Local Air Quality Updating and Screening Assessment for Ashfield District Council

May 2012

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Executive Summary

This is the latest Air Quality Updating and Screening Report produced by Ashfield District Council. This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act 1995, Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and follows the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved.

This report provides an update on air quality monitoring in the district and makes an assessment of any changes that have taken place that may affect air quality since the last Updating and Screening Assessment in 2009. This Updated Screening Assessment represents the thirteenth 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 2011 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 Updated Screening Assessment .

The report has taken the guidance into account, and in particular Part IV of the Environment Act 1995 – Local Air Quality Management Policy Guidance, Addendum 2006[3], Local Air Quality Management Technical Guidance LAQM TG(09)[4], and Local Air Quality Management Policy Guidance PG(09)[5], both issued in February 2009.

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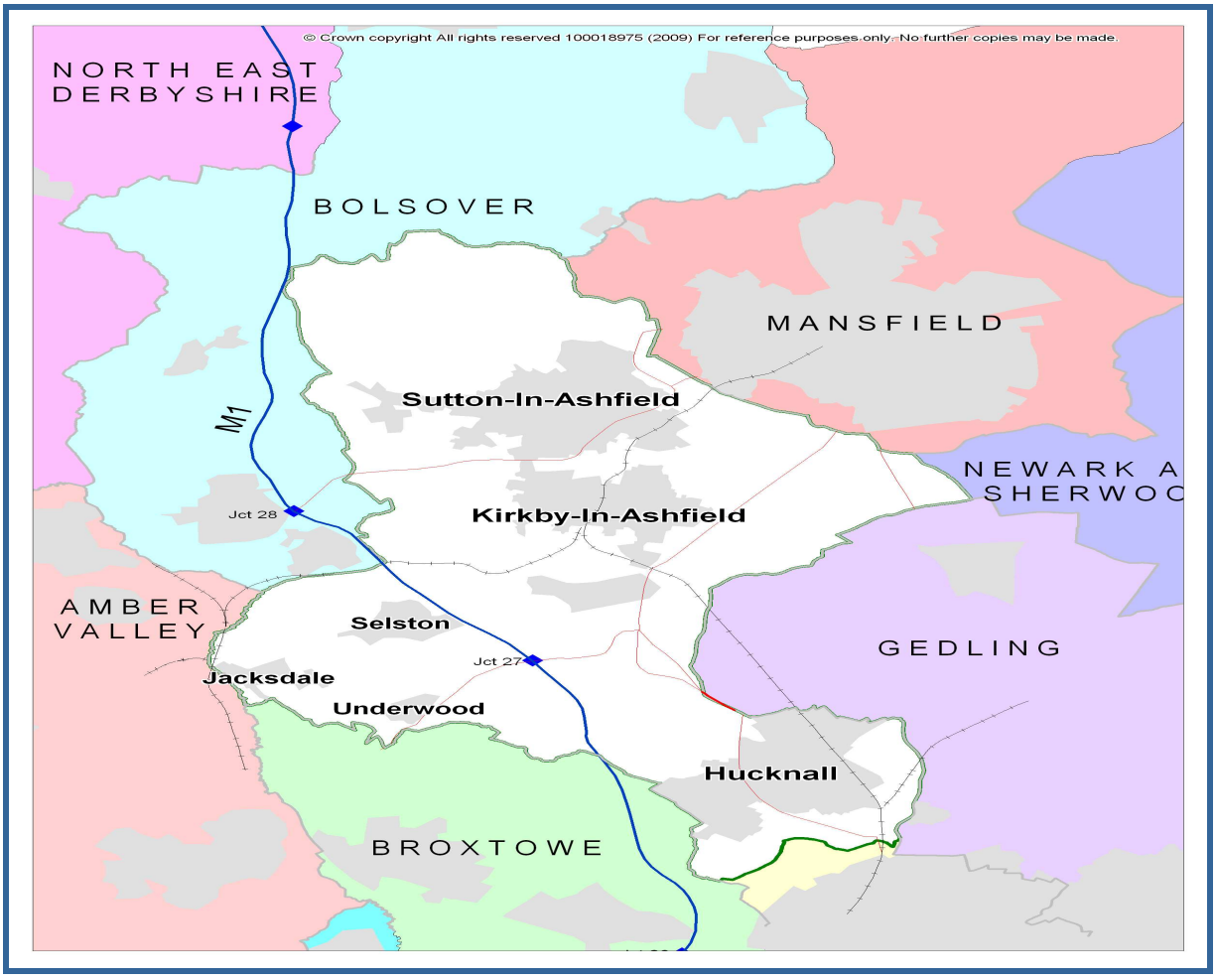
1 Introduction

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 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 this Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where it is likely the objective will be exceeded, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of accidences in each year that are permitted (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
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, 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 Updating and Screening Assessment represents the thirteenth 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 and the 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
Stage One and Two Air Quality Assessment	May 2000	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead:** No need for further assessment **Nitrogen Dioxide:** Further review and assessment immediately adjacent to Rolls Royce Fuel Burning Engine Facility, Hucknall. **Particles PM_{10}:** Further review and assessment adjacent to M1 Motorway. **Sulphur Dioxide:** Further review and assessment immediately adjacent to Kings Mill Hospital Boiler Plant
Stage Three Air Quality Assessment	August 2001	**Nitrogen Dioxide:** Further review and assessment undertaken immediately adjacent to Rolls Royce Fuel Burning Engine Facility, Hucknall. Monitoring/Modelling identified no need to declare an AQMA. **Particles PM_{10}:** Further review and assessment undertaken at two

		locations adjacent to M1 Motorway. Monitoring/Modelling identified no need to declare an AQMA. **Sulphur Dioxide:** 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. In addition, the Hospital would be switching to a CHP plant in the near future. Therefore no need to declare an AQMA.
Update and Screening Assessment	May 2003	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide:** 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. **Particles PM_{10}:** The updating and screening assessment for PM_{10} 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_{10} be undertaken at this location.
Detailed Assessment	April 2004	Detailed assessment for Particles PM_{10} 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_{10} was achieved in this location and no need to declare an AQMA.
Detailed Assessment	December 2004	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 episodes of PM_{10} recorded. Therefore, a detailed assessment was carried out for Particles PM_{10}. It was concluded that the air quality objectives for PM_{10} was achieved in this location and no need to declare an AQMA.
Progress Report	April 2005	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** 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.
Update and Screening Report	April 2006	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2005 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.
Progress Report	April 2007	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2006 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.
Progress Report	April 2008	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2007 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.
Update And Screening Assessment	May 2009	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** 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. 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.
Progress Report	May 2010	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2009 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.
Progress Report	April 2011	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** 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.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

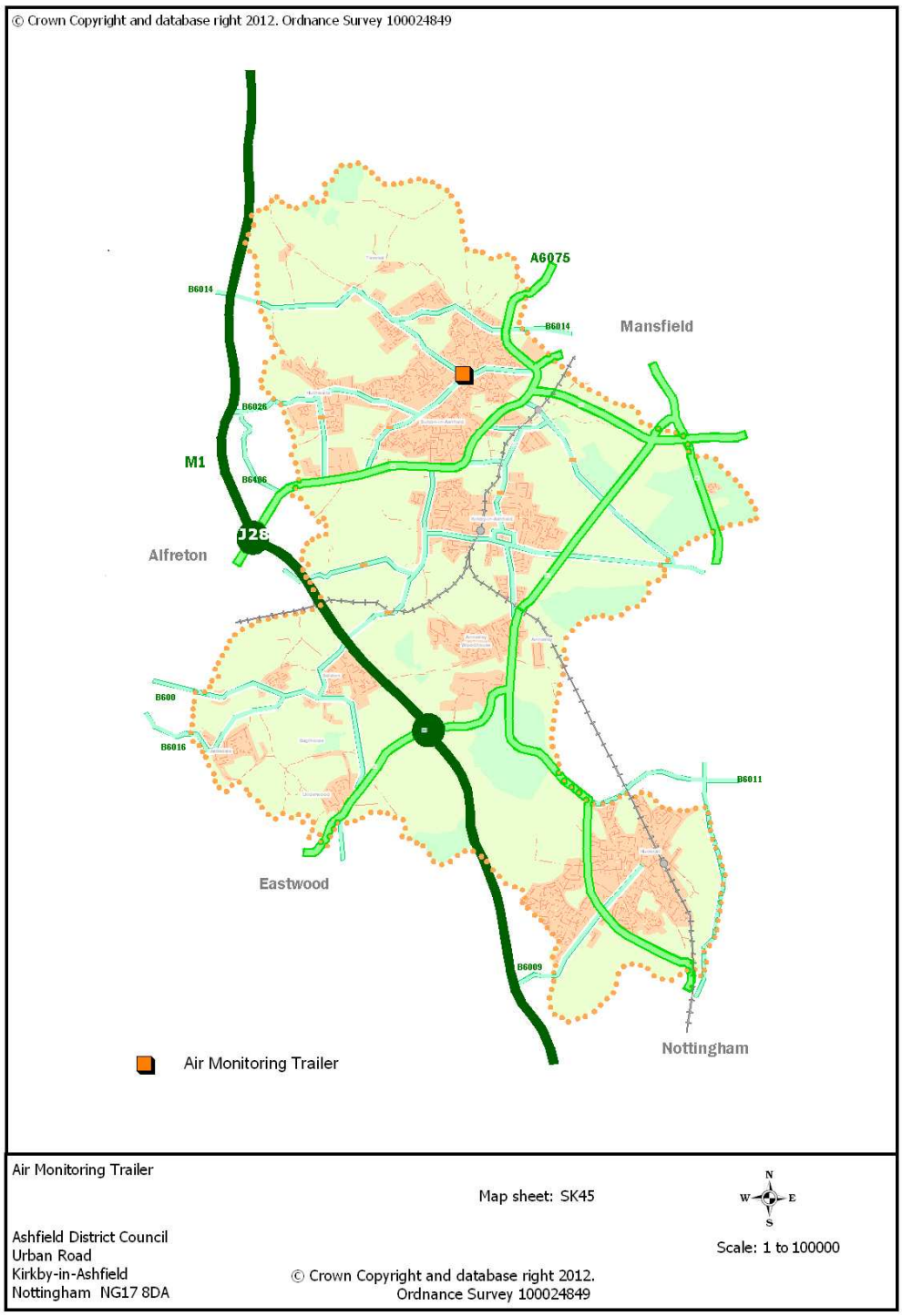
2.1.1 Automatic Monitoring Sites

New monitoring equipment and trailer were delivered in August 2010 but was not commissioned in time to provide data for the 2011 Progress report. The monitoring equipment comprised of our existing Thermo chemiluminnescence NO NO_2 _ NO_X monitor which was reconditioned by Air Monitors Ltd along side an Air Monitors Ltd TEOM 1400AB ambient particulate monitor fitted with a FDMS 8500 filter dynamic measurement system. The equipment was deployed at a busy road junction adjacent to Stoneyford Court in Sutton In Ashfield. The box junction is fed by three main roads the B6023 Priestic Road feeding traffic from Huthwaite and Kirkby, the B6014 Mansfield Road feeding traffic from Mansfield and Skegby and the B6028 Stoneyford Road feeding traffic from Skegby and Stanton Hill. The junction also feeds traffic from Downing Street which allows traffic to cut through from Outram Street. The equipment came on line in April 2011.

Table 2.1 Details of the Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA? Y	Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)* 3m	Does this location represent worst-case exposure? Y
Stoneyford Court	Road Side	449812 E	359577 N	NO_2	No	Chemiluminescense	Y (6m)	3.5m	Yes

Figure 2.1 Map of Automatic Monitoring Site



2.1.2 Non – Automatic Monitoring Sites

The Council measures Nitrogen Dioxide by non-automatic means by placing diffusion tubes 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 ± 25%. Although, it should be noted that a positive bias is more common than a negative one (although the latter is certainly not rare).

Figure 2.2 shows a map of diffusion tube sites and Table 2.2 details the location of relevant diffusion tubes within the district.

Figure 2.2 Map of Non-Automatic Monitoring Sites

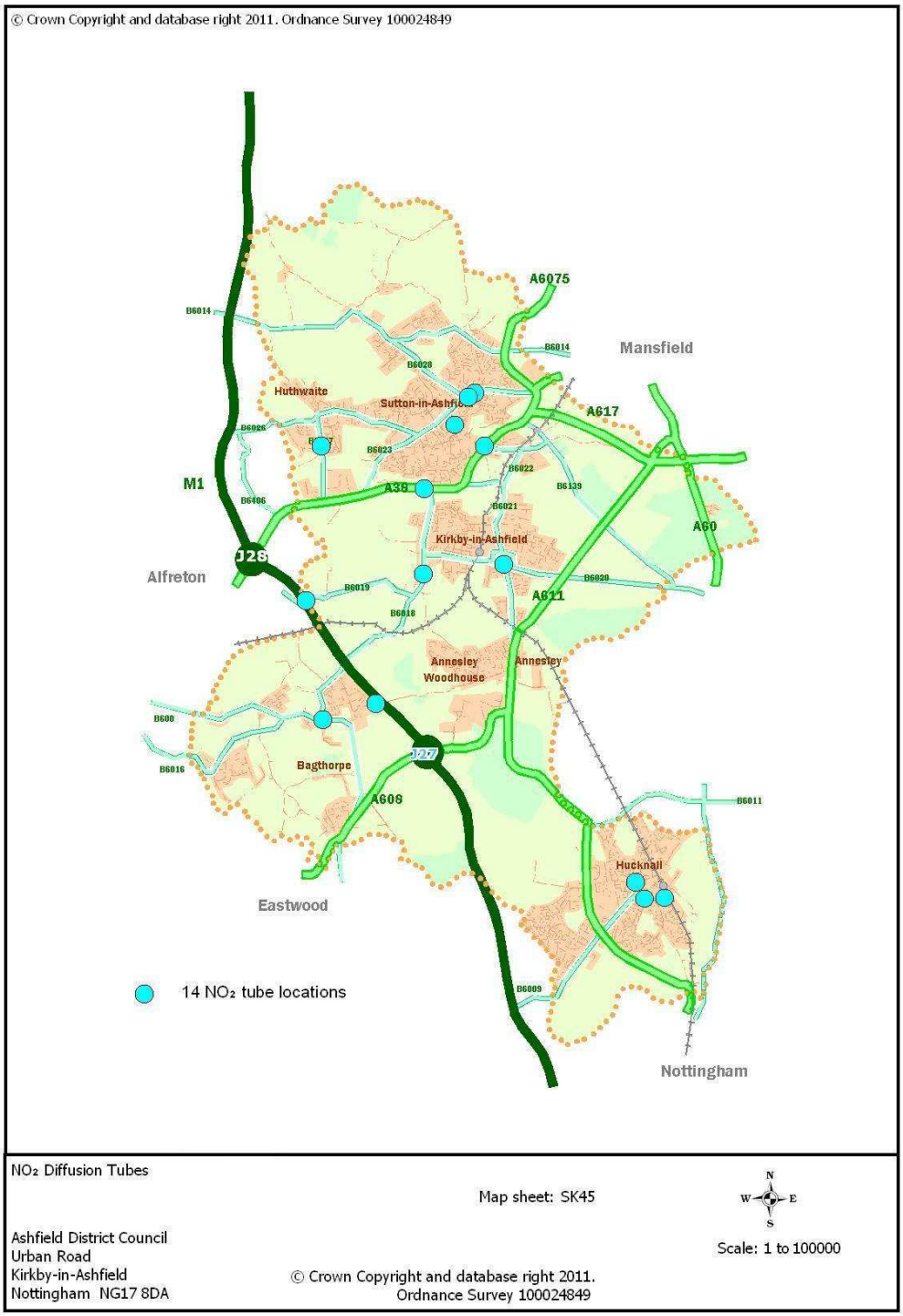


Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA	Is Monitoring Collocated With a Continuous Analyser	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road	Worst-case Location ?
Sutton Outram Street	Urban Centre	449628 358967	NO_2	N	N	3	1.5	Y
A 38 Fire Station	Roadside	448987 357610	NO_2	N	N	5	2	Y
Selston Nottingham Road	Roadside	446852 352754	NO_2	N	N	20	2.5	N
Hucknall High Street	Urban Centre	453477 349315	NO_2	N	N	5.3	2	Y
Hucknall Beardall St	Urban Background	453631 348972	NO_2	N	N	2.2	2	Y
Kirkby Naggs Head	Urban Centre	450673 356017	NO_2	N	N	7	3.3	N
Forest Close M1	Roadside	447968 353086	NO_2	N	N	6	2	Y
M1 Pinxton	Roadside	446492 355266	NO_2	N	N	8.5	1.5	Y
Kirkby Church Hill	Kerbside	448968 355816	NO_2	N	N	1.5	0.5	Y
Sutton Dalestorth Street	Roadside	450062 359653	NO_2	N	N	5.5	3.5	Y
Sutton Stoneyford Court`	Roadside	449812 359577	NO_2	N	Y	7.75	3	Y
Hucknall Ashgate Road	Roadside	454057 348989	NO_2	N	N	6.3	3.5	Y
Sutton Mansfield Road	Roadside	449923 359563	NO_2	N	N	1.6	1.6	Y
Station Road Sutton	Road Side	358512	NO_2	N	N	10	2.4	Y
Huthwaite Common Road	Road Side	446827 358508	NO_2	N	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 NO2 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 NO2 diffusion tube procedures have been amended to follow the guidelines of the DEFRA document related to the preparation, extraction, analysis and calculation procedures for NO2 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 2011 have therefore been adjusted for each monitored location. This report was used a **Bias Adjustment Factor of 0.89**

Table 2.3 details the use of the national database to obtain the relevant bias adjustment factor for this report.

Table 2.3: Diffusion Tube Bias Adjustment Factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/12

Follow the steps below in the correct order to show the results of relevant co-location studies
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 spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2012
LAQM Helpdesk Website

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data[2].

