Local Air Quality Updating and Screening

Assessment for

Ashfield District Council

SEPTEMBER 2015

In fulfillment of Part IV of the Environment Act 1995 Local Air Quality Management

Local Authority Officer	**Steve Fell Senior Environmental Protection Technician**
Department	**Environment**
	Ashfield District Council Urban Road Kirkby-in-Ashfield Nottinghamshire NG17 8DA
Telephone	**01623 457416**
e-mail	**s.fell@ashfield-dc.gov.uk**
Report Reference number	**USA**
Date	**SEPTEMBER 2015**

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. 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 2012. This Updating and Screening Assessment represents the sixteenth 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 2014 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.

Table of contents

Appendices

List of Tables

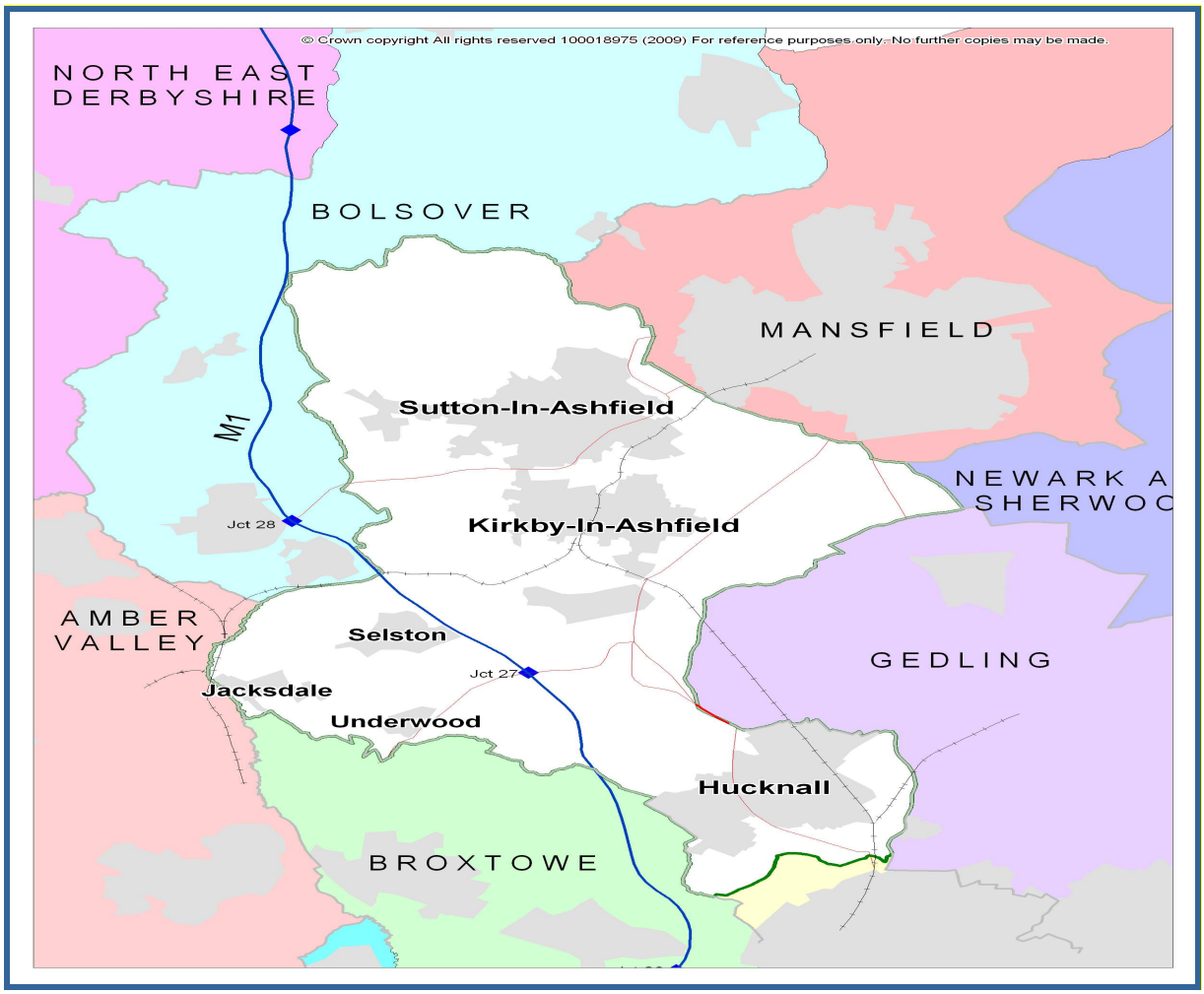
List of Figures

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 council areas within the County, including Nottingham City to the south and Mansfield to the north, and also adjoins Derbyshire. It has an estimated population of 120131 (mid-2011 ONS). The majority of this population, together with associated housing, jobs and services, are concentrated within the three main towns of Sutton-in-Ashfield, Hucknall and Kirkby-in-Ashfield, together with 3 large villages in the substantial rural area mainly to the west of the M1 motorway.



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

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

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 exceedences are considered likely, 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.

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to 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 µg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences 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 Updated Screening Assessment represents the sixteenth report on air quality produced by Ashfield District Council. It is recommended that the report is read in conjunction with the preceding reports.

Table 1.2 provides details of the 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} 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} 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 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.
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 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.
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 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 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.
Progress Report	May 2010	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** 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	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.
Update and Screening Assessment	May 2012	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2011 demonstrated that all the air quality objectives continued to be achieved across Ashfield. 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
Progress Report	Nov 2013	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2012 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	Sept 2014	**Benzene, 1,3-Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide, Particles PM_{10}:** A review of air quality measurement during 2013 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

No automatic monitoring was undertaken by Ashfield District Council during 2014.

2.1.2 Non-Automatic Monitoring

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

Figure 2.1 Map of Non-Automatic Monitoring Sites

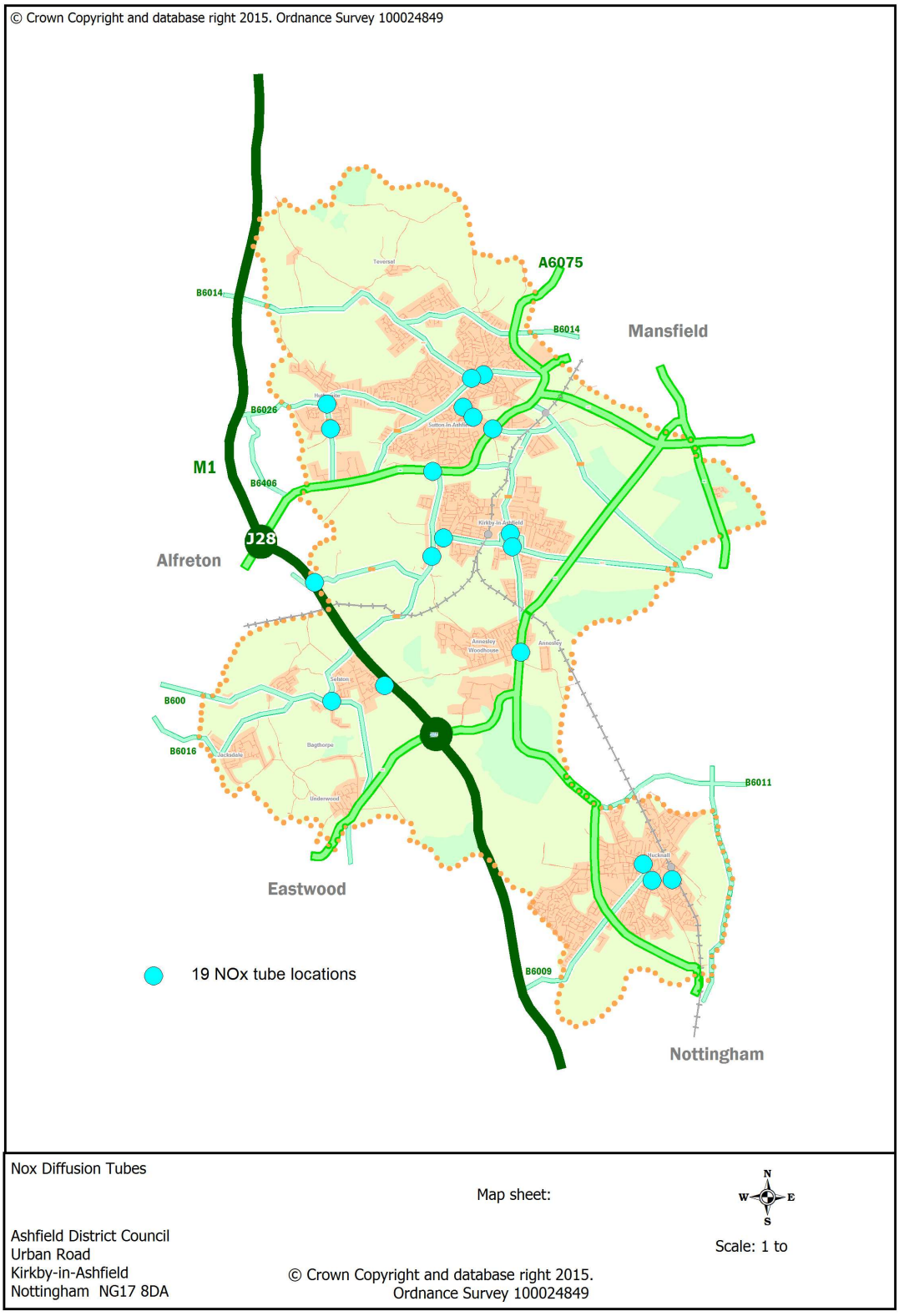


Table 2.1 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA	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 Stoneyford Court`	Roadside	449812 359577	NO_2	N	N	7.8	3	**Y**
Sutton Outram Street	Roadside/ Urban Centre	449628 358967	NO_2	N	N	3	1.5	**Y**
Sutton Dalestorth Street	Roadside	450062 359653	NO_2	N	N	1.7	1	**Y**
Sutton Croft Primary	Roadside	449850 358779	NO_2	N	N	4.5	2.5	**Y**
Sutton Station Road	Near Road	450259 358512	NO_2	N	N	12.7	2.4	**Y**
A 38 Sutton Fire Station	Near Road	448987 357610	NO_2	N	N	5.6	10	**Y**
Kirkby Naggs Head	Urban centre/Road side	450673 356017	NO_2	N	N	3.3	5.5	**Y**
Kirkby Lowmoor Road	Roadside	450636 356279	NO_2	N	N	2	2	**Y**
Kirkby Chapel Street	Roadside	449211 356192	NO_2	N	N	5	2	**Y**
Kirkby Church Hill	Kerbside	448968 355816	NO_2	N	N	1.5	0.5	**Y**
Huthwaite Common Road	Roadside	446827 358508	NO_2	N	N	2.4	2.4	**Y**
Huthwaite Church of	Roadside	446758 358995	NO_2	N	N	3.5	0.5	**Y**

England School Common Road								
Forest Close M1	Near Road	447968 353086	NO_2	N	N	5	109	**Y**
M1 Pinxton	Near Road	446492 355266	NO_2	N	N	8.5	20	**Y**
Selston Nottingham Road	Kerbside	446852 352754	NO_2	N	N	14	1	**Y**
Annesley Badger Box	Roadside	450844 353799	NO_2	N	N	9	2	**Y**
Hucknall Ashgate Road	Roadside	454057 348989	NO_2	N	N	2.8	3.5	**Y**
Hucknall High Street	Roadside	453477 349315	NO_2	N	N	5.3	2	**Y**
Hucknall Croft/Beardall St	Urban background	453631 348972	NO_2	N	N	2.2	2	**Y**

Laboratory Used

Nottinghamshire Authorities agreed to employ a single laboratory to undertake the supply and analysis of diffusion tubes. 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 relating 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. Annual diffusion tube results for 2014 have therefore been adjusted for each monitored location. This report as used a Bias Adjustment Factor of 0.91

2.2 Comparison of Monitoring Results with Air Quality Objectives

Nitrogen Dioxide

2.2.1 Automatic Monitoring Sites

No automatic monitoring was undertaken by Ashfield District Council during 2014.

2. 22 Non Automatic Monitoring Sites

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate Tubes Used	Full Calendar Year Data Capture 2014 (Number of Months or %)[a]	Data with less than 9 months monitoring has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	2014 Annual mean concentrations ($\mu g/m^3$)-Bias Adjustment factor = 0.91
Tubes 34,35,66	Stoneyford Court	Roadside	N	Y	100	N/A	N	29.4
Tube 4	Outram Street	Urban Centre	N	N	100	N/A	N	29.0
Tube 5	Dalestorth Road	Roadside	N	N	100	N/A	N	33.3
Tube 31	Croft Primary Station Road	Roadside	N	N	75	N/A	N	26.5
Tube 22	Station Road	Roadside	N	N	100	N/A	N	33.7
Tubes 7	A38	Roadside	N	N	100	N/A	N	26.6

Tubes 1,2 & 3	Naggs Head	Urban Centre	N	Y	83	N/A	N	29.2
Tube 32	Lowmoor Road	Roadside	N	N	33	Yes	N	29.2
Tube 33	Chapel Street Kirkby	Roadside	N	N	17	Yes	N	27.9
Tubes 10,11&12	Church Hill	Kerbside	N	Y	100	N/A	N	39.0
Tube 23	Common Road	Roadside	N	N	100	N/A	N	34.8
Tube 30	Church of England School Huthwaite	Roadside	N	N	67	Yes	N	22.5
Tubes 16	Forest Close	Roadside	N	N	67	Yes	N	22.6
Tube 14	M1 Pinxton	Roadside	N	N	100	N/A	N	28.7
Tubes 15	Nottingham Rd Selston	Roadside	N	N	83	N/A	N	25.1
Tubes 27,28 and 29	Badger Box Annesley	Roadside	N	Y	100	N/A	N	33.6

Tube 19	Ashgate Road Hucknall	Roadside	N	N	100	N/A	N	24.8
Tube 20	High Street Hucknall	Urban Centre	N	N	100	N/A	N	33.2
Tube 21	Beardall Street Hucknall	Urban Background	N	N	100	N/A	N	24.8

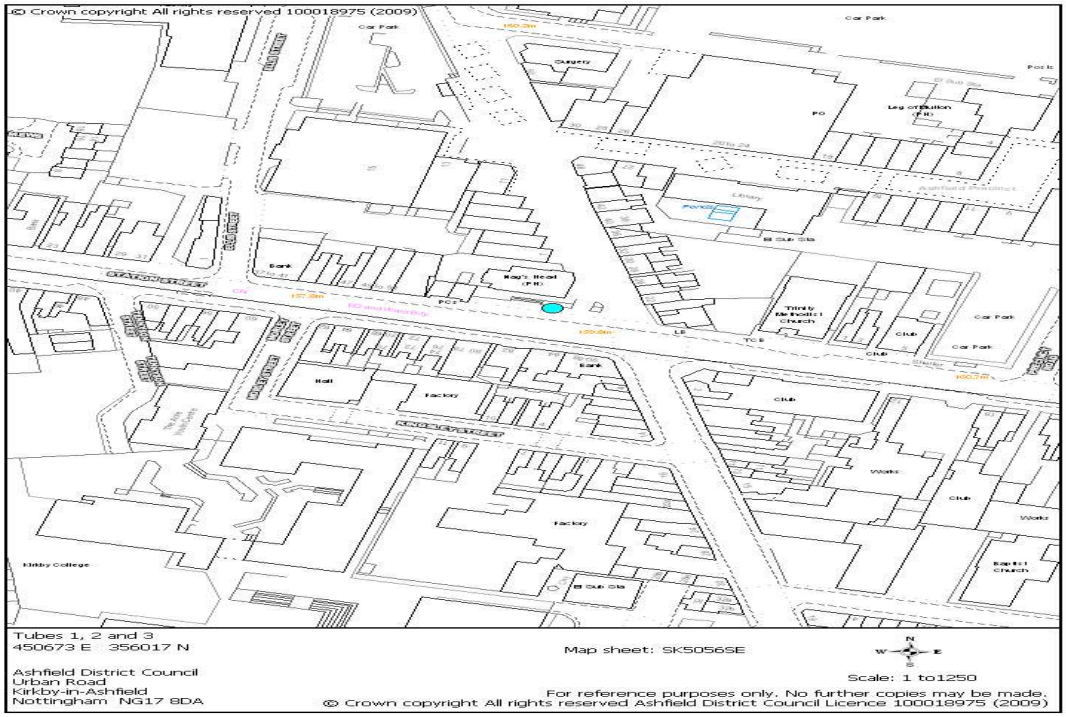
Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
			2010* (Bias Adjustment Factor = 0.92 XX)	2011 (Bias Adjustment Factor = 0.89 XX)	2012 (Bias Adjustment Factor = 0.96 XX	2013 (Bias Adjustment Factor = 0.95 XX	2014 (Bias Adjustment Factor = 0.91 XX
Kirkby Naggs Head	Urban Centre	No	32.0	29.7	31.7	31.0	29.2
Sutton Outram Street	Urban Centre	No	37.0	29.4	34.7	29.8	29.0
Sutton Dalestorth Street	Kerbside	No	35.0	32.0	34.2	33.1	33.3
A38 Fire Station	Roadside	No	40.0	26.6	29.2	30.0	26.6
Kirkby Church Hill	Kerbside	No	39.0	35.4	40	38.3	39.0
M1 Pinxton	Roadside	No	31.0	30.2	32.5	28.2	28.7
Selston Nottingham Road	Roadside	No	28.0	26.5	29.4	26.1	25.1
Forest Close M1	Roadside	No	29.0	23.9	26.6	27.6	22.6
Hucknall Ashgate Road	Roadside	No	28.0	26.2	26.6	25.7	24.8
Hucknall High Street	Urban Centre	No	39.0	38.0	36.5	35.6	33.2
Hucknall Beardall Street	Urban Background	No	25.0	26.7	25.8	22.9	24.8
Sutton Station Road	Roadside	No	37.0	38.7	35.2	34.7	33.7
Huthwaite Common Road	Roadside	No	37.0	33.3	35.8	36.7	34.8

Site ID	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m^3				
			2010* (Bias Adjustment Factor = 0.92 XX)	2011 (Bias Adjustment Factor = 0.89 XX)	2012 (Bias Adjustment Factor = 0.96 XX	2013 (Bias Adjustment Factor = 0.95 XX	2014 (Bias Adjustment Factor = 0.91 XX
Stoneyford Court	Roadside	No	N/A	34.7	34.5	35.0	29.4

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

Location of Nitrogen Dioxide Diffusion Tubes at Naggs Head , Kirkby

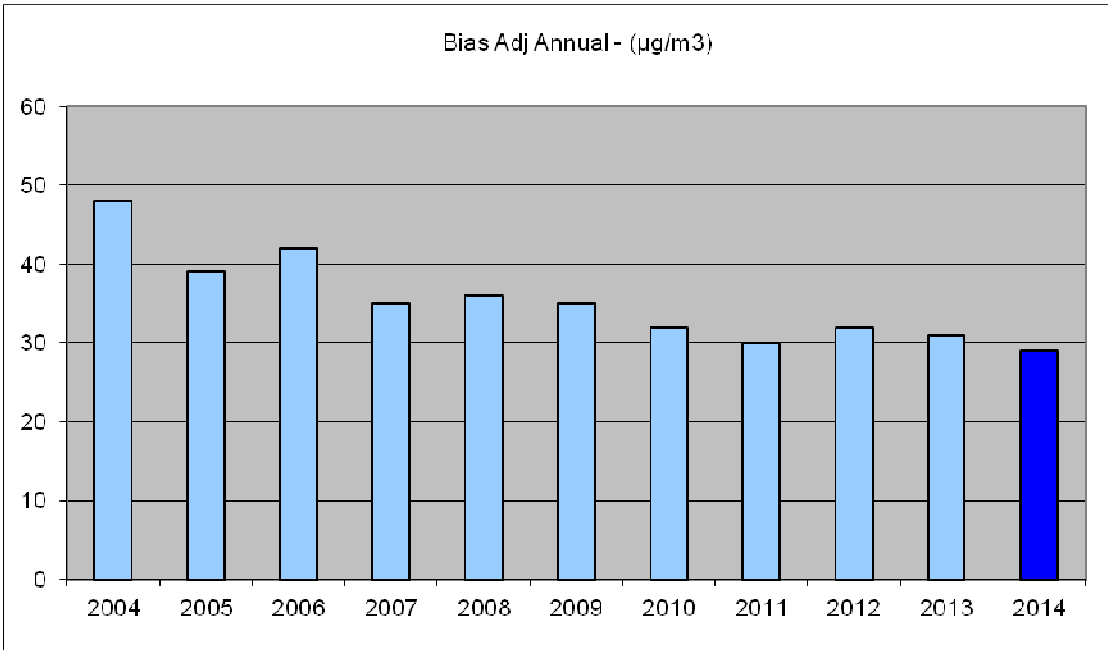


This is an urban centre location. The tube is located adjacent to a road junction, where Station Road filters onto Diamond Avenue and Kingsway. This location experiences traffic going to and coming from Mansfield, and Nottingham (via Hucknall). The tube is situated next to a shopping precinct.

