadside	453477 349315	NO <sub>2</sub>	N	5.3	2	Y
Hucknall Croft/Beardall St	Urban background	453631 348972	NO <sub>2</sub>	N	2.2	2	Y
Kirkby Naggs Head	Urban centre/Road side	450673 356017	NO <sub>2</sub>	N	3.3	5.5	Y
Forest Close M1	Near Road	447968 353086	NO <sub>2</sub>	N	5	109	Y
M1 Pinxton	Near Road	446492 355266	NO <sub>2</sub>	N	8.5	20	Y
Kirkby Church Hill	Kerbside	448968 355816	NO <sub>2</sub>	N	1.5	0.5	Y
Sutton Mansfield Road	Kerbside	449923 359563	NO <sub>2</sub>	N	0	1.6	Y
Sutton Dalestorth Street	Kerbside	450062 359653	NO <sub>2</sub>	N	1.7	1	Y
Hucknall Ashgate Road	Roadside	454057 348989	NO <sub>2</sub>	N	2.8	3.5	Y
Station Road Sutton	Near Road	450259 358512	NO <sub>2</sub>	N	12.7	2.4	Y
Common Road Huthwaite	Roadside	446827 358508	NO <sub>2</sub>	N	2.4	2.4	Y

## Laboratory Used

Nottinghamshire Authorities agreed to employ a single laboratory to undertake the supply and analysis of diffusion tubes over a three year period. All authorities have

agreed to use Gradko Laboratories, utilising the 20% TEA in Water. This is to enable the authorities to effectively compare results over the whole of the county.

Consequently, Ashfield District Council started utilising Gradko Laboratories from April, 2008 onwards.

## Laboratory Performance

There can be considerable differences in diffusion tube performance due to a number of factors. One of the issues affecting diffusion tubes is the exposure procedures employed.

Such exposure factors have been reduced as much as possible by Ashfield District Council implementing the Quality Assurance procedures, in the deployment, exposure and collection of the tubes. However, another factor in diffusion tube performance is related to the way in which the diffusion tubes are prepared and analysed. Accordingly, it is important the Council utilise the services of a Laboratory that operates its own QA/QC systems to ensure reliability and consistency of analysis results.

Ashfield District Council, along with all other Nottinghamshire Councils, utilise the services of Gradko Laboratories for the supply and analysis of Nitrogen Dioxide diffusion tubes. Gradko is UKAS accredited for Nitrogen Dioxide diffusion tube analysis. Additionally, they participate in a centralised QA/QC scheme, namely the Workplace Analysis Scheme for Proficiency (WASP). WASP is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL). It is recommended that diffusion tubes used for Local Air Quality Management should be obtained from laboratories that have demonstrated satisfactory performance in the WASP scheme. From the report '*Annual Performance Criteria for NO<sub>2</sub> Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 98-102' (February 2009)*, it is shown that Gradko's performance has been rated as **Good**.

Gradko Laboratories NO<sub>2</sub> diffusion tube procedures have been amended to follow the guidelines of the DEFRA document related to the preparation, extraction, analysis and calculation procedures for NO<sub>2</sub> passive diffusion tubes. These amendments are minimal because they already carried the out most of the procedures before the introduction of the Guidelines. Their internal analysis procedures are assessed by U.K.A.S. on an annual basis for compliance to ISO17025.

## Bias Adjustment Factors

Diffusion tubes generally under or over-read when compared to a reference automatic analyser. This is referred to as bias. This bias can be corrected by applying a correction factor that is derived either from a local study or from a nationally derived database. Local Authorities are advised to report on both local and national adjustment factors and thereafter decide which to utilise, depending on a number of factors.

Ashfield have not completed a suitable recent co-location study to calculate a local bias factor representing the type of diffusion tube exposure. Therefore the bias adjustment factor derived from the national database has been utilised for the purpose of this report.



It was considered that this would provide a reasonable adjustment factor until a suitable co-location study could be undertaken by Ashfield. Annual diffusion tube results for 2010 have therefore been adjusted for each monitored location. This report as used a **Bias Adjustment Factor of 0.92**

Table 2.2 details the use of the national database to obtain the relevant bias adjustment factor for this report.

**Table 2.2: Diffusion Tube Bias Adjustment Factor**

National Diffusion Tube Bias Adjustment Factor Spreadsheet					Spreadsheet Version Number: 04/11					
Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies					This spreadsheet will be updated in late June 2011 on the <a href="#">LAQM Helpdesk Website</a>					
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods					Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet					
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.					The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.					
Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor <sup>1</sup> shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at <a href="mailto:LAQMHelpdesk@uk.bureauveritas.com">LAQMHelpdesk@uk.bureauveritas.com</a> or 0800 0327953							
Analysed By <sup>1</sup>	Method <sup>2</sup>	Year <sup>2</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in Water	2010		Overall Factor <sup>1</sup> (39 studies)				Use	0.92	

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### Nitrogen Dioxide

**Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes**

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ )		
					2008 <sup>c, d</sup>	2009 <sup>c, d</sup>	2010 <sup>c</sup>
Tubes 1,2 & 3	Naggs Head	N	100	100	36	35	32
Tube 4	Outram Street	N	90	100	36	34	37
Tube 5	Dalestorth Road	N	100	100	38	36	35
Tube 6	Mansfield Road	N	100	100	37	36	36
Tubes 7,8 & 9	A38	N	100	100	33	32	32
Tubes 10,11&12	Church Hill	N	100	100	41	40	40
Tube 14	M1 Pinxton	N	100	100	36	36	31
Tubes 15	Nottingham Rd Selston	N	100	100	31	32	28
Tubes 16 ,17 &18	Forest Close	N	93	100	32	29	29
Tube 19	Ashgate Road Hucknall	N	100	100	31	30	28
Tube 20	High Street Hucknall	N	100	100	41	40	39
Tube 21	Beardall Street Hucknall	N	90	100	28	27	25
Tube 22	Station Road Sutton	N	100	100	N/A	37.8	37
Tube 23	Common Road Huthwaite	N	100	100	N/A	37	37

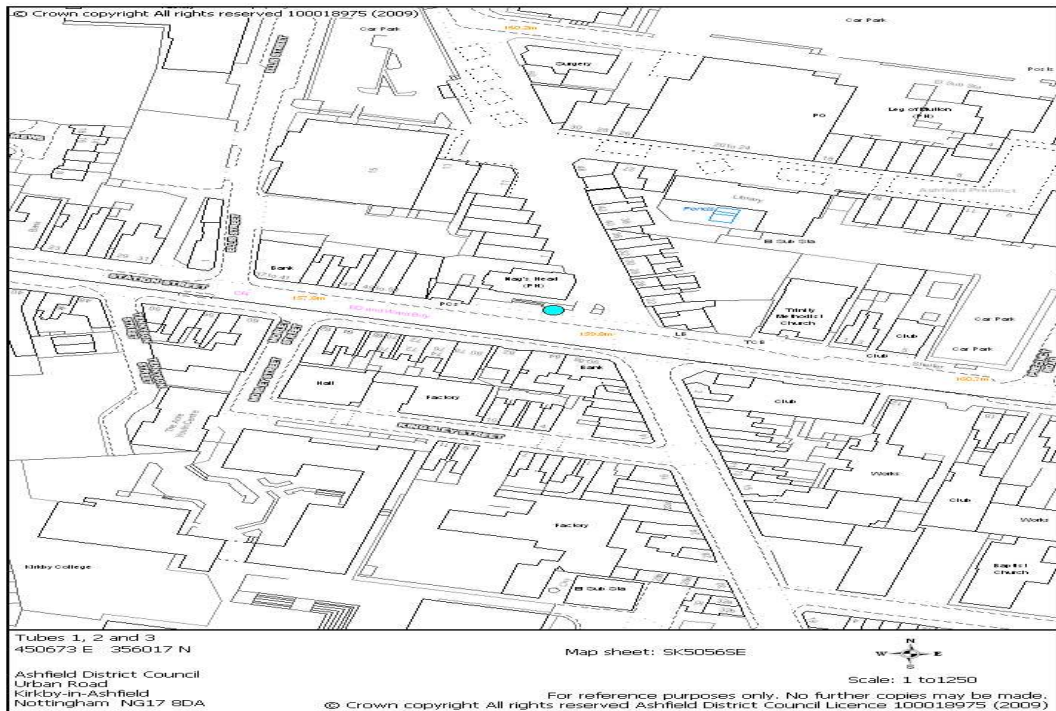
Bias adjustment factor for 2008 was 0.92

Bias adjustment factor for 2009 was 0.90

Bias adjustment factor for 2010 was 0.92

# Kirkby Naggs Head – Urban Centre Tubes 1, 2 and 3

## Location of Nitrogen Dioxide Diffusion Tubes At Naggs Head , Kirkby

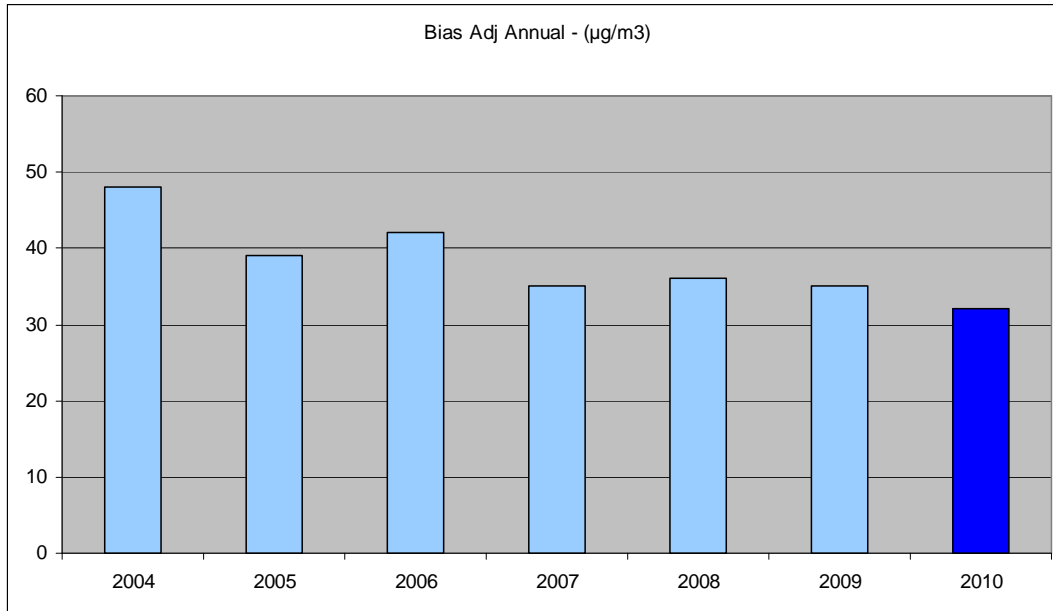


This is an urban centre location. The tube is located adjacent to a road junction, where Station Road filters onto Diamond Avenue and Kingsway. This location experiences traffic going to and coming from Mansfield, and Nottingham (via Hucknall). The tube is situated next to a shopping precinct.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
35.8	32

**Triplicate tubes deployed**

**Figure 2.2 Trend Analysis Nitrogen Dioxide Diffusion Tube at Naggs Head, Kirkby In Ashfield**



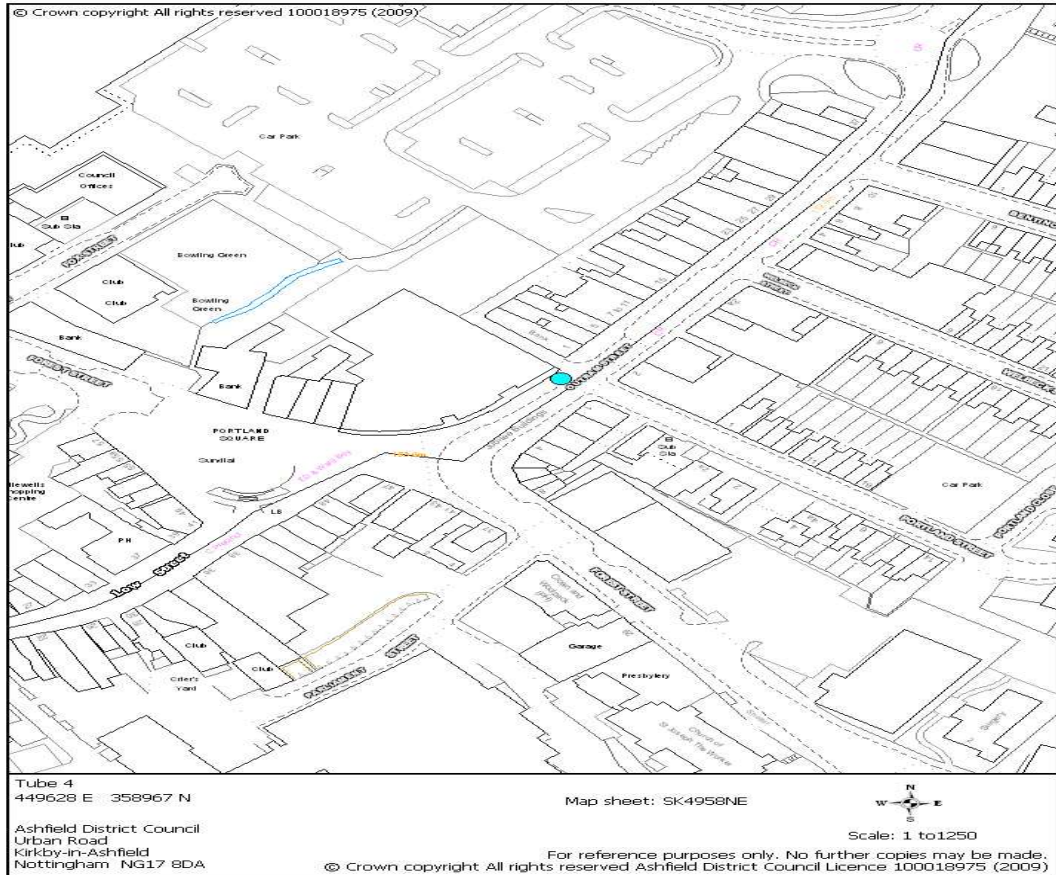
#### Distance Fall-off Calculation

The receptor nearest the actual diffusion tube location is 8.8m from the road, however there are properties adjacent to the location that are closer to the road. These properties do not have a suitable location for the diffusion tube to be sited. Therefore, the distance fall-off calculation has been carried out using the distance of the residential properties closest to the road to give an indication of likely levels. The resultant Nitrogen Dioxide level at the receptor is **33.7µg/m<sup>3</sup>** (Appendix 2). However, it should be noted that the residential receptors in question are located further from the busy junction where the tube is currently located.

