2013 Air Quality Progress Report for
Gedling Borough Council

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

April 2013

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Executive Summary

Part IV of the Environment Act 1995 requires local authorities to review and assess the current and future air quality in their areas against objectives set out for eight key air pollutants, under the provisions of the National Air Quality Regulations 2000 and the Air Quality (Amendment) Regulations 2002.

Part IV of the 1995 Act requires each local authority to review air quality 'from time to time'. The regulations prescribe air quality objectives and the dates for meeting them. Local Authorities should only undertake a level of assessment that is commensurate with the risk of an air quality objective being exceeded.

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 Where the Progress Report has identified a risk that an air quality objective will be exceeded at a location with relevant public exposure, the Local Authority is still required to undertake a Detailed Assessment. The aim being to identify with reasonable certainty, whether or not a likely exceedence will occur.

- Gedling Borough Council has examined the results from monitoring in the borough. Concentrations for all pollutants except NO_2 are below the objectives, therefore there is no need to proceed to a Detailed Assessment.

- Gedling Borough Council has measured concentrations of NO_2 above the annual mean objective at relevant locations within the AQMA; it should therefore remain.

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

Gedling Borough Council proposes no further action as a result of this Progress Report.

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1 Introduction

1.1 Description of Local Authority Area

Established in 1974, the Borough of Gedling is home to 112,000 people and covers an area of 46.3 square miles. It borders Sherwood Forest to the north, the River Trent to the south-east and the City of Nottingham to the south-west.

The main urban areas of Arnold, Carlton, Gedling, Netherfield and Mapperley form part of the Nottingham conurbation and contain the largest proportion of population and industry. The other major villages are Ravenshead, Calverton, Burton Joyce, Newstead Village and Woodborough.

The major area for industry lies to the south of the Borough at the Colwick Industrial Estate, an assortment of other light industry occurs throughout the Borough. Agriculture is also an important industry, particularly to the north. The local authorities bordering Gedling are Ashfield District Council, Newark and Sherwood District Council, Nottingham City Council and Rushcliffe Borough Council.

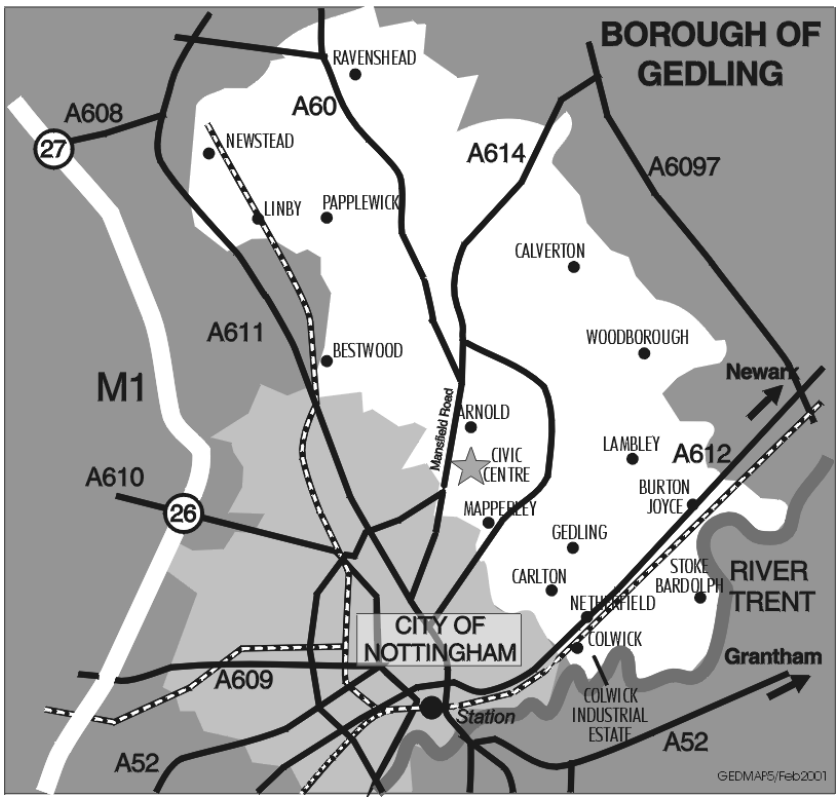


Figure 1.1 Gedling Borough Location Plan

1.2 Purpose of Progress Report

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Table 1.2 Summary of LAQM Reports 2003 – 2012