Measured Annual Mean For 2014 Based on 10 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 00.91) (µg/m^3)
32.1	29.2

Triplicate tubes deployed

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



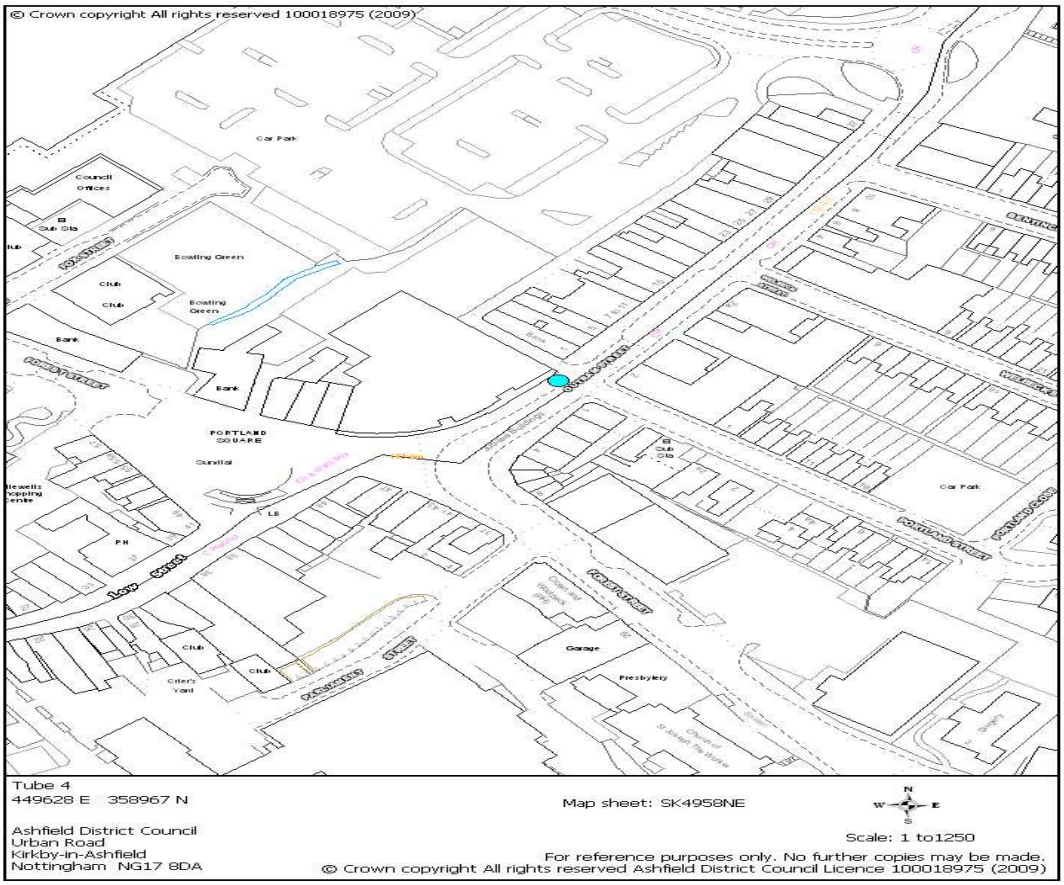
Distance Fall-off Calculation

The receptor nearest the actual diffusion tube location is 8.8m from the road, however there are properties adjacent to the location that are closer to the road. These properties do not have a suitable location for the diffusion tube to be sited. Therefore, the distance fall-off calculation has been carried out using the distance of the residential properties closest to the road to give an indication of likely levels. The resultant Nitrogen Dioxide level at the receptor is 27.0µg/m^3 (Appendix A). 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 – Kerbside/Urban Centre Tube 4

Location of Nitrogen Dioxide Diffusion Tube at Outram Street, Sutton

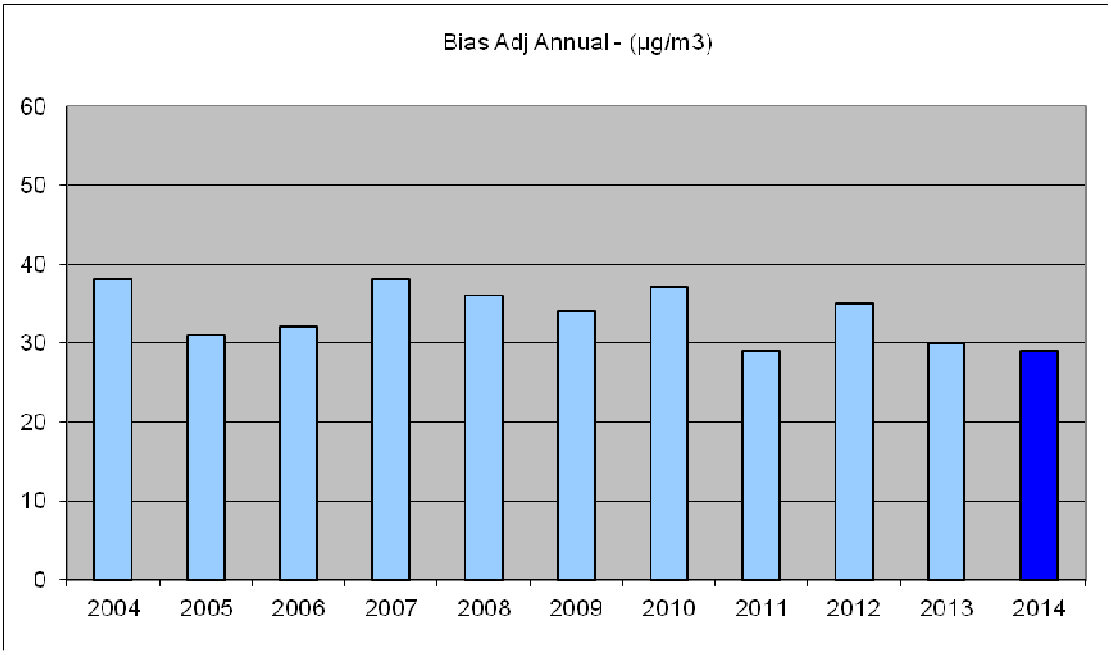


This is a urban centre location. The diffusion tube is situated at the beginning of Outram Street, directly after pedestrian lights. The road experiences traffic going to and from Mansfield and Kirkby entering Sutton Town Centre.

Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
31.9	29.0

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

It is necessary for 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.

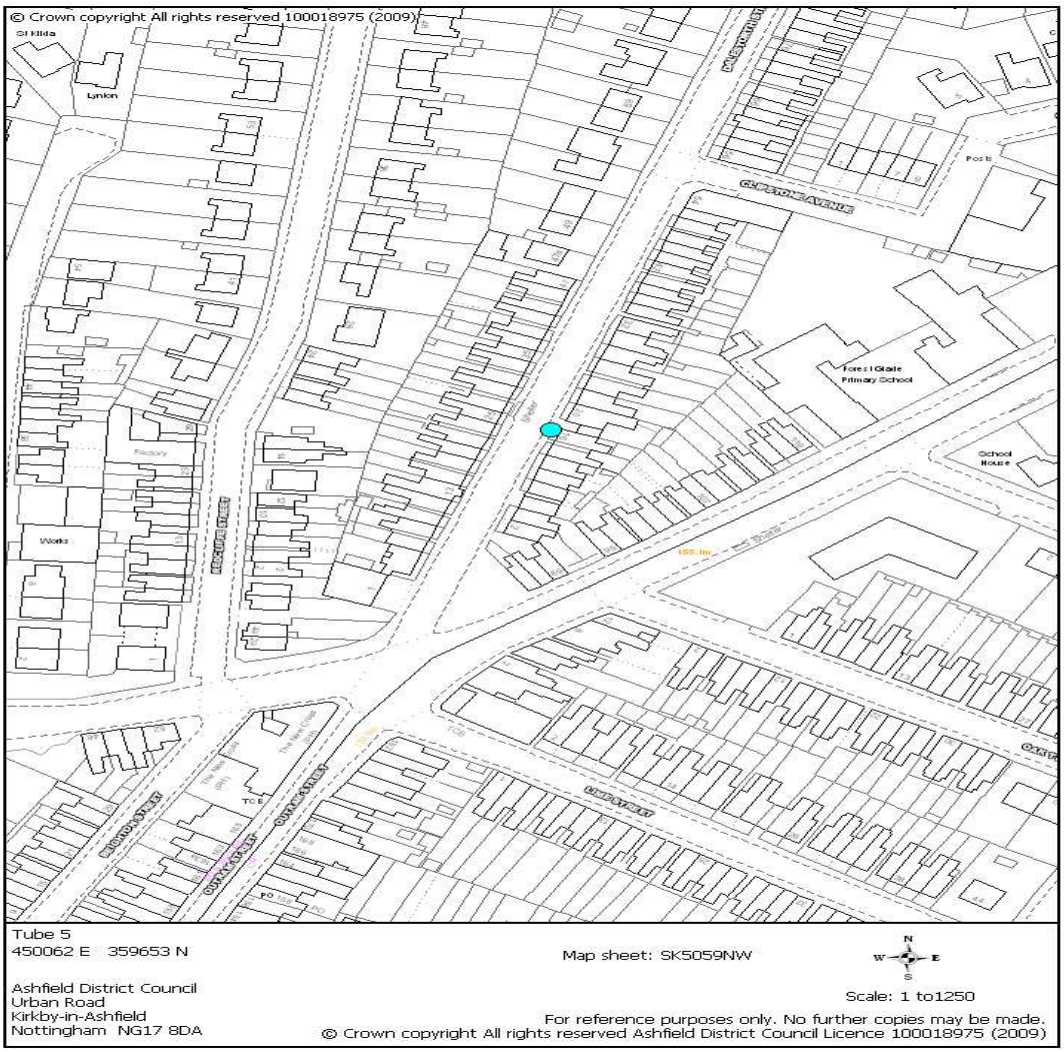
Concentrations of Nitrogen Dioxide drop off with regards to distance from a road and therefore it is essential to predict levels at the relevant receptor when monitoring has been undertaken at a different distance from the road source.

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 27.3µg/m^3 (Appendix A).

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 – Kerbside Tube 5

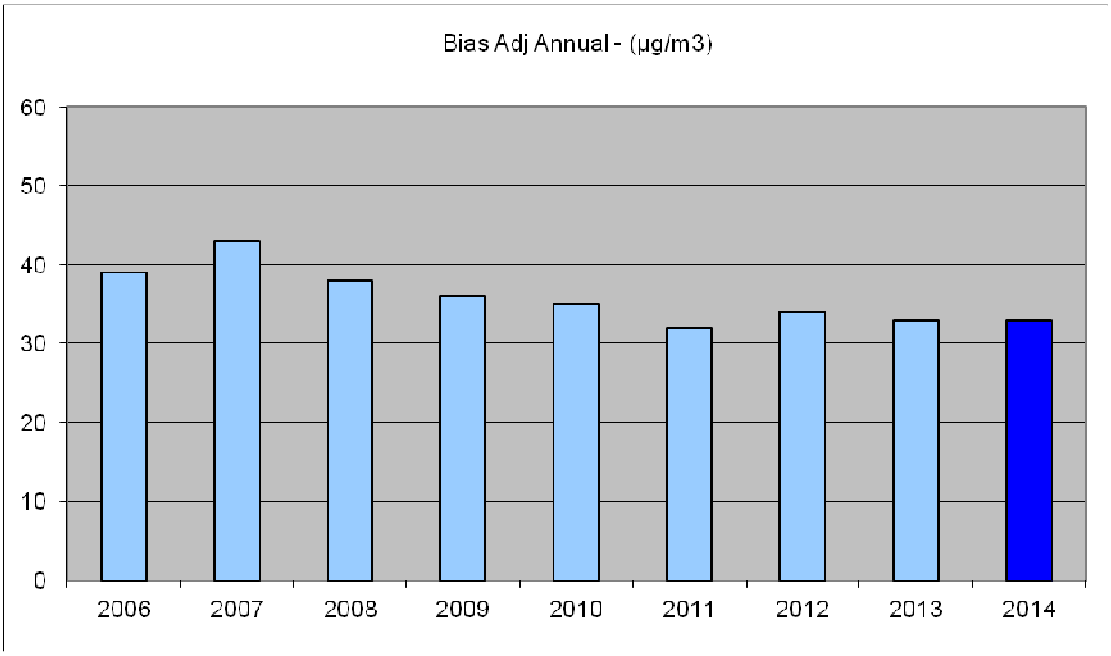
Location of Diffusion Tube at Dalestorth Street, Sutton



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 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91)(µg/m^3)
36.6	33.3

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



Single tube deployed not duplicate or triplicates

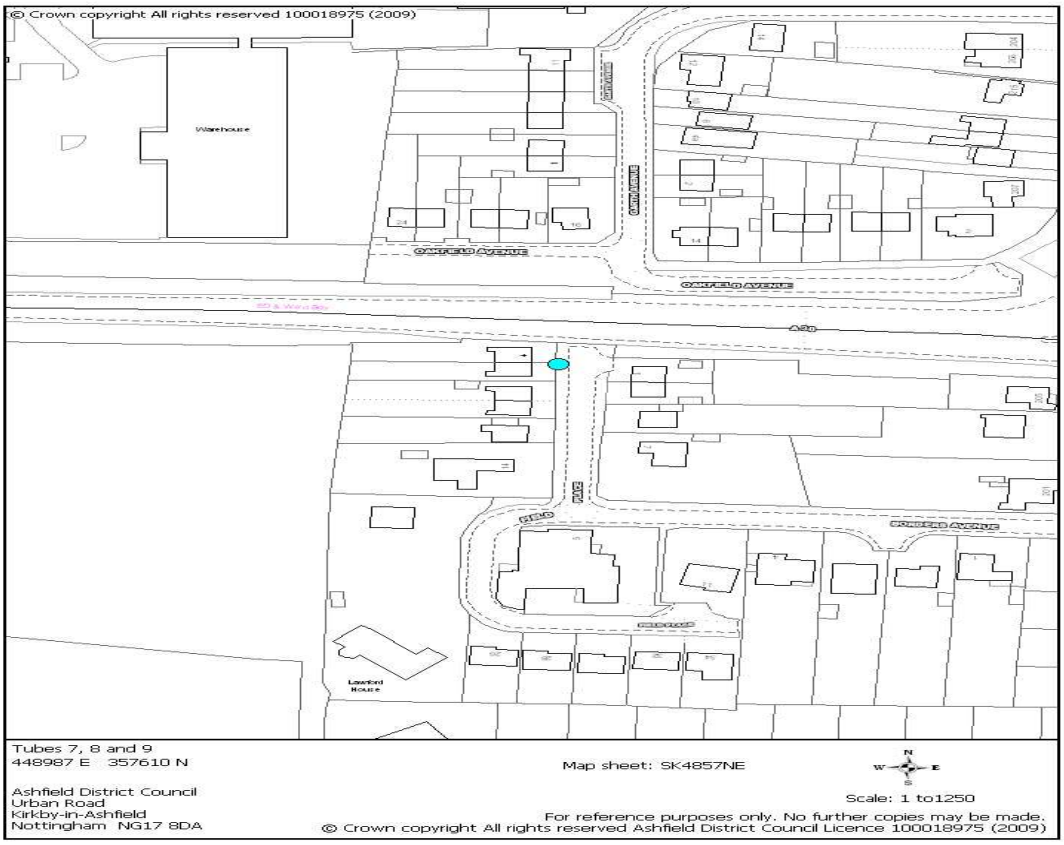
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 31.4µg/m^3 (Appendix A).

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.