Step 4: 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[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2011	R	Scarborough Borough Council	12	35	37	-4.7%	G	1.05
Gradko	20% TEA in Water	2011	R	Dudley MBC	12	35	28	23.3%	G	0.81
Gradko	20% TEA in Water	2011	UB	Dudley MBC	12	28	25	10.0%	G	0.91
Gradko	20% TEA in Water	2011	R	Dudley MBC	11	45	40	11.8%	G	0.89
Gradko	20% TEA in water	2011	K	South Lakeland District Council	10	41	38	8.3%	G	0.92
Gradko	20% TEA in water	2011	R	Gedling Borough Council	11	43	35	24.5%	G	0.80
Gradko	20% TEA in water	2011	R	Gateshead	12	39	37	4.9%	P	0.95
Gradko	20% TEA in water	2011	R	Gateshead	12	37	36	1.8%	G	0.98
Gradko	20% TEA in water	2011	R	Gateshead	10	33	31	5.1%	G	0.95
Gradko	20% TEA in water	2011	R	Gosport Borough Council	10	28	25	11.1%	G	0.90
Gradko	20% TEA in water	2011	UC	Southampton City Council	12	31	35	-10.8%	G	1.12
Gradko	20% TEA in Water	2011	R	Dudley MBC	9	50	51	-1.5%	G	1.02
Gradko	20% TEA in water	2011	K	Marylebone Road Intercomparison	12	111	100	11.4%	G	0.90
Gradko	20% TEA in water	2011	R	Boston Borough Council	11	57	36	59.6%	P	0.63
Gradko	20% TEA in water	2011	UB	Luton Borough Council	11	39	35	11.1%	G	0.90
Gradko	20% TEA in water	2011	R	Exeter City Council	11	37	33	15.1%	S	0.87
Gradko	20% TEA in water	2011	UB	Belfast City Council	12	36	29	23.5%	G	0.81
Gradko	20% TEA in water	2011	R	Bromsgrove District Council (Worceste	10	56	53	6.0%	G	0.94
Gradko	20% TEA in water	2011	R	Monmouthshire County Council	11	47	40	17.9%	S	0.85
Gradko	20% TEA in water	2011	K	New Forest District Council	10	49	42	16.7%	G	0.86
Gradko	20% TEA in water	2011	R	New Forest District Council	12	34	26	29.9%	G	0.77
Gradko	20% TEA in water	2011	R	Fareham Borough Council	12	39	33	17.4%	G	0.85
Gradko	20% TEA in water	2011	R	Rushcliffe BC	11	35	39	-9.5%	G	1.10
Gradko	20% TEA in Water	2011	R	Carlisle City Council	12	35	28	24.8%	G	0.80
Gradko	20% TEA in Water	2011	O	North Warwickshire Borough Council	12	48	39	23.0%	G	0.81
Gradko	20% TEA in water	2011	R	Wokingham Borough Council	11	41	38	8.6%	G	0.92
Gradko	20% TEA in water	2011		Overall Factor[3] (26 studies)				Use		0.89

2.2 Comparison of Monitoring Results with Air Quality Objectives

Nitrogen Dioxide

2.2.1 Automatic Monitoring Sites

Technical problems with the Thermo chemiluminnescence NO NO_2 NO_X monitor caused by data logging problems and a major breakdown resulted in only three months data being obtained. The monitoring data was obtained between October and December 2011. The Annual Mean based on this data was 29.27μg/m^3 and the Hourly Mean objective was not exceeded.

The data has been annualised as in Box 3.2 of TG(09) and the adjusted Annual Mean is 26.49 μg/m^3

The data has not been used to obtain a bias adjustment factor.

2.2.2 Non Automatic Monitoring Sites

Table 2.4 Results of Nitrogen Dioxide Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate Or Collocated Tube	Data Capture for 2011 (Number of Months)	Data with Less than 9 months as been Annualised (Y/N)	Confirm Data has Been Distance Corrected (Y/N)	Annual mean concentrations (Bias Adjustment Factor = 0.89) 2011(ug/m^3)
Tubes 1,2 & 3	Kirkby Naggs Head	Urban Centre	No	Triplicate Tubes	12 Months	N/A	Yes	29.7
Tube 4	Sutton Outram Street	Urban Centre	No	Single Tube	12 Months	N/A	Yes	29.4
Tube 5	Sutton Dalestorth Street	Roadside	No	Single Tube	12 Months	N/A	Yes	32.0
Tube 6	Sutton Mansfield Road	Roadside	No	Single Tube	4 Months	Yes	Yes	29.4
Tubes 7,8 & 9	A38 Fire Station	Roadside	No	Triplicate Tubes	12 Months	N/A	Yes	26.6
Tubes 10,11&12	Kirkby Church Hill	Kerbside	No	Triplicate Tubes	12 Months	N/A	Yes	35.4
Tube 14	M1 Pinxton	Roadside	No	Single Tube	12 Months	N/A	Yes	30.2
Tubes 15	Selston Nottingham Road	Roadside	No	Single Tube	12 Months	N/A	Yes	26.5
Tubes 16 ,17 &18	Forest Close M1	Roadside	No	Altered from Triplicate to Single Tube	12 Months	N/A	No	23.9

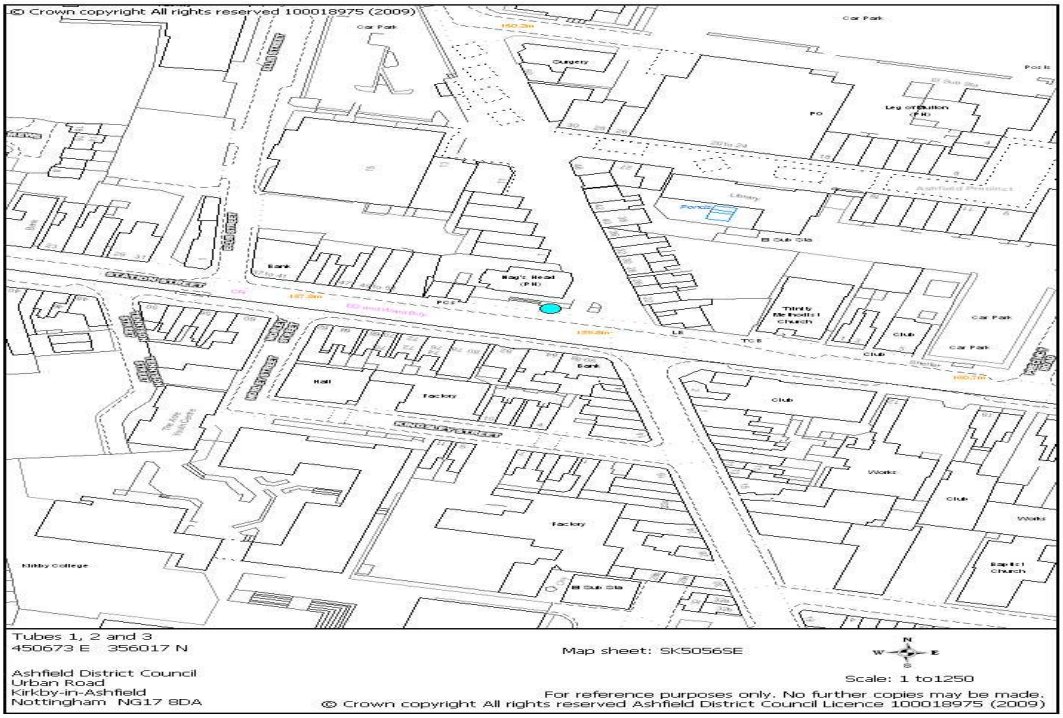
Tube 19	Hucknall Ashgate Road	Roadside	No	Single Tube	12 Months	N/A	No	26.2
Tube 20	Hucknall High Street	Urban Centre	No	Single Tube	12 Months	N/A	No	38.0
Tube 21	Hucknall Beardall Street	Urban Background	No	Single Tube	12 Months	N/A	No	26.7
Tube 22	Sutton Station Road	Roadside	No	Single Tube	12 Months	N/A	Yes	38.7
Tube 23	Huthwaite Common Road	Roadside	No	Single Tube	12 Months	N/A	Yes	33.3
Tube24,25 And 26	Sutton Stoneyford Court	Roadside/ Co Located with Monitoring Trailer	No	Triplicate Tubes	8 Months	Yes	Yes	34.7

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3				
			2007* (Bias Adjustment Factor 0.78 = XX)	2008* (Bias Adjustment Factor = 0.92 XX)	2009* (Bias Adjustment Factor = 0.90 XX)	2010* (Bias Adjustment Factor = 0.92 XX)	2011 (Bias Adjustment Factor = 0.89 XX)
Kirkby Naggs Head	Urban Centre	No	35.1	36.0	35.0	32.0	29.7
Sutton Outram Street	Urban Centre	No	38.1	36.0	34.0	37.0	29.4
Sutton Dalestorth Street	Roadside	No	42.5	38.0	36.0	35.0	32.0
A38 Fire Station	Roadside	No	33.6	41.0	40.0	40.0	26.6
Kirkby Church Hill	Kerbside	No	42.5	41.0	40.0	39.0	35.4
M1 Pinxton	Roadside	No	34.6	36.0	36.0	31.0	30.2
Selston Nottingham Road	Roadside	No	28.9	31.0	32.0	28.0	26.5
Forest Close M1	Roadside	No	30.2	32.0	29.0	29.0	23.9
Hucknall Ashgate Road	Roadside	No	29.9	31.3	30.0	28.0	26.2
Huchnall High Street	Urban Centre	No	40.0	41.0	40.0	39.0	38.0
Hucknall Beardall Street	Urban Background	No	26.5	28.0	27.0	25.0	26.7
Sutton Station Road	Roadside	No	N/A	N/A	37.8	37.0	38.7
Huthwaite Common Road	Roadside	No	N/A	N/A	37.0	37.0	33.3

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

Location of Nitrogen Dioxide Diffusion Tubes At Naggs Head , Kirkby

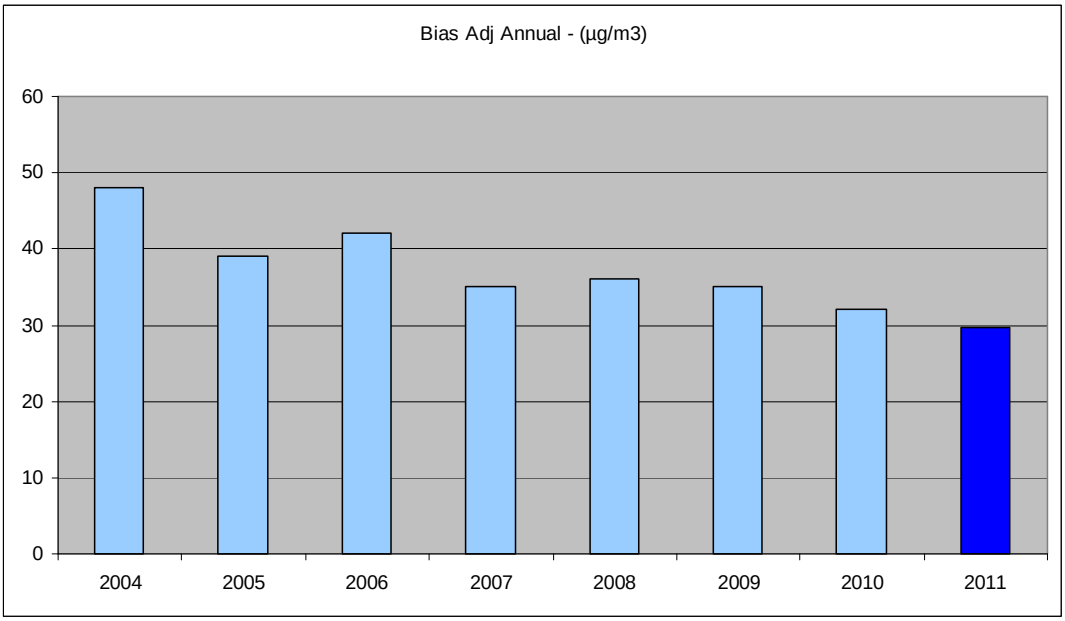


This is an urban centre location. The tube is located adjacent to a road junction, where Station Road filters onto Diamond Avenue and Kingsway. This location experiences traffic going to and coming from Mansfield, and Nottingham (via Hucknall). The tube is situated next to a shopping precinct. This is not the worst case location for undertaking diffusion tube monitoring but was selected to take account of queuing traffic adjacent the Naggs Head.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
33.4	29.7

Triplicate tubes deployed

Figure 2.3 Trend Analysis Nitrogen Dioxide Diffusion Tube at Naggs Head, Kirkby In Ashfield



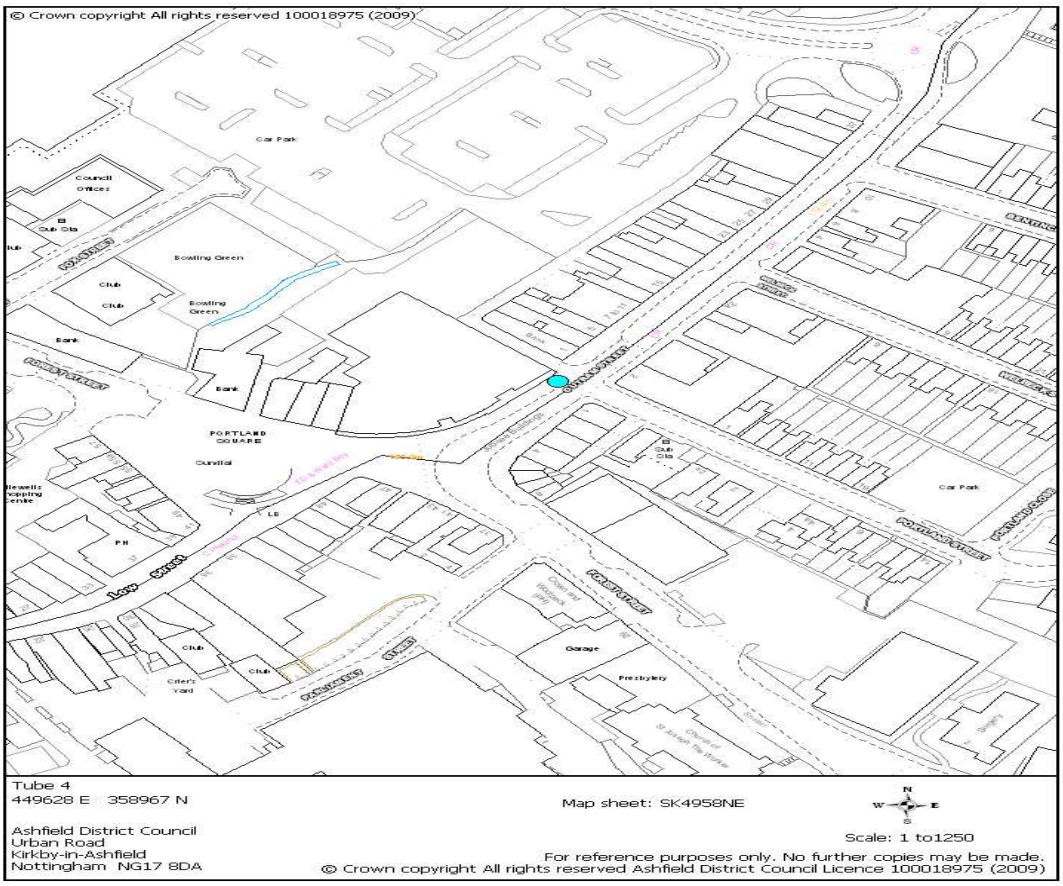
Distance Fall-off Calculation

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 **28.2µg/m^3** (Appendix 1). 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^3 and therefore there is no need to proceed to a detailed assessment for this location.

Sutton Outram Street – Urban Centre Tube 4

Location of Nitrogen Dioxide Diffusion Tube At Outram Street, Sutton

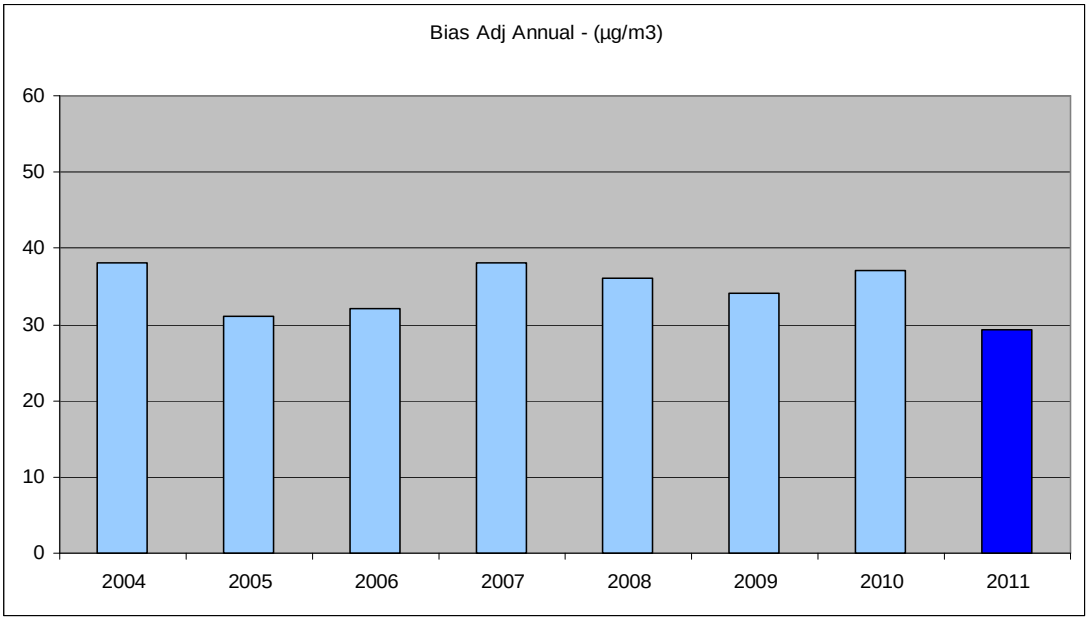


This is an urban centre location. The diffusion tube is situated at the beginning of Outram Street, directly after pedestrian lights. The road experiences traffic going to and from Mansfield and Kirkby entering Sutton Town Centre.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
33.0	29.4

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

It is necessary for accidences 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.