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

# Sutton Outram Street – Kerbside/Urban Centre Tube 4

## Location of Nitrogen Dioxide Diffusion Tube At Outram Street, Sutton

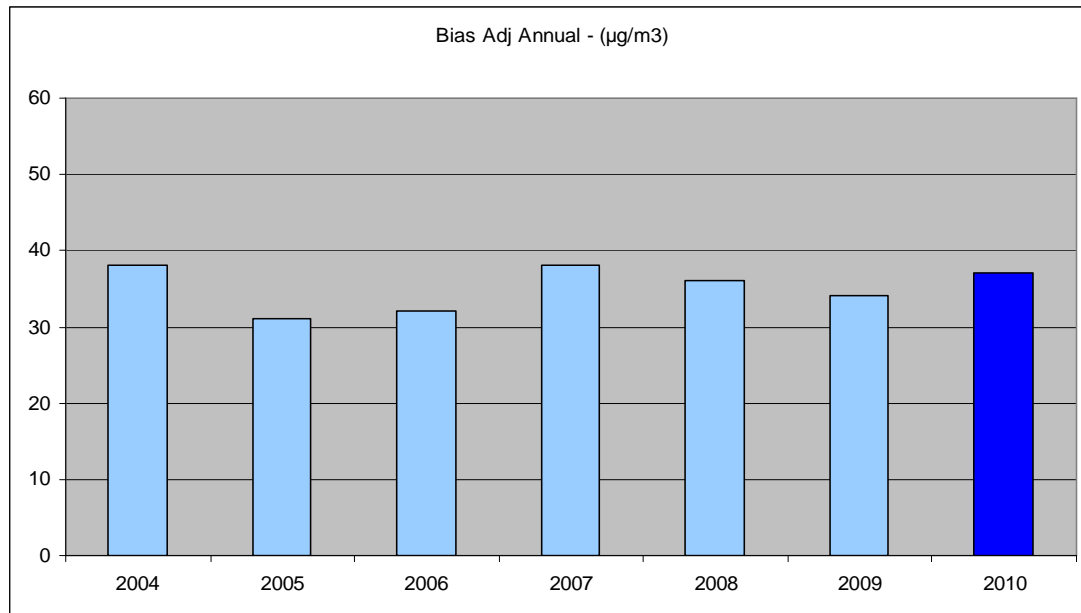


This is a roadside/urban centre location. The diffusion tube is situated at the beginning of Outram Street, directly after pedestrian lights. The road experiences traffic going to and from Mansfield and Kirkby entering Sutton Town Centre.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
<b>40.7</b>	<b>37</b>

**Single tube deployed not duplicate or triplicates**

**Figure 2.3 Trend Analysis Nitrogen Dioxide Diffusion Tube at Outram Street, Sutton In Ashfield**



#### Distance Fall-off Calculation

It is necessary for exceedences of objectives to be assessed on locations where the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

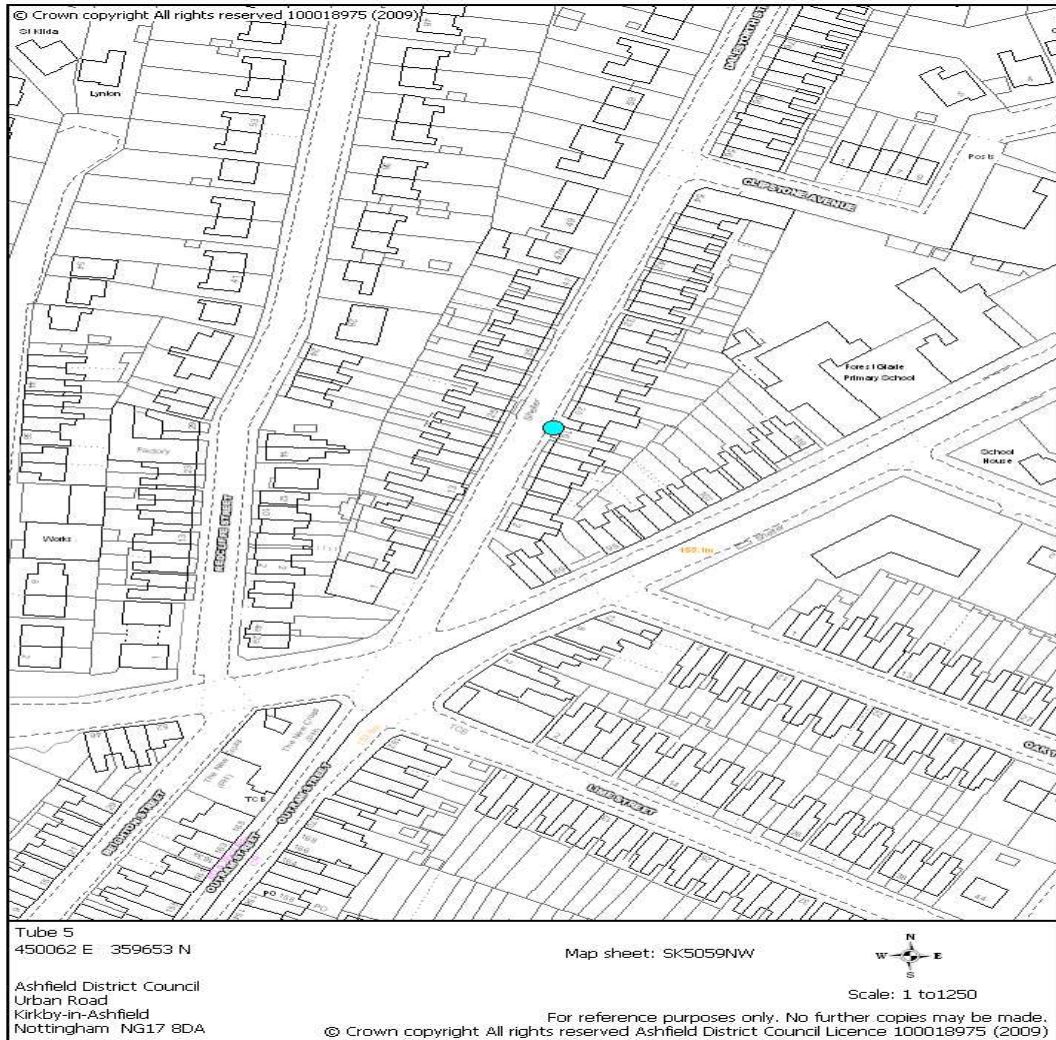
Concentrations of Nitrogen Dioxide drop off with regards to distance from a road and therefore it is essential to predict levels at the relevant receptor when monitoring has been undertaken at a different distance from the road source.

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **32.2µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location**

# Sutton Dalestorth Street – Kerbside Tube 5

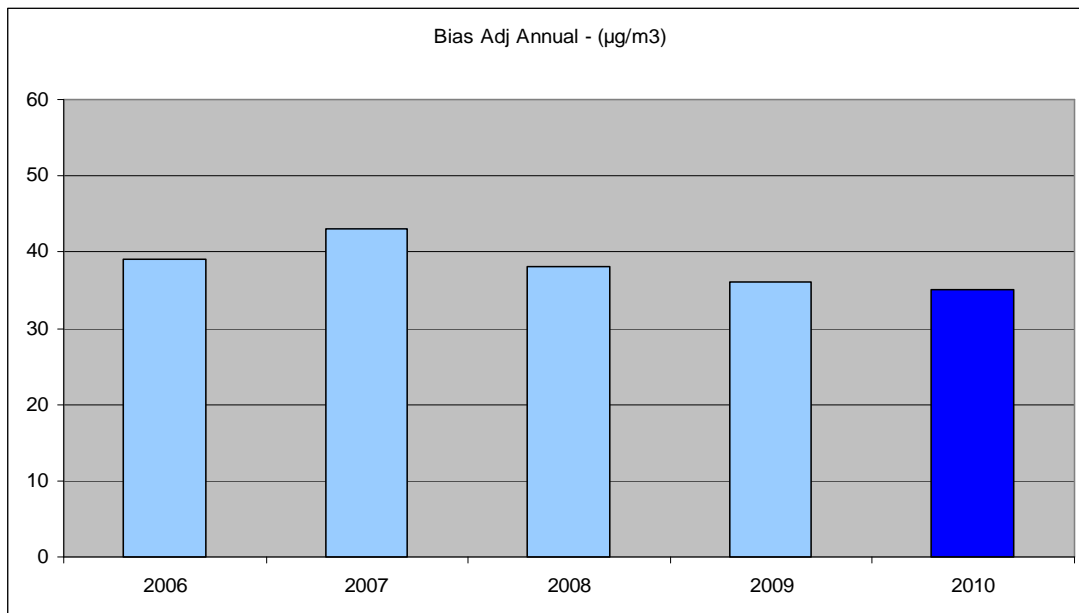
## Location of Diffusion Tube At Dalestorth Street, Sutton



This is a kerbside location. The diffusion tube is located after the junction between Mansfield Road, Dalestorth Street and Outram Street. This location experiences traffic coming to and from Mansfield and entering Sutton Town Centre.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
38.9	35

**Figure 2.4 Trend Analysis Nitrogen Dioxide Diffusion Tube at Dalestorth Street, Sutton In Ashfield**



**Single tube deployed not duplicate or triplicates**

#### Distance Fall-off Calculation

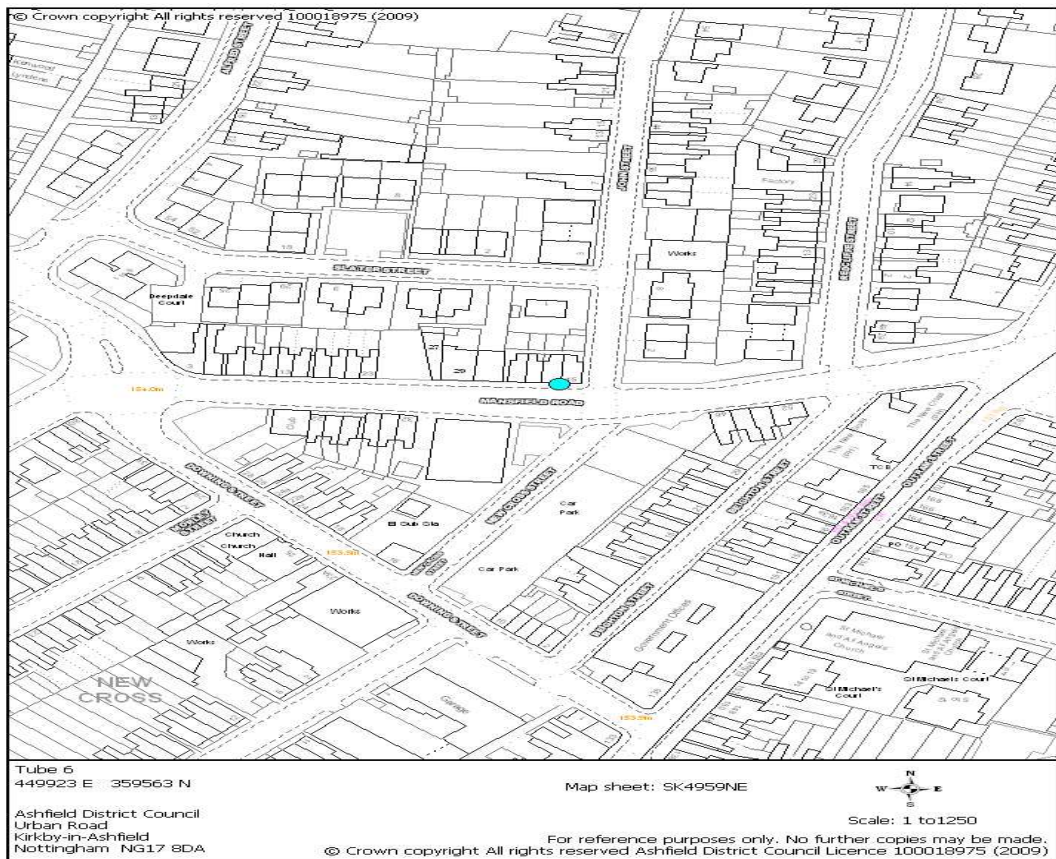
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **31.3µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**