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

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

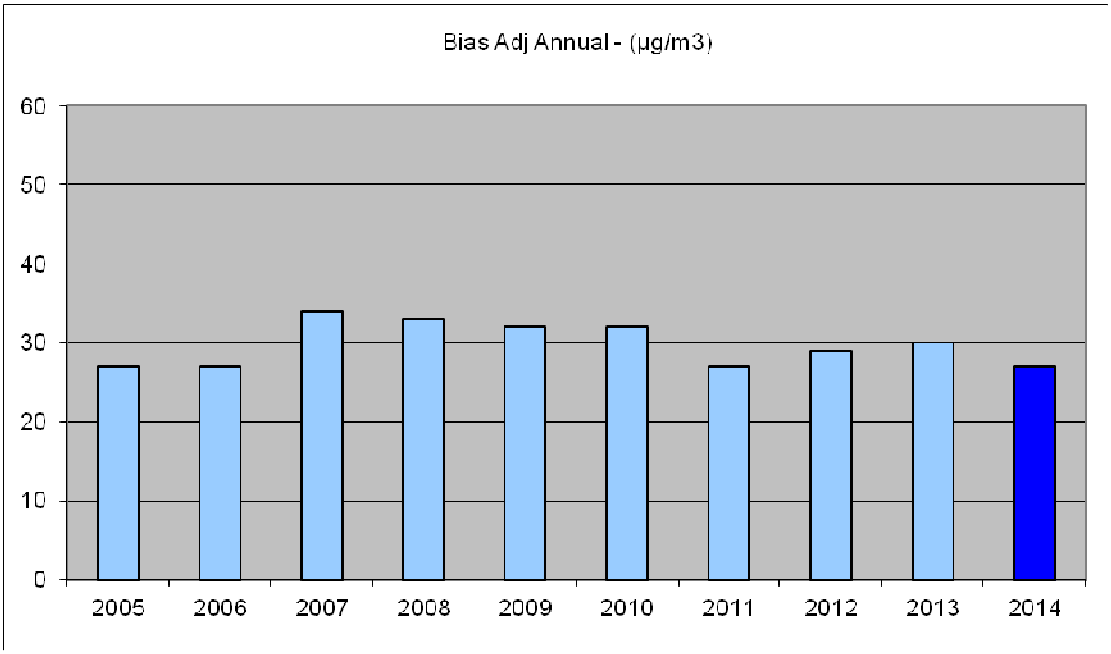


This is a roadside location. The diffusion tube is located immediately adjacent to the A38. The A38 is the major route for traffic going between Derby and Mansfield.

Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
29.2	26.6

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

Figure 2.5 Trend Analysis Nitrogen Dioxide Diffusion Tube at A38 Fire Station, Sutton in Ashfield



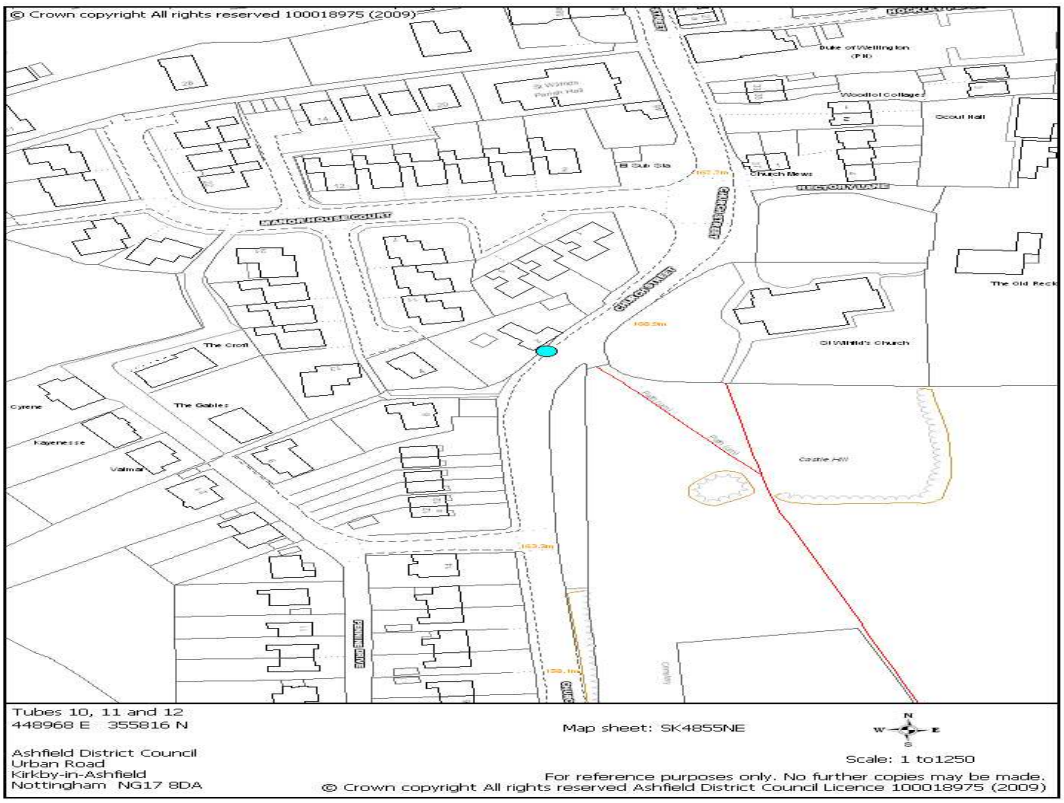
Distance Fall-off Calculation

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

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

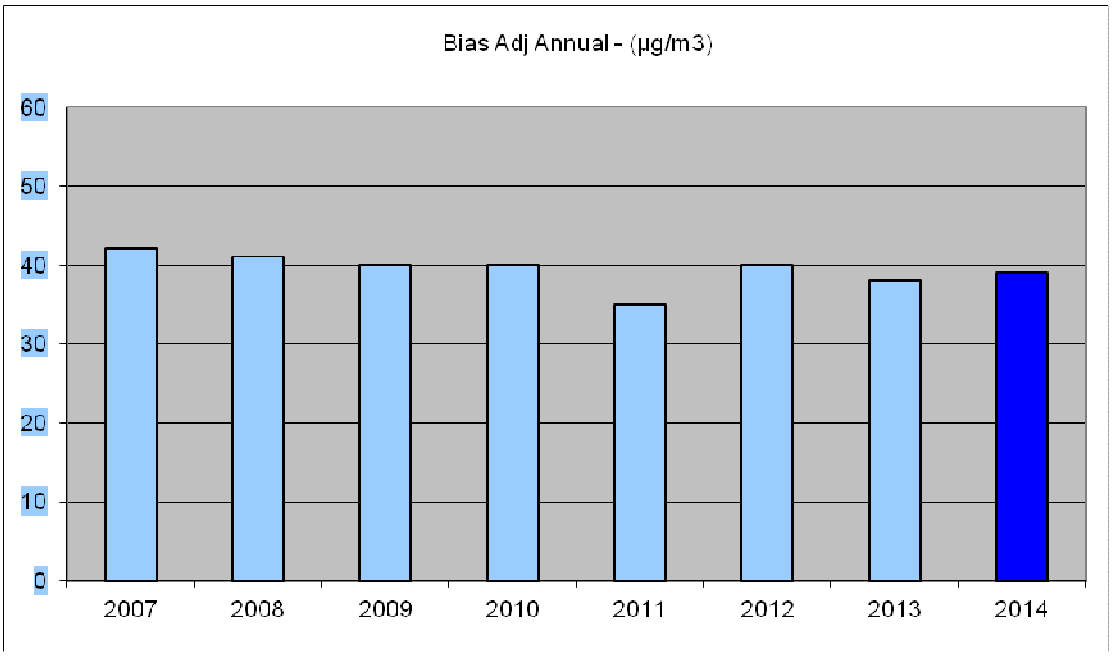


This is a kerbside location. The diffusion tube is located on a hill that is taking traffic from Selston to Kirkby. The location is near a busy roundabout that can experience traffic build-up during peak times.

Measured Annual Mean For 2014 Based on 12 months Data ($\mu g/m^3$)	Bias Adjusted Annual Mean (Factor 0.91) ($\mu g/m^3$)
42.9	39.0

Triplicate tubes deployed

Figure 2.6 Trend Analysis Nitrogen Dioxide Diffusion Tube at Church Hill, Kirkby in Ashfield



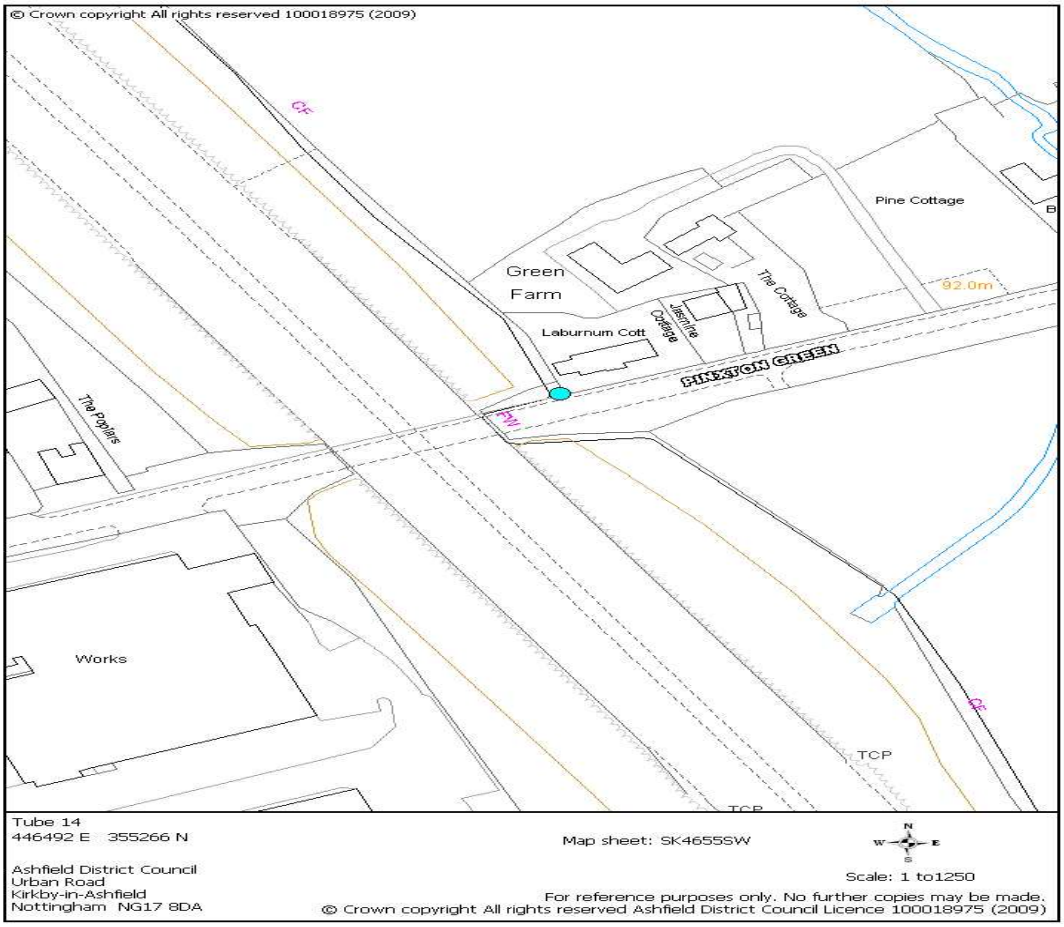
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 34.4µg/m^3 (Appendix A).

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 – Near Road Tube 14

Location of Nitrogen Dioxide Diffusion Tube at M1 Pinxton

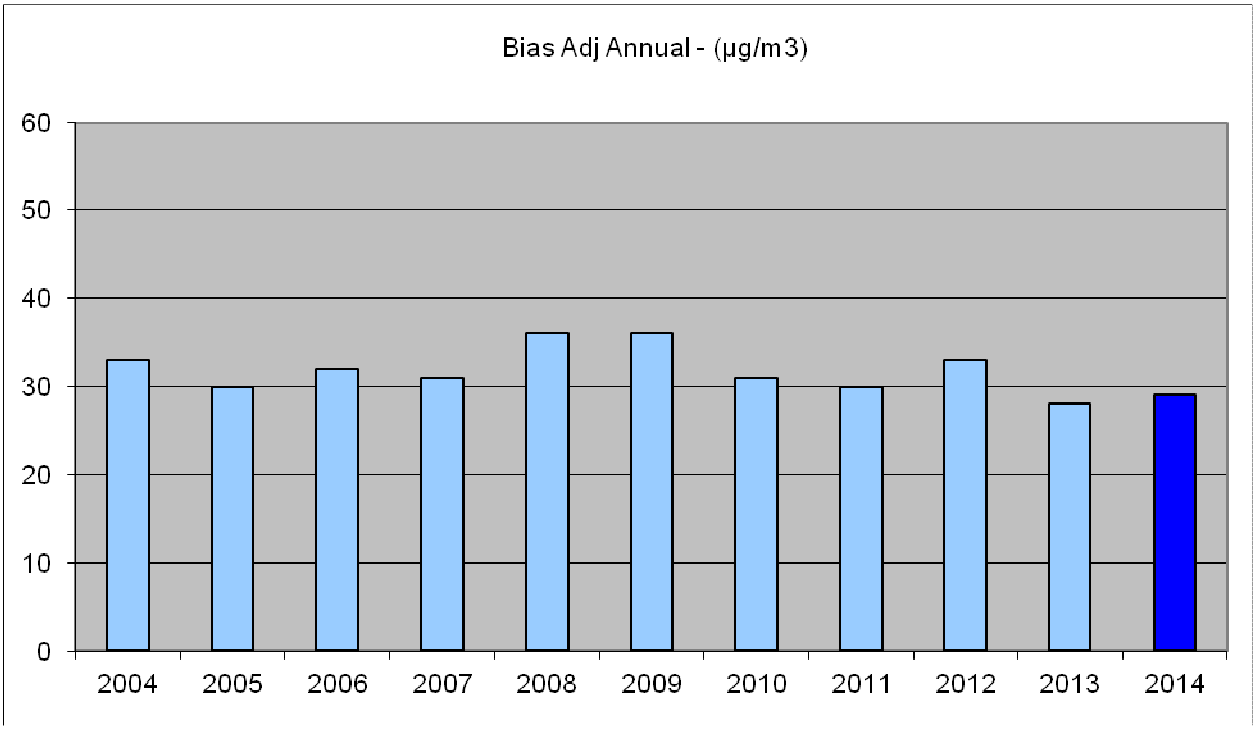


This is a roadside location. The diffusion tube is located in a residential area adjacent to the M1 at Pinxton, on the boundary of the District

Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91)(µg/m^3)
31.5	28.7

Single tube deployed not duplicate or triplicates

Figure 2.7 Trend Analysis Nitrogen Dioxide Diffusion Tube at M1 Pinxton



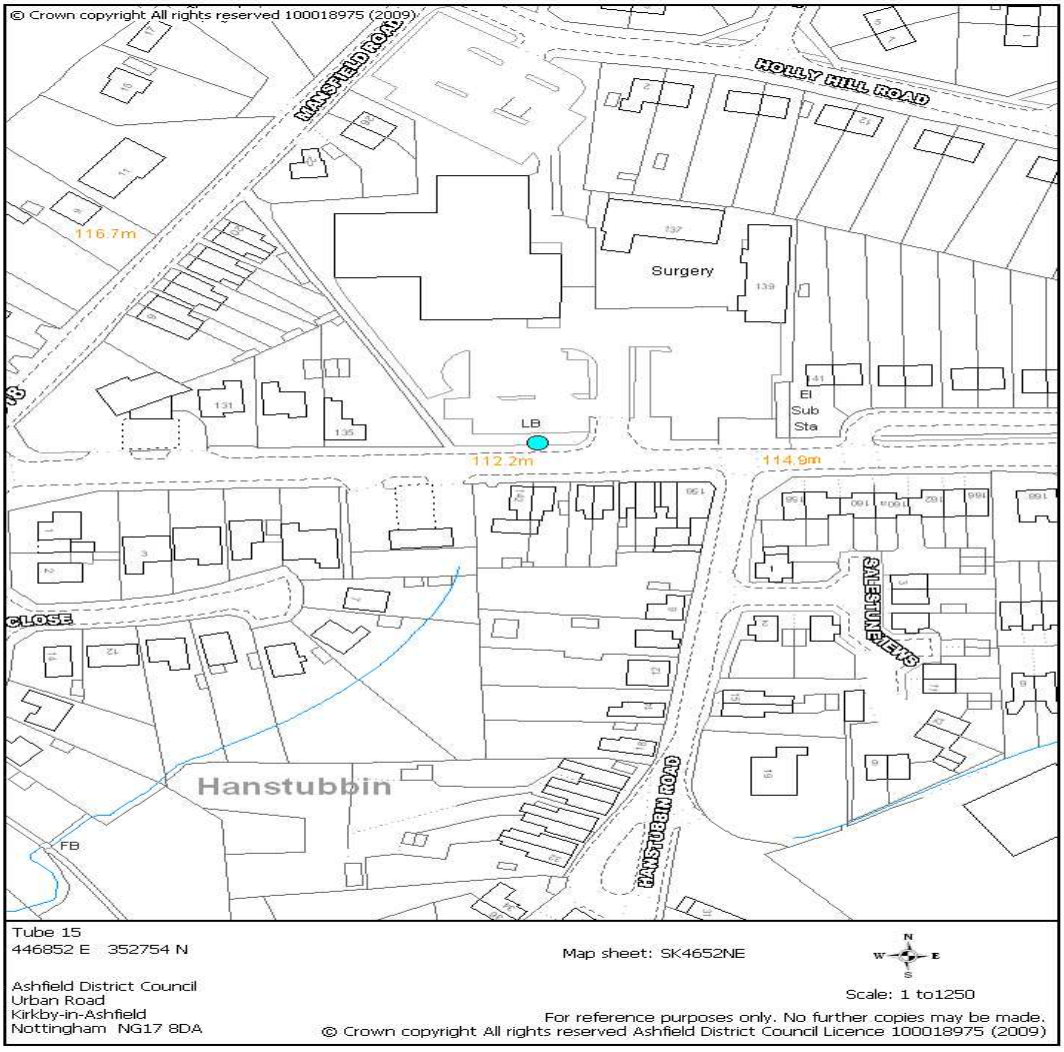
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 26.7µg/m^3 (Appendix A).

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 – Kerbside Tube 15

Location of Nitrogen Dioxide Diffusion Tube at Nottingham Road, Selston

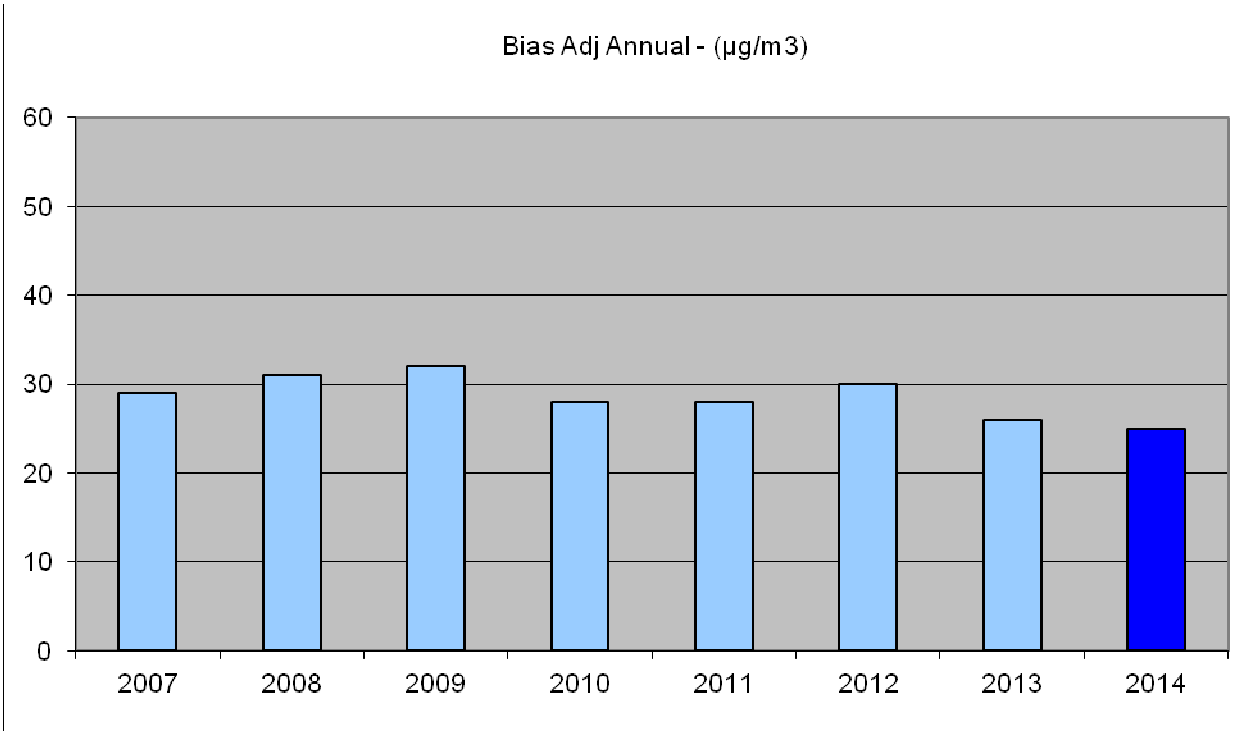


This is a roadside location. The diffusion tube is located adjacent to the main road running through Selston from Kirkby in Ashfield.