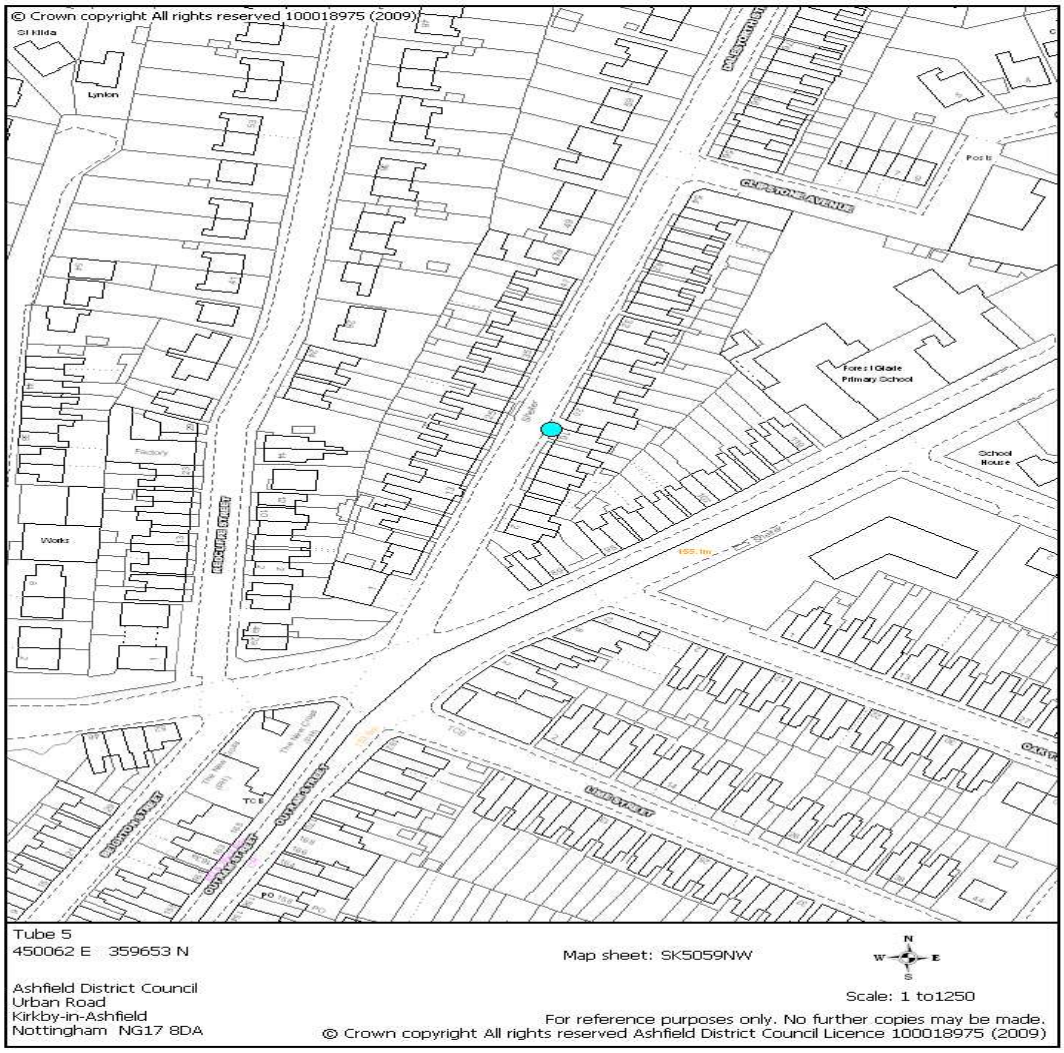
Concentrations of Nitrogen Dioxide drop off with regards to distance from a road and therefore it is essential to predict levels at the relevant receptor when monitoring has been undertaken at a different distance from the road source.

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **28.2µg/m^3** (Appendix 1).

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

Sutton Dalestorth Street – Roadside Tube 5

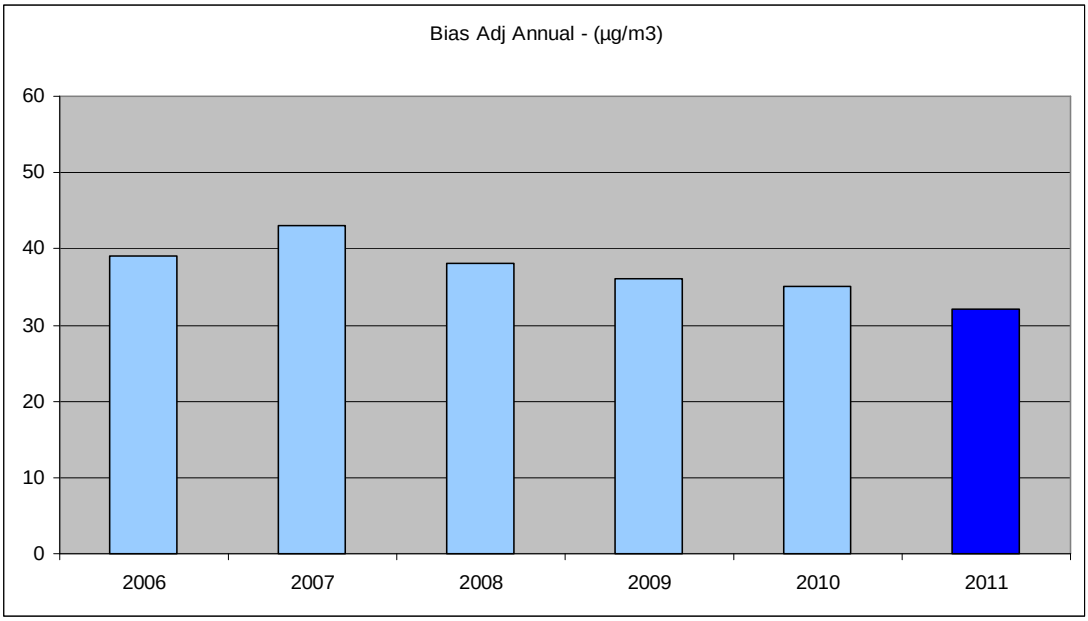
Location of Diffusion Tube At Dalestorth Street, Sutton



This is a roadside 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 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89)(µg/m^3)
35.9	32.0

Figure 2.5 Trend Analysis Nitrogen Dioxide Diffusion Tube at Dalestorth Street, Sutton In Ashfield



Single tube deployed not duplicate or triplicates

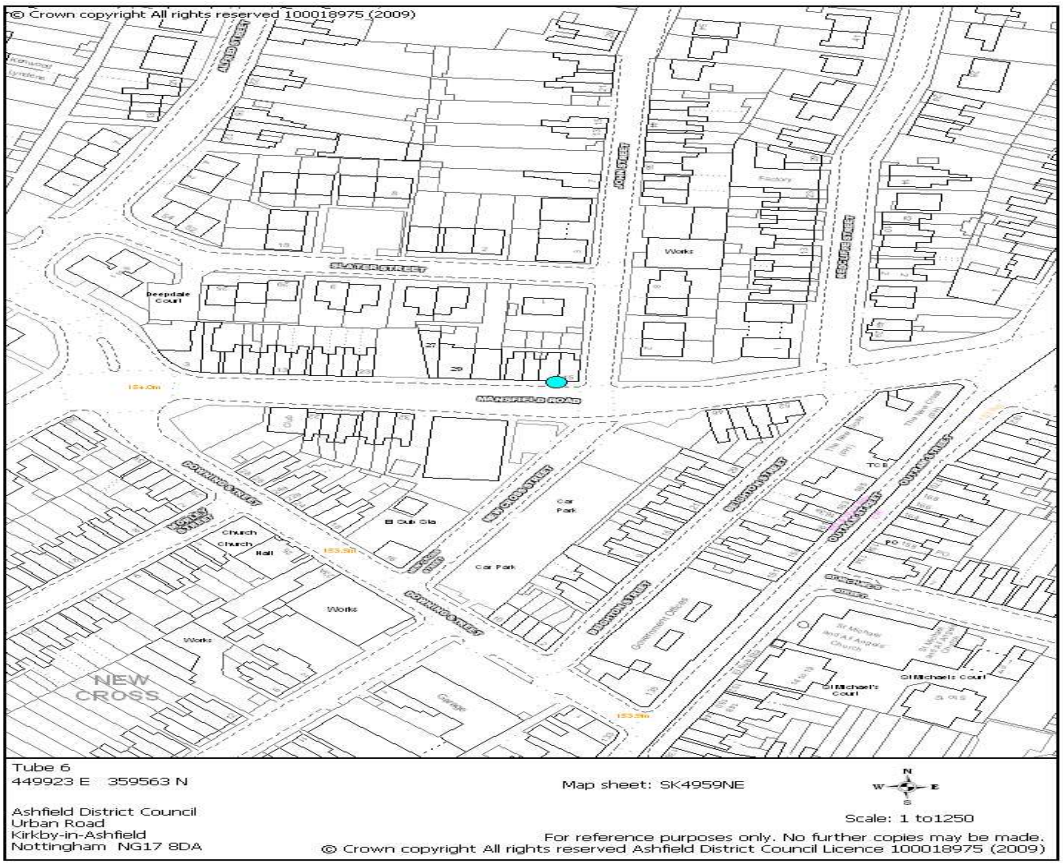
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **30.6µg/m^3** (Appendix 1).

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

Sutton Mansfield Road – Roadside Tube 6

Location of Nitrogen Dioxide Diffusion Sutton Mansfield Road



This is a roadside 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 2011 Based on 4 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
40.6	**29.36**

The data has been annualised as in Box 3.2 of TG(09) and the adjusted Annual Mean is 32.99 µg/m^3

Distance Fall-off Calculation

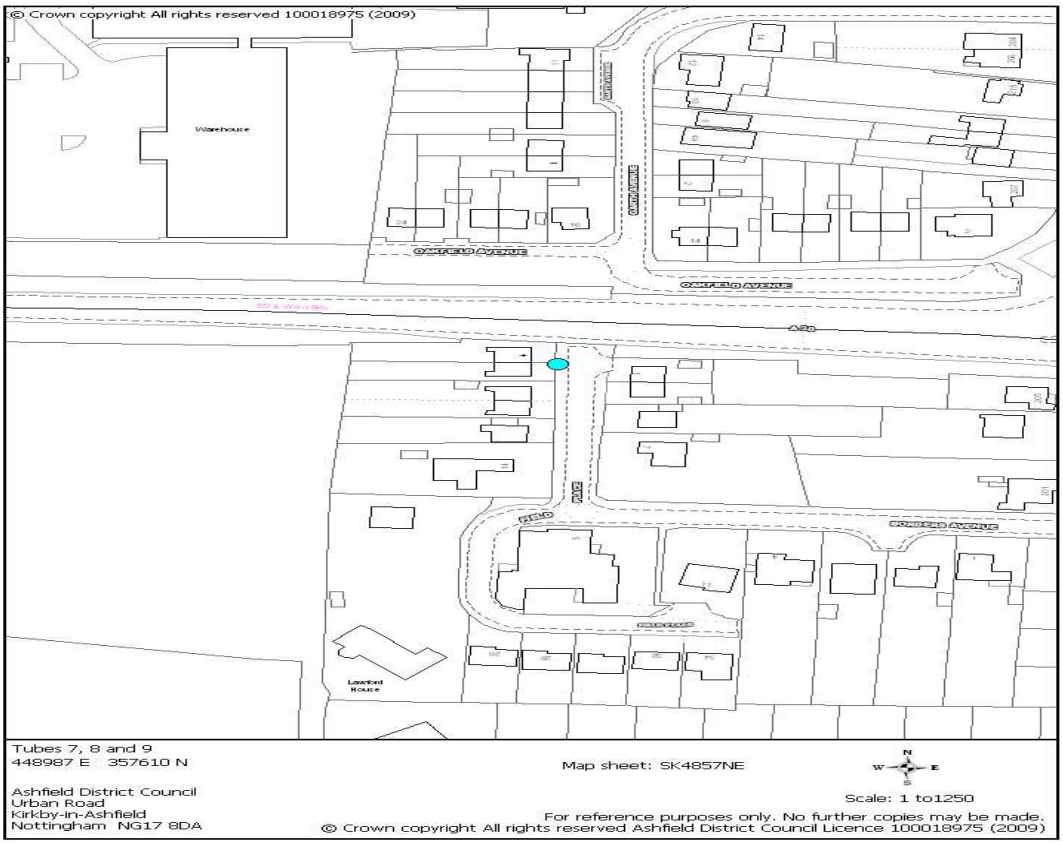
No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is **29.36µg/m ^{3}.**

Single tube deployed not duplicate or Triplicates.

This value is below the annual mean objective of 40µg/m^3 however the diffusion tube from this monitoring site was redeployed to Stoneyford Court, therefore the mean is not based on a full years monitoring.

A38 Fire Station – Roadside Tubes 7,8 and 9

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

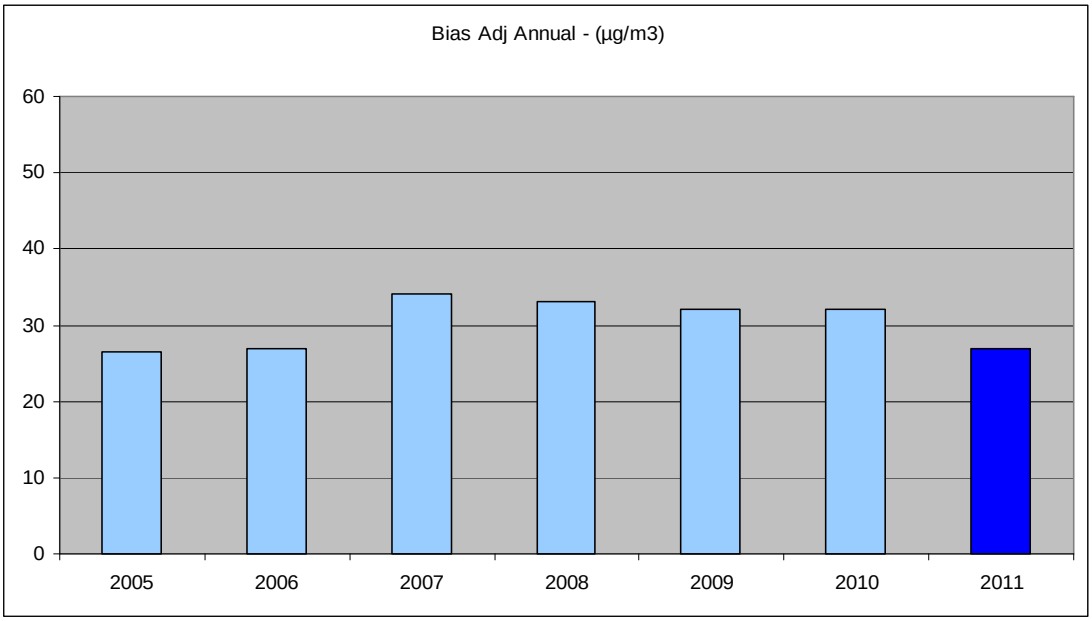


This is a roadside location. The diffusion tube is located immediately adjacent to the A38. The A38 is the major route for traffic going between Derby and Mansfield.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
29.9	26.6

Triplicate tubes deployed

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



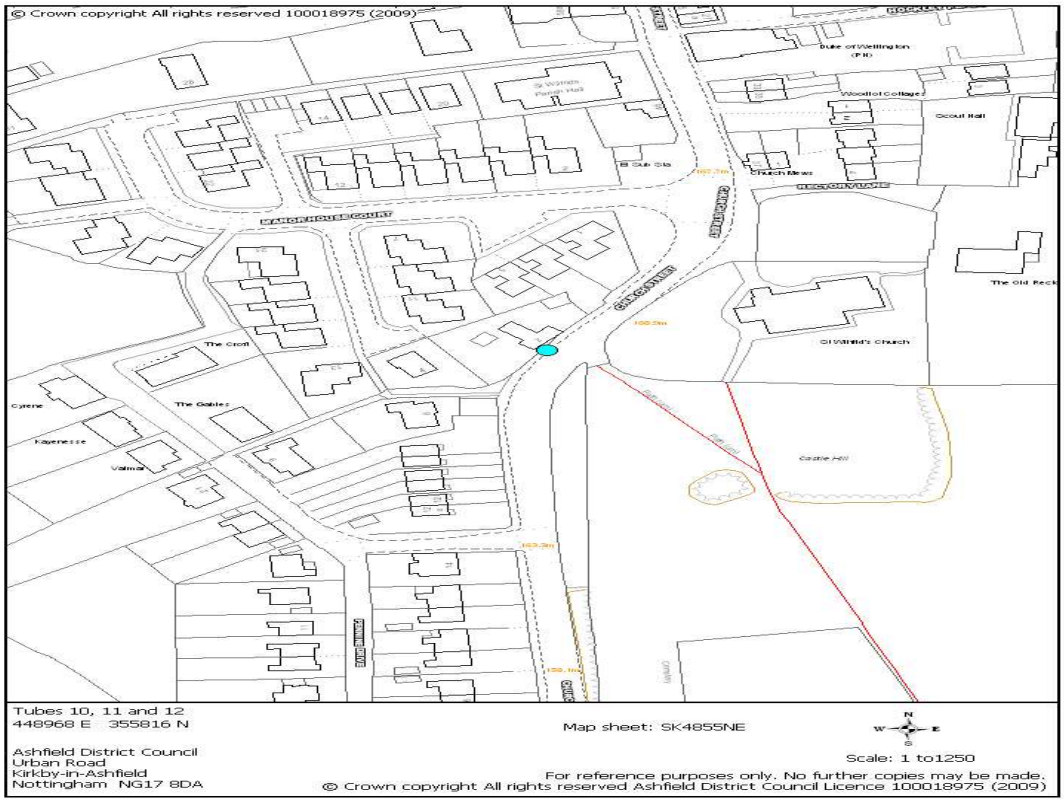
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **25.6g/m^3** (Appendix 1).