Report	Conclusions/Actions
2003 Updating and Screening Assessment	No further action required.
2004 Progress Report	No further action required.
2005 Progress Report	Progress to DA for NO_2 A60 Mansfield Rd. Daybrook
2006 Detailed Assessment	*"A60 Mansfield Road, Daybrook* *The results from the monitoring and modelling carried out to date would tend to indicate that Nitrogen Dioxide levels along the A60 Mansfield Road are below the annual objective of 40µg/m^3.* *The area is however, of continual concern and therefore Gedling Borough will continue to monitor levels along this road. Gedling Borough will also review the configuration of the co-located diffusion tubes, which may be a contributing factor to the large differences between national and local bias adjustment studies."*
2006 Updating and Screening Assessment	Progress to DA for NO_2 A60 Mansfield Rd. B684 Woodborough Rd/Plains Rd C168 Victoria Road
2007 Detailed Assessment	*"A60 Mansfield Road, Daybrook* *Overall results from the monitoring and modelling carried out to date would tend to indicate that Nitrogen Dioxide levels along the A60 Mansfield Road are below the annual objective of 40µg/m^3. Therefore we do not consider it necessary to declare an Air Quality Management Area at this time. The area is however, of continual concern and therefore Gedling Borough will continue to monitor levels along this road.* *B684 Woodborough/Plains Road, Mapperley* *Results from the additional monitoring and modelling carried out to date would tend to indicate that Nitrogen Dioxide levels along the B684 Woodborough/Plains Road, Mapperley are below the annual objective of 40µg/m^3. Therefore we do not consider it necessary to declare an Air Quality Management Area at this time. The area is however, of continual concern and therefore Gedling Borough will continue to monitor levels along this road.* *contd.*

Report	Conclusions/Actions
2007 Detailed Assessment contd.	*C168 Victoria Road, Netherfield* *Results from the additional monitoring and modelling carried out to date would tend to indicate that Nitrogen Dioxide levels along the C168 Victoria Road, Netherfield are below the annual objective of 40µg/m^3. Therefore we do not consider it necessary to declare an Air Quality Management Area at this time. The area is however, of continual concern and therefore Gedling Borough will continue to monitor levels along this road."*
2008 Progress Report	No further action required.
2009 Updating and Screening Assessment	Progress to DA for NO_2 - A60 Mansfield Rd.
2010 Progress Report	No further action required.
2010 Detailed Assessment	*It is considered that, on balance, the objective for Nitrogen Dioxide is likely to be exceeded along the A60 Mansfield Road between its junction with Thackerays Lane and Oxclose Lane. Based on the contour models this would equate to approximately 50 residential properties exposed to pollutant concentrations above the objective.* *Therefore, it is proposed that GBC declare an Air Quality Management Area (AQMA) for Nitrogen Dioxide* The AQMA order for the A60 Mansfield Road was made on 1st April 2011.(See Appendix A)
2011 Progress Report	No further action required.
2011 Further Assessment (A60 Mansfield Road)	It is recommended that the current extent of the AQMA is maintained, based on continued monitoring with the area.
2012 Air Quality Action Plan (A60 Mansfield Road)	Measures in the Action Plan have been tailored to target reductions in emissions from the commercial fleet (HGVs, Buses and LGVs) as these make up a large proportion of the emissions. However, actions to tackle the remaining 37% of emissions, from private cars (petrol & diesel); have also be included to ensure the maximum reductions in emissions possible. See Air Quality Action Plan
2012 Updating and Screening Assessment	No further action required.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Gedling Borough has one analyser measuring NOx and NO to calculate a value of NO_2.

During 2001-2007 the analyser was housed in the basement of the Daybrook Baptist Chapel, Daybrook Square (see maps in Appendix A). This site provided a safe and secure, dry location with a constant temperature and electrical supply. In January of 2008 however, the analyser was moved to a Casella ROMON enclosure on the opposite side of the A60 Mansfield Road, still in Daybrook Square.

The new enclosure is situated approximately 5 metres from the kerb to best represent the receptors located 75 metres further along the road, given the constraints for siting.

Figure 2.1 Location of ROMON enclosure, Daybrook Square

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
Daybrook Square	Roadside	457944	344596	2m	NOx / NO_2	Y	chemiluminescence analyser	N (75m)	5m	N

2.1.2 Non-Automatic Monitoring Sites

Nitrogen Dioxide Diffusion Tubes

Gedling Borough has 23 diffusion tubes spread along the key areas of concern, which are mainly commuter routes into Nottingham City Centre. The Borough also has three urban background and one rural background tube(s).