Measured Annual Mean For 2014 Based on 10 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
27.6	25.1

Single tube deployed not duplicate or triplicates

Figure 2.8 Trend Analysis Nitrogen Dioxide Diffusion Tube at Nottingham Road, Selston



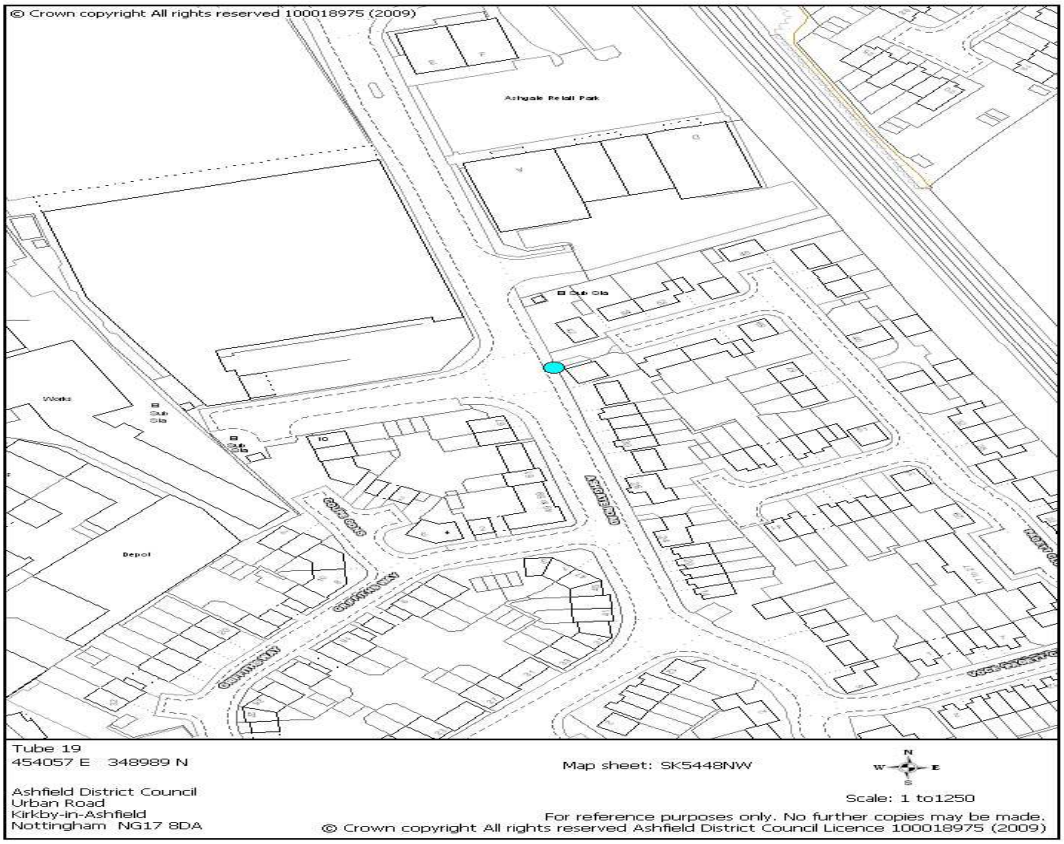
Distance Fall-off Calculation

The receptor nearest the diffusion tube location is 16.3m from the road, however there are properties adjacent to the diffusion tube location that are closer to the road, however, they do not have a suitable location for the diffusion tube to be sited. Therefore, the distance fall-off calculation has been carried out using the distance of the residential properties closest to the road to give an indication of likely levels. The resultant Nitrogen Dioxide level at the receptor is predicted to be 26.2µg/m^3 this is higher than at the monitoring location. (Appendix A).

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 – Kerbside Tube 19.

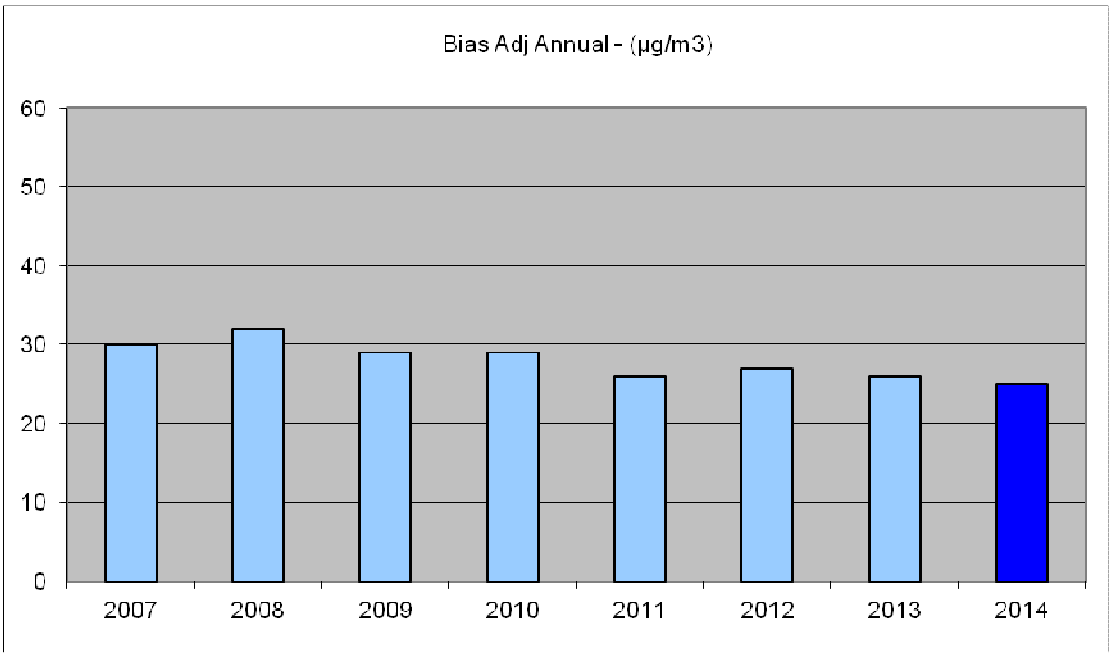
Location of Nitrogen Dioxide Diffusion Tube at Hucknall Ashgate Road



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 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
27.2	24.8

Figure 2.9 Trend Analysis Nitrogen Dioxide Diffusion Tube at Ashgate Road, Hucknall



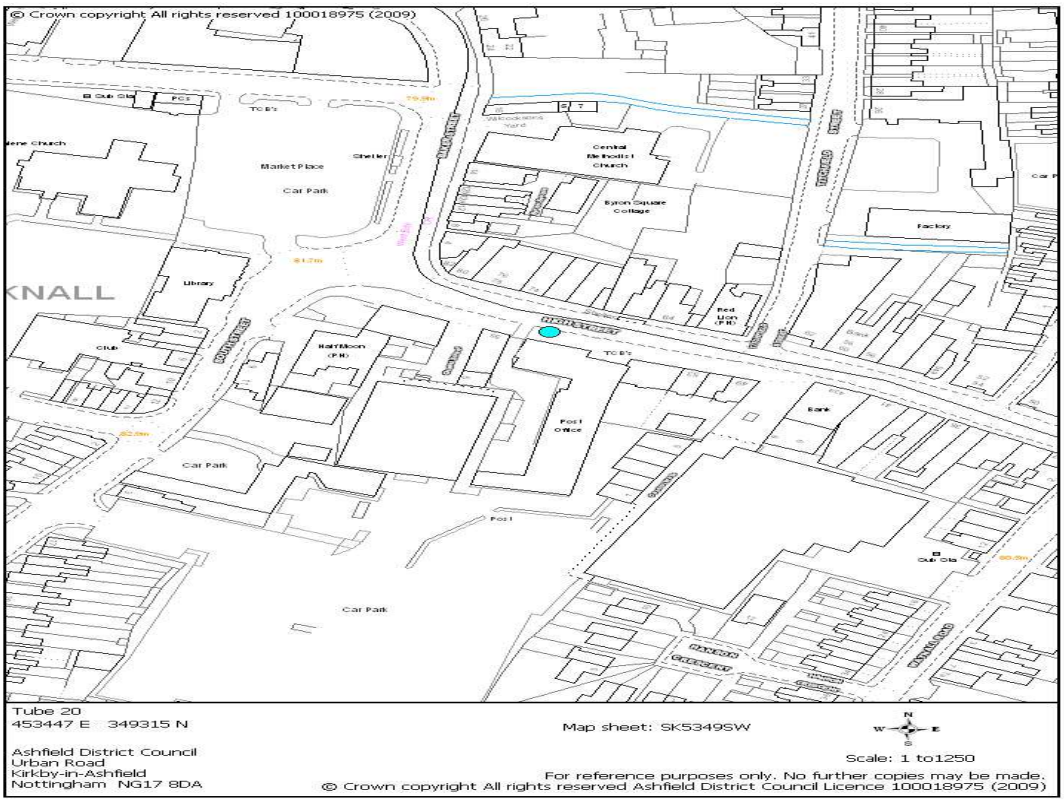
Distance Fall-off Calculation

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 23.5 µg/m^3 (Appendix A).

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 - Roadside/Urban Centre Tube 20

Location of Nitrogen Dioxide Diffusion Tube at Hucknall High Street

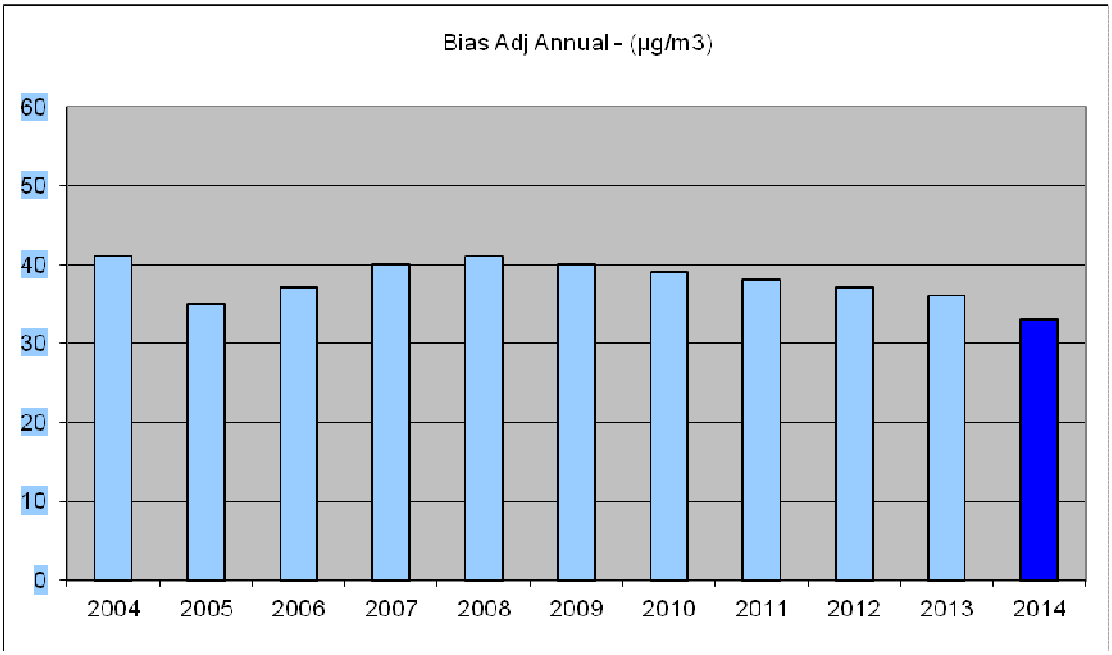


This is an urban centre location. The diffusion tube is located adjacent to the main road running through Hucknall town centre, directly adjacent to a junction that experiences traffic going to Mansfield, Nottingham, Annesley Road and the Hucknall bypass. This location has a number of commercial properties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

Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91)(µg/m^3)
36.5	33.2

Single tube deployed not duplicate or triplicates

Figure 2.10 Trend Analysis Nitrogen Dioxide Diffusion Tube at High Street, Hucknall



Distance Fall-off Calculation

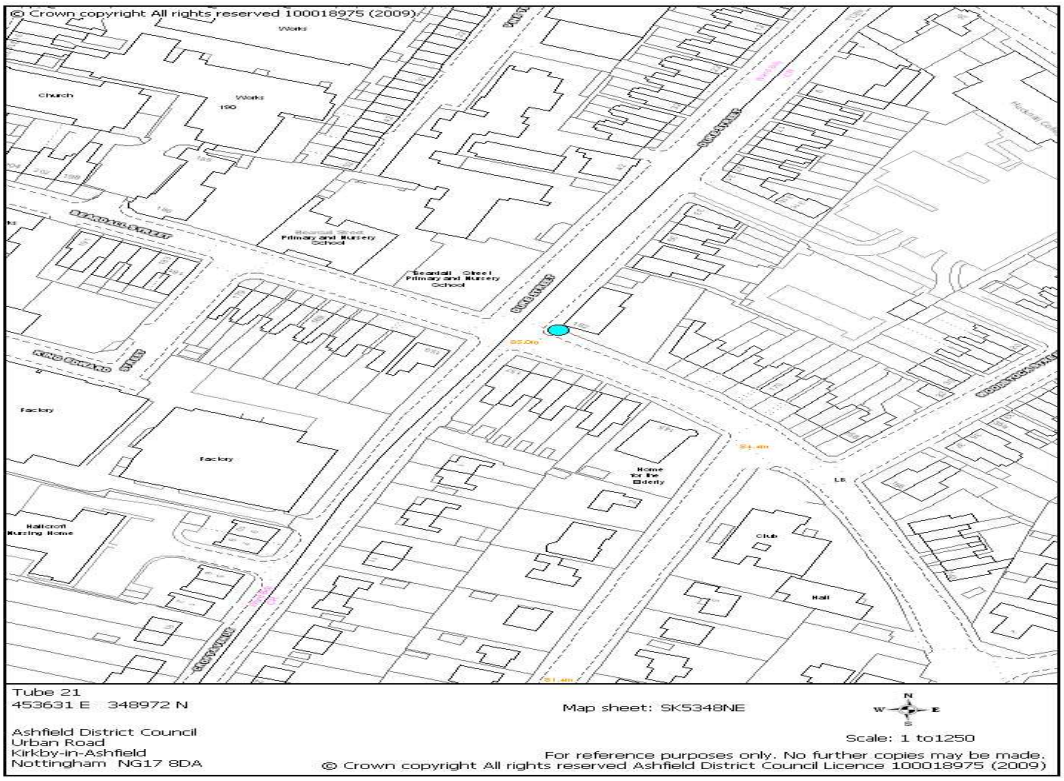
This is a town centre roadside location where it is unlikely that people will be exposed to levels of NO_2 over a full 24 hour period. The annual level recorded indicates that the 1-hour mean value for Nitrogen Dioxide is unlikely to be exceeded. It does however provide an indication of annual spatial concentration for this area.

Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 29.7µg/m^3 (Appendix A).

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.