# Sutton Mansfield Road – Kerbside Tube 6

## Location of Nitrogen Dioxide Diffusion Sutton Mansfield Road

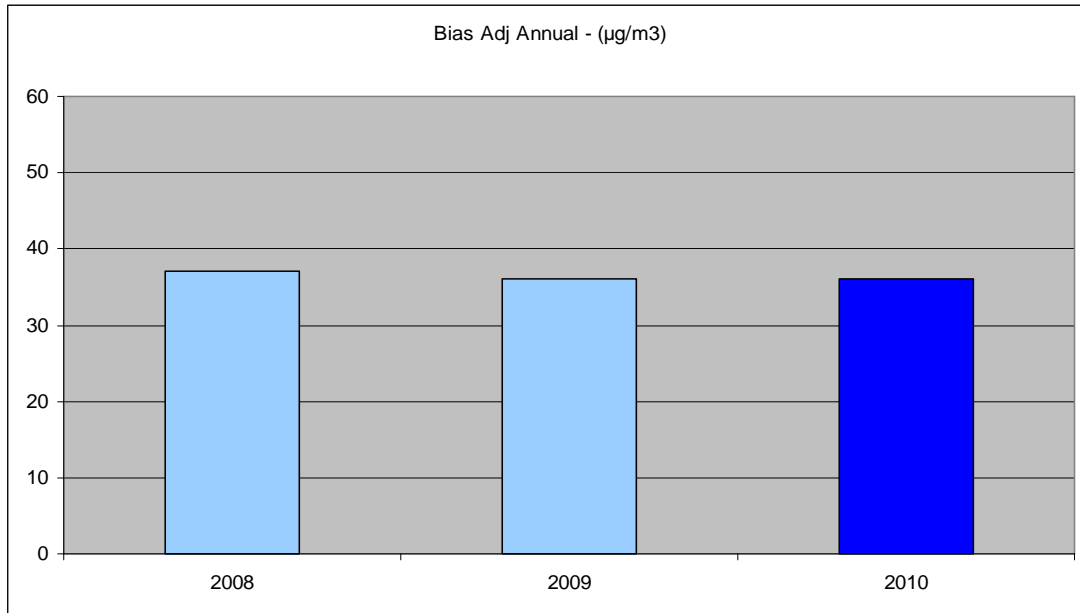


This is a kerbside location. The diffusion tube is located between two busy junctions of Mansfield Road, Dalestorth Street and Outram Street and the junction between Mansfield Road, Stoneyford Road and Preistic Road. This location experiences traffic build-up, particularly at peak times.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
<b>39.3</b>	<b>36</b>

**Single tube deployed not duplicate or Triplicates**

**Figure 2.5 Trend Analysis Nitrogen Dioxide Diffusion Tube at Manfield Road, Sutton In Ashfield**



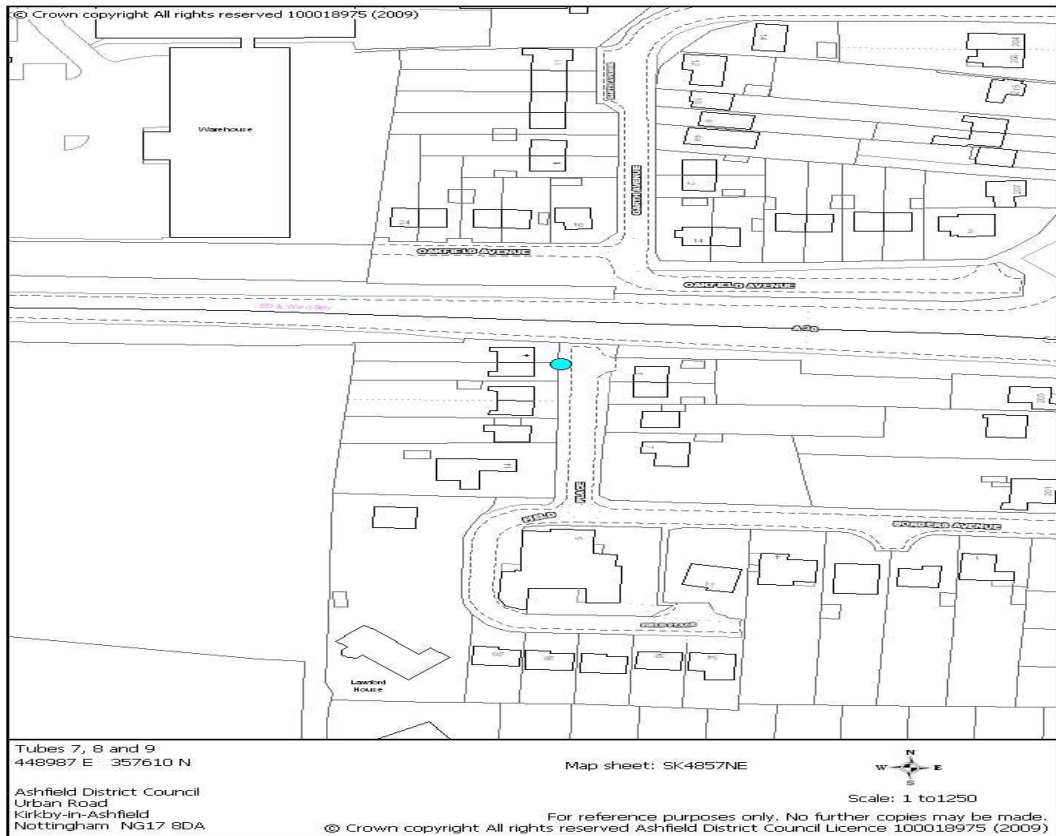
#### Distance Fall-off Calculation

No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is **36µg/m<sup>3</sup>**.

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

# A38 Fire Station – Near Road Tubes 7,8 and 9

## Location of Nitrogen Dioxide Diffusion Tubes At A38 Fire Station, Sutton

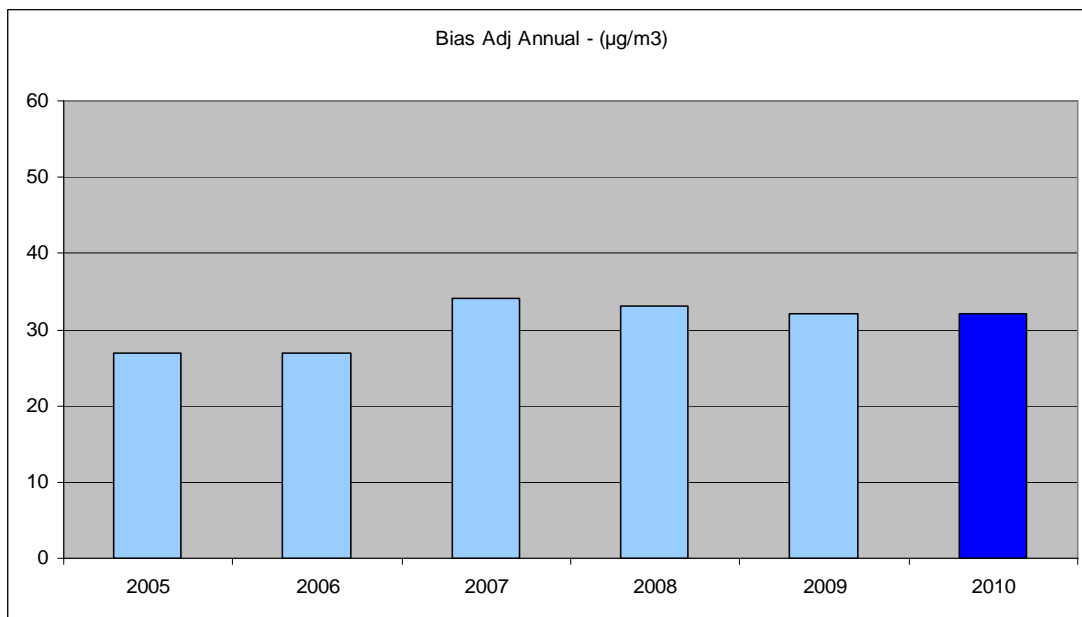


This is a near road location. The diffusion tube is located immediately adjacent to the A38. The A38 is the major route for traffic going between Derby and Mansfield.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
35.5	32

**Triplicate tubes deployed**

**Figure 2.6 Trend Analysis Nitrogen Dioxide Diffusion Tube at A38 Fire Station, Sutton In Ashfield**



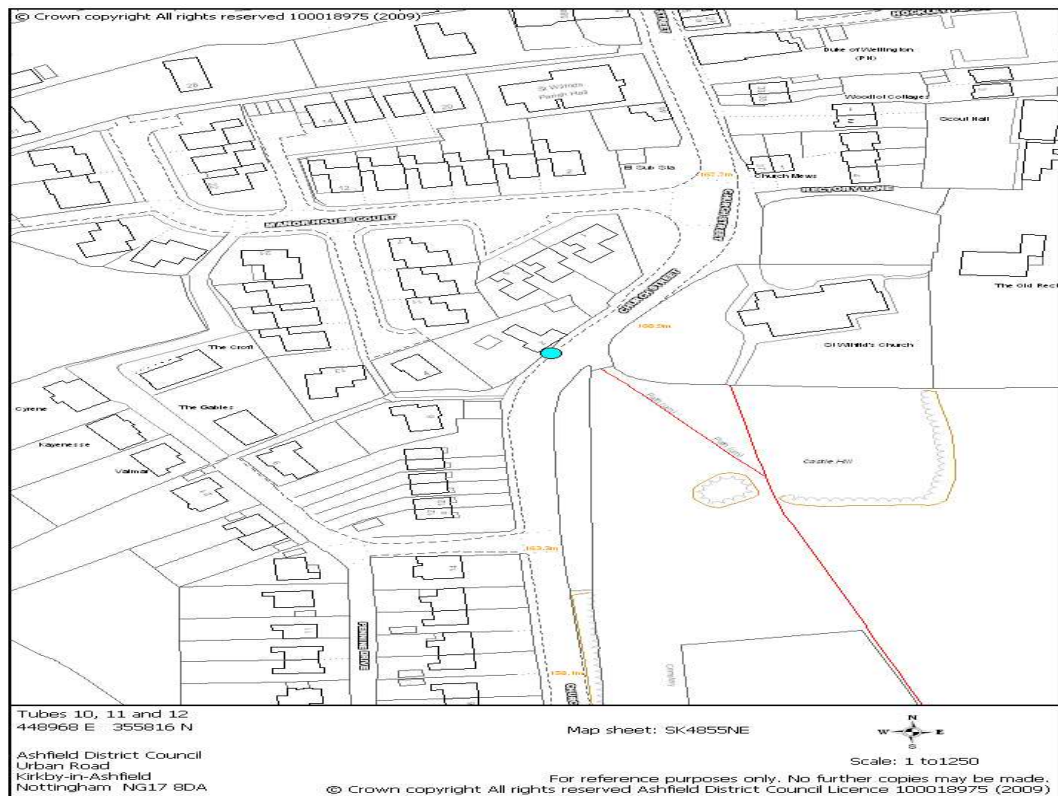
**Distance Fall-off Calculation**

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **35.4µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

# Kirkby Church Hill – Kerbside Tubes 10,11 and 12

## Location of Nitrogen Dioxide Diffusion Tubes At Church Hill, Kirkby

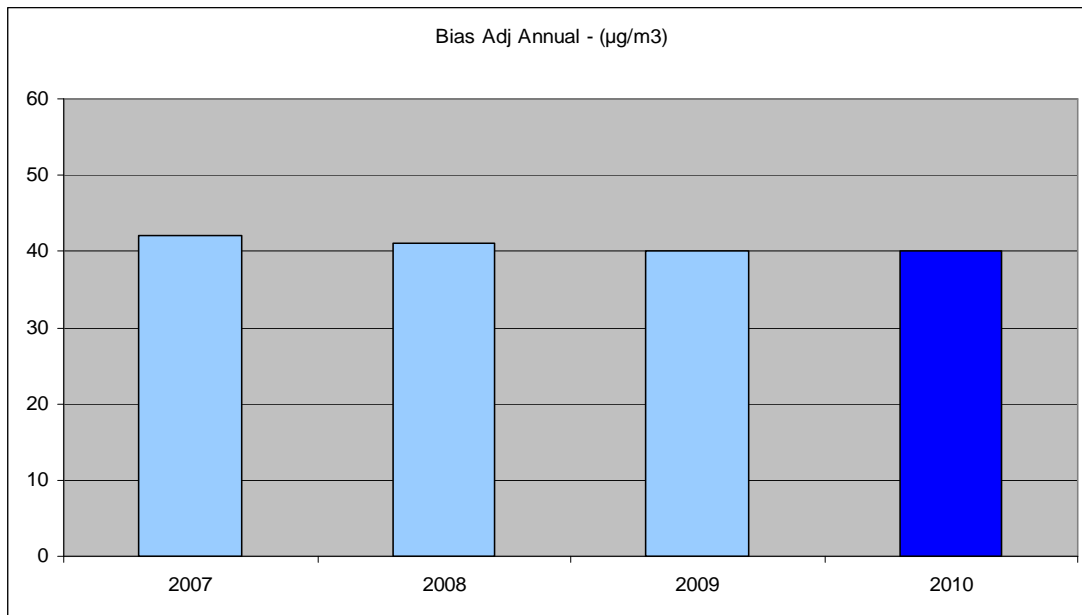


This is a kerbside location. The diffusion tube is located on a hill that is taking traffic from Sulston to Kirkby. The location is near a busy roundabout that can experience traffic build-up during peak times.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
44.3	40