In 2004 most of the tubes were moved to new locations that better reflected the "receptor" based risk assessment criteria of guidance. The three tubes, Daybrook Analyser I, II and III, are located at the sampling head of the continuous automatic analyser. (See location maps in Appendix A)

Details of the co-location study and subsequent bias adjustment can be found in Appendix B, along with full monitoring results. QA/QC procedures and laboratory details can be found in Appendix C.

Benzene Diffusion Tubes

Gedling Borough Council does monitor for Benzene using a small number of BTex passive diffusion tubes. BTex tube results are for benzene, toluene, ethyl-benzene and xylene. The concentrations of the other pollutants can be used to validate the benzene results as local conditions may affect the results i.e. high levels of solvents from industrial processes. Benzene concentrations measured in micrograms per cubic metre (μgm^3). Details of QA/QC procedures and laboratory details can be found in Appendix C.

Tubes are located around the TotalFinaElf Storage Depot, Private Road No. 3, Colwick Industrial Estate and also Chaworth Road and Bourne Mews which have been identified as a possible receptors for exceedence of the 2010 objective. A single tube is also placed in the north of the Borough as a rural background site. (See Maps in Appendix A)

Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
82492	The Grove PH-Daybrook Sq	Receptor	457947	344651	3m	NO_2	Y	N (16m)	3.5m	Y
82494	Hastings street	Urban background	460391	341413	3m	NO_2	N	N/A	N/A	N/A
82495	Marion Murdock Court	Urban background	461294	342826	3m	NO_2	N	N/A	N/A	N/A
82937	47 Plains Road, Mapperley	Receptor	459209	343513	3m	NO_2	N	Y	7m	Y
87398	Morley Mills Building	Receptor	457969	344780	3m	NO_2	Y	Y	3m	Y
87399	Mansfield Road, Redhill	Receptor	457866	345578	3m	NO_2	Y	N (25m)	10m	N
87400	Daybrook Dental Surgery	Receptor	457867	345388	3m	NO_2	Y	N (30m)	2.3m	Y
87401	19 Victoria Road	Receptor	461995	341175	3m	NO_2	N	Y	4m	Y
87402	36 Victoria Road	Receptor	462002	341097	3m	NO_2	N	N (4.5m)	1.5m	Y
87403, 87404, 87405	Daybrook Analyser	Co-located tubes	457944	344597	2m	NO_2	Y	N/A	5m	N/A
87406	Burton Rd/Shearing Hill	Receptor	462422	341972	3m	NO_2	N	N (9m)	16m	N
87407	The Vale PH-Thackerays Ln	Receptor	457918	344358	3m	NO_2	Y	N (14m)	3.5m	N

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
87408	Rickets Lane	Rural Background	456621	355935	3m	NO_2	N	N/A	N/A	N/A
87409	Wickes, Mansfield Road	Receptor	457904	345259	3m	NO_2	Y	N (50m)	3m	N
87410	Civic Centre, Arnold	Urban background	458259	344723	3m	NO_2	N	N/A	N/A	N/A
87411	Colwick Park Close	Receptor	461103	340086	3m	NO_2	N	Y	10m	Y
87412	Daybrook Fish Bar	Receptor	457947	344713	3m	NO_2	Y	Y	3m	Y
87413	T&S Heating	Receptor	457950	344748	3m	NO_2	Y	Y	3m	Y
87414	Frank Keys	Receptor	457969	344827	3m	NO_2	Y	Y	3m	Y
87415	856 Plains Road	Receptor	458898	343139	3m	NO_2	N	Y	8m	Y
BTex01	Private Road No3	Urban Industrial	462142	340384	3m	BTex	N	N/A	N/A	N/A
BTex02	Bourne Mews	Urban Background	462125	340874	3m	BTex	N	Y	N/A	Y
BTex03	Ricket Lane	Rural	456621	355935	3m	BTex	N	N/A	N/A	N/A
BTex04	Hollyoake Villas	Receptor	461795	340703	3m	BTex	N	Y	N/A	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

The results of 2012 monitoring for nitrogen dioxide and benzene have been compared against air quality objectives.

2.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

As Tables 2.3 and 2.4 indicate the results for automatic monitoring for 2012 show no exceedences of the air quality objectives for NO_2. Data capture overall for 2012 was poor due to a failure of the data logger in mid August 2012. The annual average has therefore been "annualised" as in Box 3.2 of TG(09) (see Appendix B for details)

Figure 2.3 shows a small decrease in NO_2 levels over an eight year period (2004-2012).