Hucknall Croft/Beardhall Street – Urban Background Tube 21

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

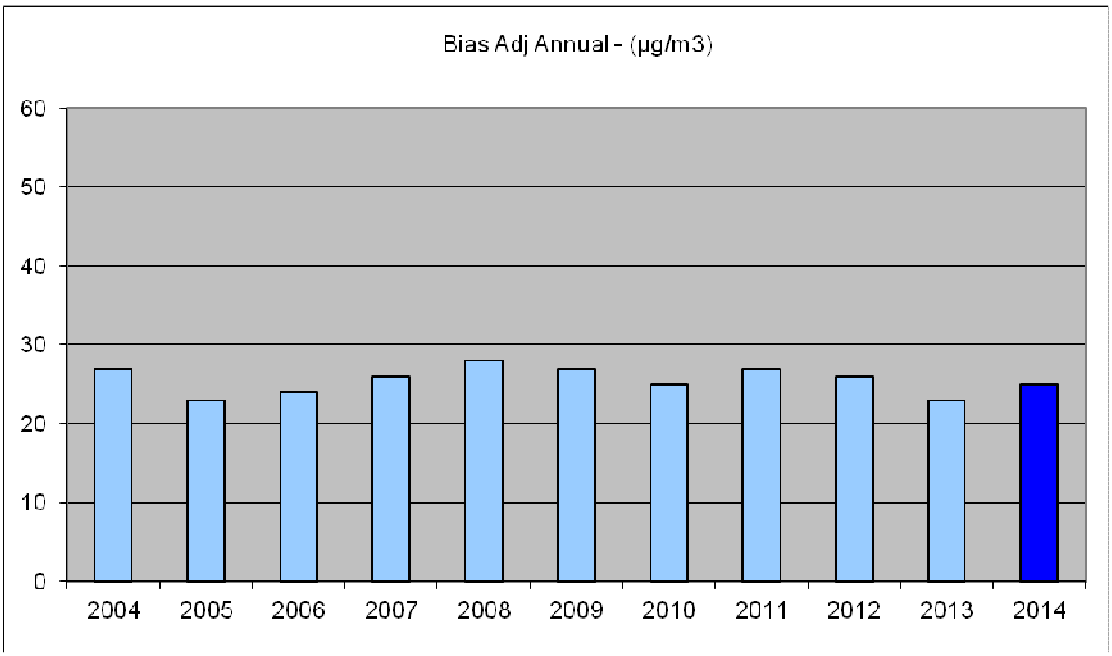


This is an urban background location. The diffusion tube is located on Beardall Street, some distance from the town centre**.**

Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
27.3	24.8

Single tube deployed not duplicate or triplicates

Figure 2.11 Trend Analysis Nitrogen Dioxide Diffusion Tube at Beardall Street, Hucknall



Distance Fall-off Calculation

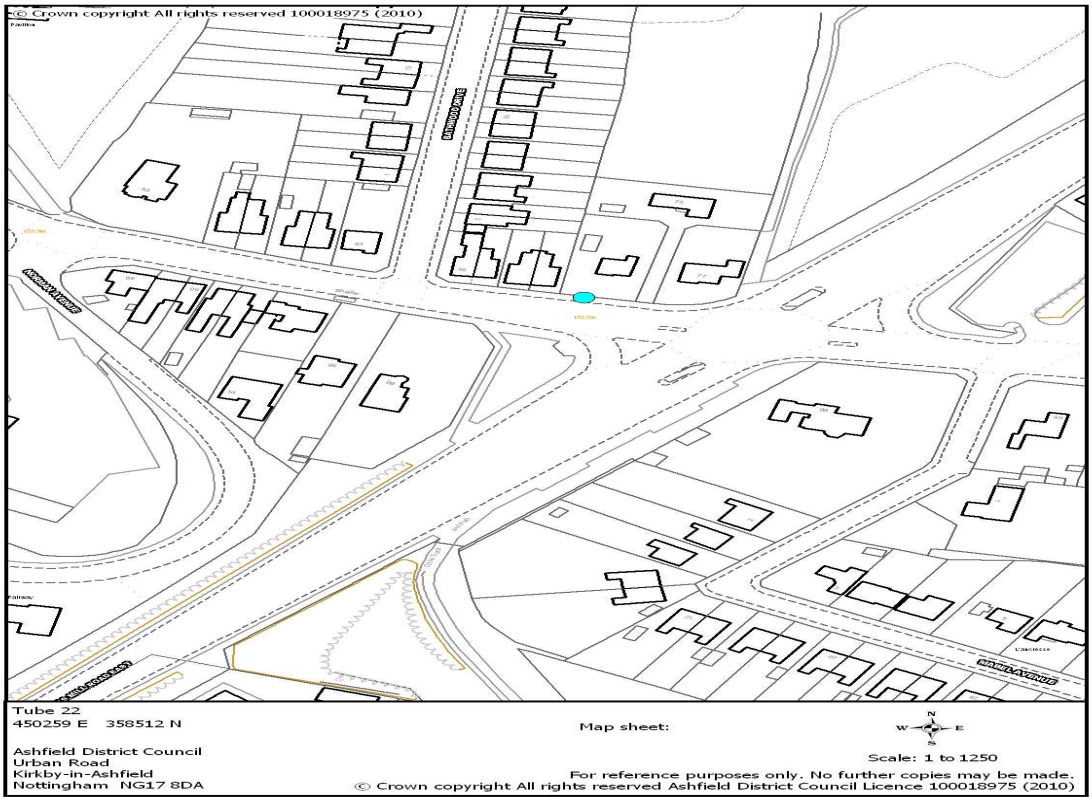
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 24.7µg/m^3 (Appendix A).

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.

Station Road, Sutton 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**.**

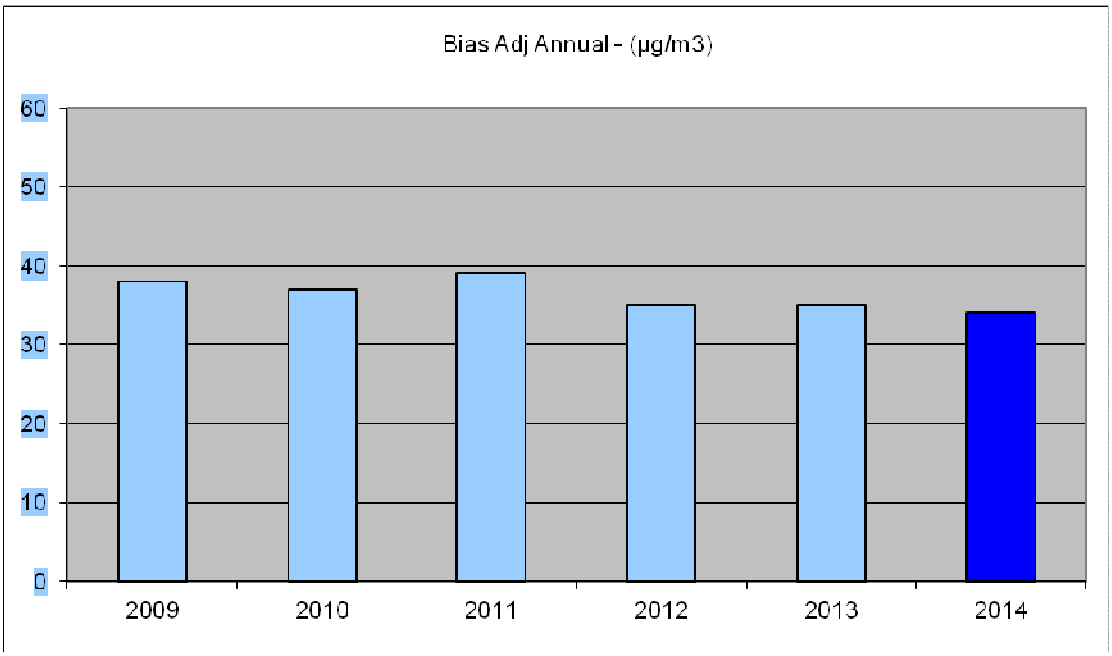
Location of Nitrogen Dioxide Diffusion Tube at Station Road, Sutton



Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
37.0	33.7

Single tube deployed not duplicate or triplicates

Figure 2.12 Trend Analysis Nitrogen Dioxide Diffusion Tube at Station Road, Sutton



Distance Fall-off Calculation

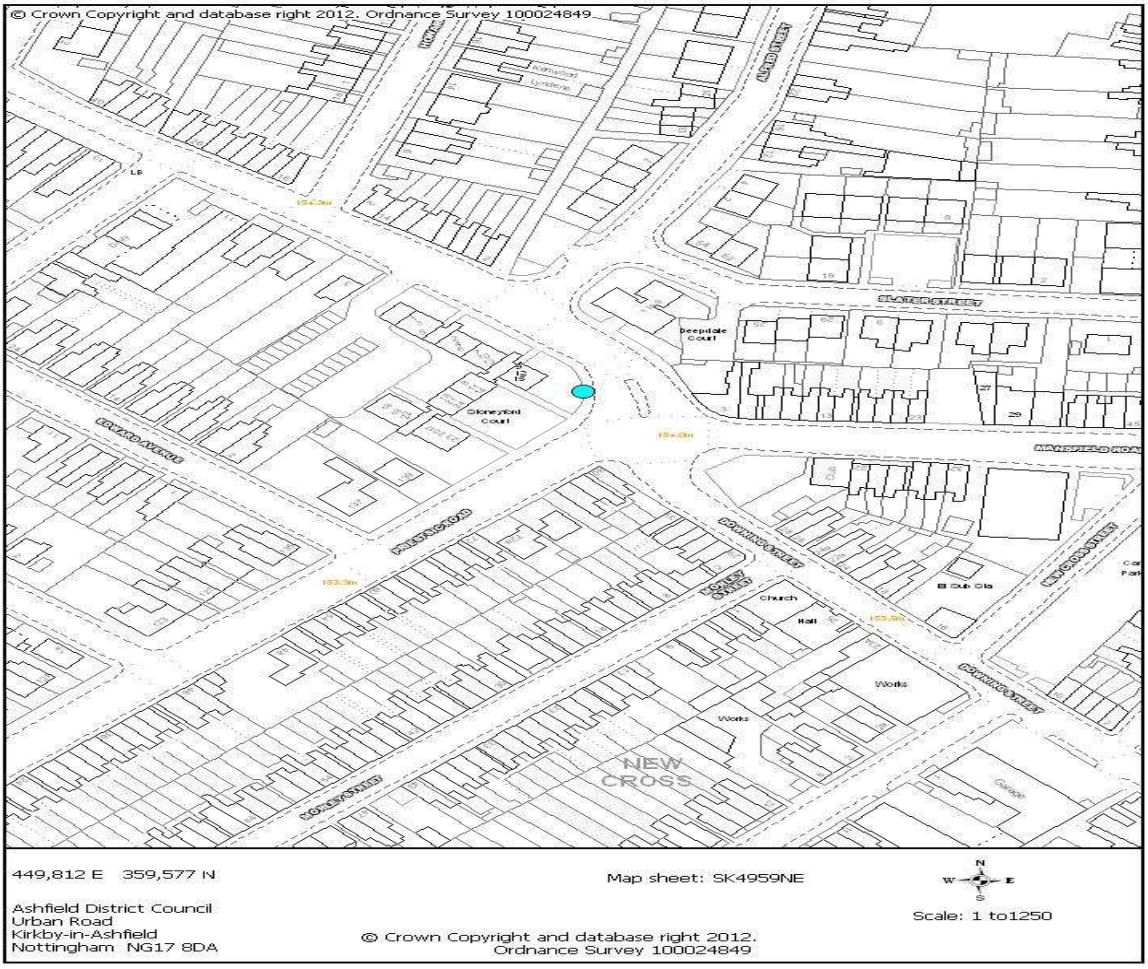
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 29.5 µg/m^3 (Appendix A).

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 Tubes 24,25 and 26

This is a roadside location adjacent to a busy box junction that is fed by three main roads the B6023 Priestsic 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.

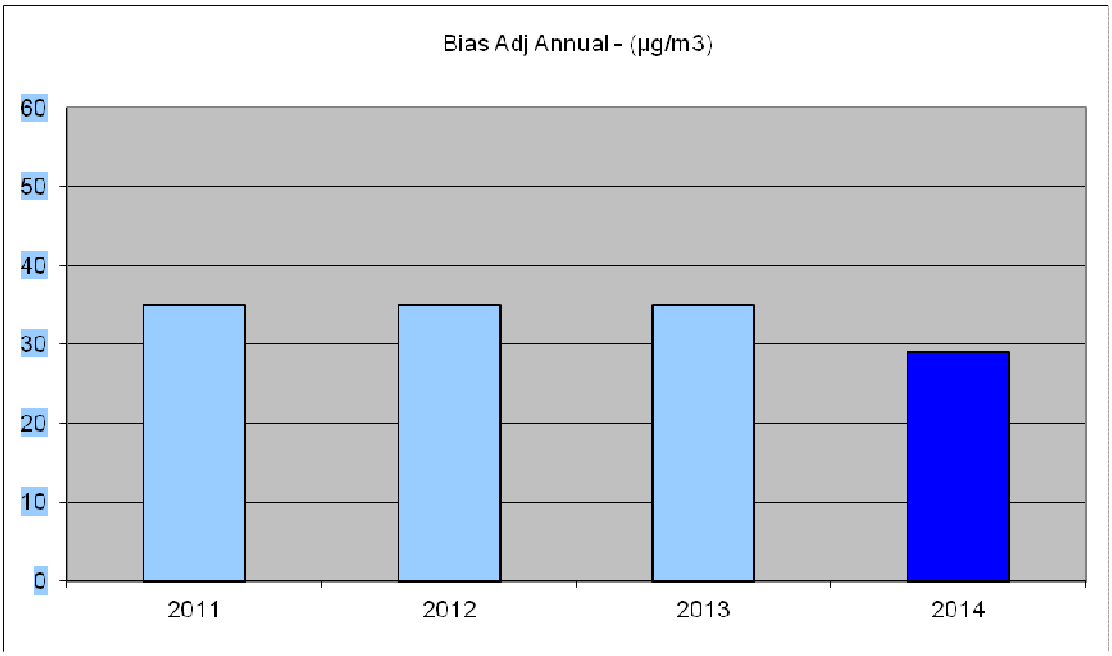
Location of Nitrogen Dioxide Diffusion Tube at Stoneyford Court, Sutton



Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
32.3	29.4

Triplicate tubes were deployed.

Figure 2.13 Trend Analysis Nitrogen Dioxide Diffusion Tube at Stoneyford Court , Sutton



Distance Fall-off Calculation

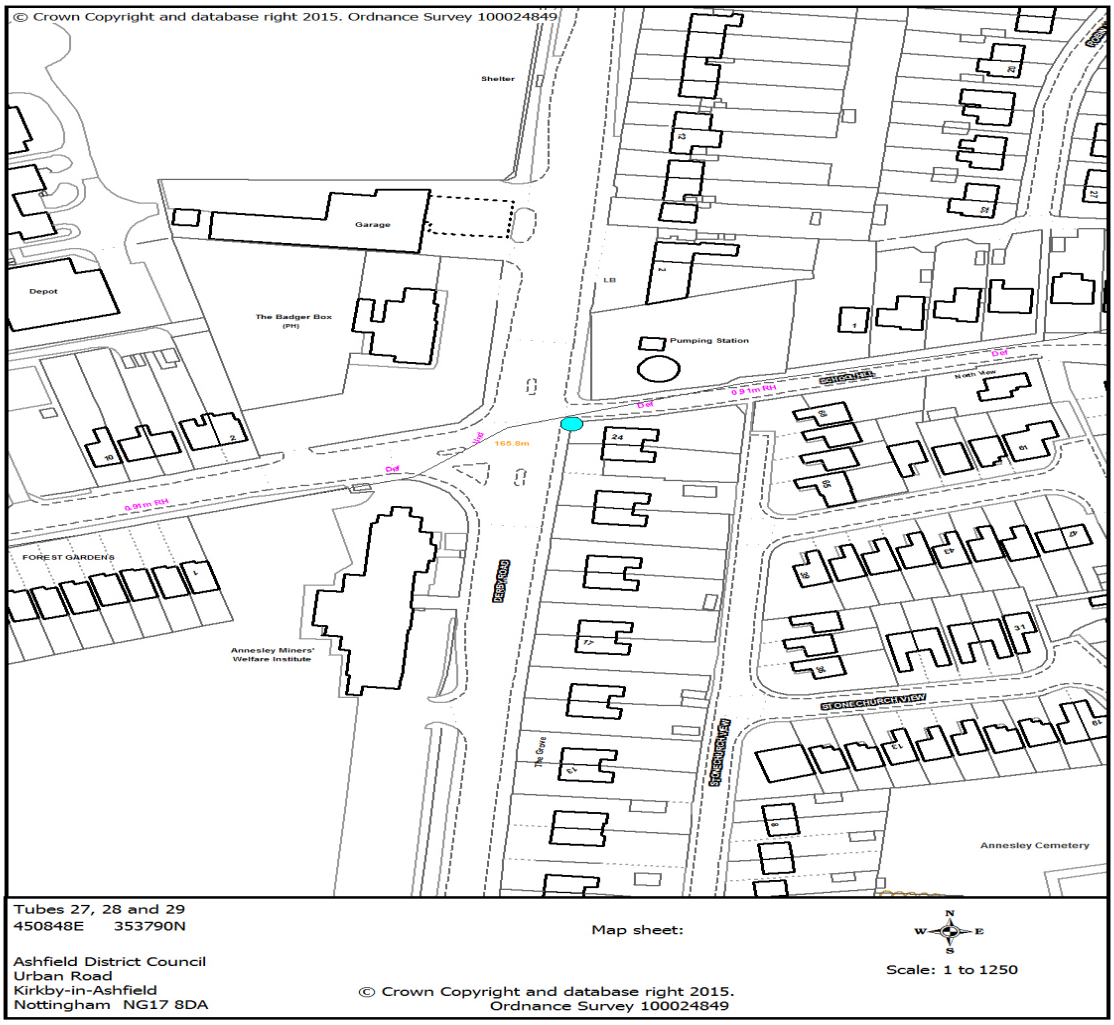
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 26.6µg/m^3 (Appendix A).

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

Badger Box Annesley Tubes 27,28 and 29

This is a roadside location. The diffusion tube is located adjacent to the A611 Derby Road at a box junction that is also fed by Forest Road and School Hill. The location experiences traffic coming from Mansfield, Sutton and Kirkby to access Hucknall, Notttingham and the M1 and like wise traffic coming off the M1 and from Hucknall and Nottingham to return to Mansfield, Sutton and Kirkby.

Location of Nitrogen Dioxide Diffusion Tube at the Badger Box, Annesley



Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
36.9	33.6

Triplicate tubes were deployed.

Distance Fall-off Calculation

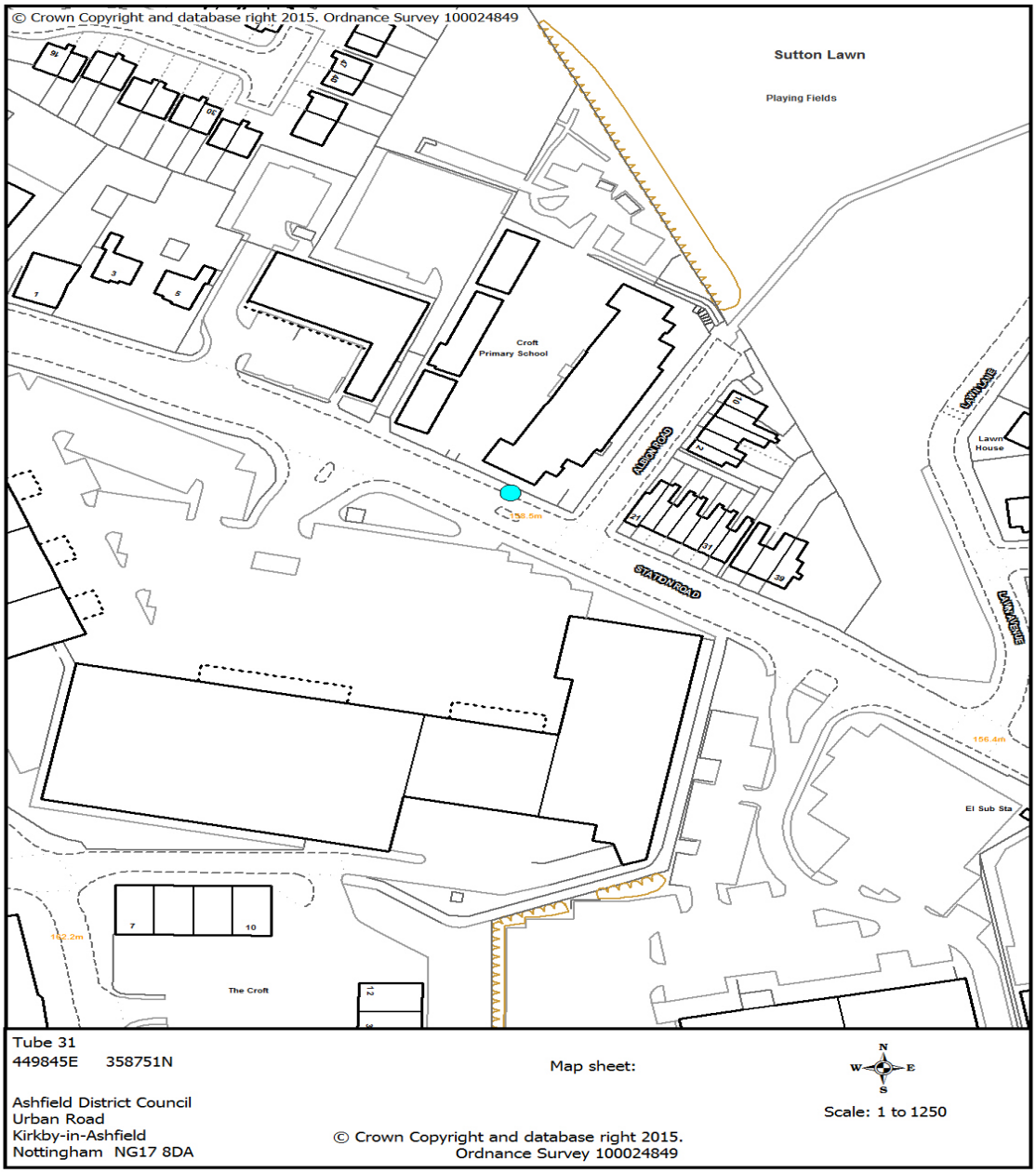
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 28.9µg/m^3 (Appendix A).