This value is below the annual mean objective of 40µg/m^3 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

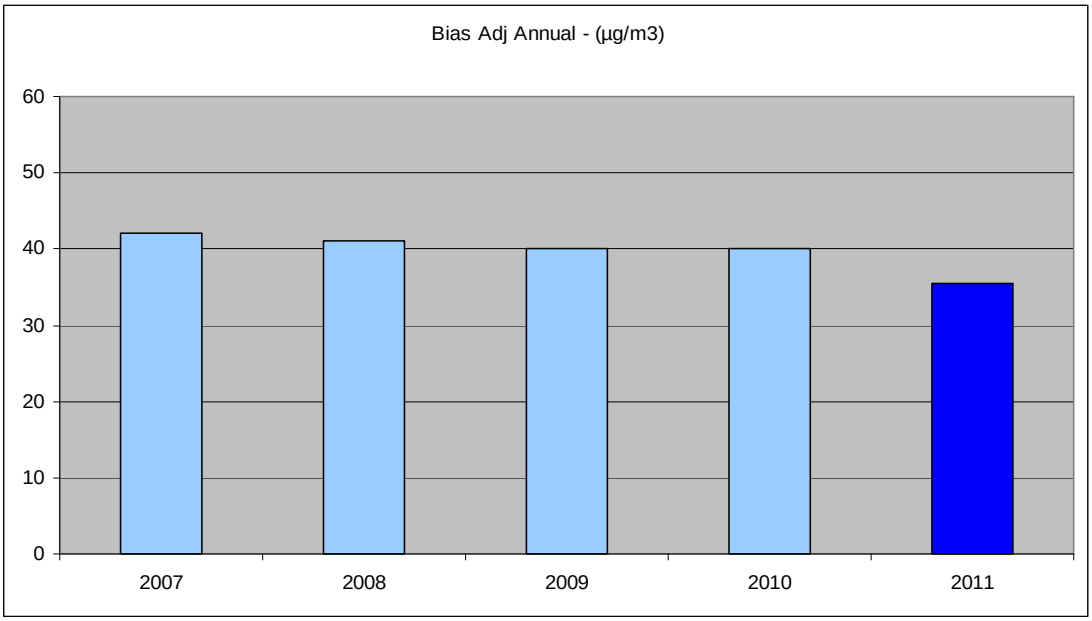


This is a kerbside location. The diffusion tube is located on a hill that is taking traffic from Sulston to Kirkby. The location is near a busy roundabout that can experience traffic build-up during peak times.

Measured Annual Mean For 2011 Based on 12 months Data ($\mu g/m^3$)	Bias Adjusted Annual Mean (Factor 0.89) ($\mu g/m^3$)
39.8	35.4

Triplicate tubes deployed

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



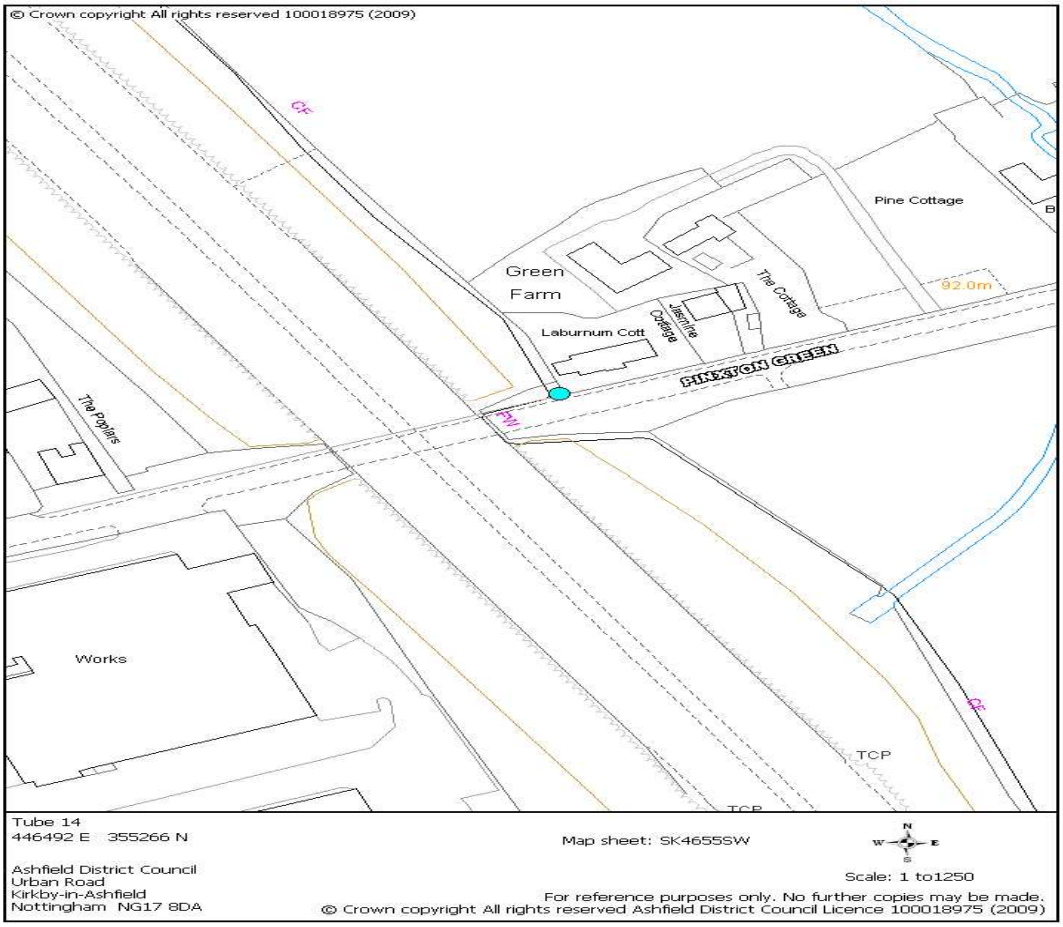
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **32.4m^3** (Appendix 1).

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

M1 Pinxton – Roadside Tube 14

Location of Nitrogen Dioxide Diffusion Tube At M1 Pinxton

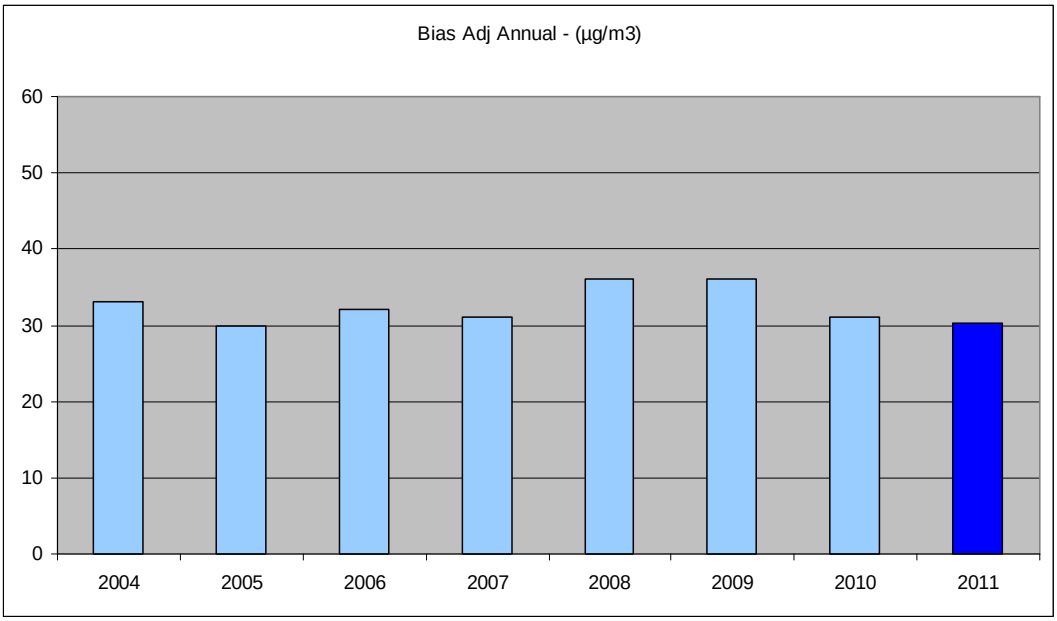


This is a roadside location. The diffusion tube is located in a residential area adjacent to the M1 at Pinxton, on the boundary of the District.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89)(µg/m^3)
33.9	30.2

Single tube deployed not duplicate or triplicates

Figure 2.8 Trend Analysis Nitrogen Dioxide Diffusion Tube at M1 Pinxton



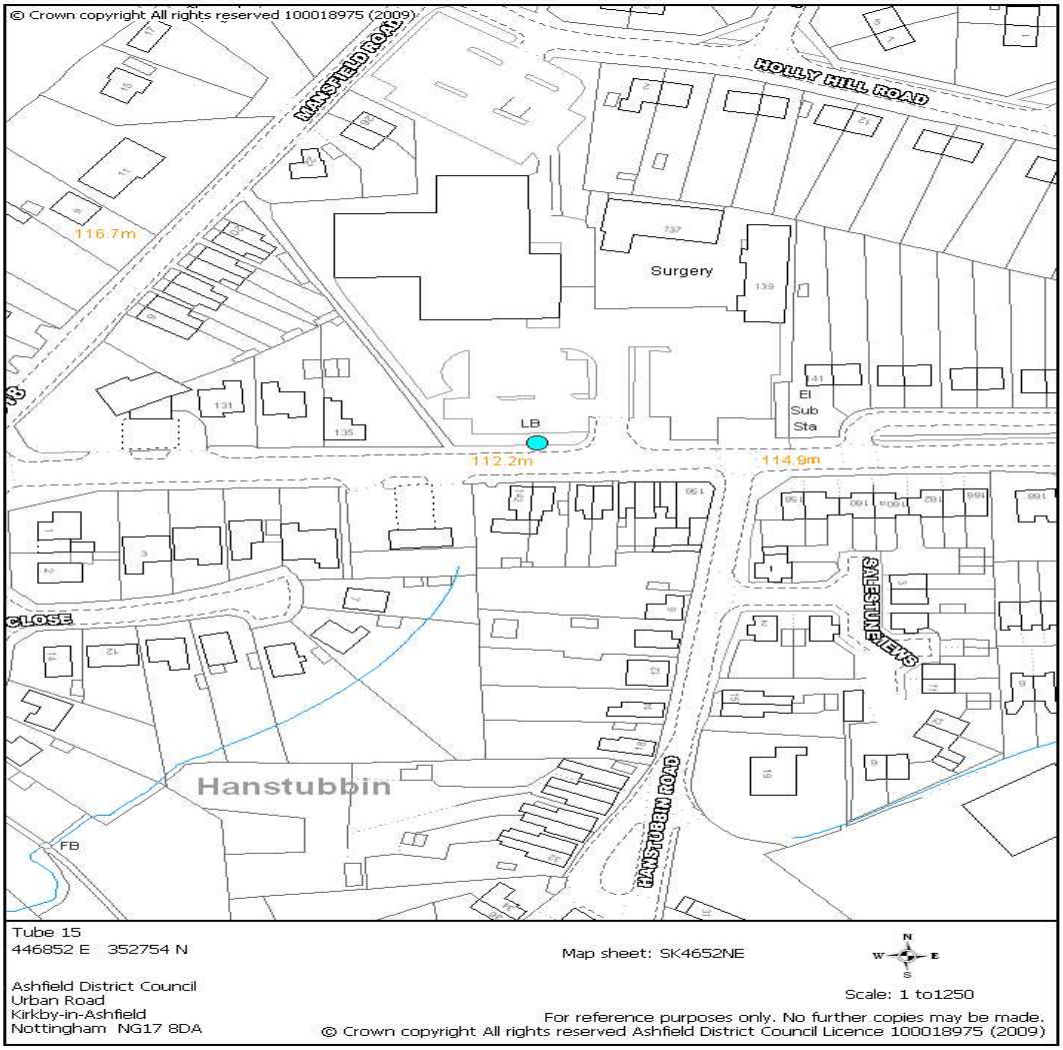
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **29.1m^3** (Appendix 2).

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

Selston Nottingham Road – Roadside Tube 15

Location of Nitrogen Dioxide Diffusion Tube At Nottingham Road, Selston

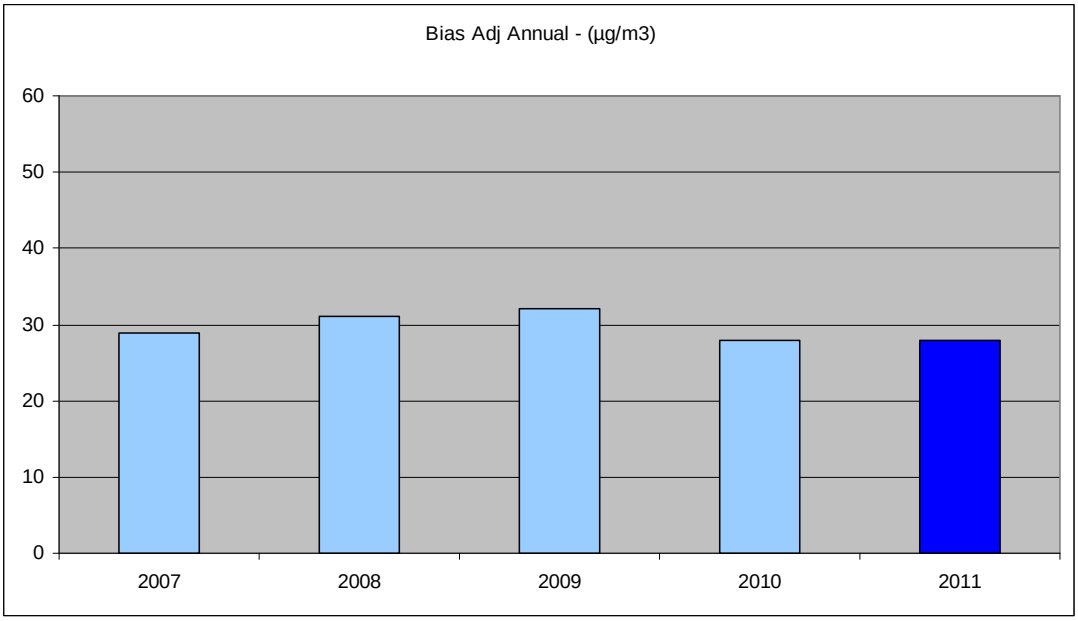


This is a roadside location. The diffusion tube is located adjacent to the main road running through Selston from Kirkby in Ashfield. This is not the worst case location for deploying diffusion tubes but was chosen in preference over the more suitable location on the opposite side of the road because the lamp post location on the opposite side of the road is next to a fast food retail outlet. Therefore the current location was selected to prevent interference with the diffusion tube once deployed.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
29.8	26.5

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

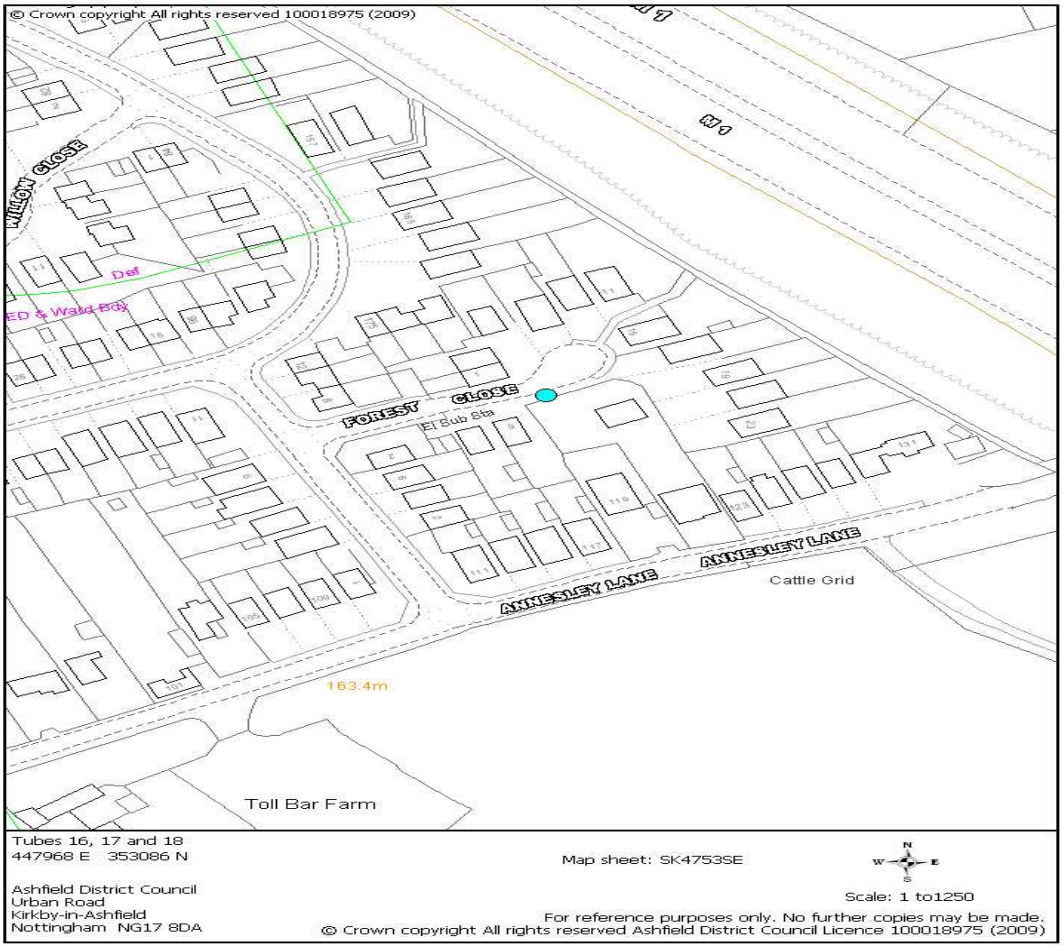
The receptor nearest the diffusion tube location is 16.3m from the road, however there are properties adjacent to the diffusion tube location that are closer to the road, however, they do not have a suitable location for the diffusion tube to be sited. Therefore, the distance fall-off calculation has 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 **22.6.** (Appendix 1).