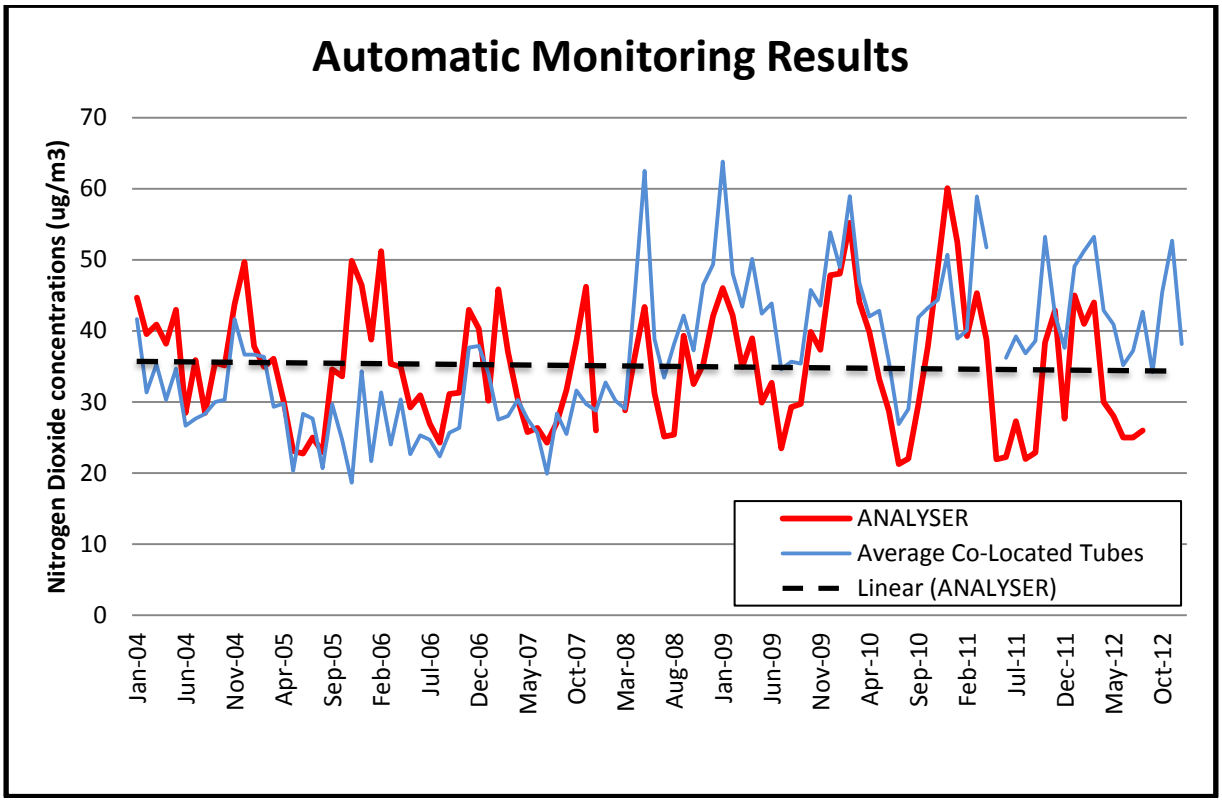


Figure 2.3 Trends in Monthly Mean Nitrogen Dioxide Concentration Daybrook Square.

Table 2.3 Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2012 % [b]	Annual Mean Concentration (µg/m^3)						
				2006	2007	2008	2009	2010	2011	2012 [c]
Roadside	Y	82	54	35	32	34	36	39	33	35

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Mean has been "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), as valid data capture is less than 75% (See Appendix B)

Table 2.4 Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2012 % [b]	Number of Hourly Means > 200µg/m^3						
				2006	2007	2008 [c]	2009	2010	2011	2012 [c]
Roadside	Y	82	54	0	0	0 (127)	0	1	0	0 (144)

In bold, exceedence of the NO_2 hourly mean AQS objective (200µg/m^3 – not to be exceeded more than 18 times per year)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] If the data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

The results of diffusion tube monitoring for 2012 (Table 2.5) show some exceedences of the air quality objectives at receptors along the A60 Mansfield Road: Full diffusion tube monitoring dataset, including details of bias and location adjustments are available in Appendix B.