**Triplicate tubes deployed**

**Figure 2.7 Trend Analysis Nitrogen Dioxide Diffusion Tube at Church Hill, Kirkby In Ashfield**



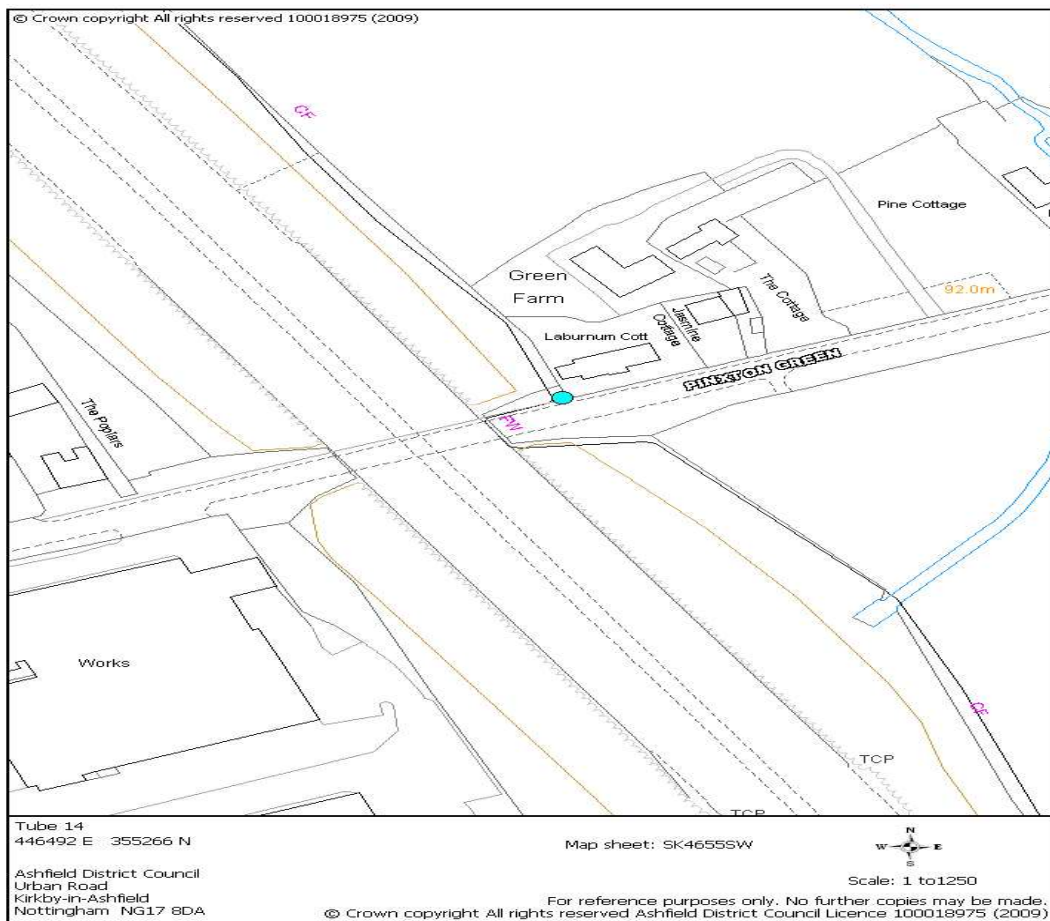
#### Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is  **$33.6\mu\text{g}/\text{m}^3$**  (Appendix 2).

**This value is below the annual mean objective of  $40\mu\text{g}/\text{m}^3$  and therefore there is no need to proceed to a detailed assessment for this location.**

#### **M1 Pinxton – Near Road Tube 14**

## Location of Nitrogen Dioxide Diffusion Tube At M1 Pinxton

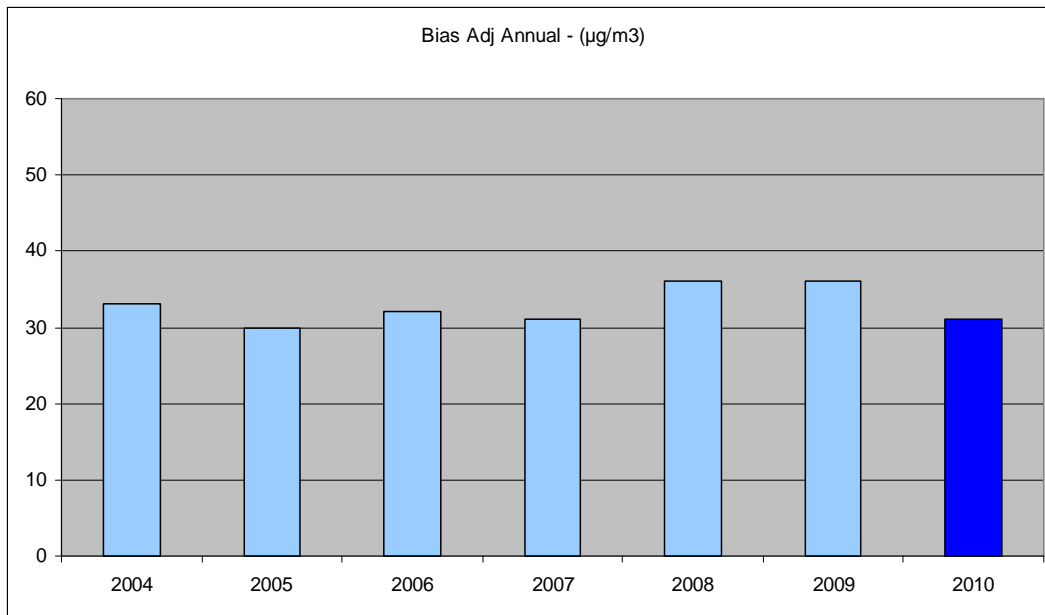


This is a near road location. The diffusion tube is located in a residential area adjacent to the M1 at Pinxton, on the boundary of the District

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92)( $\mu\text{g}/\text{m}^3$ )
33.9	31

**Single tube deployed not duplicate or triplicates**

**Figure 2.8 Trend Analysis Nitrogen Dioxide Diffusion Tube at M1 Pinxton**



#### Distance Fall-off Calculation

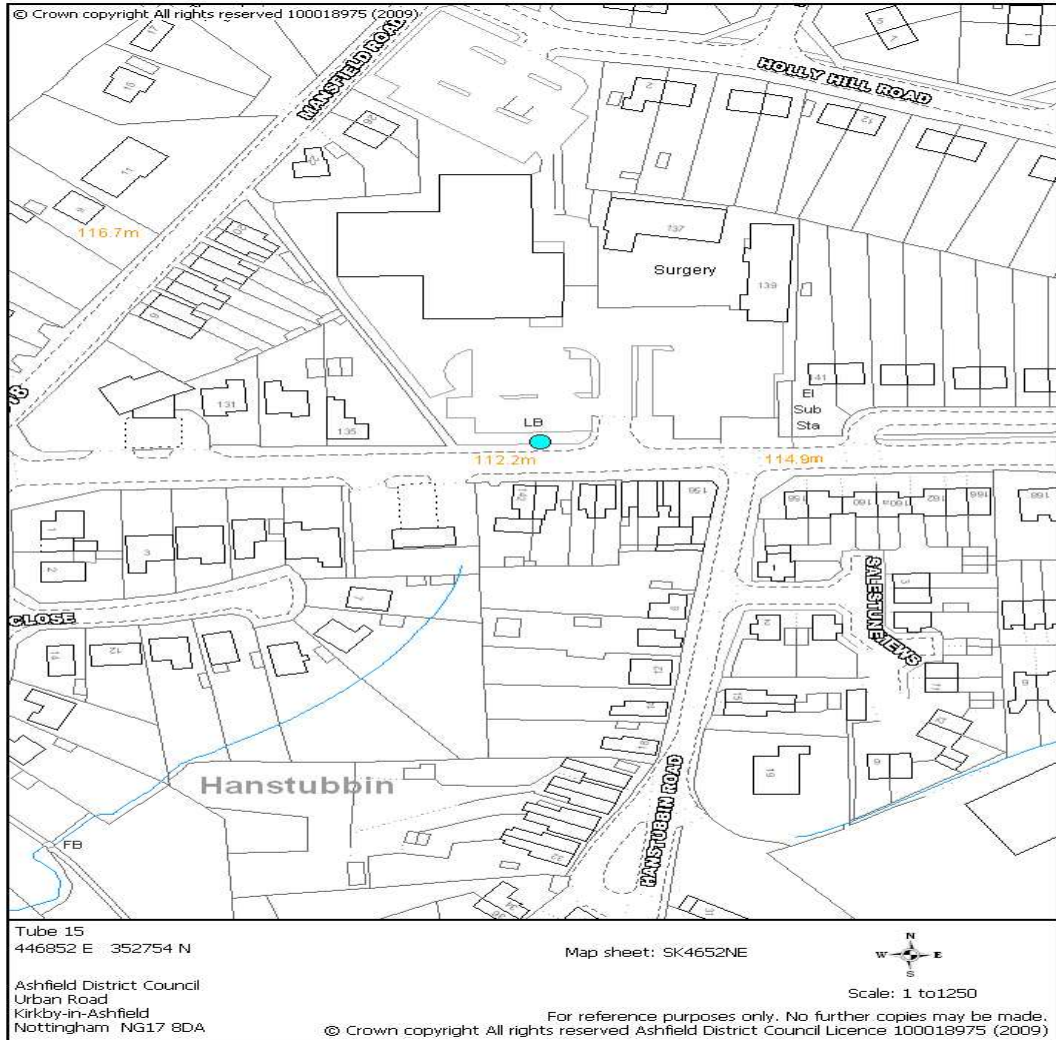
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **28.1µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location**



# Selston Nottingham Road – Kerbside Tube 15

## Location of Nitrogen Dioxide Diffusion Tube At Nottingham Road, Selston

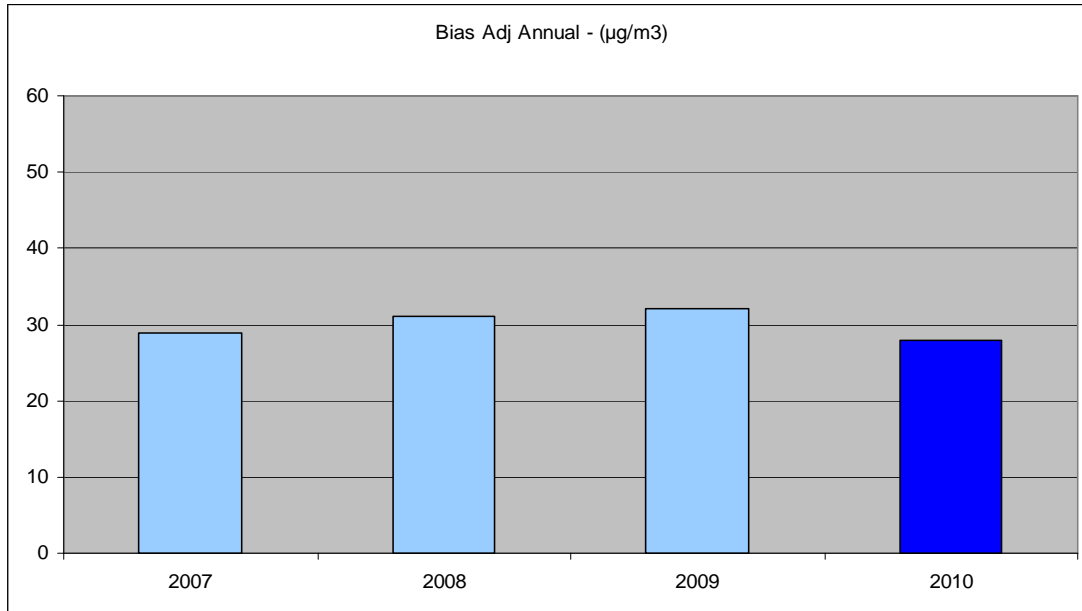


This is a kerbside location. The diffusion tube is located adjacent to the main road running through Selston from Kirkby in Ashfield.

Measured Annual Mean For 2009 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.9) ( $\mu\text{g}/\text{m}^3$ )
31.5	28

**Single tube deployed not duplicate or triplicates**

**Figure 2.9 Trend Analysis Nitrogen Dioxide Diffusion Tube at Nottingham Road, Selston**



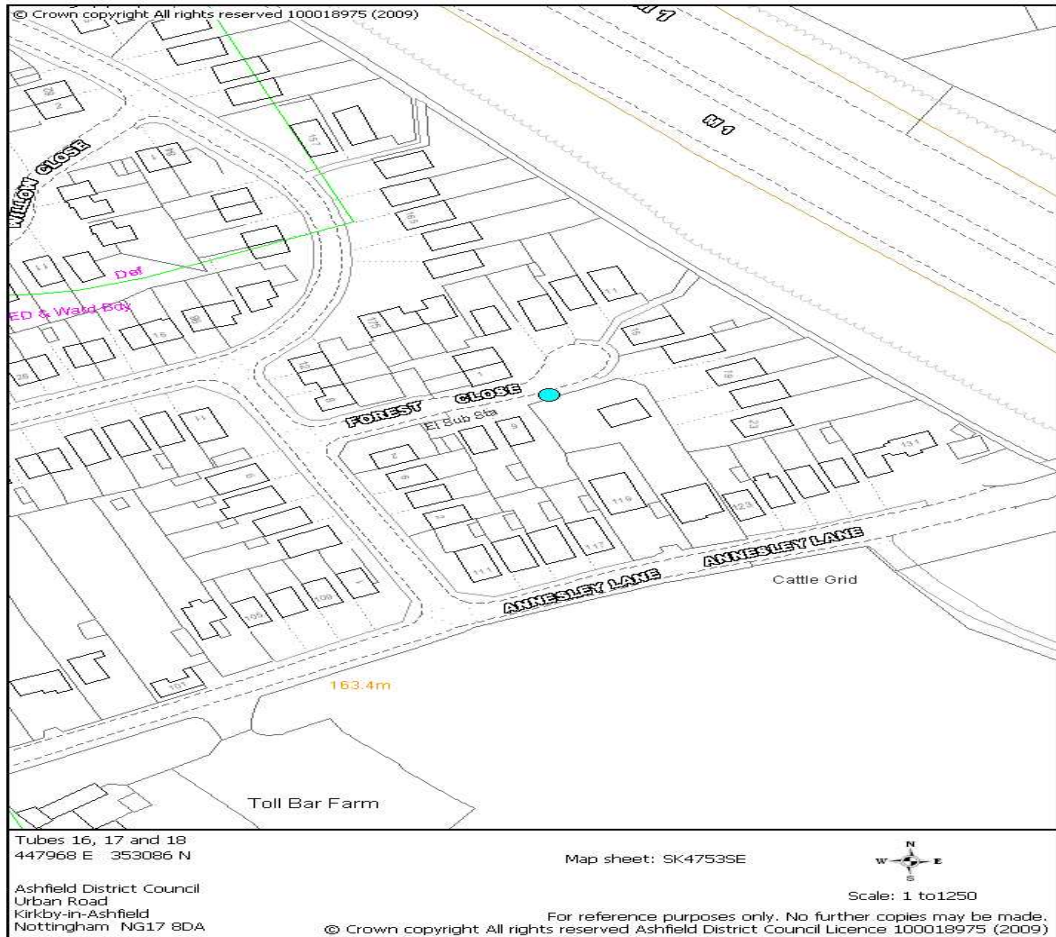
#### Distance Fall-off Calculation

The receptor nearest the diffusion tube location is 16.3m from the road, however there are properties adjacent to the diffusion tube location that are closer to the road, however, they do not have a suitable location for the diffusion tube to be sited. Therefore, the distance fall-off calculation has been carried out using the distance of the residential properties closest to the road to give an indication of likely levels. The resultant Nitrogen Dioxide level at the receptor is  **$24.3\mu\text{g}/\text{m}^3$** . (Appendix 2).