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

Forest Close M1 – Roadside Tubes 16,17 and 18

Location of Nitrogen Dioxide Diffusion Tube Forest Close M1

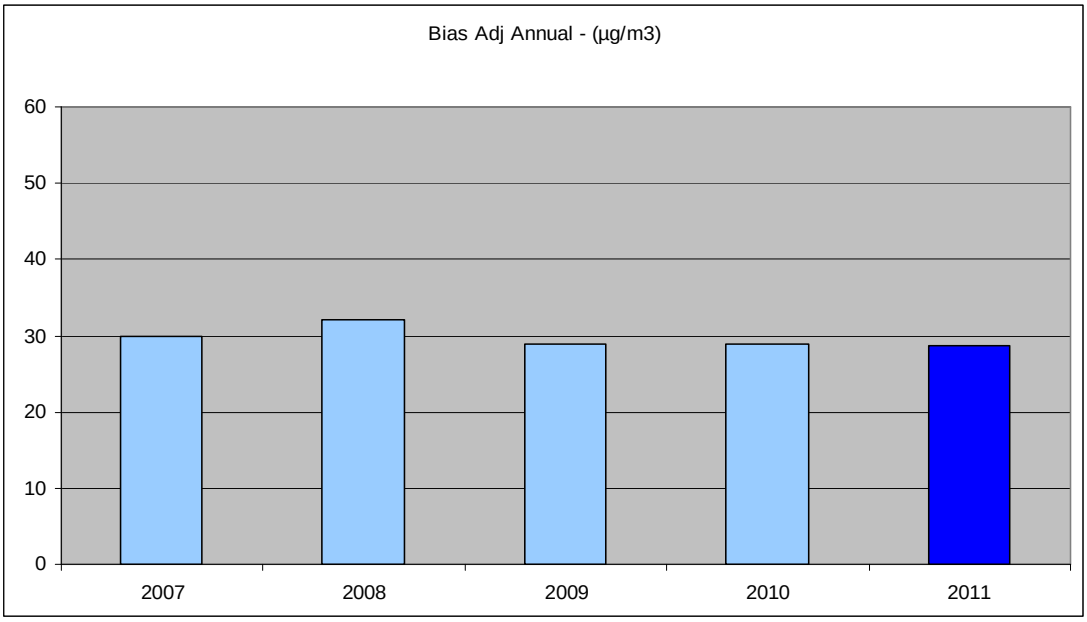


This is a roadside location. The diffusion tube is located in a residential estate adjacent to the M1.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
26.8	23.9

Triplicate Tubes were deployed for first four months of monitoring and then a single tube was deployed.

Figure 2.10 Trend Analysis Nitrogen Dioxide Diffusion Tube at Forest Close M1



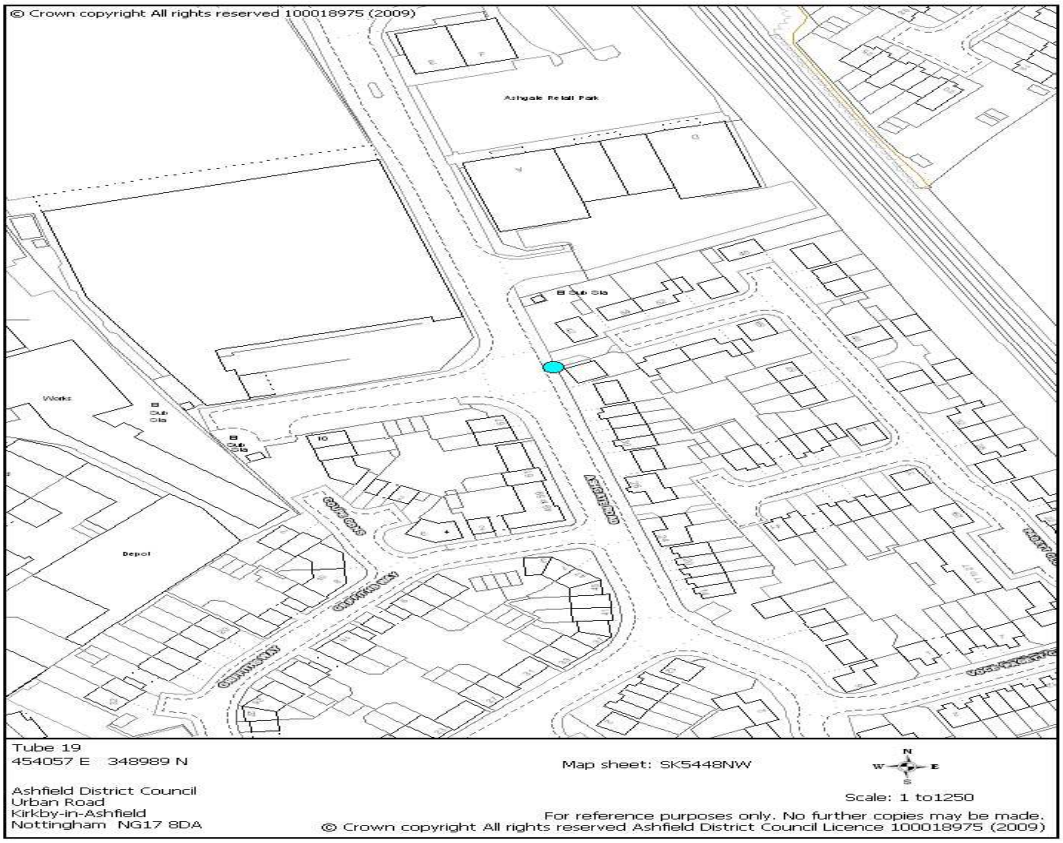
Distance Fall-off Calculation

No adjustment has been made for distance fall off because the background mean for this location is higher than the measured mean.

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

Hucknall Ashgate Road – Roadside Tube 19.

Location of Nitrogen Dioxide Diffusion Tube At Hucknall Ashgate Road

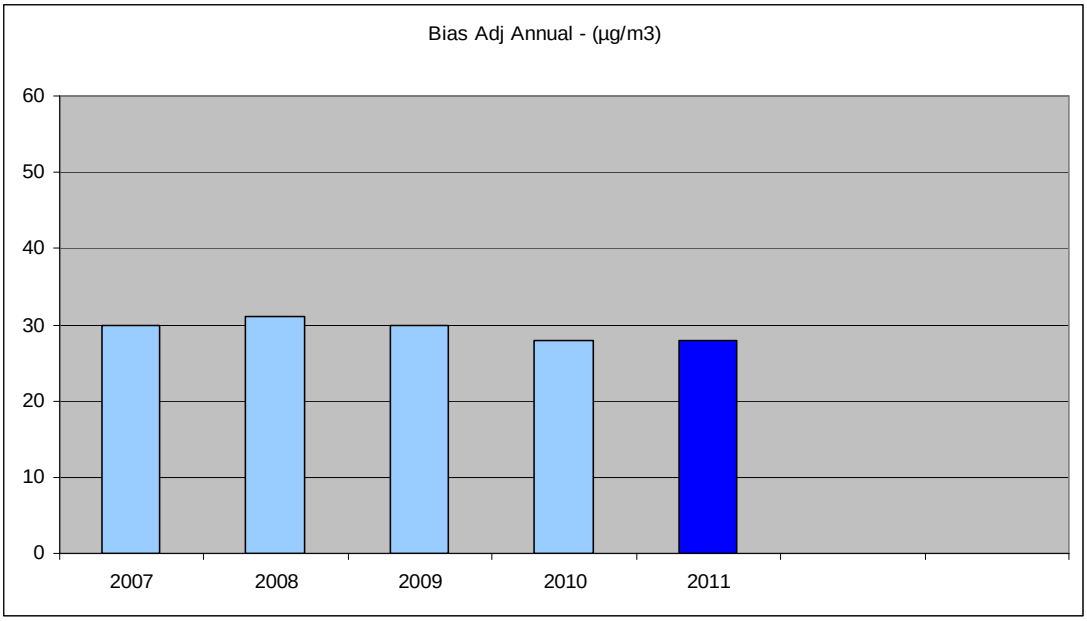


This is a roadside location. The diffusion tube is located adjacent to a new housing estate on Ashgate Road where developments such as the Nottingham Tram Station and Tesco Superstore may be contributing to increased levels of traffic.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
29.4	26.2

Single tube deployed not duplicate or triplicates

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



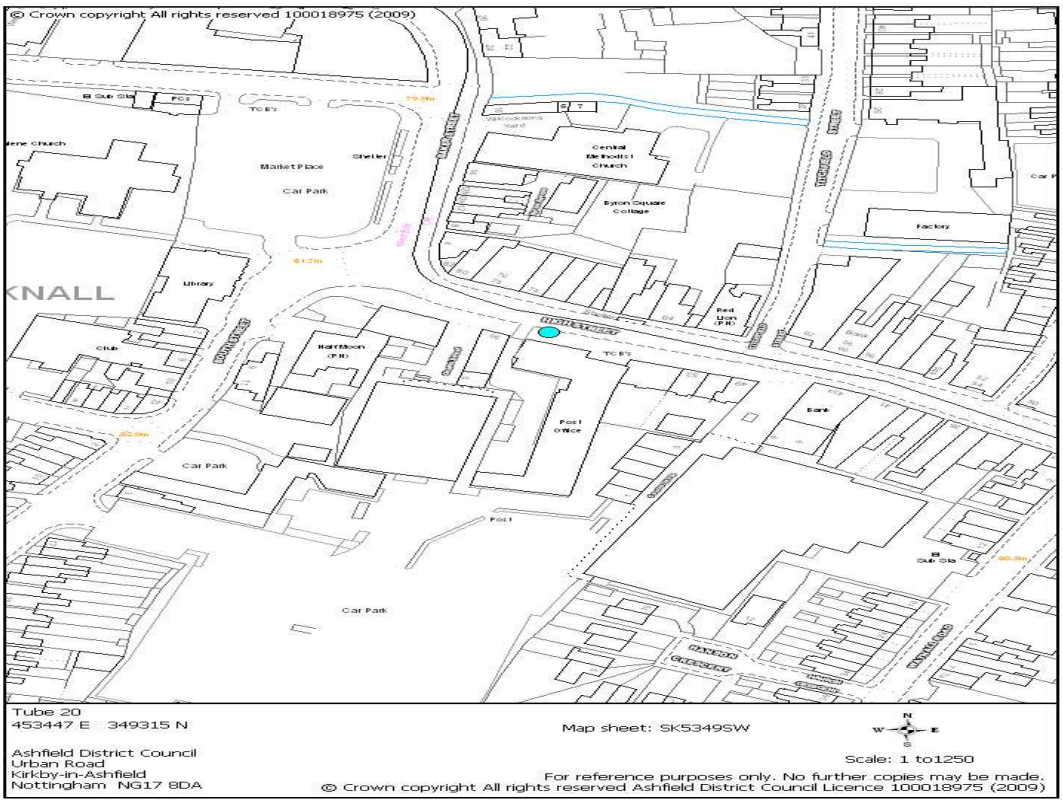
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **25.0 µg/m^3** (Appendix 1).

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

Hucknall High Street - Urban Centre Tube 20

Location of Nitrogen Dioxide Diffusion Tube At Hucknall High Street

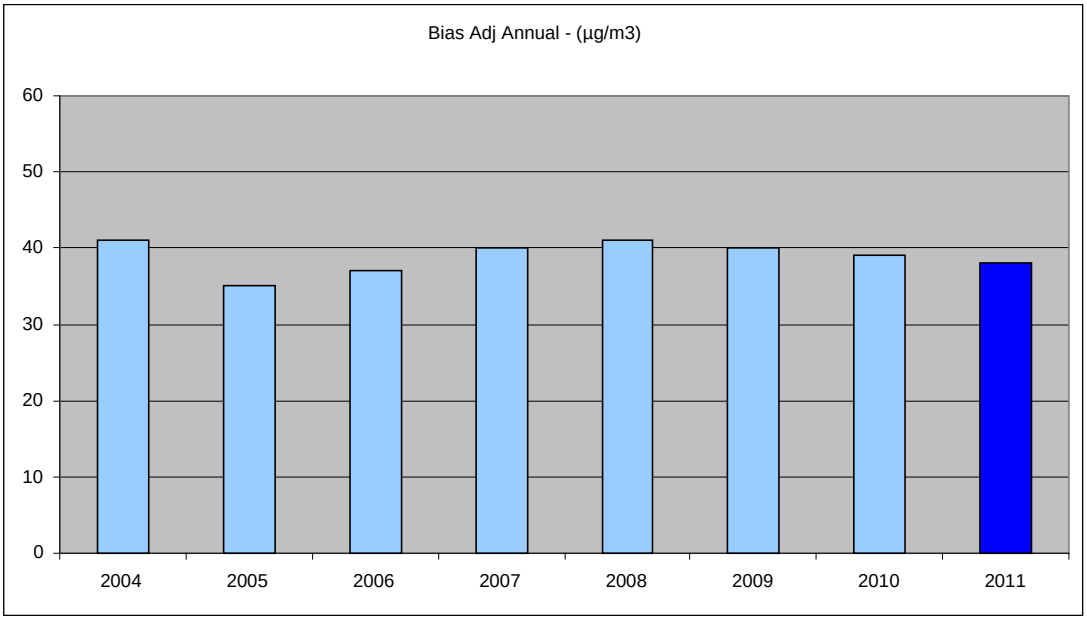


This is an urban centre location. The diffusion tube is located adjacent to the main road running through Hucknall town centre, directly adjacent to a junction that experiences traffic going to Mansfield, Nottingham, Annesley Road and the Hucknall bypass. This location has a number of commercial properties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

Measured Annual Mean For 2010 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89)(µg/m^3)
42.7	38.0

Single tube deployed not duplicate or triplicates

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



This is a town centre roadside location where it is unlikely that people will be exposed to levels of NO_2 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.

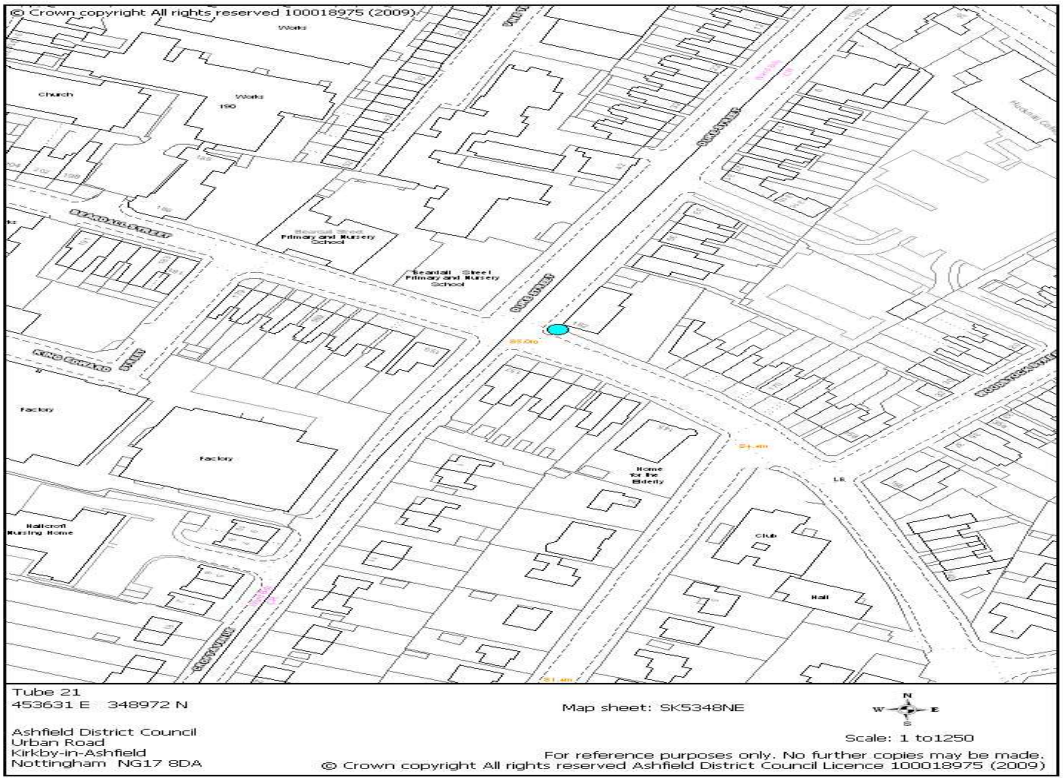
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **33.9 µg/m^3** Appendix 2).