Figure 2.4 shows a series of graphs plotting diffusion tube results over a 4 year 9 month period (2008 – 2012), the results since the change to Gradko laboratory. These graphs split into urban/background sites, Mansfield Road sites and Plains/Woodborough Road sites show:

- The trendline for the indicative urban background site shows a slightly increasing trend over time in the levels of NO_2.

- The trendline for the indicative Mansfield Road site shows a flat response over time in the levels of NO_2.

- The trendline for the indicative Plains Road site shows an increasing trend over time in the levels of NO_2.

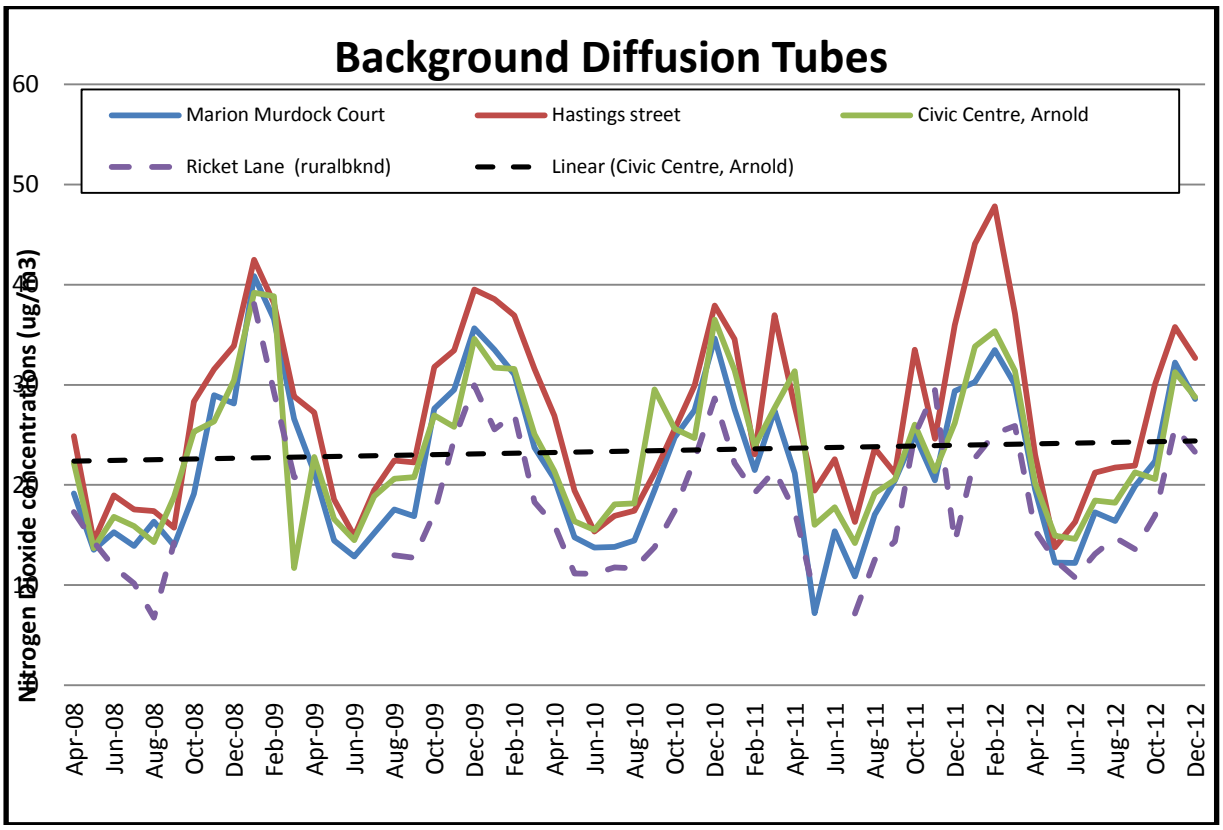
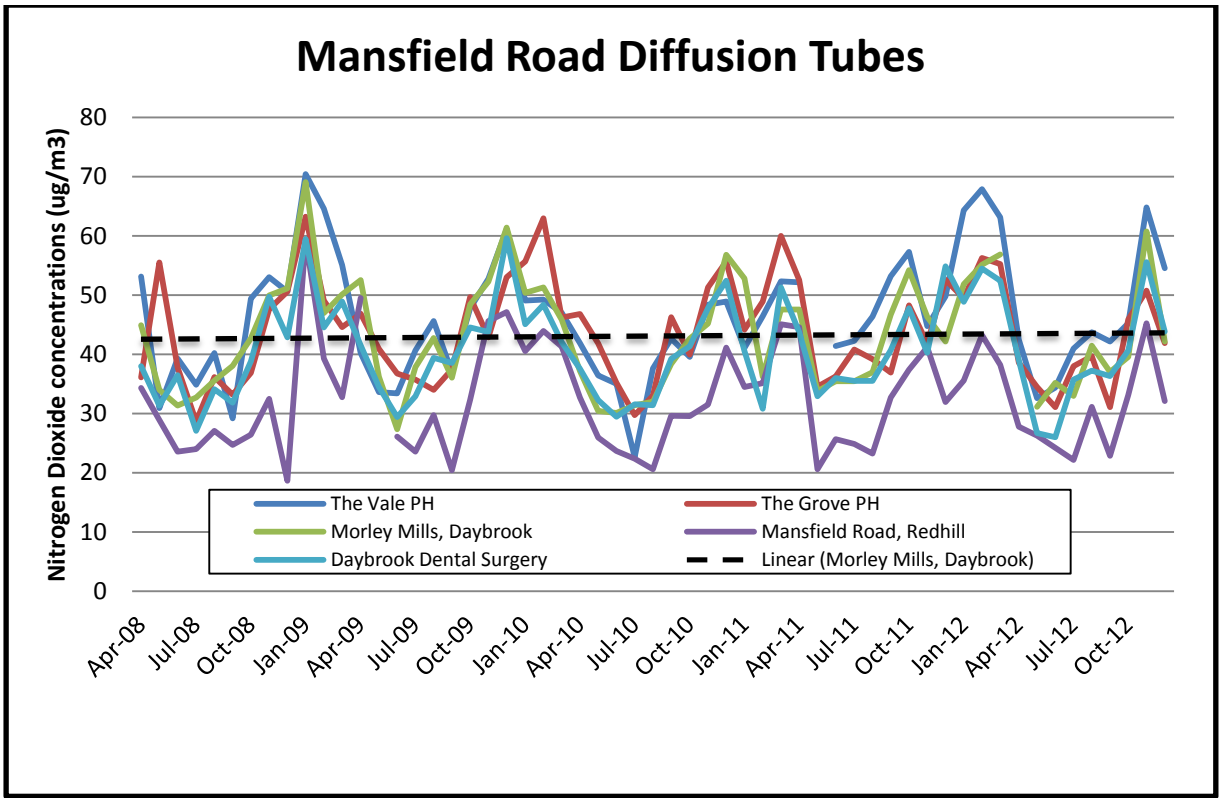