**This value is below the annual mean objective of  $40\mu\text{g}/\text{m}^3$  and therefore there is no need to proceed to a detailed assessment for this location.**

# Forest Close M1 – Near Road Tubes 16,17 and 18

## Location of Nitrogen Dioxide Diffusion Tube Forest Close M1

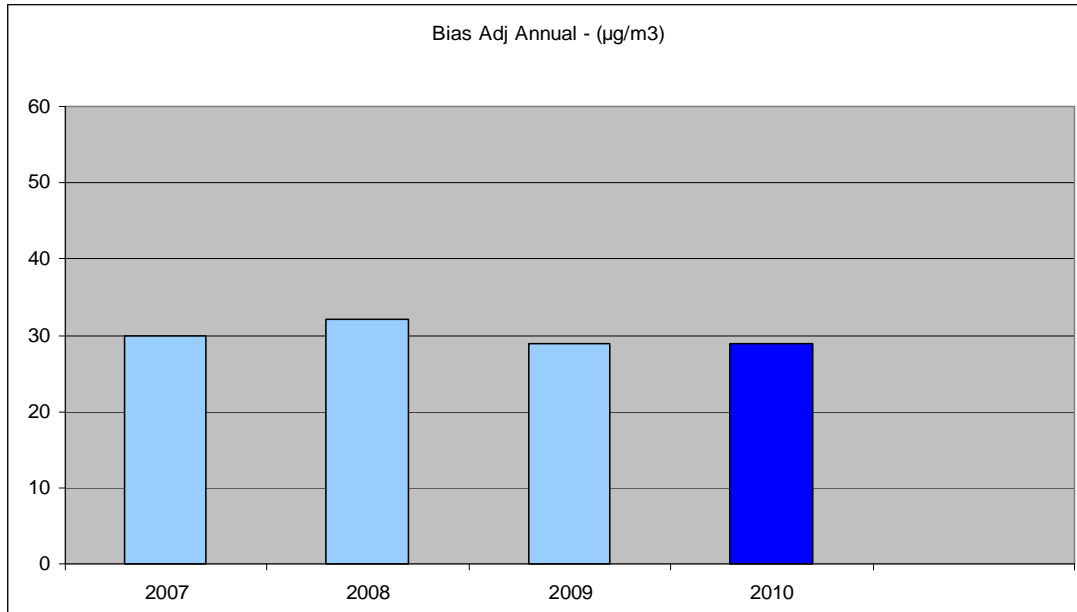


This is a near road location. The diffusion tube is located in a residential estate adjacent to the M1 and will act as the new co-location study for the new location of the Air Quality Monitoring Station.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
32.3	29

**Triplicate Tubes Deployed**

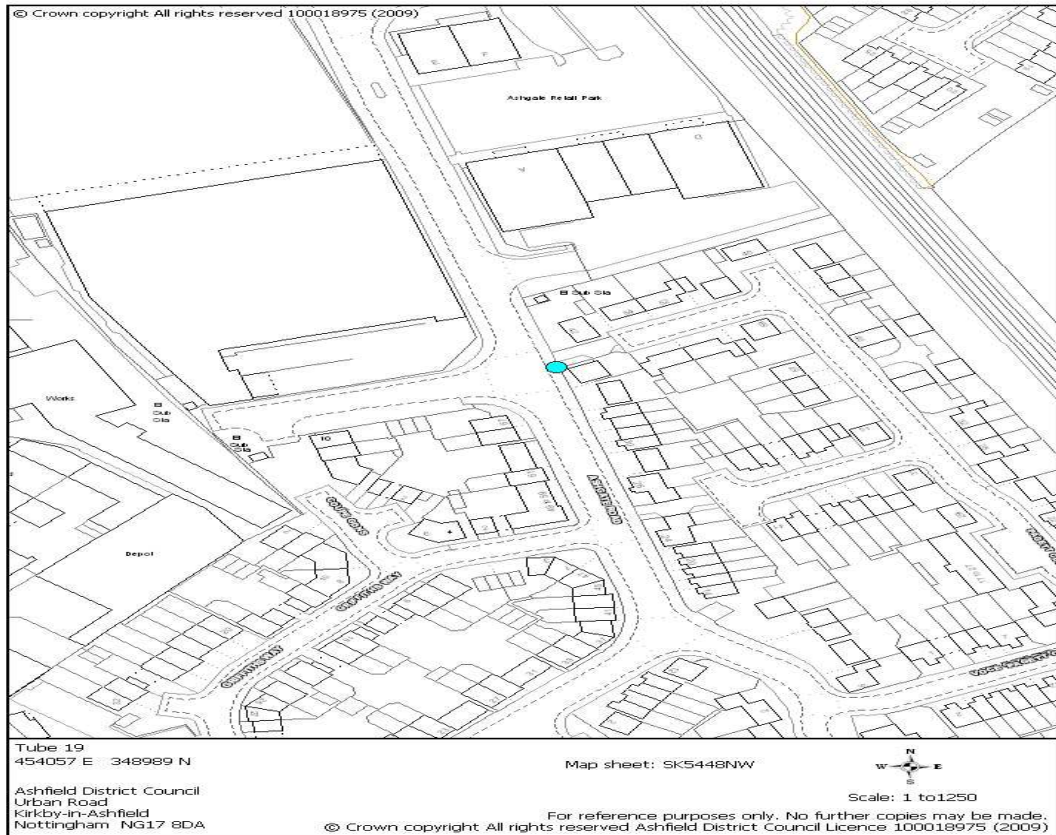
**Figure 2.10 Trend Analysis Nitrogen Dioxide Diffusion Tube at Forest Close**



**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

# Hucknall Ashgate Road – Kerbside Tube 19.

## Location of Nitrogen Dioxide Diffusion Tube At Hucknall Ashgate Road

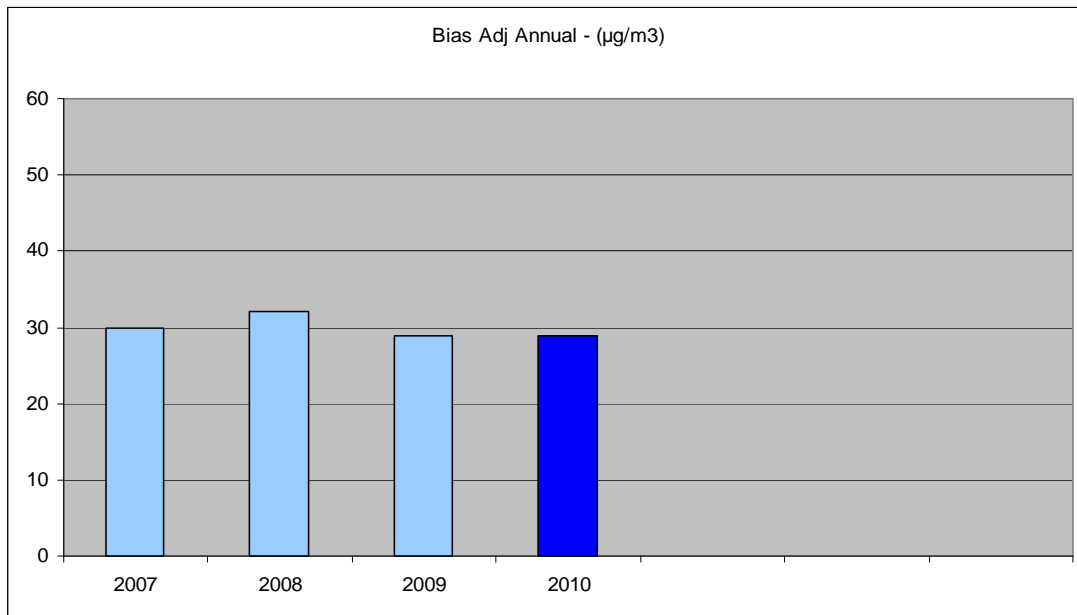


This is a kerbside location. The diffusion tube is located adjacent to a new housing estate on Ashgate Road where developments such as the Nottingham Tram Station and Tesco Superstore may be contributing to increased levels of traffic.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
31.4	28

**Single tube deployed not duplicate or triplicates**

**Figure 2.11 Trend Analysis Nitrogen Dioxide Diffusion Tube at Ashgate Road, Hucknall**



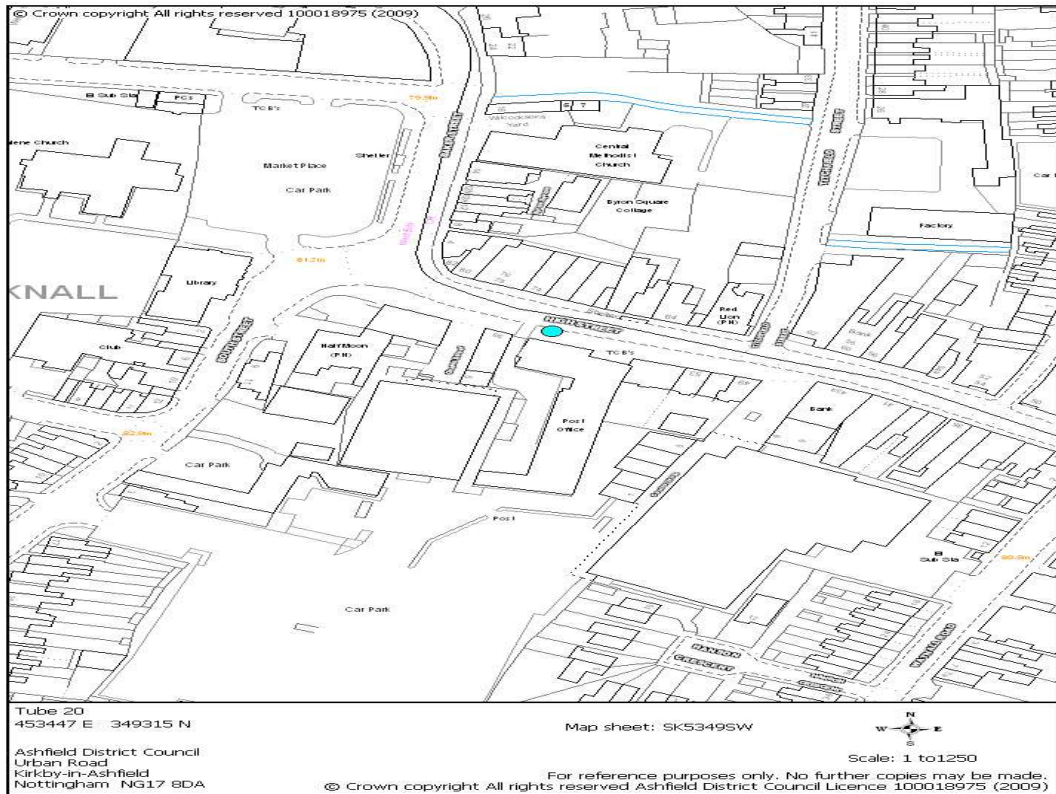
#### Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **26 µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