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

Croft Primary School, Station Road Sutton Tube 31

This is a Kerbside location. The diffusion tube is located immediately adjacent to Station Road which is a main road running through Sutton town centre. The Junction experiences traffic going to Mansfield, Kirkby and Hucknall. This location has a number of large commercial properties adjacent to the location.

Location of Nitrogen Dioxide Diffusion Tube at Croft Primary School



Measured Annual Mean For 2014 Based on 9 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
29.1	26.5

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 25.7µg/m^3 (Appendix A).

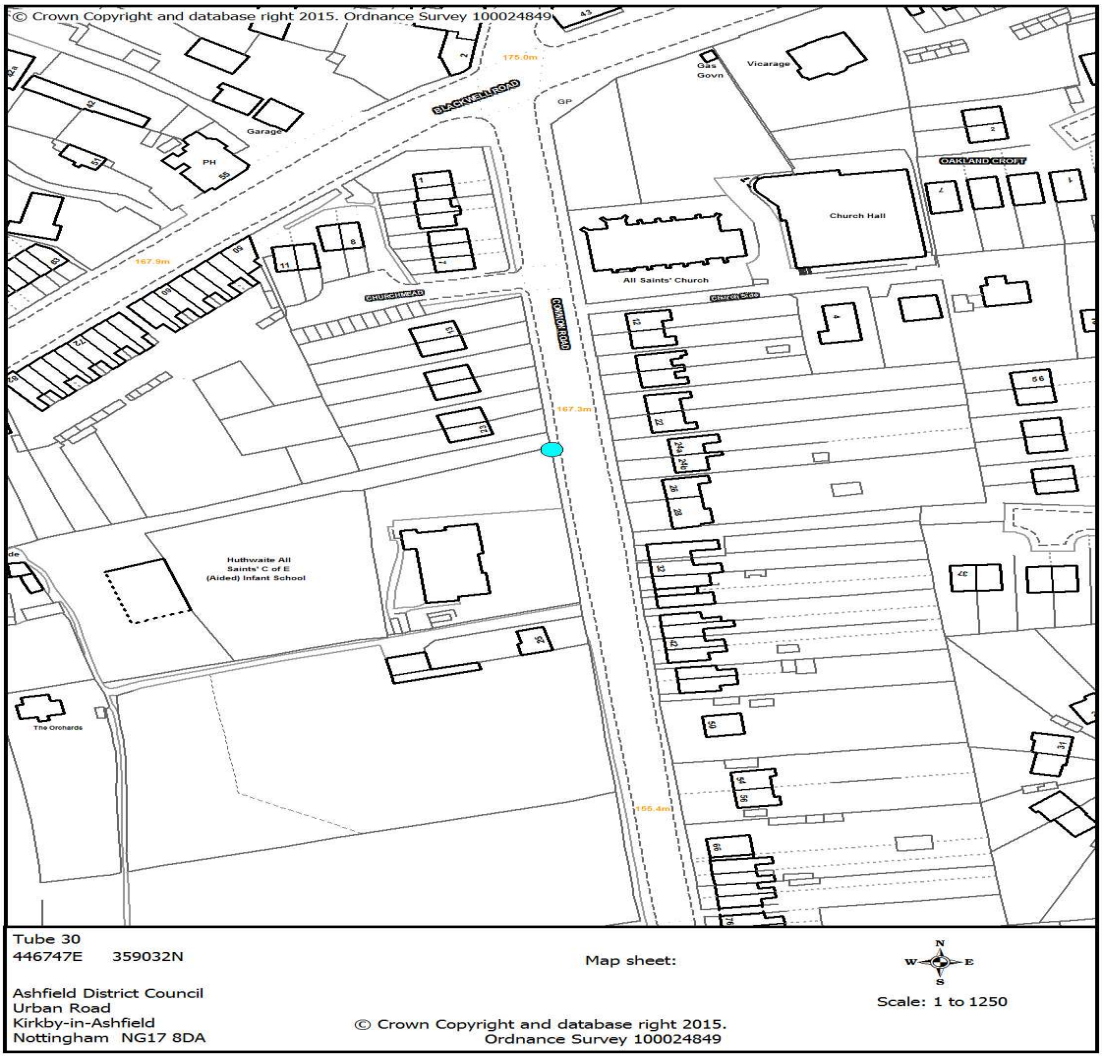
This value is below the annual mean objective of 40µg/m^3 and therefore there is no need to proceed to a detailed assessment for this location

Church of England School, Common Road Huthwaite

Tube 30

This is a roadside location. The diffusion tube is located adjacent to Common Road immediately before the junction with Blackwell Road. The location experiences traffic moving between Sutton, Huthwaite and the A38.

Location of Nitrogen Dioxide Diffusion Tube at Church of England School, Huthwaite.



Measured Annual Mean For 2014 Based on 8 months Data (µg/m^3)	Annualised Mean For 2014 Based on 8 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
24.2	24.7	22.5

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 21.6 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

Chapel Street, Kirkby in Ashfield Tube 33

This is a roadside location. The diffusion tube is located immediately adjacent to the Chapel Street. The location experiences traffic moving to Sutton and Selston from Kirkby and traffic moving from Kirkby to Sutton and Selston.

Location of Nitrogen Dioxide Diffusion Tube at Chapel Street School

Measured Annual Mean For 2014 Based on 2 months Data (µg/m^3)	Annualised Mean For 2014 Based on 8 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
40.1	30.6	27.9

Single tube deployed not duplicate or triplicates

Distance Fall-off Calculation

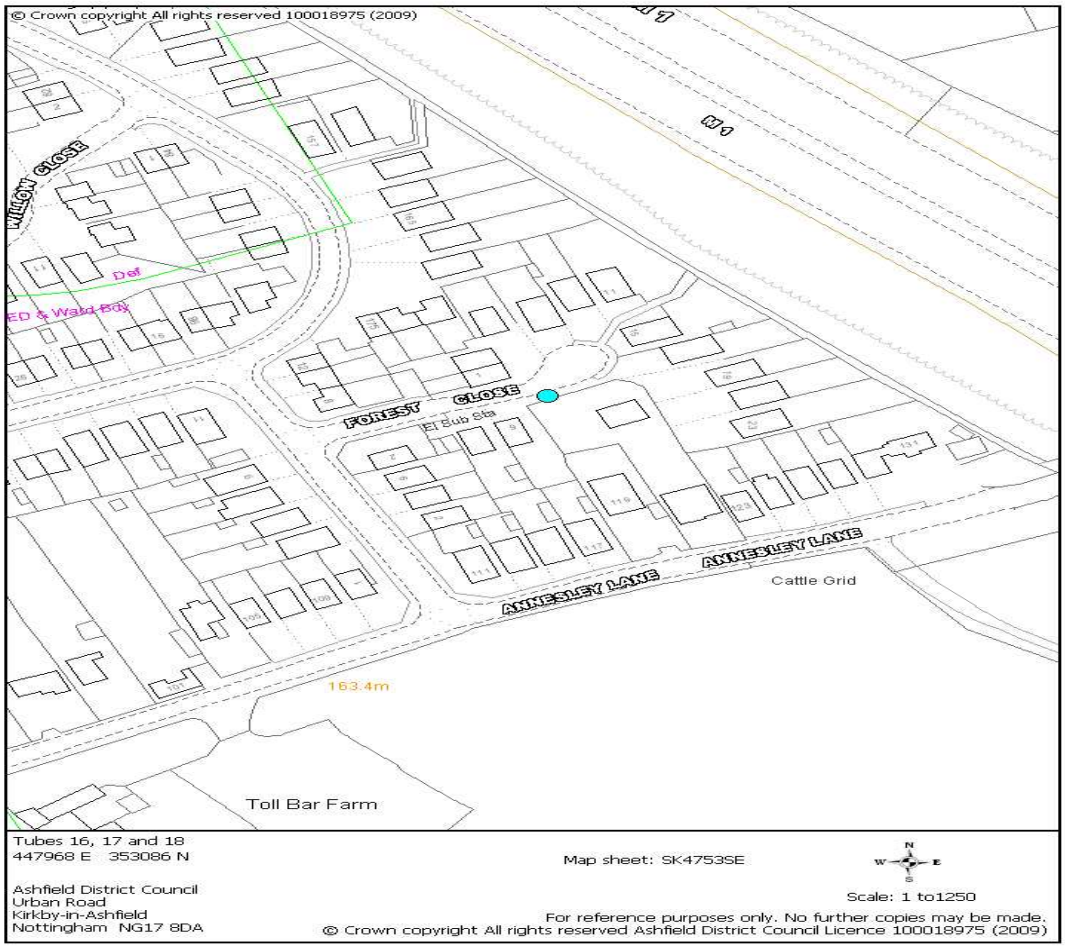
Undertaking the relevant calculation for distance fall-off, the resultant Nitrogen Dioxide level at the receptor is 25.0µg/m^3 (Appendix A).

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

DiffusionTube Sites Where There is No Distance Fall Off

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

Location of Nitrogen Dioxide Diffusion Tube Forest Close M1

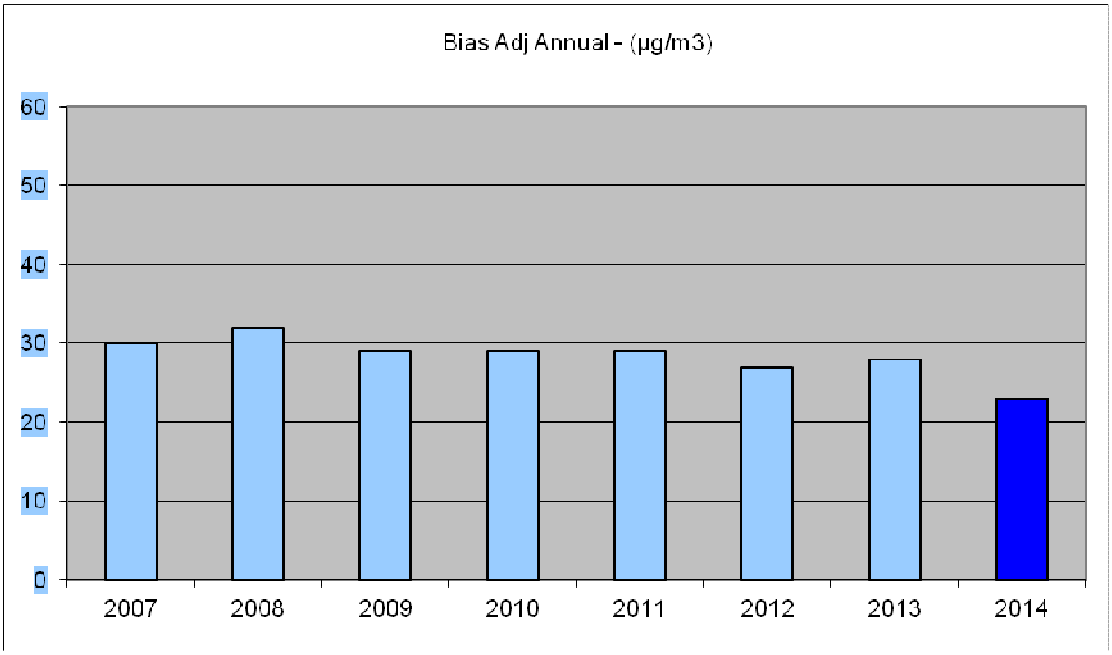


This is a roadside location. The diffusion tube is located in a residential estate adjacent to the M1.

Measured Annual Mean For 2014 Based on 8 months Data (µg/m^3)	Annualised Mean For 2014 Based on 8 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
28.2	24.8	22.6

Single Tubes were deployed for first eight months of monitoring and then monitoring stopped and a new location has replaced this site.

Figure 2.14 Trend Analysis Nitrogen Dioxide Diffusion Tube at Forest Close



Distance Fall-off Calculation

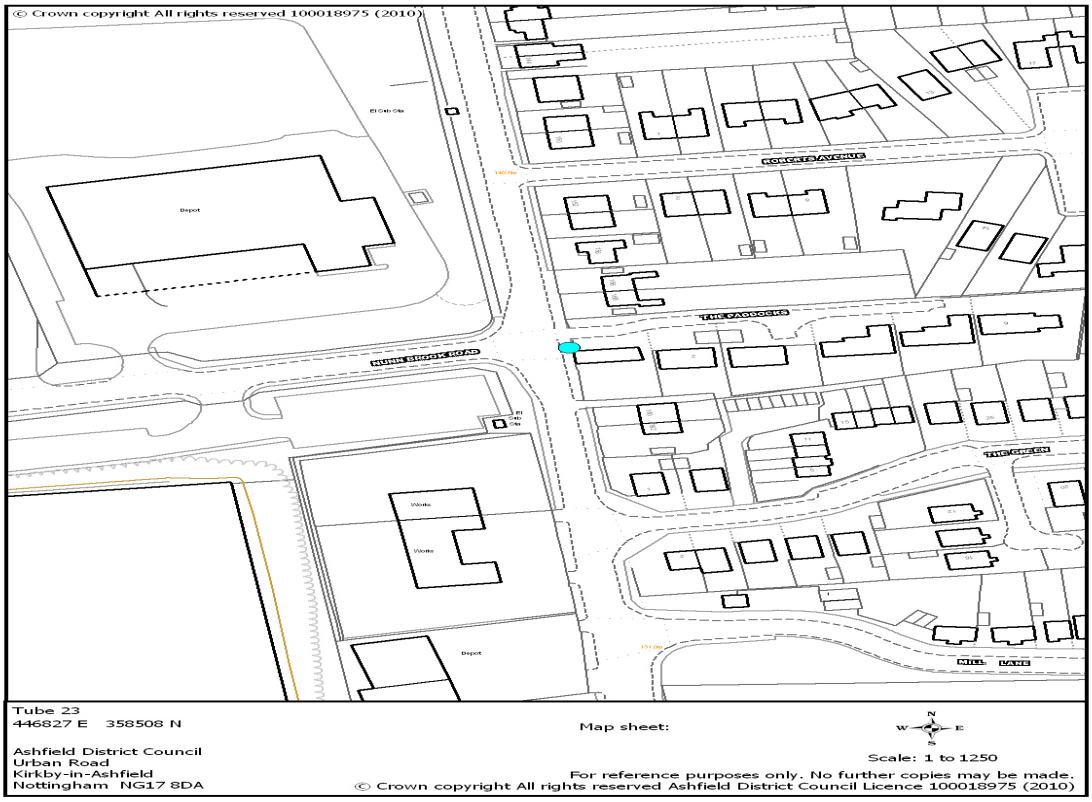
No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is 22.6 µg/m^3.

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.

Common Road, Huthwaite Tube 23

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

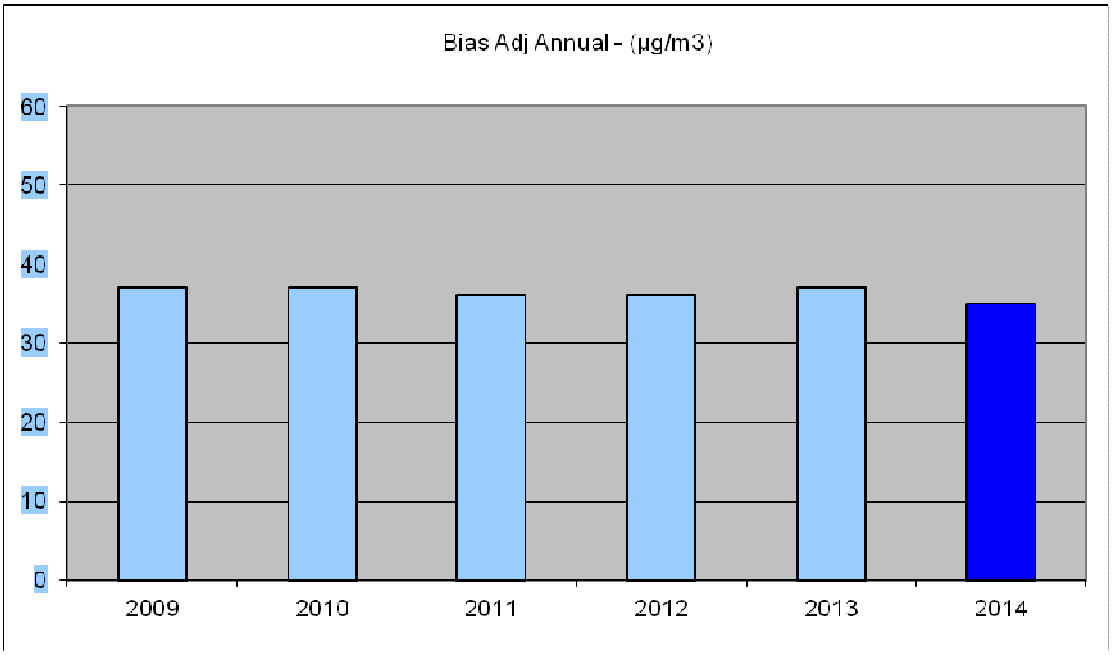
Location of Nitrogen Dioxide Diffusion Tube at Common Road Huthwaite



Measured Annual Mean For 2014 Based on 12 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
38.3	34.8