Figure 2.4 **Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.**



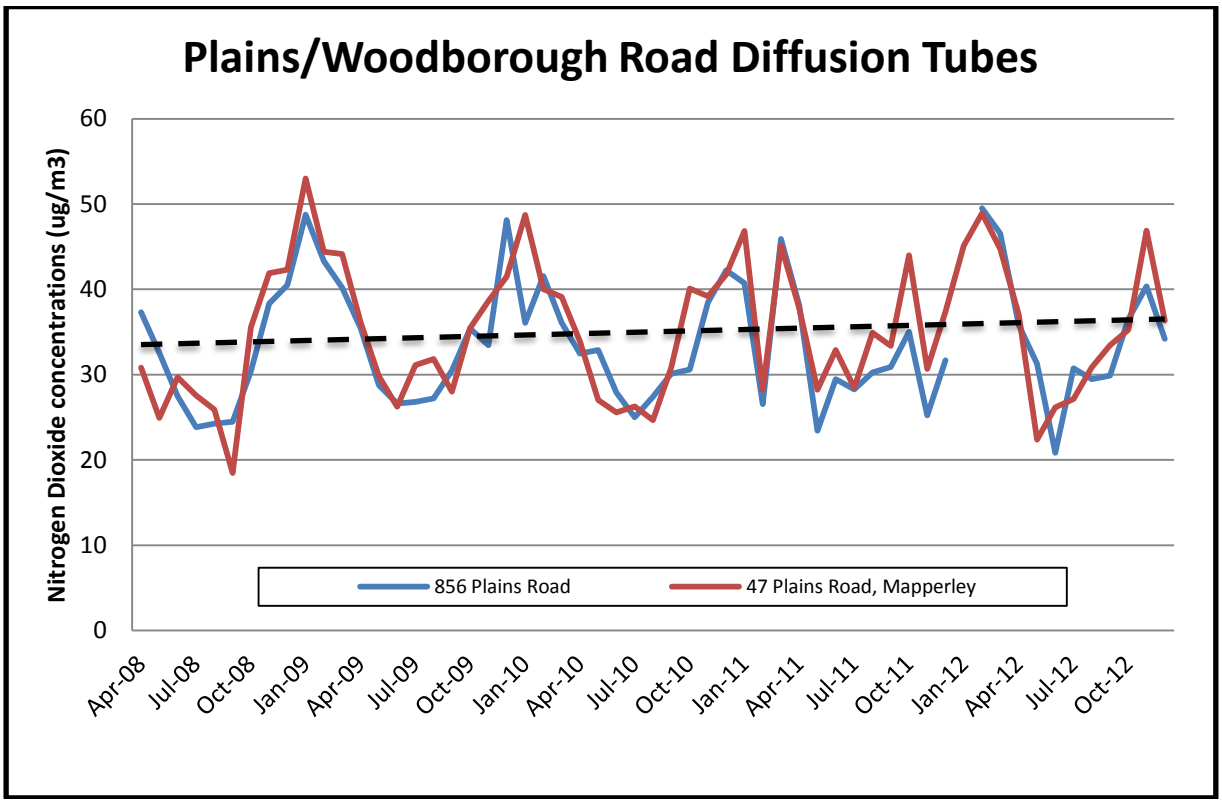


Figure 2.4 contd. **Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.**

Table 2.5 Results of NO_2 Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (%) [a]	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97 [b]
82492	The Grove PH-Daybrook Sq	Receptor	Y	N	100	**41**
82494	Hastings street	Urban background	N	N	100	28
82495	Marion Murdock Court	Urban background	N	N	100	22
82937	47 Plains Road, Mapperley	Receptor	N	N	100	35
87398	Morley Mills Building	Receptor	Y	N	92	**43**
87399	Mansfield Road, Redhill	Receptor	Y	N	100	31
87400	Daybrook Dental Surgery	Receptor	Y	N	100	**40**
87401	19 Victoria Road	Receptor	N	N	100	36
87402	36 Victoria Road	Receptor	N	N	100	38[b]
87403, 87404, 87405	Daybrook Analyser	Co-located tubes	Y	Y	100	**42, 42, 43**
87406	Burton Rd/Shearing Hill	Receptor	N	N	100	32
87407	The Vale PH-Thackerays Ln	Receptor	Y	N	100	39[b]

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (%) [a]	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.97 [b]
87408	Rickets Lane	Rural Background	N	N	100	18
87409	Wickes, Mansfield Road	Receptor	Y	N	100	39
87410	Civic Centre, Arnold	Urban background	N	N	100	23
87411	Colwick Park Close	Receptor	N	N	100	29
87412	Daybrook Fish Bar	Receptor	Y	N	100	**50**
87413	T&S Heating	Receptor	Y	N	100	**54**
87414	Frank Keys	Receptor	Y	N	100	**46**
87415	856 Plains Road	Receptor	N	N	92	34

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

[a] Means should be "annualised" as in Box 3.2 of TG(09)(http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%

[b] If an exceedence is measured at a monitoring site not representative of public exposure, NO_2 concentration at the nearest relevant exposure should be estimated based on the "NO_2 fall-off with distance" calculator (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=30).

Table 2.6 Results of NO_2 Diffusion Tubes (2008 to 2012)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias				
				2008 (Bias Adjustment Factor = 0.91)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.97)
82492	The Grove PH-Daybrook Sq	Receptor	Y	**40**	38	**42**	**40**	**41**
82494	Hastings street	Urban background	N	23	24	24	24	28
82495	Marion Murdock Court	Urban background	N	19	21	21	18	22
82937	47 Plains Road, Mapperley	Receptor	N	31	32	32	32	35
87398	Morley Mills Building	Receptor	Y	**40**	**40**	38	38	**43**
87399	Mansfield Road, Redhill	Receptor	Y	27	32	29	29	31
87400	Daybrook Dental Surgery	Receptor	Y	37	37	37	36	**40**
87401	19 Victoria Road	Receptor	N	32	33	32	31	36
87402	36 Victoria Road	Receptor	N	39	37	35	37	38
87403, 87404, 87405	Daybrook Analyser	Co-located tubes	Y	**41, 40**, 39	38, 39**, 40**	39, 39, **40**	39, 38, 38	**42,42,43**
87406	Burton Rd/Shearing Hill	Receptor	N	24	26	27	25	32
87407	The Vale PH-Thackerays Ln	Receptor	Y	34	34	34	37	39
87408	Rickets Lane	Rural Background	N	18	19	16	16	18