# Hucknall High Street - Roadside/Urban Centre Tube 20

## Location of Nitrogen Dioxide Diffusion Tube At Hucknall High Street

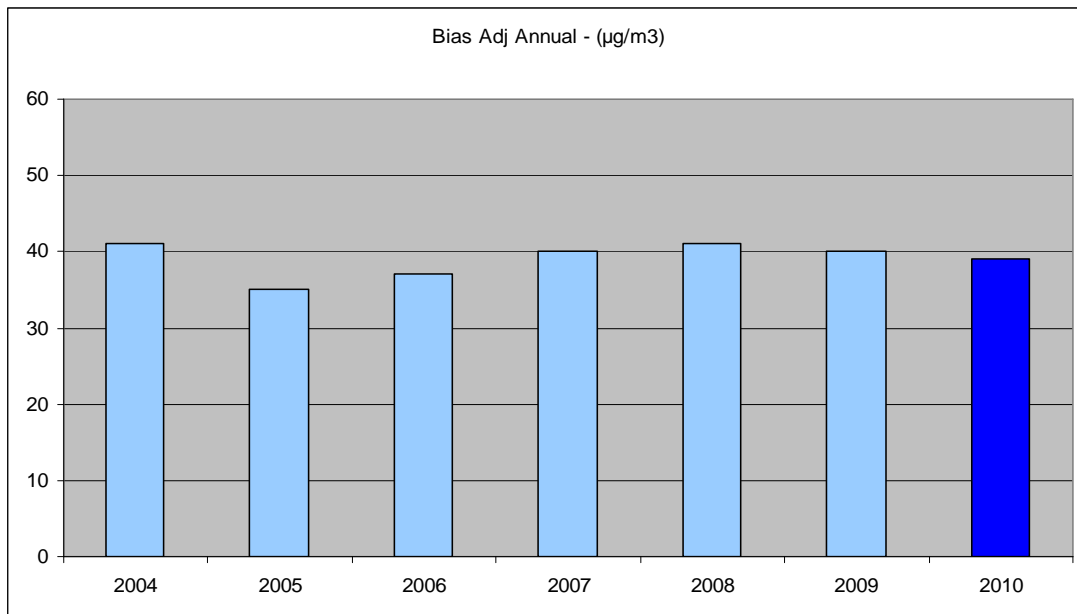


This is an urban centre location. The diffusion tube is located adjacent to the main road running through Hucknall town centre, directly adjacent to a junction that experiences traffic going to Mansfield, Nottingham, Annesley Road and the Hucknall bypass. This location has a number of commercial properties and is a busy shopping area.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92)( $\mu\text{g}/\text{m}^3$ )
42.7	39

**Single tube deployed not duplicate or triplicates**

**Figure 2.12 Trend Analysis Nitrogen Dioxide Diffusion Tube at High Street, Hucknall**



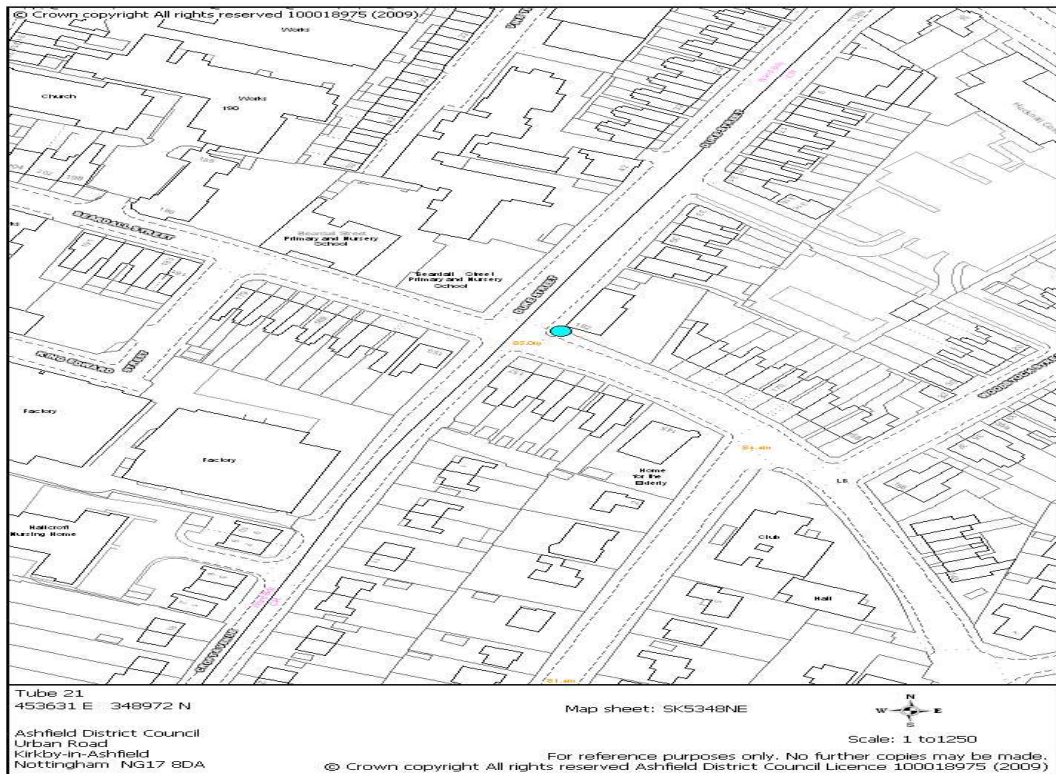
This is a town centre roadside location where it is unlikely that people will be exposed to levels of NO<sub>2</sub> over a full 24 hour period. The annual level recorded indicates that the 1-hour mean value for Nitrogen Dioxide is unlikely to be exceeded. It does however provide an indication of annual spatial concentration for this area.

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**



# Hucknall Croft/Beardhall Street – Urban Background Tube 21

## Location of Nitrogen Dioxide Diffusion Tube At Hucknall Croft/Beardhall Street

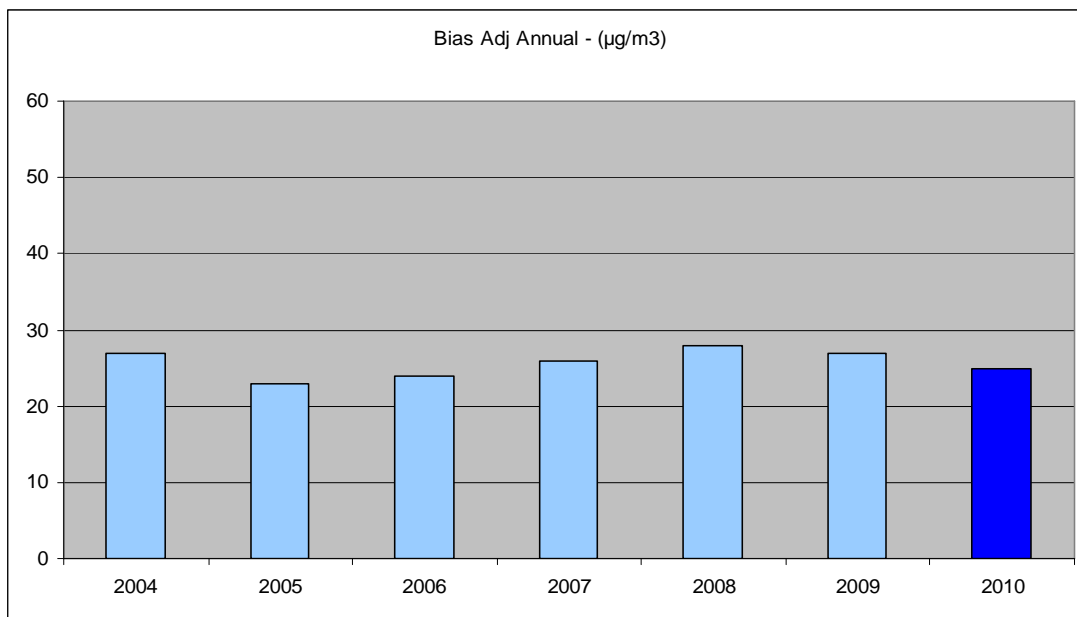


This is an urban background location. The diffusion tube is located on Beardall Street, some distance from the town centre.

Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
28	25

**Single tube deployed not duplicate or triplicates**

**Figure 2.13 Trend Analysis Nitrogen Dioxide Diffusion Tube at Beardall Street, Hucknall**

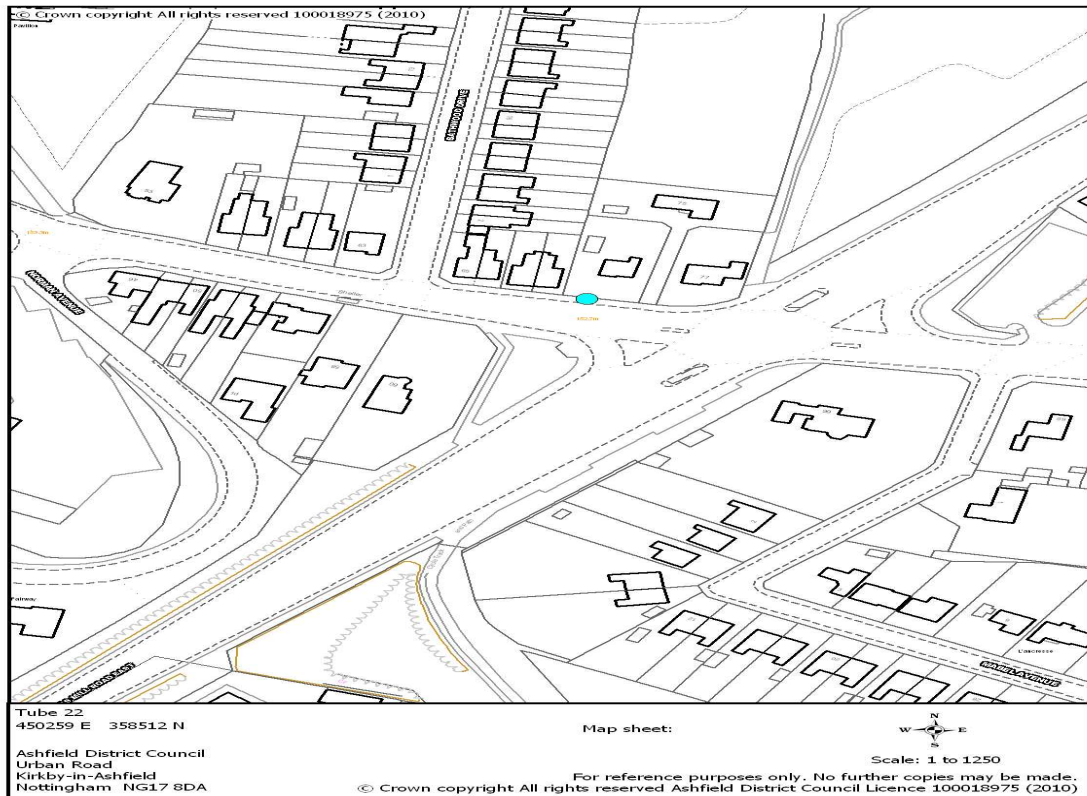


**This bias adjusted annual mean value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

## Station Road, Sutton Tube 22

This is a near road location. The diffusion tube is located immediately adjacent to the A38. The A38 is the major route for traffic going between Derby and Mansfield

### Location of Nitrogen Dioxide Diffusion Tube At Station Road, Sutton

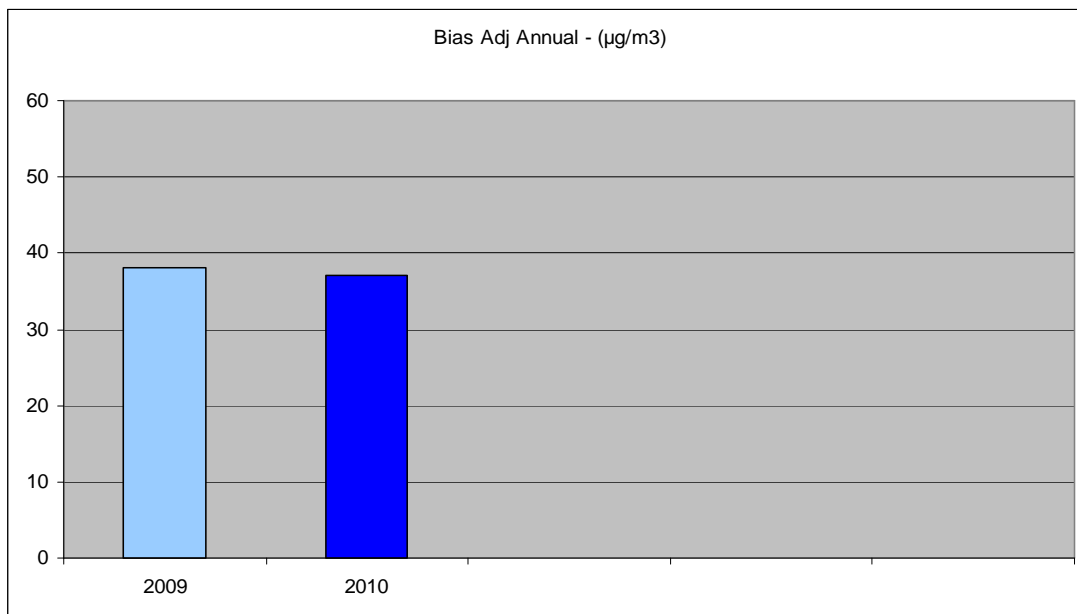


Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
40.7	37

**Single tube deployed not duplicate or triplicates**

**Monitoring started at this site in June 2009**

**Figure 2.14 Trend Analysis Nitrogen Dioxide Diffusion Tube at Station Road, Sutton**



### Distance Fall-off Calculation

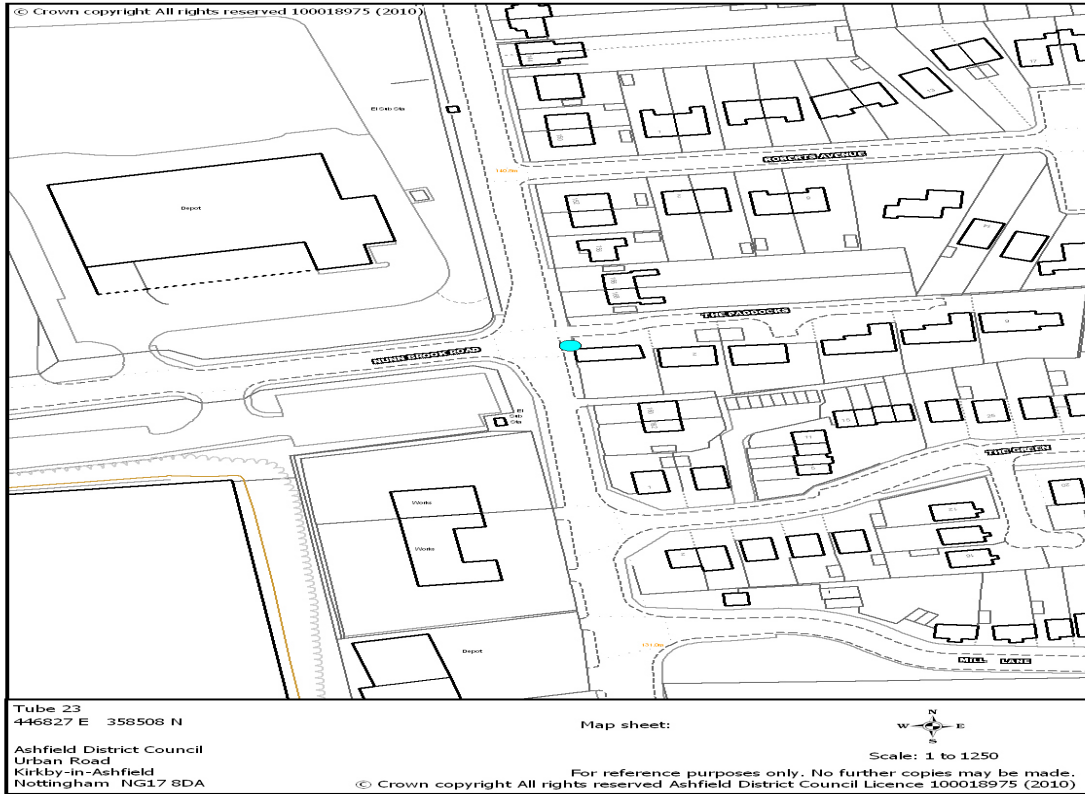
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **30.7 µg/m<sup>3</sup>** (Appendix 2).