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

Hucknall Beardhall Street – Urban Background Tube 21

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

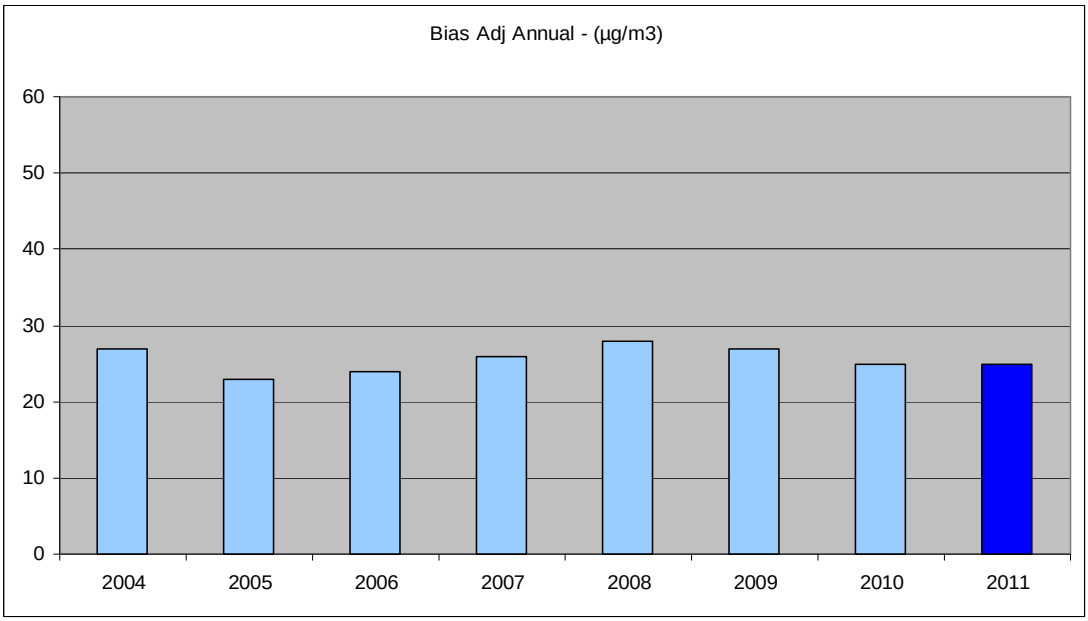


This is an urban background location. The diffusion tube is located on Beardall Street, some distance from the town centre.

Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
30	26.7

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

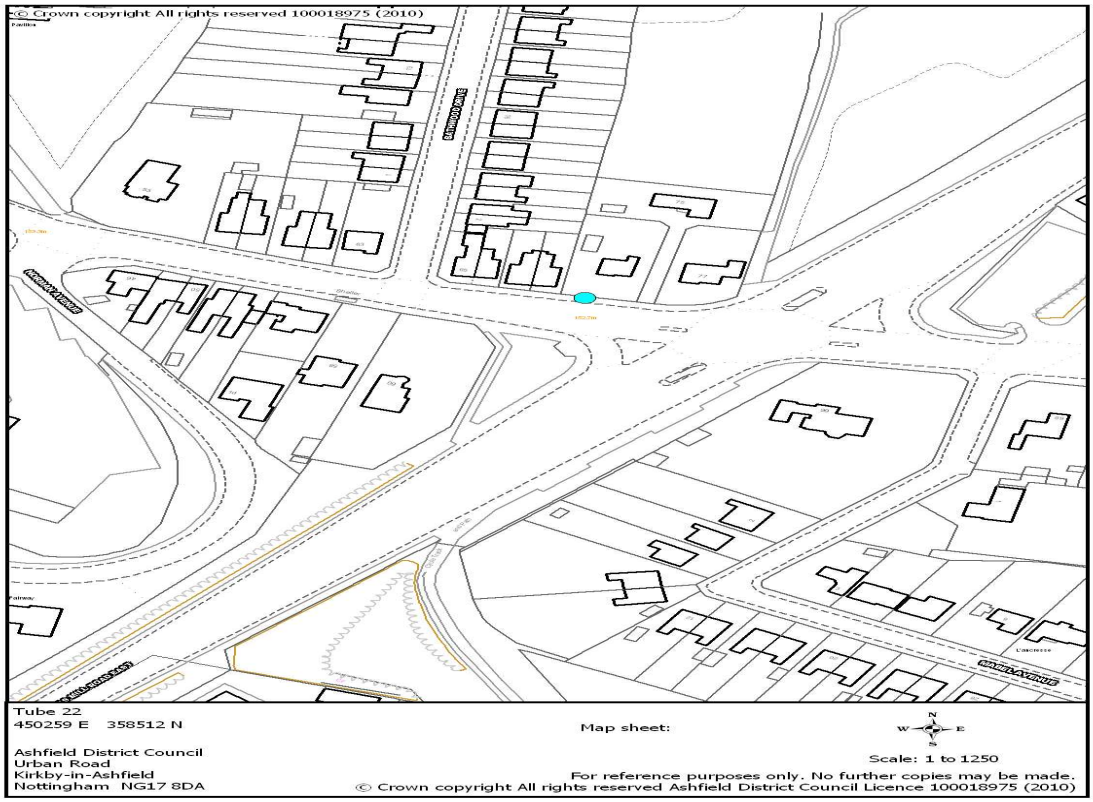
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **26.6m^3** Appendix 2).

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

Sutton Station Road Roadside Tube 22

This is a roadside 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

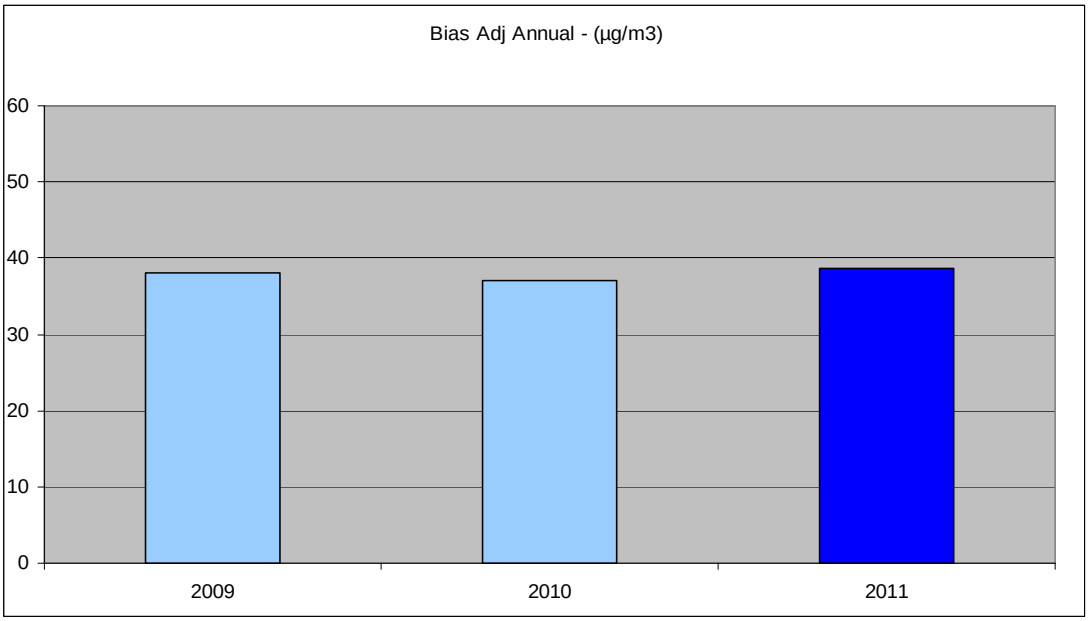


Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
43.5	38.7

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

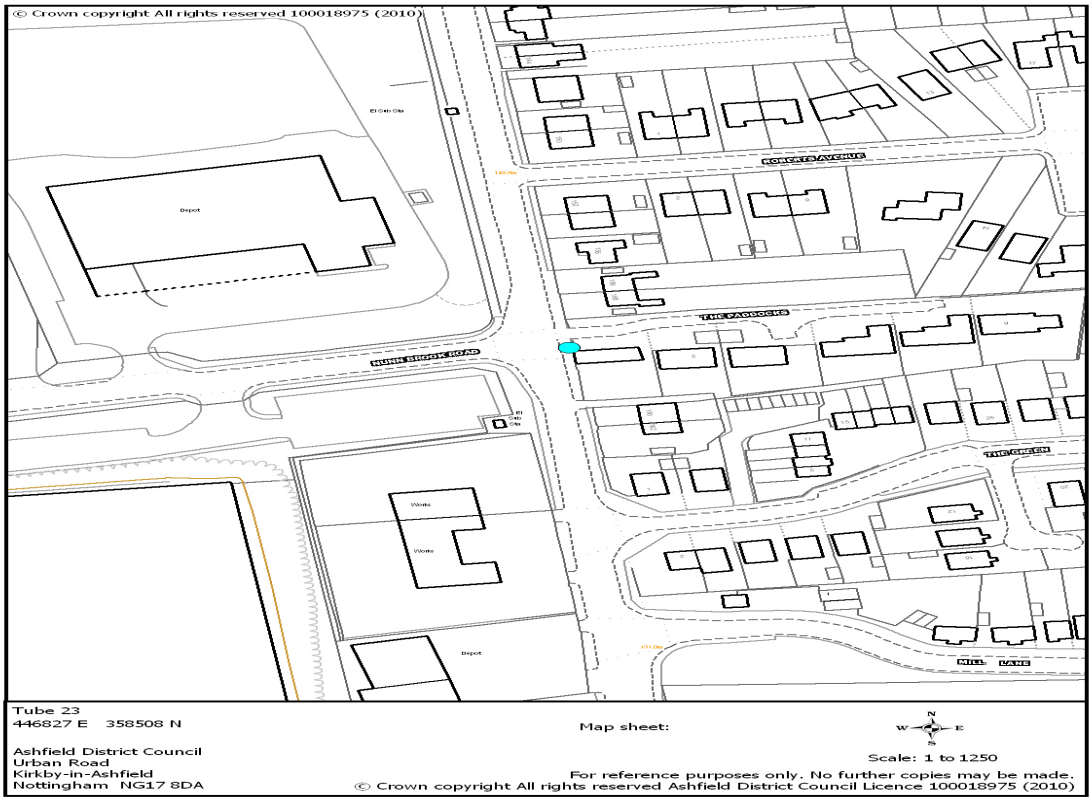
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **34.3/m^3** (Appendix 1).

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

Huthwaite Common Road Roadside 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.

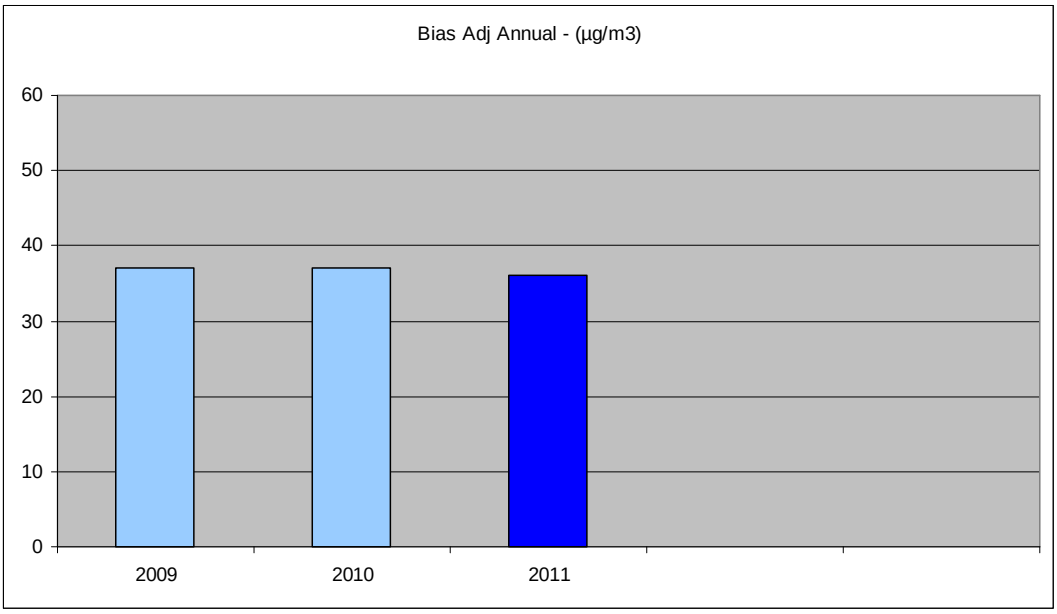
Location of Nitrogen Dioxide Diffusion Tube At Station Road, Sutton



Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
37.4	33.3

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

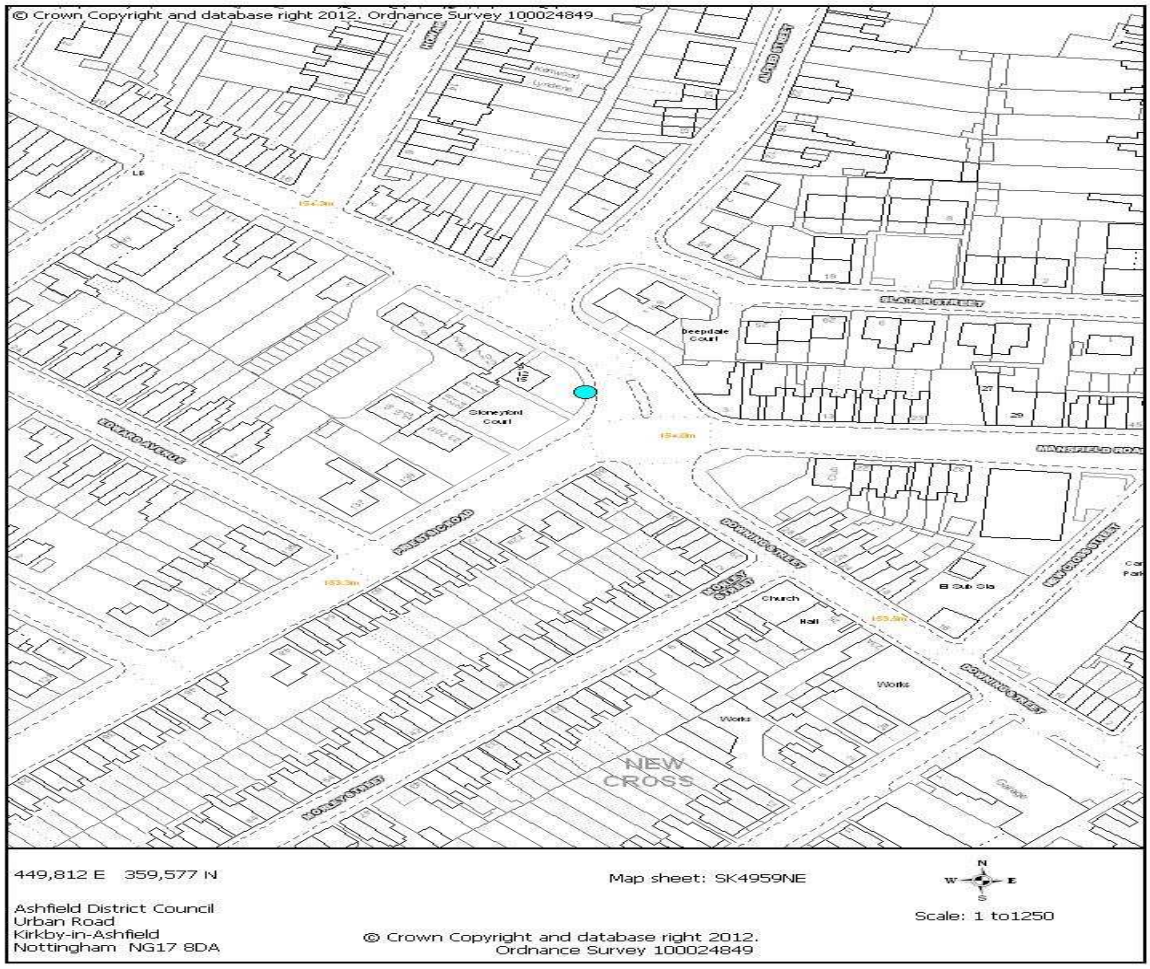
No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is **33.3 µg/m^3.**

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

Stoneyford Court RoadsideTubes 24,25 and 26

This is a roadside location adjacent to a busy box junction that is fed by three main roads the B6023 Priestic Road feeding traffic from Huthwaite and Kirkby, the B6014 Mansfield road feeding traffic from Mansfield and Skegby and the B6028 Stoneyford road feeding traffic from Skegby and Stanton Hill. The junction also feeds traffic from Downing Street which allows traffic to cut through from Outram Street. Triplicate tubes were deployed at this site to use as a co location study in conjunction with the air quality monitoring station.

Location of Nitrogen Dioxide Diffusion Tube At Station Road, Sutton



Measured Annual Mean For 2011 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.89) (µg/m^3)
34	34.7

The data has been annualised as in Box 3.2 of TG(09) and the adjusted Annual Mean is 39.00 µg/m^3

Triplicate tubes were deployed.

Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is **31.2m^3** Appendix 2).

This value is below the annual mean objective of 40µg/m^3 however the tubes were not deployed until May 2011 and therefore the mean is not based on a full years monitoring and the data as not been annualised. This data was not used to obtain Bias adjustment factor due to technical difficulties with the NOX monitoring equipment.

2.2.2 PM_{10}

Table 2.6 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m^3
						2011 [c]
Stoneyford Court	Road side	No	86%	9 Mths 75%	Yes	15.52 µg/m^3

Table 2.7 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Number of Accidences of 24-Hour Mean (50 µg/m^3
						2011 [c]
Stoneyford Court	Road side	No	86%	9 Mths 75%	Yes	6

These values are below the annual mean objective and 24 hour mean objectives and therefore there is no need to proceed to a detailed assessment for this location.

The Teom data as not been corrected using the VCM because the Teom is fitted with the FDMS System and is equivalent with the gavimetric method.

2.2.3Sulphur 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 2.8: Summary of Results of Nitrogen Dioxide Diffusion Tubes

Site Name	Within AQMA?	Data Capture 2011 %	Annual mean concentrations 2011($\mu g/m^3$) Adjusted for bias	Annual mean concentrations 2011 ($\mu g/m^3$) Distance Fall-Off Calculated Level at Receptor
Sutton Outram Street	No	100%	29.4	28.2
A38 Fire Station	No	100%	26.4	25.6
Sutton Stoneyford Court	No	91.7%	34.7	31.2
Selston Nottingham Road	No	83%	26.5	22.6
Hucknall High Street	No	100%	38.0	33.9
Hucknall Beardhall Street	No	92%	26.7	26.6

Kirkby Naggs Head	No	97%	29.7	28.2
Forest Close M1	No	100%	23.9	-
M1 Pinxton	No	100%	30.2	29.1
Kirkby Church Hill	No	100%	35.4	32.4
Sutton Mansfield Road	No	33%	29.4	N/A
Sutton Dalestorth Street	No	100%	32	30.6
Hucknall Ashgate Road	No	100%	26.2	25
Sutton Station Road	No	100%	38.7	34.3
Huthwaite Common Road	No	100%	33.3	N/A

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.