Single tube deployed not duplicate or triplicates

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



Distance Fall-off Calculation

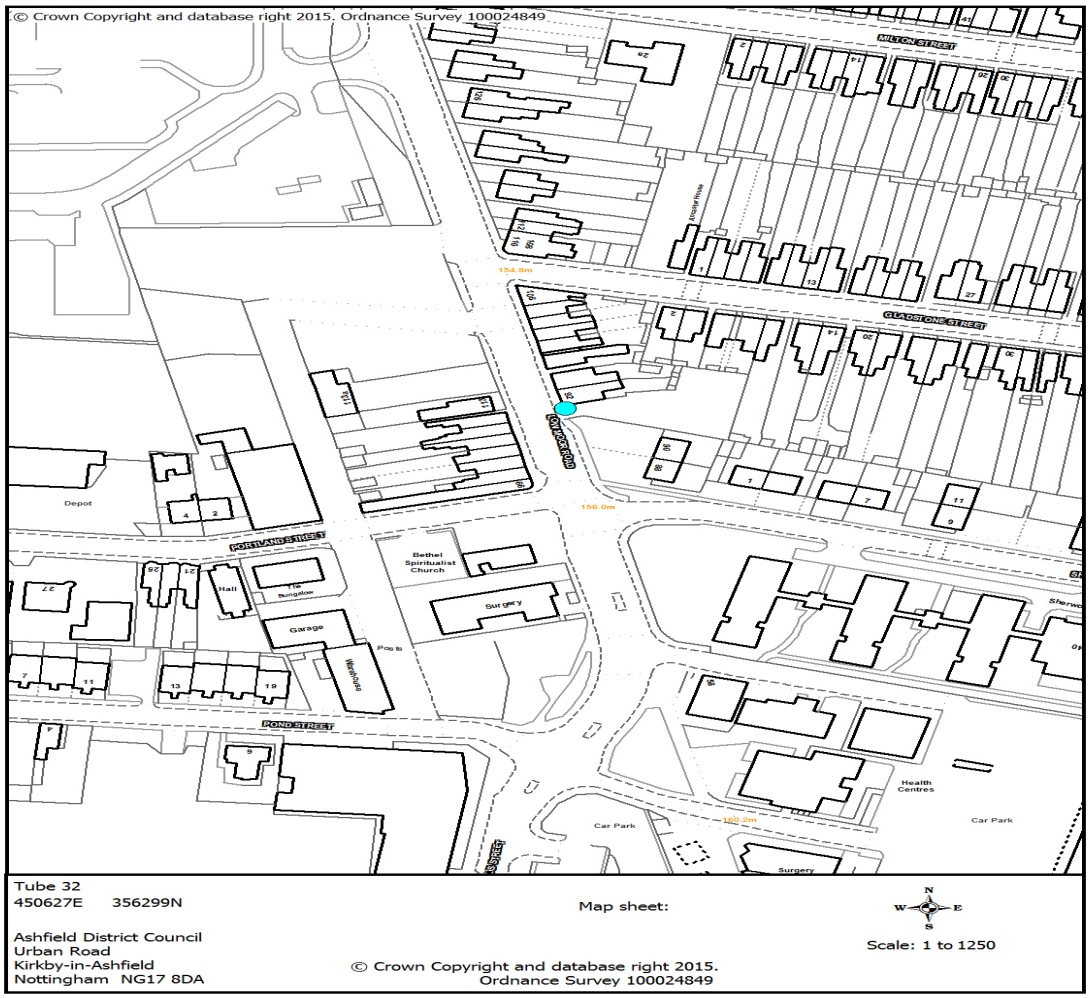
No distance fall-off calculation has been carried out as the diffusion tube is located directly at the nearest receptor. Therefore, the relevant annual mean value at the receptor is 34.8 µg/m^3.

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.

Lowmoor Road, Kirkby in Ashfield Tube 32

This is a roadside location. The diffusion tube is located immediately adjacent to the Lowmoor Road before and junction with Portland Street and Sherwood Street .The location experiences traffic moving to Kirkby from Sutton and Mansfield and from Kirkby to Sutton and Mansfield..

Location of Nitrogen Dioxide Diffusion Tube at Lowmoor Road Kirkby



Measured Annual Mean For 2014 Based on 4 months Data (µg/m^3)	Annualised Mean For 2014 Based on 4 months Data (µg/m^3)	Bias Adjusted Annual Mean (Factor 0.91) (µg/m^3)
30.1	32.1	29.2

Single tube deployed not duplicate or triplicates

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 29.2 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.

2.2.2 PM_{10}

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

2.2.3 Sulphur Dioxide

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

2.2.4 Benzene

No monitoring of Benzene is carried out within the district.

2.2.5 Other pollutants monitored

No other pollutants are monitored within the district.

2.2.6 Summary of Compliance with AQS Objectives

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.

Where no monitoring information is available for a particular site of interest, a screening assessment has been carried out utilising the latest version of Design Manual for Roads and Bridges (DMRB), Highways Agency.

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 (ADDT) 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 ADDT 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	ADDT 2010	ADDT 2013
Kirkby - Station Street	10750	12000
Kirkby – Lowmoor Road Southwell Lane to Portland Street	8850	10700
Sutton – Dalestorth Street Outram Street to skegby road	13350	15400
Sutton – Outram Street High Pavement to Asda Link Road	11500	11250
Sutton – Priestsic Road /Mansfield Road	19750	20150
Hucknall – South Street Annesley Rd/Baker St,Spring Street to South Street	7150	6055
Hucknall – High Street B6009 Watnall Road to Station Road	11600	11750

These sites were previously investigated as part of the 2009 and 2012 Updating and Screening Assessments and have been re -considered again as part of the 2015 Updating and Screening Assessment to ensure that they fully meet the required criteria.

Of the sites identified above and with the exception of South Street Hucknall which has shown a reduction in traffic movements all are 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

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 'unusual 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, A611 – Forest Road and the B6018 – B6020 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.

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 accidences along the existing roads with a significant change in flows.

Improved AADT traffic data for 2013 was compared with 2007 and 2010 AADT data to identify roads which had experienced an increase in traffic flow above 25%.

Table 3.3: Roads Assessed for Significantly Increased Traffic

Road Description	2007	2010	2013	% Increase
Alfreton Road: B 6027 Common Road, Huthwaite - B 6023	35150	33500	32950	N/A
Sutton Bypass B6023 Alfreton Road – B6018 Sutton Road	31250	29750	30800	N/A
Sutton Bypass B6018 Sutton Road – B6021 Oddicroft Lane	31200	29700	29250	N/A
Sutton Bypass B6021 Oddicroft Lane – B6022 Station Road	28300	27000	26700	N/A
Sutton BypassB6022 Station Road – B6139 Coxmoor Road	29850	28900	28500	N/A
Sutton BypassB6139 Coxmoor Road – A617 MARR	28600	27200	26750	N/A
Sutton BypassA617 MARR – A617 Kings Mill Junction	27100	26300	26500	N/A
Sutton Road Mansfield A617 Kings Mill Junction – Wilmore Way	N/A	26400	24300	N/A
A60 Mansfield : A611 Derby Road-Cauldwell Road	12150	12300	12350	1.6
Mansfield Road Underwood B600 Willey Lane – B600 Alfreton Road	13500	13300	13300	0.01
Mansfield Road Underwood B600 Alfreton Road – M1Junction 27	10750	10600	10150	N/A
Mansfield Road M1Junction 27 A611 Annesley	21400	23350	24450	14.0
Derby Road B6139 Coxmoor Road – B6020 Diamond Avenue	16950	16600	14100	N/A
Derby Road B6020 Diamond Avenue – B6021 Annesley Woodhouse	18650	18350	18450	N/A
Derby Road B6021 Annesley Woodhouse – Forest Road	23500	22300	22250	N/A
Derby Road B6021 Annesley Woodhouse – Annesley Cutting	19800	19450	19500	N/A
Derby Road Annesley Cutting – A608 Mansfield Road	21300	23200	23300	9.0
A608 Mansfield Road – Hucknall Road	21550	19950	20000	N/A
Annesley Road: Hucknall Road – B6011Annesley Road	21700	20950	21350	N/A
Hucknall Bypass B6011 Annesley Read – B6009 Watnall Road	14450	14050	15100	4.5
Hucknall Bypass B6009 Watnall Road – Nottingham Road	17350	17400	16200	N/A
Nottingham Road Hucknall Bypass – Moor	27800	27000	26100	N/A

Bridge Bulwell				
Alfreton Road Derbyshire Boundary – B6027 Common Road Huthwaite	36200	38200	37050	2.3
M1 Junction 28 (A38) – 27 (A607)	113700	114900	112500	N/A
Mansfield Road M1 Junction 27 Willow Drive	N/A	24650	25750	5.3
Mansfield Road Willow Drive Osier Drive	N/A	20700	21600	4.3
Marr Mansfield A38 Sutton Bypass – Hamilton Road	18500	18500	18850	1.9
Marr Mansfield Hamilton Road – A60 Nottingham Road	17550	19100	19100	8.8
B600 Watnall-Nabbs Lane Hucknall	14400	12900	12950	N/A
Nabbs Lane Hucknall – A611 Hucknall Bypass	22750	21450	18050	N/A
Annesley Road A611 Hucknall Bypass – C221 Annesly Road	14100	13500	14500	2.8
Mansfield Road, Skegby - New Lane-Forest Road	11600	10300	10350	N/A
Mansfield Road Dalestorth, Dalestorth Road To A617 Beck Lane	15600	13850	13850	N/A
A38 Sutton Bypass – B6020 Chapel Street Kirkby	19350	18450	17950	N/A
B6020 Chapel Street Kirkby – B6019	N/A	12150	11850	N/A
B6018 Southwell Lane Kirkby In Ashfield	N/A	11950	12850	
Southwell Lane Kirkby In Ashfield –B6021 Portland Street	N/A	12750	11500	N/A
Station Street K In A – Portland Street - Kingsway	11350	10750	10900	N/A
Kirkby Road B6139 Coxmoor Road – A60 Ravenshead	11350	10750	No Data	N/A
Penny Emma Way – A38 Sutton Bypass Lowmoor Road	11650	11100	10850	N/A
Kirkby Folly Road –B0622 Station Road – Penny Emma Way	13550	12900	12550	N/A
Lowmoor Road – Penny Emma Way-Southwell Lane	15500	14750	14400	N/A
Newark Road Sutton In Ashfield – Kirkby Folly – B6139 Coxmoor Road	15250	14500	14150	N/A
Alfreton Road A38 Fulwood- B6026 Huthwaite Road	N/A	10750	10450	N/A
Lammas Road Sutton In Ashfield – B6026 Huthwaite Road Hack lane	17250	16450	16050	N/A
Lammas Road Sutton In Ashfield – Hack lane Forest Street	15750	15000	18300	N/A
Priestsic Road – Forest Street -Asda Link Road	N/A	19400	20150	N/A
Priest sic Road – Asda Link Road – B6028 Stoneyford Road	23100	19750	16700	N/A
Mansfield Road Sutton In Ashfield – B6028	15300	13750	13400	N/A

Stoneyford Road –Outram S				
Mansfield Road Sutton In Ashfield Outram St – Skegby Road	N/A	13750	15400	N/A
Mansfield Road Sutton In Ashfield Skegby Road –Unwin Road	11450	11100	11250	N/A
Mansfield Road Sutton In Ashfield Unwin Rd A38 Kingmill	N/A	15200	14850	N/A
Market Street Huthwaite – B6026	12800	12550	11100	N/A
Common Road – Nunn Brook Road- A38	8000	10450	9550	23.0
Coxmoor Road Sutton in Ashfield Hamilton Rd B6022 Newark Road	16000	15250	14850	N/A
Coxmoor Road B6022 Newark Road – A611 Derby Road	11300	10000	9450	N/A
Hamilton Road Sutton In Ashfield B6139 Coxmoor Road – A617 Marr	11350	10850	10600	N/A
Hamilton Road - A617 Marr – Oakham Business Park	12600	12050	11750	N/A
Kirkby Road – High Pavement – A38 Sutton Bypass	13650	12750	13200	N/A
High Street Hucknall: B6009 Wagnall Road –Station Road	12100	11600	11750	N/A
Portland Street Hucknall - Ashgate Road- Beardall Street	12300	11600	11700	N/A
Nottingham Road – Beardall Street –A611 hucknall Bypass	13250	12500	12600	N/A

The comparison of the improved 2013 traffic flows compared with 2007 and 2010 figures as highlighted the A611 Derby Road, The Marr Road and Common Road, Nunn Brook Road as showing a significant increase but not a twenty five percent Increase. However Common Road, Nunn Brook Road is already being monitored with diffusion tubes.

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 (Diesil 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 no previous air quality assessment, have been identified, either within the district or with 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

It has been identified that there may be potential exceedences of the PM_{10} objectives linked to poultry farms. Consequently, Ashfield District Council is required to review the district to identify any farms housing in excess of: 4000,000 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 20MW 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 Plants 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 PM10 concentrations that are close to or above the relevant objectives.

Since the 2009 and 2012 Updating and Screening Assessment 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 and 2012 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 as 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 there is unlikely to be exceedences of the SO_2 and PM_{10} Objectives. 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'.

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 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

No automatic monitoring was undertaken by Ashfield District Council during 2014.

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, road and other transport sources, industrial and commercial sources, domestic and commercial biomass and fugitive emissions would have a significant detrimental effect on local 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.

9 References

None Used

Appendices

Appendix A: QA/QC Data

Factors from Local Co- location Studies

No data was available to undertake a co – location study

Diffusion Tube Bias Adjustment Factors

The national database was used to obtain the relevant bias adjustment factor for this report. A bias adjustment factor of 0.91 was used in this report.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/15

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 spreadsheet 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 2015

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:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	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[5] 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[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2014		Overall Factor[3] (21 studies)				Use		0.91

Discussion of Choice of factor Used

Not Applicable

PM Monitoring Adjustment

Not Applicable

Short-term to Long-term data Adjustment

The diffusion tube results for Lowmoor Road and Chapel Street Kirkby, Forest close and Huthwaite Church of England School, Common Road were annualised as on Box 3.2 of TH(09).

Lowmoor Road

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield Loudsley Green	20.52	18.71	1.096
Nottingham Centre	34.05	32.54	1.046
Average (Ra)			1.071

Huthwaite Church of England School

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield Loudsley Green	20.52	20.3	1.010
Nottingham Centre	34.05	32.9	1.034
Average (Ra)			1.022

Chapel Street

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield Loudsley Green	20.52	29.33	0.699
Nottingham Centre	34.05	41.00	0.830
Average (Ra)			0.764

Forest Close

Long term site	Annual mean	Period mean	Ratio (Am/Pm)
Chesterfield Loudsley Green	20.52	24.60	0.834
Nottingham Centre	34.05	36.90	0.922
Average (Ra)			0.878

QA/QC of Automatic Data

Not Applicable

QA/QC of Diffusion Tube Monitoring

Diffusion tube precision and WASP results were discussed in the main body of the text.

Monthly Mean Data

Naggs Head

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	38.88	38.20	38.86	38.65	
Feb	29/01/2014 - 05/03/2014	41.63	39.96	38.58	40.06	
March	05/03/2014 - 02/04/2014	33.08	36.19	34.89	34.72	
April	02/04/2014 - 30/04/2014	34.9	30.09	32.68	32.56	
May	30/04/2014 - 28/05/2014	29.94	29.95	30.88	30.26	
June	28/05/2014 - 02/07/2014	27.18	26.25	25.54	26.32	
July	02/07/2014 - 01/08/2014	27.67	26.64	28.24	27.52	
August	01/08/2014 - 27/08/2014	26.32	27.43	27.4	27.05	
September	27/08/2014 - 01/10/2014	30.84	28.1	30.18	29.71	
October	01/10/2014 - 29/10/2014	33.42	33.99		33.71	
		10			320.54	**32.1**

Outram Street

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 29/01/2014	33.33			33.33	
Feb	28/01/2014 - 05/03/2014	33.89			33.89	
March	05/03/2014 - 02/04/2014	37.08			37.08	
April	02/04/2014 - 29/04/2014	32.15			32.15	
May	29/04/2014 - 28/05/2014	27.81			27.81	
June	28/05/2014 - 02/07/2014	27.57			27.57	
July	02/07/2014 - 01/08/2014	28.4			28.40	
August	01/08/2014 - 26/08/2014	28.32			28.32	
September	26/08/2014 - 01/10/2014	36.42			36.42	
October	01/10/2014 - 30/10/2014	32.32			32.32	
November	30/10/2014 - 03/12/2014	34.33			34.33	
December	03/12/2014 - 07/01/2015	30.63			30.63	
		12			**382.25**	**31.9**

Dalestorth

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/01/2014	47.25			47.25	
Feb	28/01/2014 - 05/03/2014	61.82			61.82	
March	05/03/2014 - 02/04/2014	39.65			39.65	
April	02/04/2014 - 29/04/2014	36.20			36.20	
May	29/04/2014 - 28/05/2014	34.57			34.57	
June	28/05/2014 - 02/07/2014	30.29			30.29	
July	02/07/2014 - 01/08/2014	28.94			28.94	
August	01/08/2014 - 26/08/2014	21.94			21.94	
September	26/08/2014 - 01/10/2014	32.99			32.99	
October	01/10/2014 - 30/10/2014	38.94			38.94	
November	30/10/2014 - 03/12/2014	40.03			40.03	
December	03/12/2014 - 07/01/2015	27.15			27.15	
		12			439.77	**36.6**

Croft Primary, Sutton Road

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
April	29/04/2014 - 28/05/2014	26.37			26.37	
May	28/05/2014 - 02/07/2014	24.78			24.78	
June	28/05/2015 - 02/07/2014	24.78			24.78	
July	02/07/2014 - 01/08/2014	26.59			26.59	
August	01/08/2014 - 26/08/2014	25.22			25.22	
September	26/08/2014 - 01/10/2014	31.33			31.33	
October	01/10/2014 - 30/10/2014	34.27			34.27	
November	30/10/2014 - 03/12/2014	34.91			34.91	
December	03/12/2014 - 07/01/2015	33.53			33.53	
		9			261.78	**29.1**

A38

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/12/2014	23.48	27.42	25.42	25.44	
Feb	28/01/2014 - 04/03/2014	28.34	29.96	30.21	29.50	
March	04/03/2014 - 01/04/2014	32.77	31.46	32.85	32.36	
April	02/04/2014 - 29/04/2014	32.68	31.99	33.28	32.65	
May	29/04/2014 - 27/05/2014	29.40			29.40	
June	27/05/2014 - 01/07/2014	31.57			31.57	
July	01/07/2014 - 29/07/2014	32.72			32.72	
August	29/07/2014 - 26/08/2014	28.44			28.44	
September	26/08/2014 - 01/10/2014	38.82			38.82	
October	01/10/2014 - 29/10/2014	27.35			27.35	
November	28/10/2014 - 02/12/2014	32.34			32.34	
December	02/12/2014 - 06/01/2015	27.85			9.28	
		12			349.88	**29.2**