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location**

## Common Road, Huthwaite Tube 23

This is a Roadside tube. It is situated along a road that links the A38 with Huthwaite but the road also runs towards Sutton town centre. The road also runs adjacent to a large industrial site.

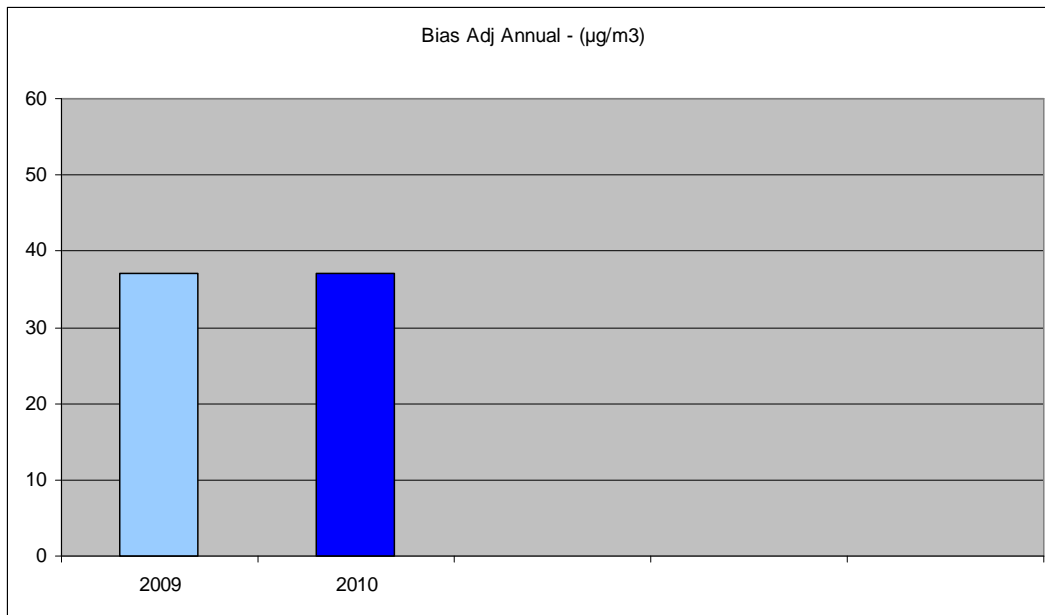
### Location of Nitrogen Dioxide Diffusion Tube At Station Road, Sutton



Measured Annual Mean For 2010 Based on 12 months Data ( $\mu\text{g}/\text{m}^3$ )	Bias Adjusted Annual Mean (Factor 0.92) ( $\mu\text{g}/\text{m}^3$ )
40.5	37

**Single tube deployed not duplicate or triplicates**

**Figure 2.15 Trend Analysis Nitrogen Dioxide Diffusion Tube at Common Road, Huthwaite**



#### Distance Fall-off Calculation

No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is **37 µg/m<sup>3</sup>**.

**This value is below the annual mean objective of 40µg/m<sup>3</sup> and therefore there is no need to proceed to a detailed assessment for this location.**

## 2.2.2 PM<sub>10</sub>

No monitoring of fine particles has been carried out since that reported in Ashfield District Council's Progress Report, 2008. This has been due to operational difficulties relating to the Council's Automatic Monitoring Station.

## 2.2.3 Sulphur Dioxide

No monitoring of Sulphur Dioxide is carried out within the district.

## 2.2.4 Benzene

No monitoring of Benzene is carried out within the district.

## 2.2.5 Other pollutants monitored

No other pollutants are monitored within the district.

## 2.2.6 Summary of Compliance with AQS Objectives

Table 2.4: Summary of Results of Nitrogen Dioxide Diffusion Tubes

Site Name	Within AQMA?	Data Capture 2010 %	Annual mean concentrations	Annual mean concentrations
			2010( $\mu\text{g}/\text{m}^3$ ) Adjusted for bias	2010 ( $\mu\text{g}/\text{m}^3$ ) Distance Fall-Off Calculated Level at Receptor
Sutton Outram Street	N	90%	37	32.2
A38 Fire Station	N	100%	32	35.4
Selston Nottingham Road	N	100%	28	24.3

Hucknall High Street	N	100%	39	-
Hucknall Croft/Beardhall Street	N	90%	25	-
Kirkby Naggs Head	N	100%	32	33.7
Forest Close M1	N	93%	29	-
M1 Pinxton	N	100%	31	28.1
Kirkby Church Hill	N	100%	40	33.6
Sutton Mansfield Road	N	100%	36	-
Sutton Dalestorth Street	N	100%	35	31.3
Hucknall Ashgate Road	N	100%	28	26
Station Road Sutton	N	100%	37	30.7
Common Road Huthwaite	N	100%	37	-



## **Nitrogen Dioxide: Conclusions**

**It is therefore concluded that there is no need to proceed to a detailed assessment for Nitrogen Dioxide at any of the monitoring locations within the district.**

## 3 New Local Developments

### 3.1 Road Traffic Sources

#### M1 Widening M1 (Junctions 21-31)

The Highways Agency has completed work on widening and junction works of the M1 between Junctions 27 and 28 which falls within the district of Ashfield. The air quality assessment undertaken by ARUP.

#### Development of Kirkby Precinct

Ashfield District Council has given planning approval for the re development of Kirkby precinct. This includes the demolition of part of the existing precinct and the construction of a new retail store. As part of the re development of Kirkby precinct, new road and junction layouts were proposed. Nottinghamshire County Council Highways have not given final approval to the final road and Junction layout and a further planning application is under consideration. As part of the planning process the Environmental Protection Team gave full consideration to the Air Quality and Transport Plan submitted as part of this application. It is not predicted that the development will have any significant impact on Local Air Quality but the Environmental Protection Team have requested that further Air Quality Assessments be carried out if Nottinghamshire County Council propose further road layout or changes to road junctions.

Air Quality Impact and Air Quality assessments have been considered fully as part of the planning process under Ashfield District Council planning Reference **V/2010/0447**

The Air Quality Assessment was carried out by Air Quality Consultants Ltd **R1087/1/F1**.

The Transport Assessment was carried out by Bryan G Hall **Ref 10-115-004-3**

### 3.2 Other Transport Sources

There are no new other transport sources.

### 3.3 Industrial Sources

There are no new large scale industrial sources.

### 3.4 Commercial and Domestic Source

There are no new commercial or domestic sources.

### **3.5 New Developments with Fugitive or Uncontrolled Sources**

There are no new developments with fugitive or uncontrolled sources.

**Ashfield District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.**

## **4 Local / Regional Air Quality Strategy**

### **Local Air Quality Strategy**

Ashfield District Council has developed and approved a Local Air Quality Strategy 'The Air We Breathe'

Under the headings of Planning and Land Use, Transport, Health and Education, Energy Efficiency, Public Sector, Commercial and Industry, Domestic Sector, and Information and Services, the strategy identifies individual objectives, the achievement of which will bring about significant improvements in air quality. For each objective listed under the above headings a tabulated action plan identifies the Council Divisions and Sections responsible for actions to be taken, deadline for achieving the objective and lists those partner agencies that have a role to play in the delivery of the objective. The strategy also attempts to consolidate into one comprehensive document those initiatives being undertaken elsewhere in the council or by other stakeholders that will also deliver an air quality benefit to the District of Ashfield.

The revised strategy was approved by the Council in April 2007.

### **Regional Air Quality Strategy**

The Nottinghamshire Environmental Protection Working Group, which comprises air pollution specialists from each Nottinghamshire Authority, issued the first Nottinghamshire Regional Air Quality Strategy in 2001. The Nottinghamshire framework strategy was reviewed and revised in 2006 and re – launched under a new title 'A breath of Fresh Air for Nottinghamshire – An Air Quality Strategy for the next Decade.

### **Nottinghamshire Website Project**

In 2007 Nottinghamshire authorities were successful in receiving a Defray grant to support the creation of a County wide website to present real-time air quality monitoring data and air quality information. This project planned to deliver the automatic collection, collation and presentation of air quality monitoring data from real time monitoring sites across Nottinghamshire's local authorities. Officers, students and members of the public would be able to access county wide air quality data from each local authority's real time monitoring sites and diffusion tube and gravimetric data.

The Nottinghamshire Air Quality Steering Group created a sub group to coordinate the Nottinghamshire authorities development of the webpage. No further meetings of the sub group have taken place since the submission of the previous Progress report. Ashfield District Council have experienced technical difficulties with the Casella data logger and Envista software and it no longer meets the requirements of the authorities security policy. A capital. A capital bid as been approved and the authority as taken the decision to move away from the Envista software system and as taken the decision to purchase data logging and automatic calibration equipment from Air Monitors. Future development of the website will be based around incorporating Ashfield District Councils new software package with the Envista

software.

## 5 Planning Applications

### Planning Applications in the pipe line

#### **Twin Oaks Farm**

Nottinghamshire County Council and Ashfield District Council is still reviewing a planning application for a large Quarry Processing Plant on land at Twin Oaks Farm, Derby Road, Mansfield, Nottinghamshire. The planning application is for a plant to extract and process silica sand and includes provision for an access road, landscaping and screening bunds and a sand and soil processing plant.

Air Quality Impact and Air Quality assessments have been considered fully as part of the planning process and comments have been made.

The Air Quality Assessment was carried out by the Smith Grant Environmental Consultancy Reference **R1140-R01-v5**.

#### **Pye Bridge**

Derbyshire County Council and Amber Valley Borough Council are reviewing a planning application for the development and operation of a energy generation plant utilising processed waste through gasification. The application was received from Warwick Energy Limited and the plant will be based at Pye Bridge Industrial Estate, Somercotes, Derbyshire. Although this process is not in the Ashfield's district both the Air Dispersion Modelling Study and the Draft Environmental Permit have been fully considered as part of the planning process and comments have been made.

The Air Quality Assessment was carried out by the WSP Environmental Limited Ref **12091932-001**. Draft Environmental permit ref **EPR/TP3335KU**

#### **Morrison's**

## **6 Air Quality Planning Policies**

Currently Ashfield District Council does not have formal planning policies that links air quality issues with development control.

Close co-operation exists between the Council's Planning Officers and Air Quality Officers. Procedures are in place which requires all planning applications to be reviewed for their impact on air quality during the planning application process.

## 7 Local Transport Plans and Strategies

The North Nottinghamshire Local Transport Plan covers the districts of Ashfield (excluding Hucknall), Bassetlaw, Mansfield and Newark & Sherwood. The Greater Nottingham Local Transport Plan is developed in partnership with Nottingham City Council, and covers the Broxtowe, Gedling and Rushcliffe districts, as well as Hucknall and the City of Nottingham.

The aims and objectives of the second local transport plan have been developed both nationally and locally. Nationally, the objectives were developed through the Department for Transport and Local Government Association. Locally, through consultation the plans have also been developed to take account of what local people feel is important. Nationally, four objectives were determined which all local authorities in the country must address within their transport plans.



## 8 Climate Change Strategies

Ashfield District Council's Environment and Sustainability Section as developed a Climate Change and Action Plan for 2009 to 2012. The strategy outlines how Ashfield District Council aims to deliver action on climate change and move towards meeting national Targets for the reduction of carbon dioxide emissions.

The climate change strategy focuses on the local economy, buildings and land, transport, people and communities, waste and other environmental services as priority areas where action can be taken to reduce emissions and adapt to the risks of more extreme climatic conditions.

The full climate strategy is available on Ashfield District Councils website.

## **9 Implementation of Action Plans**

Ashfield District Council has not declared any air quality management areas and therefore the Council has not produced and there is no requirement to submit an Action Plan.

## **10 Conclusions and Proposed Actions**

### **10.1 Conclusions from New Monitoring Data**

#### **Automatic Monitoring**

Unfortunately problems with the Councils Casella data logger and delays in commissioning new equipment as resulted in no data being available for this report. Therefore no automatic monitoring data is available for the period between 01/01/2010 and 05/01/2011.

#### **Non Automatic Monitoring**

The Council measures Nitrogen Dioxide by non-automatic means. This is carried out by number of diffusion tubes being placed at variety of locations throughout the district.