PM10: Conclusions

Monitoring of PM 10 was undertaken at Stoneyford Court in Sutton in Ashfield. Non of the objectives were exceeded and there is no need to proceed to a detailed assessment.

Ashfield District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

Ashfield District Council has focused attention on the following locations:

- Busy roads, especially in congested areas and near junctions, where emissions are likely to be higher.

- Roads in built up areas where there is a possible canyon effect due to the adjacent buildings restricting dispersion and dilution of pollutants.

Specific locations have only been addressed where conditions have changed significantly from previous assessments.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Pollutant concentrations can be higher at locations that experiences slow moving traffic and where the nature of the location may lead to a canyon effect. A canyon effect may occur where buildings adjacent to the road restrict dispersion and dilution of the pollutant. This section of the screening assessment only considers Nitrogen Dioxide.

Daily traffic flow (AADT) data has been obtained from Nottingham County Council. Where no traffic flow data was available, Ashfield District Council undertook its own studies in order to ascertain an estimate of traffic flow.

Traffic flow data and local knowledge was then utilised to identify whether any roads within the district met with both of the following criteria:

- Traffic is slow moving and is starting/stopping due to crossings/parked vehicles throughout the day. Roads with an AADT of around 5,000 vehicles and with average speeds likely to be less than 15m.p.h.

- Residential properties within 2m of the kerb and buildings on both sides of the road.

From gathered traffic flow data, the following streets were identified as potentially meeting the above criteria:

Table 3.1: Potential Streets – Narrow Congested

Location	AADT 2007	AADT 2010
Kirkby - Station Street	11350	10750
Kirkby – Lowmoor Road	Approx 5000	8850
Sutton – Dalestorth Street	Approx 5000	Approx 5000
Sutton – Outram Street	Approx 5000	Approx 5000
Sutton – Priestic Road /Mansfield Road	23100	19750
Hucknall – South Street	5150	7150
Hucknall – High Street	12100	11600

These sites were investigated as part of the 2009 Updating and Screening Assessment and have been re -considered again as part of the 2012 Updating and Screening Assessment to ensure that they fully meet the required criteria.

Of the sites identified above, Lowmoor Road and South Street do not meet all of the criteria laid down. Station Street, Dalestorth Street, Outram Street, Priestic Road/Mansfield Road and High Street /South Street are currently being monitored by the use of Nitrogen Dioxide Diffusion Tubes, and this report has concluded that there is no need to proceed to a detailed assessment at any of these sites. In addition, automatic monitoring equipment is currently located at Stoneyford Court and is being utilised to assess Nitrogen Dioxide levels at the junction of Priestic Road/Mansfield Road. The results of previous continuous monitoring on Priestic Road/Mansfield Road were reported within Ashfield District Council's 2007 Progress Report. The levels monitored then were below the relevant objectives.

Ashfield District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1 – hour or More Close to Traffic

Local authorities are only required to undertake review and assessment against this section where there are busy street locations identified where members of the public might regularly spend 1-hour or more, e.g. streets with many shops, streets with outdoor cafes/bars. Ashfield District Council has considered all busy streets where individuals may be exposed within 5m of the kerb.

There are no streets within Ashfield, which meet all the criteria of this section and therefore no further assessment has been undertaken.

Ashfield District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs

Authorities are only required to undertake an updating and screening assessment for this section where roads are identified as having an unusually high proportion of buses or HGVs. An 'unusually high proportion of Buses or HGVs' is taken to be greater than 20% of the AADT

There are no roads determined as having an unusually high proportion of buses or HGV's.

Ashfield District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Local authorities are required to undertake assessment of busy junctions within their districts. A 'busy' junction is defined as '*one with more than 10,000 vehicles per day*'. Additionally there should be a relevant exposure within 10 metres of the kerb. A comprehensive assessment of busy junctions was undertaken during the 2nd Round USA utilising GIS software and local knowledge. Seven busy junctions were evaluated using the DMRB model which demonstrated that the air quality objective would not be compromised at these locations. These busy junctions were then re-evaluated during the 3rd Round of USA, having considered revised AADT traffic flow data for 2004, updated UK background concentration maps and a re-assessment for relevant exposure, and again demonstrated that air quality objectives would not be compromised at these locations. The following Junctions were considered:

Table 3.2: Identified Busy Junctions

Coordinates	Busy Junctions
450,180 358,594	A38 – B6022
448,969 356,303	B6018 – B6020
450,814 353,809	A611 – Forest Road
448,800 358,684	B6023 – B6026
449,295 358,973	B6023 – Lammas
449,295 358,973	B6023 – B6028
448,323 360,747	B6014 – B6028

The A38 – B6022, B6023 – B6028 and the B6014 – B6028 Junctions are currently monitored for Nitrogen Dioxide.

Apart from these seven junctions, Ashfield District Council has not identified any “busy junctions” that are new.

Ashfield District Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review or Assessment.

.
It is only necessary to consider proposed roads for which planning permission has been granted. Ashfield District Council has reviewed this matter and has identified no such new/proposed roads.

It is only necessary to consider proposed roads for which planning permission has been granted. Ashfield District Council has reviewed this matter and has identified no such new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Authorities are only required to undertake the assessment of roads with traffic flows greater than 10,000 vehicles per day that have experienced a large increase in traffic. ‘large increase’ as ‘*more than a 25% increase in traffic*’.

The aim of the assessment is to establish whether there is a risk of the air quality objectives being exceeded along the existing roads with a significant change in flows.

Improved AADT traffic data for 2010 was compared with 2007 AADT data to identify roads which had experienced an increase in traffic flow above 25%.

Table 3.3: Road Assessed for Significantly Increased Traffic

Road Description	2007	2010	% Increase
Alfreton Road: B 6027 Common Road, Huthwaite - B 6023	35150	33500	N/A
Sutton Bypass B6023 Alfreton Road – B6018 Sutton Road	31250	29750	N/A
Sutton Bypass B6018 Sutton Road – B6021 Oddicroft Lane	31200	29700	N/A
Sutton Bypass B6021 Oddicroft Lane –B6022 Station Road	28300	27000	N/A
Sutton BypassB6022 Station Road – B6139 Coxmoor Road	29850	28900	N/A
Sutton BypassB6139 Coxmoor Road – A617 MARR	28600	27200	N/A
Sutton BypassA617 MARR – A617 Kings Mill Junction	27100	26300	N/A
Sutton Road Mansfield A617 Kings Mill Junction – Wilmore Way	N/A	26400	N/A
A60 Mansfield : A611 Derby Road-Cauldwell Road	12150	12300	1 .2
Mansfield Road Underwood B600 Willey Lane – B600 Alfreton Road	13500	13300	N/A
Mansfield Road Underwood B600 Alfreton Road – M1Junction 27	10750	10600	N/A
Mansfield Road M1Junction 27 A611 Annesley	21400	23350	9.0
Derby Road B6139 Coxmoor Road – B6020 Diamond Avenue	16950	16600	N/A
Derby Road B6020 Diamond Avenue –B6021 Annesley Woodhouse	18650	18350	N/A
Derby Road B6021 Annesley Woodhouse – Forest Road	23500	22300	N/A
Derby Road B6021 Annesley Woodhouse – Annesley Cutting	19800	19450	N/A
Derby Road Annesley Cutting – A608 Mansfield Road	21300	23200	8.9
A608 Mansfield Road – Hucknall Road	21550	19950	N/A
Annesley Road: Hucknall Road –B6011Annesley Road	21700	20950	N/A
Hucknall Bypass B6011 Annesley Read – B6009 Watnall Road	14450	14050	N/A
Hucknall Bypass B6009 Watnall Road – Nottingham Road	17350	17400	N/A
Nottingham Road Hucknall ByPass – Moor Bridge Bulwell	27800	27000	N/A
Alfreton Road Derbyshire Boundary – B6027 Common Road Huthwaite	36200	38200	6.0
M1 Junction 28 (A38) – 27 (A607)	113700	114900	1.1
Mansfield Road M1 Junction 27 Willow Drive	N/A	24650	N/A
Mansfield Road Willow Drive Osier Drive	N/A	20700	N/A
Marr Mansfield A38 Sutton Bypass – Hamilton Road	18500	18500	N/A
Marr Mansfield Hamilton Road – A60 Nottingham Road	17550	19100	8.0
B600 Watnall-Nabbs Lane Hucknall	14400	12900	N/A
Nabbs Lane Hucknall – A611 Hucknall Bypass	22750	21450	N/A

Annesley Road A611 Hucknall Bypass – C221 Annesly Road	14100	13500	**N/A**
Mansfield Road, Skegby - New Lane- Forest Road	11600	10300	**N/A**
Mansfield Road Dalestorth, Dalestorth Road To A617 Beck Lane	15600	13850	**N/A**
A38 Sutton Bypass – B6020 Chapel Street Kirkby	19350	18450	**N/A**
B6020 Chapel Street Kirkby – B6019	N/A	12150	**N/A**
B6018 Southwell Lane Kirkby In Ashfield	N/A	11950	**N/A**
Southwell Lane Kirkby In Ashfield –B6021 Portland Street	N/A	12750	**N/A**
Station Street K In A – Portland Street - Kingsway	11350	10750	**N/A**
Kirkby Road B6139 Coxmoor Road – A60 Ravenshead	11350	10750	**N/A**
Penny Emma Way – A38 Sutton Bypass Lowmoor Road	11650	11100	**N/A**
Kirkby Folly Road –B0622 Station Road – Penny Emma Way	13550	12900	**N/A**
Lowmoor Road – Penny Emma Way- Southwell Lane	15500	14750	**N/A**
Newark Road Sutton In Ashfield – Kirkby Folly – B6139 Coxmoor Road	15250	14500	**N/A**
Alfreton Road A38 Fulwood- B6026 Huthwaite Road	N/A	10750	**N/A**
Lammas Road Sutton In Ashfield – B6026 Huthwaite Road Hack lane	17250	16450	**N/A**
Lammas Road Sutton In Ashfield – Hack lane Forest Street	15750	15000	**N/A**
Priestic Road – Forest Street -Asda Link Road	N/A	19400	**N/A**
Priestic Road – Asda Link Road – B6028 Stoneyford Road	23100	19750	**N/A**
Mansfield Road Sutton In Ashfield – B6028 Stoneyford Road –Outram S	15300	13750	**N/A**
Mansfield Road Sutton In Ashfield Outram St – Skegby Road	N/A	13750	**N/A**
Mansfield Road Sutton In Ashfield Skegby Road –Unwin Road	11450	11100	**N/A**
Mansfield Road Sutton In Ashfield Unwin Rd A38 Kingmill	N/A	15200	**N/A**
Market Street Huthwaite – B6026	12800	12550	**N/A**
Common Road – Nunn Brook Road- A38	8000	10450	**30.6**
Coxmoor Road Sutton in Ashfield Hamilton Rd B6022 Newark Road	16000	15250	**N/A**
Coxmoor Road B6022 Newark Road – A611 Derby Road	11300	10000	**N/A**
Hamilton Road Sutton In Ashfield B6139 Coxmoor Road – A617 Marr	11350	10850	**N/A**
Hamilton Road - A617 Marr – Oakham Business Park	12600	12050	**N/A**
Kirkby Road – High Pavement – A38 Sutton Bypass	13650	12750	**N/A**
High Street Hucknall: B6009 Watnall Road –Station Road	12100	11600	**N/A**
Portland Street Hucknall - Ashgate Road- Beardall Street	12300	11600	**N/A**
Nottingham Road – Beardall Street –A611 Hucknall Bypass	13250	12500	**N/A**

The comparison of the improved 2010 traffic flows compared with 2007 has only highlighted Common Road, Nunn Brook Road and A38 road as showing a significant increase of above twenty five percent. However this junction is already being monitored with diffusion tubes at Common Road Huthwaite. The value recorded by this tube is below the annual mean objective of 40µg/$m^{3.}$

Ashfield District Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

There is only one bus station within Ashfield located at Sutton-in-Ashfield. The guidance only requires the updating and screening process to be undertaken if bus movements exceed 2,500 movements a day, and if there is a relevant receptor within 10m, assessed against the 1-hour objective. An evaluation of the bus station has determined that there are well below 2,500 bus movements per day. It is also very unlikely that any members of the public would remain in this location for over an hour.

No further review and assessment has been undertaken for this section.

Ashfield District Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Aircraft are potentially significant sources of Nitrogen Oxides emissions, especially during take-off. There are no airports within the district that require to be considered as part of this assessment.

Ashfield District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of Sulphur Dioxide close to the point of emissions.

4.2.1 Stationary Trains

Authorities are only required to undertake assessment at locations where there is relevant exposure to diesel or coal fired locomotives, which are regularly stationary for periods of 15-minutes or more. There are no locations identified within Ashfield, which meet these criteria, and therefore no further assessment has been undertaken

Ashfield District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

It is now considered that moving diesel trains, in sufficient numbers, can also give rise to high emissions of Nitrogen Dioxide close to the track. A number of rail lines have been identified within the relevant technical guidance document, LAQM.TG(09) that should be considered where the background annual mean concentration of Nitrogen Dioxide is greater than 25 µg/m^3.

None of the lines identified are located within this district.

Ashfield District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

There are no relevant air quality issues relating to shipping within Ashfield. No further assessment has been undertaken for this section.

Ashfield District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

Due to the existence of other regulatory controls over industrial sources there are very few sources that are of relevance to local authorities under the Local Air Quality Management regime. The focus of current review and assessments are on new installations and/or those with significantly changed emissions.

In assessing industrial sources, Ashfield District Council has consulted with, and given consideration to, neighbouring local authorities.

5.1.1 New or proposed Installations for which an Air Quality Assessment has been carried out.

A review has been carried out by Ashfield District Council and there are no new industrial sources identified within the district. Consideration has only been given to any installation that has been granted planning permission. No such installations have been identified in neighbouring districts.

Ashfield District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced.

Ashfield District Council has undertaken a review to identify any industrial sources, considered in previous assessments, which have relevant emissions that have increased substantially or where a new relevant exposure has been introduced in the vicinity of the installation. A substantial increase in emissions is taken as being greater than 30%.

There are no such installations within the district or within neighbouring authorities.

Ashfield District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or significantly Changed Installations with No Previous Air Quality Assessment

Ashfield District Council has undertaken a review and no new or significantly changed installations, which have had previous air quality assessment, have been identified, either within the district or within neighbouring authorities.

Ashfield District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel(Petrol) Storage Depots

There are no major fuel storage depots located within Ashfield or within adjacent authorities close to the district boundary.

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

When located adjacent to busy roads, there is evidence that some petrol stations can emit levels of Benzene that could be sufficient to cause a risk of the relevant objective being breached. Consequently, Ashfield District Council has undertaken a review to identify all petrol stations within the district that:

- Have an annual throughput of 2000m^3 of petrol and are located adjacent to a busy road.

- Have relevant exposure within 10m of the pumps.

None of the petrol stations in Ashfield meet these criteria.

Ashfield District Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

Ashfield District Council is required to review the district to identify any farms housing in excess of: 400,000 birds if mechanically ventilated, 200,000 birds if naturally ventilated, 100,000 birds for any turkey unit, where there is relevant exposure within 100m of the poultry unit.

Consultation was carried out with the Environment Agency and it has been identified that no such units operate within the district.

Ashfield District Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

Although there are potential benefits for the reduction of greenhouse gas production by utilising biomass to generate energy, there have been concerns that an increase in biomass combustion can have a detrimental effect on local air quality.

Therefore, Ashfield District Council is required to give consideration to the use of biomass combustion in both the commercial and domestic sectors.

Ashfield District Council is also required to consider other forms of solid fuel combustion in the domestic sector.

6.1 Biomass Combustion – Individual Installations

The Council is required to identify any plant burning biomass in 50kW to 20WM units. A review was carried out utilising data from the Nottingham Air Quality Emission Inventory, data held under the Clean Air Act, information on planning permissions, previous local air quality studies and local knowledge.

After reviewing the relevant data Ashfield District Council are satisfied that there are no plants burning biomass in 50Kw to 20Mw units.

Ashfield District Council confirms that there are no biomass Combustion Plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

It is considered that there is the potential for there to be unacceptably high PM_{10} concentrations to arise in areas where there are many small biomass combustion installations located, particularly in areas where PM_{10} concentrations are close to or above the objectives.

As part of the 2009 Updating and Screening Assessment Ashfield District Council utilised local knowledge and data held by the authority (development control, housing etc) to consider whether combined biomass combustion is an issue that requires further detailed assessment. Possible indicators of higher than average emissions densities resulting from solid fuel burning were considered including:

- Complaints about nuisance dust or odour relating to burning;
- Visual signs of chimney smoke being emitted from several properties near to each other;
- Smell of burning solid fuel;
- Known high levels of sales of solid fuel via home delivery or local outlets; and
- Areas known to have limited or no access to mains gas.

No areas within the district were identified as having PM_{10} concentrations that are close to or above the relevant objectives.

Since 2009 no new complaints have been received that specifically relate to biomass burning from commercial developments, nursing/care homes or large scale social housing developments. Similarly since the 2009 Updating and Screening Assessment the Environmental Protection Team have not been consulted on any new commercial developments, nursing/care homes or large scale social housing developments that utilise biomass combustion.

The authority does receive and log an increasing number of enquiries from members of the public who are interested in using wood as a fuel source. Members of the public are given advice in regard to exempted appliances and appropriate fuels and are also requested to register with building control. All complaints relating to smoke control are fully investigated using the Clean Air Act 1993 legislation. The authority has not had to take enforcement action under the Clean Air Act that relate specifically to biomass combustion.

Ashfield District Council confirms that there are no Biomass Combustion Plant in the Local Authority area.

6.3 Domestic Solid Fuel Burning

Ashfield District Council as undertaken comprehensive reviews of all potential solid fuel burning areas in previous review and assessment reports. The previous reviews have concluded that the SO_2 and PM_{10} Objectives were not exceeded. As a consequence of reduced solid fuel burning Ashfield District Council no longer undertakes monitoring of SO_2 and PM_{10} particulate monitoring is now mainly focussed from road traffic sources. However new

enquiries from the public relating to solid fuel use are logged and members of the public are given appropriate advice relating to ‘authorised fuels’.