Church Hill

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/01/2014	39.34	46.28	34.97	40.20	
Feb	28/01/2014 - 04/03/2014	40.57	43.03	42.54	42.05	
March	04/03/2014 - 01/04/2014	41.50	41.43	43.15	42.03	
April	01/04/2014 - 29/04/2014	38.05	41.22	40.92	40.06	
May	29/04/2014 - 27/05/2014	40.28	42.48	41.22	41.33	
June	27/05/2014 - 01/07/2014	40.55	41.84	39.87	40.75	
July	01/07/2014 - 29/07/2014	39.79	43.19	45.54	42.84	
August	29/07/2014 - 26/08/2014	31.68	36.95	33.31	33.98	
September	26/08/2014 - 01/10/2014	24.00	46.31	42.28	44.29	
October	01/10/2014 - 29/10/2014	39.44	41.83	45.22	42.16	
November	29/10/2014 - 03/12/2014	39.37	53.8	45.66	69.42	
December	03/12/2014 - 07/01/2015	32.17	39.99	36.29	36.15	
		12			527.26	**42.9**

Pinxton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	41.3			41.3	
Feb	29/01/2014 - 05/03/2014	39.32			39.32	
March	05/03/2014 - 02/04/2014	31.89			31.89	
April	02/04/2014 - 30/04/2014	22.87			22.87	
May	30/04/2014 - 28/05/2014	31.09			31.09	
June	28/05/2014 - 02/07/2014	24.49			24.49	
July	02/07/2014 - 29/07/2014	26.38			26.38	
August	29/07/2014 - 27/08/2014	28.92			28.92	
September	27/08/2014 - 01/10/2014	28.32			28.32	
October	01/10/2014 - 29/10/2014	37.18			37.18	
November	29/10/2014 - 03/12/2014	33.68			33.68	
December	03/12/2014 - 07/01/2015	32.74			32.74	
		12			378.18	**31.5**

Selston

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	30.75			30.75	
Feb	29/01/2014 - 05/03/2014	29.61			29.61	
March	05/03/2014 - 02/04/2014	30.73			30.73	
April	02/04/2014 - 30/04/2014	25.23			25.23	
May	30/04/2014 - 28/05/2014	24.6			24.6	
June	28/05/2014 - 02/07/2014	23.5			23.5	
July	02/07/2014 - 29/07/2014				0	
August	29/07/2014 - 27/08/2014				0	
September	27/10/2014 - 01/10/2014	25.23			25.23	
October	01/10/2014 - 29/10/2014	26.79			26.79	
November	29/10/2014 - 03/12/2014	32.32			32.32	
December	03/12/2014 - 07/01/2015	27.19			27.19	
		10			275.95	**27.6**

Forest Close

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	25.9			25.90	
Feb	29/01/2014 - 05/03/2014	28.41			28.41	
March	05/03/2014 - 02/04/2014	30.73			30.73	
April	02/04/2014 - 30/04/2014	27.17			27.17	
May	30/04/2014 - 28/05/2014	26.36			26.36	
June	28/05/2014 - 02/07/2014	40.83			40.83	
July	02/07/2014 - 29/07/2014	26.33			26.33	
August	29/07/2014 - 27/08/2014	19.49			19.49	
		8			225.22	**28.2**

Ashgate Road Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	36.57			36.57	
Feb	29/01/2014 - 05/03/2014	37.64			37.64	
March	05/03/2014 - 02/04/2014	24.61			24.61	
April	02/04/2014 - 30/04/2014	25.75			25.75	
May	30/04/2014 - 28/05/2014	21.15			21.15	
June	28/05/2014 - 02/07/2014	18.65			18.65	
July	02/07/2014 - 01/08/2014	20.85			20.85	
August	01/08/2014 - 29/08/2014	22.82			22.82	
September	29/08/2014 - 01/10/2014	23.69			23.69	
October	01/10/2014 - 30/10/2014	31.63			31.63	
November	30/10/2014 - 03/12/2014	33.08			33.08	
December	03/12/2014 - 07/01/2015	29.83			29.83	
		12			326.27	**27.2**

High Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	36.19			36.19	
Feb	29/01/2014 - 05/03/2014	43.61			43.61	
March	05/03/2014 - 02/04/2014	39.99			39.99	
April	02/04/2014 - 30/04/2014	41.46			41.46	
May	30/04/2014 - 28/05/2014	35.92			35.92	
June	28/05/2014 - 02/07/2014	30.23			30.23	
July	02/07/2014 - 01/08/2014	33.18			33.18	
August	01/08/2014 - 29/08/2014	28.79			28.79	
September	29/08/2014 - 01/10/2014	28.09			28.09	
October	01/10/2014 - 30/10/2014	36.68			36.68	
November	30/10/2014 - 03/12/2014	39.27			39.27	
December	03/12/2014 - 07/01/2015	44.94			44.94	
		12			438.35	**36.5**

Beardall Street Hucknall

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 29/01/2014	36.69			36.69	
Feb	29/01/2014 - 05/03/2014	31.94			31.94	
March	05/03/2014 - 02/04/2014	28.10			28.1	
April	02/04/2014 - 30/04/2014	26.64			26.64	
May	30/04/2014 - 28/05/2014	20.43			20.43	
June	28/05/2014 - 02/07/2014	17.50			17.5	
July	02/07/2014 - 01/08/2014	20.66			20.66	
August	01/08/2014 - 29/08/2014	19.50			19.5	
September	29/08/2014 - 01/10/2014	26.80			26.8	
October	01/10/2014 - 30/10/2014	28.47			28.47	
November	30/10/2014 - 03/12/2014	38.74			38.74	
December	03/12/2014 - 07/01/2015	32.71			32.71	
		12			328.18	**27.3**

Station Road Sutton

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/01/2014	43.37			43.37	
Feb	28/01/2014 - 05/03/2014	47.27			47.27	
March	05/03/2014 - 02/04/2014	36.20			36.2	
April	02/04/2014 - 29/04/2014	39.73			39.73	
May	29/04/2014 - 28/05/2014	37.92			37.92	
June	28/05/2014 - 02/07/2014	30.23			30.23	
July	02/07/2014 - 01/08/2014	29.80			29.8	
August	01/08/2014 - 29/08/2014	31.28			31.28	
September	26/08/2014 - 01/10/2014	31.21			31.21	
October	01/10/2014 - 30/10/2014	39.73			39.73	
November	30/10/2014 - 03/12/2014	43.37			43.37	
December	03/12/2014 - 07/01/2015	33.97			33.97	
		12			444.08	**37.0**

Common Road Huthwaite

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/01/2014	46.26			46.26	
Feb	28/01/2014 - 05/03/2014	37.57			37.57	
March	04/03/2014 - 01/04/2014	40.15			40.15	
April	01/04/2014 - 29/04/2014	39.38			39.38	
May	29/04/2014 - 27/05/2014	38.15			38.15	
June	27/05/2014 - 01/07/2014	30.94			30.94	
July	01/07/2014 - 29/07/2014	36.54			36.54	
August	29/07/2014 - 26/08/2014	34.34			34.34	
September	26/08/2014 - 01/10/2014	38.97			38.97	
October	01/10/2014 - 28/10/2014	41.79			41.79	
November	28/10/2014 - 02/12/2014	37.92			37.92	
December	02/12/2014 - 06/01/2015	37.22			37.22	
		12			459.23	**38.3**

Stoneyford Court

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	30/12/2013 - 28/01/2014	38.74			38.74	
Feb	28/01/2014 - 05/03/2014	37.32			37.32	
March	05/03/2014 - 02/04/2014	37.45			37.45	
April	02/04/2014 - 29/04/2014	38.66			38.66	
May	29/04/2014 - 28/05/2014	30.92			30.92	
June	28/05/2014 - 02/07/2014	28.15			28.15	
July	02/07/2014 - 01/08/2014	30.6			30.60	
August	01/08/2014 - 26/08/2014	28.73			28.73	
September	26/08/2014 - 01/10/2014	29.71			29.71	
October	01/10/2014 - 30/10/2014	38.04			38.04	
November	30/10/2014 - 03/12/2014	39.94			39.94	
December	03/12/2014 - 07/01/2015	27.43			9.14	
		12			387.40	**32.3**

Badger Box

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
Jan	31/12/2013 - 28/01/2014	37.75	46.76	39.1	41.20	
Feb	28/10/2014 - 02/12/2014	38.55	37.97	39.96	38.83	
March	05/03/2014 - 02/04/2014	38.15	38.7	39.61	38.82	
April	02/04/2014 - 30/04/2014	39.31	37.77	32.29	36.46	
May	30/04/2014 - 28/05/2014	36.61	37.06	37.27	36.98	
June	28/05/2014 - 02/07/2014	32.29	31.24	32.63	32.05	
July	02/07/2014 - 01/08/2014	36.92	35.43	36.73	36.36	
August	01/08/2014 - 29/08/2014	32.11	30.14	32.02	31.13	
September	29/08/2014 - 01/10/2014	38.95	38.63	35.72	37.77	
October	01/10/2014 - 30/10/2014	38.78	35.16	40.29	38.08	
November	30/12/2014 - 03/12/2014	37.33	34.19	34.7	35.41	
December	03/12/2014 - 07/01/2015	40.68	35.85	42.04	39.52	
		12			442.60	**36.9**

Huthwaite C of E

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
May	29/04/2014 - 27/05/2014	17.23			17.23	
June	27/05/2014 - 01/07/2014	20.49			20.49	
July	01/07/2014 - 29/07/2014	18.8			18.80	
August	29/07/2014 - 26/08/2014	19.09			19.09	
September	26/08/2014 - 01/10/2014	29.38			29.38	
October	01/10/2014 - 28/10/2014	27.66			27.66	
November	28/10/2014 - 02/12/2014	36.4			36.40	
December	02/12/2014 - 06/01/2015	24.82			24.82	
		8			193.87	**24.2**

Lowmoor Road

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
September	27/08/2014 - 01/10/2014	25.74			25.74	
October	01/10/2014 - 29/10/2014	29.53			29.53	
November	29/10/2014 - 03/12/2014	34.84			34.84	
December	03/12/2014 - 07/01/2015	30.13			30.13	
		4			120.24	**30.1**

Chapel Street

Month	Date	Tube 1	Tube 2	Tube 3	Mean	Annual Mean
November	19/11/2014 - 02/12/2014	48.91			48.91	
December	02/12//2014 - 06/01/2015	31.33			31.33	
		2			80.24	**40.1**

Nitrogen Dioxide – Distance Fall-Off Calculations

Sutton Outram Street (Tube 4)

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 $\mu g/m^3$)?	(Note 2)		18.0	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		29.0	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		27.3	$\mu g/m^3$

Sutton Dalestorth Street (Tube 5)

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)		18.1	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		33.3	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		31.4	$\mu g/m^3$

Sutton A38 Fire Station (Tube 7)

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 $\mu g/m^3$)?	(Note 2)		19.3	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		26.6	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		25.0	$\mu g/m^3$

Sutton Station Road (Tube 22)

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)		21.6	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		33.7	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		29.5	$\mu g/m^3$

Sutton Croft Primary Station Road (Tube 31)

Step 1		How far from the KERB was your measurement made (in metres)?	(Note 1)		2.3	metres
Step 2		How far from the KERB is your receptor (in metres)?	(Note 1)		3.5	metres
Step 3		What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		19.1	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		26.5	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		25.7	$\mu g/m^3$

Sutton Stoneyford Court (Tubes 24.25 and 26)

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 $\mu g/m^3$)?	(Note 2)		18.0	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		29.4	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		26.6	$\mu g/m^3$

Huthwaite Church of England School Common Road (Tube 30)

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)		9.8	metres
Step 3		What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		20.1	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		22.5	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		21.6	$\mu g/m^3$

Kirkby Naggs Head (Tubes 1,2 and 3)

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 $\mu g/m^3$)?	(Note 2)		18.1	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		29.2	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		27.0	$\mu g/m^3$

Kirkby Church Hill (10,11 and 12)

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)		15.5	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		39.0	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		34.4	$\mu g/m^3$

Kirkby Chapel Street (Tube 33)

Step 1		How far from the KERB was your measurement made (in metres)?	(Note 1)		2.3	metres
Step 2		How far from the KERB is your receptor (in metres)?	(Note 1)		6.8	metres
Step 3		What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		17.0	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		27.9	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		25.0	$\mu g/m^3$

Selston Nottingham Road (Tube 15)

Step 1		How far from the KERB was your measurement made (in metres)?	(Note 1)		2.3	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)		14.8	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		25.1	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		26.2	$\mu g/m^3$

M1 Pinxton (Tube14)

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 $\mu g/m^3$)?	(Note 2)		23.4	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		28.7	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		26.7	$\mu g/m^3$

Annesley Badger Box (Tubes 27, 28 and 29)

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	metres
Step 3		What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		20.9	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		33.6	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		28.9	$\mu g/m^3$

Hucknall Ashgate Road (tube 19)

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)		16.5	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		24.8	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		23.5	$\mu g/m^3$

High Street Hucknall (Tube 20)

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 $\mu g/m^3$)?	(Note 2)		17.9	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		33.2	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		29.7	$\mu g/m^3$

Beardall Street Hucknall (Tube 21)

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 $\mu g/m^3$)?	(Note 2)		18.1	$\mu g/m^3$
Step 4		What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)		24.8	$\mu g/m^3$
Result		The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)		24.7	$\mu g/m^3$

Nitrogen Dioxide Triplicate Diffusion Tube Precision

Naggs Head Kirkby

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	31/12/2013	29/01/2014	38.9	38.2	38.9	39	0.4	1	1.0			Good	
2	29/01/2014	05/03/2014	41.6	40.0	38.6	40	1.5	4	3.8			Good	
3	05/03/2014	02/04/2014	33.1	36.2	34.9	35	1.6	4	3.9			Good	
4	02/04/2014	30/04/2014	34.9	30.1	32.7	33	2.4	7	6.0			Good	
5	30/04/2014	28/05/2014	29.9	30.0	30.9	30	0.6	2	1.4			Good	
6	28/05/2014	02/07/2014	27.2	26.3	25.5	26	0.8	3	2.0			Good	
7	02/07/2014	01/08/2014	27.7	26.6	28.2	28	0.8	3	2.0			Good	
8	01/08/2014	27/08/2014	26.3	27.4	27.4	27	0.6	2	1.6			Good	
9	27/08/2014	01/10/2014	30.8	28.1	30.2	30	1.4	5	3.6			Good	
10	01/10/2014	29/10/2014	33.4	34.0		34	0.4	1	3.6			Good	
11													
12													
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision

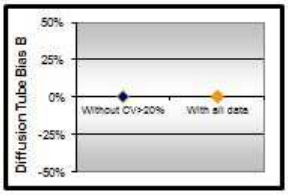
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 10 out of 10 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: µgm^{-3}
Mean CV (Precision):
Automatic Mean: µgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: µgm^{-3}
Mean CV (Precision):
Automatic Mean: µgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

A38

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	31/12/2013	28/01/2014	23.5	27.4	25.4	25	2.0	8	4.9			Good	
2	28/01/2014	04/03/2014	28.3	30.0	30.2	30	1.0	3	2.5			Good	
3	04/03/2014	01/04/2014	32.8	31.5	32.9	32	0.8	2	1.9			Good	
4	01/04/2014	29/04/2014	32.7	32.0	33.3	33	0.6	2	1.6			Good	
5													
6													
7													
8													
9													
10													
11													
12													
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision

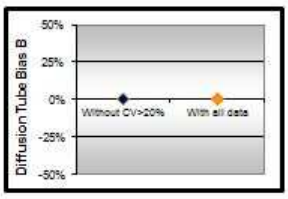
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 4 out of 4 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: µgm^{-3}
Mean CV (Precision):
Automatic Mean: µgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: µgm^{-3}
Mean CV (Precision):
Automatic Mean: µgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Church Hill

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	30/12/2013	29/01/2014	39.3	46.3	35.0	40	5.7	14	14.2			Good	
2	28/01/2014	04/03/2014	40.6	43.0	42.5	42	1.3	3	3.2			Good	
3	04/03/2014	01/04/2014	41.5	41.4	43.2	42	1.0	2	2.4			Good	
4	01/04/2014	29/04/2015	38.1	41.2	40.9	40	1.8	4	4.3			Good	
5	29/04/2014	27/05/2014	40.3	42.5	41.2	41	1.1	3	2.7			Good	
6	27/05/2014	01/07/2014	40.6	41.8	39.9	41	1.0	2	2.5			Good	
7	01/07/2014	29/07/2014	39.8	43.2	45.5	43	2.9	7	7.2			Good	
8	29/07/2014	26/08/2014	31.7	37.0	33.3	34	2.7	8	6.7			Good	
9	26/08/2014	01/10/2014		46.3	42.3	44	2.8	6	25.6			Good	
10	01/10/2014	29/10/2014	39.4	41.8	45.2	42	2.9	7	7.2			Good	
11	29/10/2014	03/12/2014	39.4	53.8	45.7	46	7.2	16	17.9			Good	
12	03/12/2014	07/01/2015	31.2	40.0	36.3	36	4.4	12	11.0			Good	
13													
											Overall survey -->	Good precision	

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

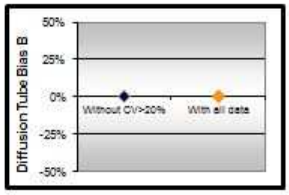
Site Name/ ID:

Precision 12 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	µgm^{-3}
Mean CV (Precision):	
Automatic Mean:	µgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	µgm^{-3}
Mean CV (Precision):	
Automatic Mean:	µgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Badger Box

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	31/12/2013	29/01/2014	37.8	46.8	39.1	41	4.9	12	12.1			Good	
2	29/01/2014	05/03/2014	38.6	38.0	40.0	39	1.0	3	2.5			Good	
3	05/03/2014	02/04/2014	38.2	38.7	39.6	39	0.7	2	1.8			Good	
4	02/04/2014	30/04/2014	39.3	37.8	32.3	36	3.7	10	9.2			Good	
5	30/04/2014	28/05/2014	36.6	37.1	37.3	37	0.3	1	0.8			Good	
6	28/05/2014	02/07/2014	32.3	31.2	32.6	32	0.7	2	1.8			Good	
7	02/07/2014	01/08/2014	36.9	35.4	36.7	36	0.8	2	2.0			Good	
8	01/08/2014	29/08/2014	32.1	30.1	32.0	31	1.1	4	2.8			Good	
9	29/08/2014	01/10/2014	39.0	38.6	35.7	38	1.8	5	4.4			Good	
10	01/10/2014	30/10/2014	38.8	35.2	40.3	38	2.6	7	6.5			Good	
11	30/10/2014	03/12/2014	37.3	34.2	34.7	35	1.7	5	4.2			Good	
12	03/12/2014	07/01/2015	40.7	38.9	42.0	41	1.6	4	4.0			Good	
13													
											Overall survey -->	Good precision	

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

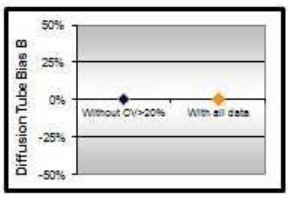
Site Name/ ID:

Precision 12 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	µgm^{-3}
Mean CV (Precision):	
Automatic Mean:	µgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	µgm^{-3}
Mean CV (Precision):	
Automatic Mean:	µgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Appendix 2 DMRB DATA

None Used