Analysis of the monitoring results indicates that there is no need to proceed to a detailed assessment at any of the locations where monitoring has been undertaken.

### **10.2 Conclusions relating to New Local Developments**

No new developments have been given planning approval that would have a significant detrimental effect on air quality.

### **10.3 Other Conclusions**

None.

### **10.4 Proposed Actions**

This Progress Report has not identified the need for Ashfield District Council to proceed to a Detailed Assessment for any relevant pollutants at any assessed locations.

The Councils as taken delivery of a new Air Quality Monitoring Trailer and a Teom FDMS particulates sampler and our existing NOX monitor as been overhauled. In addition the Council as recently taken delivery of new data logging equipment In the short term this will allow the Council to undertake more accurate/in-depth monitoring for future assessments and fully participate in the Nottinghamshire Air Quality Group.

However our existing Thermo Chemiluminescent NOX Analyser will need replacement to enable monitoring to continue in the medium to longer term.

# 11 References

None Used

# Appendices

## Appendix 1 Monthly Mean Data

### Naggs Head

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	46.28	51.63	50.61	49.51	
Feb	04/02/2010 - 03/03/2010	49.49	43.79	42.99	45.42	
March	03/03/2010 - 08/04/2010	36.45	36.22	35.87	36.18	
April	08/04/2010 - 30/04/2010	36.12	39.04	38.88	38.01	
May	30/04/2010 - 04/06/2010	29.71	31.78	30.37	30.62	
June	04/06/2010 - 30/06/2010	24.36	23.78	23.17	23.77	
July	30/06/2010 - 03/08/2010	27.59	28.12	27.69	27.80	
August	03/08/2010 - 02/09/2010	27.02	26.94	25.87	26.61	
September	02/09/2010 - 29/09/2010	34.64	34.9	31.8	33.78	
October	29/09/2010 - 05/11/2010	34.85	34.88	35.22	34.98	
November	05/11/2010 - 05/01/2011	48	44.92	48.99	47.30	
December					0.00	
		11			393.99	<b>35.8</b>

### Outram Street

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	56.41			56.41	
Feb	04/02/2010 - 03/03/2010	53.71			53.71	
March	03/03/2010 - 08/04/2010	33.26			33.26	
April	08/04/2010 - 30/04/2010	41.71			41.71	
May	30/04/2010 - 04/06/2010	33.24			33.24	
June	04/06/2010 - 02/07/2010				0.00	
July	13/07/2010 - 03/08/2010	30.91			30.91	
August	03/08/2010 - 02/09/2010	31.5			31.50	
September	02/09/2010 - 29/09/2010	34.24			34.24	
October	29/09/2010 - 04/11/2010	40.4			40.40	
November	05/11/2010 - 05/01/2011	51.85			51.85	
December					0.00	
		10			407.23	<b>40.7</b>

## Dalestorth

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	53.22			53.22	
Feb	04/02/2010 - 03/03/2010	50.29			50.29	
March	03/03/2010 - 08/04/2010	45.88			45.88	
April	08/04/2010 - 30/04/2010	44.13			44.13	
May	30/04/2010 - 04/06/2010	33.01			33.01	
June	04/06/2010 - 02/07/2010	22.09			22.09	
July	02/07/2010 - 03/08/2010	29.64			29.64	
August	03/08/2010 - 02/09/2010	25.72			25.72	
September	02/09/2010 - 29/09/2010	36			36.00	
October	29/09/2010 - 04/11/2010	41.64			41.64	
November	04/11/2010 - 05/01/2011	46.18			46.18	
December					0.00	
		11			427.80	<b>38.9</b>

## Mansfield Road Sutton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	53.22			53.22	
Feb	04/02/2010 - 03/03/2010	50.29			50.29	
March	03/03/2010 - 08/04/2010	37.15			37.15	
April	08/04/2010 - 30/04/2010	43.35			43.35	
May	30/04/2010 - 04/06/2010	36.03			36.03	
June	04/06/2010 - 02/07/2010	29.02			29.02	
July	02/07/2010 - 03/08/2010	26.16			26.16	
August	03/08/2010 - 02/09/2010	29.97			29.97	
September	02/09/2010 - 29/09/2010	35.57			35.57	
October	29/09/2010 - 04/11/2010	40.62			40.62	
November	04/11/2010 - 05/01/2011	51.33			51.33	
December					0.00	
		11			432.71	<b>39.3</b>

## A38

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	48.08	50.14	48.28	48.83	
Feb	04/02/2010 - 03/03/2010	43.58	46.96	46.37	45.64	
March	03/03/2010 - 08/04/2010	32.74	30.45	32.23	31.81	
April	08/04/2010 - 30/04/2010	40.57	34.97	40.26	38.60	
May	30/04/2010 - 04/06/2010	36.51	34.87	36.68	36.02	
June	04/06/2010 - 02/07/2010	28.52	25	25.41	26.31	
July	02/07/2010 - 03/08/2010	22.45	24.1	24.17	23.57	
August	03/08/2010 - 02/09/2010	27.86	28.74	28.36	28.32	
September	02/09/2010 - 29/09/2010	31.4	30.16	30.63	30.73	
October	29/09/2010 - 04/11/2010	31.33	30.95	39.45	33.91	
November	04/11/2010 - 05/01/2011	50.58	43.5	46.35	46.81	
December					0.00	
		11			390.55	<b>35.5</b>

## Church Hill

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	53.12	54.81	62.45	56.79	
Feb	04/02/2010 - 03/03/2010	45.12	43.64	46.26	45.01	
March	03/03/2010 - 08/04/2010	40.65	40.9	39.66	40.40	
April	08/04/2010 - 30/04/2010	45.13	43.82	48.33	45.76	
May	30/04/2010 - 03/06/2010	44.65	39.79	43.74	42.73	
June	03/06/2010 - 30/06/2010	34.73	35.58	37.66	35.99	
July	30/06/2010 - 03/08/2010	38.22	34.62	37.01	36.62	
August	03/08/2010 - 02/09/2010	36.1	35.95	42.72	38.26	
September	02/09/2010 - 29/09/2010	42.03	41.99	45.04	43.02	
October	29/09/2010 - 03/11/2010	50.86	50.9	53.55	51.77	
November	03/11/2010 - 05/01/2011	50.55	49.5	54.19	51.41	
December					0.00	
		11			487.76	<b>44.3</b>

## Pinxton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	44.47			44.47	
Feb	04/02/2010 - 03/03/2010	35.07			35.07	
March	03/03/2010 - 08/04/2010	38.81			38.81	
April	08/04/2010 - 30/04/2010	32.68			32.68	
May	30/04/2010 - 03/06/2010	27.37			27.37	
June	03/06/2010 - 30/06/2010	22.14			22.14	
July	30/06/2010 - 03/08/2010	31.85			31.85	
August	03/08/2010 - 02/09/2010	31.86			31.86	
September	02/09/2010 - 29/09/2010	27.83			27.83	
October	29/09/2010 - 03/11/2010	42.6			42.6	
November	03/11/2010 - 05/01/2011	37.99			37.99	
December						
		11			372.67	<b>33.9</b>

## Selston

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	50.25			50.25	
Feb	04/02/2010 - 03/03/2010	39.44			39.44	
March	03/03/2010 - 08/04/2010	30.51			30.51	
April	08/04/2010 - 30/04/2010	32.69			32.69	
May	30/04/2010 - 03/06/2010	28.62			28.62	
June	03/06/2010 - 30/06/2010	20.66			20.66	
July	30/06/2010 - 03/08/2010	24.23			24.23	
August	03/08/2010 - 02/09/2010	23.71			23.71	
September	02/09/2010 - 29/09/2010	28.33			28.33	
October	29/09/2010 - 03/11/2010	31.32			31.32	
November	03/11/2010 - 05/01/2011	37.12			37.12	
December						
		11			346.88	<b>31.5</b>



## Forest Close

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	46.26	43.63	48.56	46.15	
Feb	04/02/2010 - 03/03/2010	48.18	47.42	46.79	47.46	
March	03/03/2010 - 08/04/2010	27.81	28.67	30.88	29.12	
April	08/04/2010 - 30/04/2010	32.84	34.42	33.89	33.72	
May	30/04/2010 - 03/06/2010		28.18	24.64	26.41	
June	03/06/2010 - 30/06/2010	25.18	26.2	23.18	24.85	
July	30/06/2010 - 03/08/2010	17.95	18.4	18.87	18.41	
August	03/08/2010 - 02/09/2010	25.82		20.33	23.08	
September	02/09/2010 - 29/09/2010	27.82	26.63	27.36	27.27	
October	29/09/2010 - 03/11/2010	31.16	31.49	32.87	31.84	
November	03/11/2010 - 05/01/2011	47.46	46.44	47.35	47.08	
December					0.00	
		11			355.39	<b>32.3</b>

## Ashgate Road Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	46.97			46.97	
Feb	04/02/2010 - 03/03/2010	32.75			32.75	
March	03/03/2010 - 08/04/2010	31.97			31.97	
April	08/04/2010 - 30/04/2010	28.15			28.15	
May	30/04/2010 - 04/06/2010	22.3			22.3	
June	04/06/2010 - 02/07/2010	18.72			18.72	
July	02/07/2010 - 03/08/2010	29.41			29.41	
August	03/08/2010 - 03/09/2010	23.08			23.08	
September	03/09/2010 - 29/09/2010	29.08			29.08	
October	29/09/2010 - 04/11/2010	38.34			38.34	
November	04/11/2010 - 05/01/2011	45.14			45.14	
December						
		11			345.91	

## High Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	57.08			57.08	
Feb	04/02/2010 - 03/03/2010	42.5			42.5	
March	03/03/2010 - 08/04/2010	39.13			39.13	
April	08/04/2010 - 30/04/2010	51.22			51.22	
May	30/04/2010 - 04/06/2010	39.52			39.52	
June	04/06/2010 - 02/07/2010	30.45			30.45	
July	02/07/2010 - 03/08/2010	33.98			33.98	
August	03/08/2010 - 03/09/2010	34.28			34.28	
September	03/09/2010 - 29/09/2010	41.26			41.26	
October	29/09/2010 - 04/11/2010	46.34			46.34	
November	04/11/2010 - 05/01/2011	53.74			53.74	
December					0	
		11			469.5	<b>42.7</b>

## Beardall Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	37.26			37.26	
Feb	04/02/2010 - 03/03/2010	36.68			36.68	
March	03/03/2010 - 08/04/2010				0	
April	08/04/2010 - 30/04/2010	27.86			27.86	
May	30/04/2010 - 04/06/2010	21.02			21.02	
June	04/06/2010 - 02/07/2010	17.99			17.99	
July	02/07/2010 - 03/08/2010	20.27			20.27	
August	03/08/2010 - 03/09/2010	20.92			20.92	
September	03/09/2010 - 29/09/2010	25.43			25.43	
October	29/09/2010 - 04/11/2010	31.8			31.8	
November	04/11/2010 - 05/01/2011	40.8			40.8	
December					0	
		10			280.03	<b>28.0</b>

## Station Road Sutton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	57.49			57.49	
Feb	04/02/2010 - 03/03/2010	49.12			49.12	
March	03/03/2010 - 08/04/2010	43.2			43.2	
April	08/04/2010 - 30/04/2010	44.02			44.02	
May	30/04/2010 - 04/06/2010	35.93			35.93	
June	04/06/2010 - 02/07/2010	25.15			25.15	
July	02/07/2010 - 03/08/2010	33.14			33.14	
August	03/08/2010 - 02/09/2010	27.71			27.71	
September	02/09/2010 - 29/09/2010	39.95			39.95	
October	29/09/2010 - 04/11/2010	43.64			43.64	
November	04/11/2010 - 05/01/2011	47.88			47.88	
December					0	
		11			447.23	<b>40.7</b>

## Common Road Huthwaite

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	18/01/2010 - 04/02/2010	55.83			55.83	
Feb	04/02/2010 - 03/03/2010	36.24			36.24	
March	03/03/2010 - 08/04/2010	38.83			38.83	
April	08/04/2010 - 30/04/2010	43.62			43.62	
May	30/04/2010 - 04/06/2010	35.33			35.33	
June	04/06/2010 - 02/07/2010	33.33			33.33	
July	02/07/2010 - 03/08/2010	37.35			37.35	
August	03/08/2010 - 02/09/2010	34.06			34.06	
September	02/09/2010 - 29/09/2010	42.3			42.3	
October	29/09/2010 - 03/11/2010	40.94			40.94	
November	03/11/2010 - 05/01/2011	47.28			47.28	
December						
		11			445.11	<b>40.5</b>

## Appendix 2: Nitrogen Dioxide – Distance Fall-Off Calculations

### Sutton Outram Street

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	4.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	17	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	37	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	32.2	µg/m <sup>3</sup>

### A38 Fire Station

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	10	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	5.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	16.7	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	32	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	35.4	µg/m <sup>3</sup>

### Selston Nottingham Road

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	3.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	13.45	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	28	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	24.3	µg/m <sup>3</sup>

## Kirkby Naggs Head

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	5.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	3.8	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	17	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	32	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	33.7	µg/m <sup>3</sup>

## M1 Pinxton

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	8.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	28.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	24.22	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	31	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	28.1	µg/m <sup>3</sup>

## Kirkby Church Hill

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	0.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	2	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	14	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	40	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	33.6	µg/m <sup>3</sup>

## Sutton Dalestorth Street

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	2.7	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	16.71	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	35	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	31.3	µg/m <sup>3</sup>

## Hucknall Ashgate Road

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	3.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	6.3	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	15.31	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	28	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	26	µg/m <sup>3</sup>

## Station Road Sutton

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	2.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	12.8	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	20.89	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	37	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	30.7	µg/m <sup>3</sup>

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