The authority as recently observed an increase in smoke control complaints which were investigated under the Clean Air Act.1993. As a consequence of this increase Ashfield District Council is currently undertaking an investigation of two local coal merchants in relation to delivering ‘unauthorised’ fuels with smoke control areas.

Ashfield District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area

7 Fugitive or Uncontrolled Sources

Authorities are only expected to undertake a detailed assessment for PM_{10} in regard to this section where locations with relevant exposure and substantiated problems associated with dust have been determined.

Currently there are no locations within Ashfield, which meet the criteria of this section. The previous Updating and Screening Assessment submitted in May 2009 discussed the Sutton landfill site. This site is no longer being operated as a landfill site and the process of restoration is in progress.

Langton Spoil

Bolsover District Council along with Nottinghamshire County Council gave planning consent for mineral extraction from a redundant spoil heap at Langton Spoil. The extraction is taking place within the boundary of Ashfield District Council on the border with Bolsover District Council. The company undertaking the work are based in Bolsover District Council's area. No complaints have been received from Ashfield residents and the site does not come under the control of Ashfield District Council. Dust Monitoring results are forwarded to the Environmental Protection Team at Ashfield District Council by Nottinghamshire County Council

Ashfield District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Automatic Monitoring

Unfortunately problems with the Thermo Chemiluminescence NO-NO_2-Nox Analyser and the new Air Monitors Envirologger resulted in insufficient Nitrogen Dioxide results. The results of three months monitoring at Stoneyford Court are below the air quality objectives and therefore there is no need to proceed to a detailed assessment currently although further assessment is still required.

The results of PM_{10} particulate Monitoring at Stoneyford Court are below the air quality objectives and therefore there is no need to proceed to a detailed assessment.

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.

8.2 Conclusions from Assessment of Sources

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

8.3 Proposed Actions

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

The Council will continue to undertake automatic continuous monitoring at Stoneyford Court in Sutton in Ashfield. However there is also a need to investigate moving the continuous monitoring equipment to either one of the following locations

1 Naggs Head Kirkby In Ashfield
2 A38 Station Road Sutton in Ashfield
3 High Street Hucknall

Problems with the Thermo Chemiluminecent NOX Analyser have highlighted the need for replacement of this equipment in order to enable monitoring to continue in the medium to longer term.

9 References

None Used

Appendices

Appendix A

Monthly Mean Data

Naggs Head

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 - 02/02/2011	44.96	45.26	40.34	43.52	
Feb	02/02/2011 - 03/03/2011	33.94	36.59		35.27	
March	03/03/2011 - 04/04/2011	40.11	35.06	36.74	37.30	
April	04/04/2011 - 28/04/2011	32.14	29.65	28.64	30.14	
May	28/04/2011 - 07/06/2011	26.40	26.07	24.18	25.55	
June	07/06/2011 - 01/07/2011	33.49	32.39	35.93	33.94	
July	01/07/2011 - 02/08/2011	30.98	30.34	34.05	31.79	
August	02/08/2011 - 01/09/2011	30.23	30.43	32.94	31.20	
September	01/09/2011 - 27/09/2011	26.30	25.36	26.95	26.20	
October	27/09/2011 - 02/11/2011	37.12	37.18	34.12	36.14	
November	02/11/2011 - 29/11/2011	38.18	39.77	41.75	39.90	
December	29/11.2011 - 03/01/2012	30.14	30.61	27.71	29.49	
		12			400.44	**33.4**

Outram Street

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 03/02/2011	43.88			43.88	
Feb	03/02/2011 – 03/03/2011	33.77			33.77	
March	03/03/2011 - 04/04/2011	37.39			37.39	
April	04/04/2011 - 28/04/2011	31.78			31.78	
May	28/04/2011 - 07/06/2011	24.51			24.51	
June	07/06/2011 - 30/06/2011	32.65			32.65	
July	30/06/2011 - 04/08/2011	28.70			28.70	
August	04/08/2011 - 01/09/2011	33.46			33.46	
September	01/09/2011 - 29/09/2011	28.32			28.32	
October	29/09/2011 - 03/11/2011	33.93			33.93	
November	03/11/2010 - 29/11/2011	39.40			39.40	
December	20/11/2011 – 03/01/2011	28.64			28.64	
		12			396.43	**33.04**

Dalestorth

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 - 03/02/2011	45.30			45.30	
Feb	03/02/2011 - 03/03/2011	41.23			41.23	
March	03/03/2011 - 04/04/2011	41.29			41.29	
April	04/04/2011 - 28/04/2011	25.21			25.21	
May	28/04/2011 - 07/06/2011	28.35			28.35	
June	07/06/2011 - 30/06/2011	33.89			33.89	
July	30/06/2011 - 04/08/2011	31.60			31.60	
August	04/08/2011 - 01/09/2011	31.98			31.98	
September	01/09/2011 - 29/09/2011	39.35			39.35	
October	29/09/2011 - 03/11/2011	38.38			38.38	
November	03/11/2010 - 29/11/2011	40.32			40.32	
December	29/11/2011 – 03/11/2011	34.11			34.11	
		12			431.01	**35.92**

Mansfield Road Sutton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 03/02/2011	50.28			50.28	
Feb	03/02/2011 - 03/03/2011	35.86			35.86	
March	03/03/2011 - 04/04/2011	39.15			39.15	
April	04/04/2011 - 28/04/2011	37.03			37.03	
May						
June						
July						
August						
September						
October						
November						
December						
		4			162.32	**40.58**

A38

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 02/02/2011	45.79	40.51	41.76	42.7	
Feb	02/02/2011 - 03/03/2011	30.57	35.52	33.30	33.13	
March	03/03/2011 - 04/04/2011	33.51	35.59	35.73	34.95	
April	04/04/2011 - 27/04/2011	34.15	53.45	40.54	36.71	
May	27/04/2011 - 07/06/2011	22.24	23.06	23.12	22.81	
June	07/06/2011 - 30/06/2011	26.61	25.92	26.39	26.31	
July	30/06/2011 - 04/08/2011	31.65	29.59	29.88	30.37	
August	04/08/2011 - 01/09/2011	29.20	29.62	28.04	28.95	
September	01/09/2011 - 27/09/2011	19.26	18.31	18.11	18.56	
October	27/09/2011 - 01/11/2011	25.46	26.08	28.09	26.54	
November	01/11/2011 - 29/11/2011	35.75	36.78	31.50	34.67	
December	29/11/2011 – 03/01/2012	23.26	21.28	24.95	23.16	
		12			358.86	**29.91**

Church Hill

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 02/02/2011	46.65	52.82	55.51	51.66	
Feb	02/02/2011 - 03/03/2011	43.98	38.74	37.60	40.11	
March	02/03/2011 - 05/04/2011	45.18	46.17	43.11	44.82	
April	05/04/2011 - 27/04/2011	43.15	43.83	46.89	44.62	
May	27/04/2011 - 07/06/2011	28.63	26.91	30.22	28.60	
June	07/06/2011 - 28/06/2011	41.5	27.95	42.27	40.60	
July	28/06/2011 - 04/08/2011	34.99	38.63	39.56	37.73	
August	02/08/2011 - 01/09/2011	40.45	31.76	41.06	37.76	
September	01/09/2011 - 27/09/2011	33.21	33.16	35.78	34.05	
October	27/09/2011 - 02/11/2011	43.44	44.14	46.02	44.53	
November	02/11/2011 - 29/11/2011	49.67	39.42	38.30	42.46	
December	29/11/2011 - 03/01/2011	29.38	30.52	31.90	30.60	
		12			477.54	**39.8**

Pinxton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 02/02/2011	39.76			39.76	
Feb	02/02/2011 - 02/03/2011	35.29			35.29	
March	02/03/2011 - 05/04/2011	34.01			34.01	
April	05/04/2011 - 27/04/2011	30.89			30.89	
May	27/04/2011 - 07/06/2011	28.73			28.73	
June	07/06/2011 - 28/06/2011	37.90			37.90	
July	28/06/2011 - 04/08/2011	29.33			29.33	
August	04/08/2011 - 01/09/2011	33.12			33.12	
September	01/09/2011 - 27/09/2011	29.67			29.67	
October	27/09/2011 - 02/11/2011	32.76			32.67	
November	02/11/2011 - 29/11/2011	38.23			38.23	
December	29/11/2011 – 04/01/2012	37.08			37.08	
		12			406.68	**33.89**

Selston

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 02/02/2011	38.39			38.39	
Feb	02/02/2011 - 02/03/2011	32.09			32.09	
March	02/03/2011 - 05/04/2011	32.8			32.80	
April	05/04/2011 - 37/04/2011	28.34			28.34	
May	30/04/2011 - 07/06/2011				0	
June	07/06/2011 - 28/06/2011	27.25			27.25	
July	38/06/2011 - 04/08/2011	24.20			24.20	
August	04/08/2011 - 01/09/2011	26.33			26.33	
September	01/09/2011 - 27/09/2011					
October	27/09/2011 - 02/11/2011	32.08			32.08	
November	02/11/2011 - 29/11/2011	33.01			33.01	
December	29/11/2011 - 04/01/2011	23.58			23.58	
		10			298	**29.8**

Forest Close

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 02/02/2011	42.30	37.98	41.66	40.65	
Feb	02/02/2011 - 02/03/2011	31.40	30.63	31.85	31.30	
March	02/03/2011 - 05/04/2011	32.36	32.63	33.65	32.88	
April	05/04/2011 - 27/04/2011	30.78	37.26	32.44	33.49	
May	27/04/2011 - 07/06/2011	18.22			18.22	
June	07/06/2011 - 28/06/2011	18.79			18.79	
July	38/06/2011 - 04/08/2011	23.95			23.95	
August	04/08/2011 - 01/09/2011	22.61			22.61	
September	01/09/2011 - 27/09/2011	18.15			18.15	
October	27/09/2011 - 02/11/2011	23.25			23.25	
November	03/11/2011 - 29/11/2011	36.52			36.52	
December	29/11/2011 - 04/01/2012	21.20			21.20	
		12			321.01	**26.75**

Ashgate Road Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 07/02/2011	36.48			36.48	
Feb	07/02/2011 - 03/03/2011	33.41			33.41	
March	03/03/2011 - 04/04/2011	32.04			32.04	
April	04/04/2011 - 27/04/2011	28.61			28.61	
May	27/04/2011 - 07/06/2011	21.95			21.95	
June	07/06/2011 - 30/06/2011	26.73			26.73	
July	30/06/2011 - 04/08/2011	22.08			22.08	
August	04/08/2011 - 01/09/2011	24.32			24.32	
September	01/09/2011 - 29/09/2011	27.99			27.99	
October	29/09/2011 - 07/11/2011	37.15			37.15	
November	07/11/2011 - 01/12/2011	38.35			38.35	
December	01/12/2011 - 03/01/2012	34.25			34.25	
		12			353.36	**29.45**

High Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 07/02/2011	50.07			50.07	
Feb	07/02/2011 - 03/03/2011	46.86			46.86	
March	03/03/2011 - 04/04/2011	45.89			45.89	
April	04/04/2011 - 27/04/2011	44.19			44.19	
May	27/04/2011 - 07/06/2011	30.18			30.18	
June	07/06/2011 - 30/06/2011	41.64			41.64	
July	30/06/2011 - 04/08/2011	36.99			36.99	
August	04/08/2011 - 01/09/2011	38.56			38.56	
September	01/09/2011 - 29/09/2011	36.79			36.79	
October	29/09/2011 - 07/11/2011	46.25			46.25	
November	07/11/2011 - 01/12/2011	49.38			49.38	
December	01/12/2011 - 03/01/2012	40.33			40.33	
		12			507.13	**42.26**

Beardall Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 07/02/2011	34.32			34.32	
Feb	07/02/2011 - 03/03/2011	35.08			35.08	
March	03/03/2011 - 04/04/2011	30.96			30.96	
April	04/04/2011 - 27/04/2011	25.03			25.03	
May						
June	07/06/2011 - 30/06/2011	40.71			40.71	
July	30/06/2011 - 04/08/2011	21.13			21.13	
August	04/08/2011 - 01/09/2011	22.17			22.17	
September	01/09/2011 - 29/09/2011	24.35			24.35	
October	29/09/2011 - 07/11/2011	28.33			28.33	
November	07/11/2011 - 01/12/2011	39.29			39.29	
December	01/12/2011 - 03/01/2012	28.52			28.52	
		11			329.89	**29.99**

Station Road Sutton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	05/01/2011 – 03/02/2011	48.07			48.07	
Feb						
March	03/03/2011 - 04/04/2011	50.07			50.07	
April	04/04/2011 - 28/04/2011	46.86			46.86	
May	28/04/2011 - 07/06/2011	29.33			29.33	
June	07/06/2011 - 30/06/2011	40.54			40.54	
July	30/06/2011 - 04/08/2011	31.06			31.06	
August	04/08/2011 – 01/09/2011	44.09			44.09	
September	01/09/2011 - 29/09/2011	36.16			36.16	
October	29/09/2011 - 03/11/2011	54.54			54.54	
November	03/11/2011 – 29/11/2011	56.77			56.77	
December	29/11/2011 – 03/01/2012	40.99			40.99	
		11			478.48	**43.50**

Common Road Huthwaite

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan						
Feb	03/02/2011 - 03/03/2011	35.37			35.37	
March	03/03/2011 - 04/04/2011	43.25			43.25	
April	04/04/2011 - 27/04/2011	36.95			36.95	
May	27/04/2011 - 07/06/2011	30.93			30.93	
June	07/06/2011 - 30/06/2011	42.70			42.70	
July	30/06/2011 - 02/08/2011	35.74			35.74	
August	02/08/2011 - 01/09/2011	40.21			40.21	
September	01/09/2011 - 29/09/2011	36.16			36.16	
October	29/09/2011 - 01/11/2011	40.72			40.72	
November	01/11/2011 - 29/11/2011	37.93			37.93	
December	29/11/2011 – 03/01/2012	31.69			31.69	
		11			411.65	**37.42**

Stoneyford Court

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan						
Feb						
March						
April						
May	28/04/2011 - 07/06/2011	29.54	27.32	29.66	28.84	
June	07/06/2011 - 30/06/2011	32.90	35.00	34.04	33.98	
July	30/06/2011 - 04/08/2011	31.39		30.93	31.16	
August	04/08/2011 - 01/09/2011	32.58		26.53	29.56	
September	01/09/2011 - 29/09/2011	32.55	35.24	30.31	32.70	
October	29/09/2011 - 03/11/2011	39.41	38.27	39.77	39.15	
November	03/11/2011 - 29/11/2011	42.47	46.25	44.87	44.53	
December	29/11/2011 – 03/01/2012	32.28	31.94	30.85	31.69	
		8			271.61	**33.95**

Appendix 1:

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)		**3**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**21.4**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**29.4**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**28.2**	µg/m^3

A38 Fire Station

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**2**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**5**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**22.17**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**26.6**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**25.6**	µg/m^3

Selston Nottingham Road

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**2.5**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**20**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**18.96**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**26.5**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**22.6**	µg/m^3

Kirkby Naggs Head

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**3.3**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**7**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**22.15**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**29.7**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**28.2**	µg/m^3

M1 Pinxton

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)		**8.5**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**27.26**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**30.2**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**29.1**	µg/m^3

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)		**1.5**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**17.99**	$\mu g/m^3$
Step 4		**What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**35.4**	$\mu g/m^3$
Result		**The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor**	(Note 3)		**32.4**	$\mu g/m^3$

Sutton Dalestorth Street

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)		**5.5**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**20.41**	$\mu g/m^3$
Step 4		**What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**32**	$\mu g/m^3$
Result		**The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor**	(Note 3)		**30.6**	$\mu g/m^3$

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_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**18.94**	$\mu g/m^3$
Step 4		**What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**26.2**	$\mu g/m^3$
Result		**The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor**	(Note 3)		**25**	$\mu g/m^3$

Station Road Sutton

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**2.4**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**10**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**26.08**	$\mu g/m^3$
Step 4		**What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?**	(Note 2)		**38.7**	$\mu g/m^3$
Result		**The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor**	(Note 3)		**34.3**	$\mu g/m^3$

Stoneyford Court

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**3**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**7.75**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**20.44**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**34.7**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**31.2**	µg/m^3

Hucknall High Street

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**2**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**5.3**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**20.19**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**38**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**33.9**	µg/m^3

Beardall Street

Step 1		**How far from the KERB was your measurement made (in metres)?**	(Note 1)		**2**	metres
Step 2		**How far from the KERB is your receptor (in metres)?**	(Note 1)		**2.2**	metres
Step 3		**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)		**20.04**	µg/m^3
Step 4		**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)		**26.7**	µg/m^3
Result		**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)		**26.6**	µg/m^3

QA/QC of diffusion tube monitoring

Discussed in the main body of the text.

QA/QC of automatic monitoring

The Authority has taken out a service and maintenance contract with Air Monitors, Unit 2, Bredon Court, Brockeridge Park, Twyning, Gloucestershire. GL20 6FF.

With the Air Monitors Enviro logger they are able to continually monitor the operation of the equipment and automatically carry out calibrations of the equipment.

Appendix 2 DMRB DATA

None Used

Appendix 3 ADJUSTMENT FOR ANNUAL MEAN

Sutton Mansfield Road (Jan – April)

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield	15	19	0.789
Nottingham Centre	36	43	0.837
		Average (Ra)	0.813

Stoneyford Court RoadsideTubes (May – Dec)

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield	15	12.6	1.190
Nottingham Centre	36	32.5	1.108
		Average (Ra)	1.149

Stoneyford Court Continuous Monitoring Data

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield	15	17.4	0.862
Nottingham Centre	36	38	0.947
		Average (Ra)	0.905

NOTE – This is the revised submission of the updating and screening assessment dated December 2012.