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias				
				2008 (Bias Adjustment Factor = 0.91)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.97)
87409	Wickes, Mansfield Road	Receptor	Y	34	36	35	35	39
87410	Civic Centre, Arnold	Urban background	N	20	21	23	20	23
87411	Colwick Park Close	Receptor	N	27	27	30	26	29
87412	Daybrook Fish Bar	Receptor	Y	n/a	**48[a]**	**44**	**45**	**50**
87413	T&S Heating	Receptor	Y	n/a	**49[a]**	**45**	**47**	**54**
87414	Frank Keys	Receptor	Y	n/a	**43[a]**	**41**	**41**	**46**
87415	856 Plains Road	Receptor	N	31	30	31	29	34

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

[a] Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%

2.2.2 Particulate Matter (PM_{10})

Gedling Borough Council does not monitor for PM_{10}.

2.2.3 Sulphur Dioxide (SO_2)

Gedling Borough Council does not monitor for Sulphur Dioxide.

2.2.4 Benzene

Table 2.7 shows monitoring results for the past five years, no exceedences of the benzene air quality 2010 objective were measured (5.00 µg/m^3).

Table 2.7 Results of BTex Diffusion Tubes

Location	Benzene Annual mean concentrations (µg/m^3)				
	2009	2010	2011	2012	Data Capture 2012 %
Private Road No.3	0.90	0.66	0.49	1.14	83
Bourne Mews	0.49	0.76	0.57	1.78	75
Ricket Lane (rural backgnd)	0.59	0.79	0.49	1.10	92
Chaworth Road	0.79	0.89	0.57	1.13	83

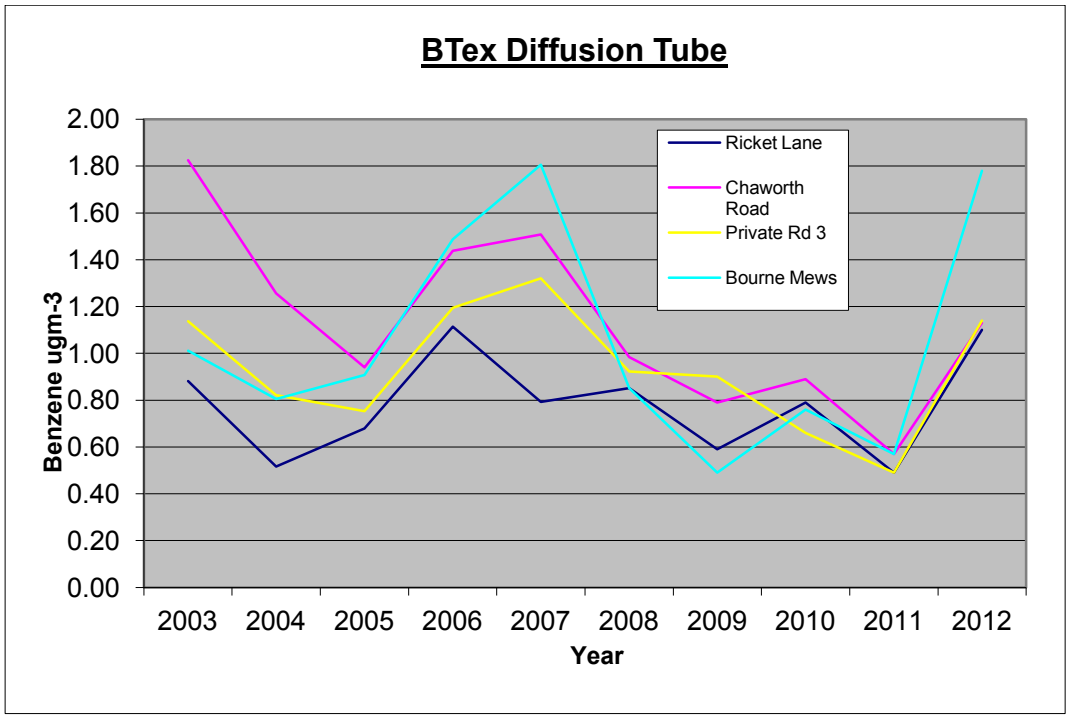


Figure 2.5 Annual Benzene (BTex tube) Results 2003 - 2012

2.2.5 Other Pollutants Monitored

No other pollutants monitored.

2.2.6 Summary of Compliance with AQS Objectives

Gedling Borough Council has examined the results from monitoring in the borough.

Concentrations within the AQMA still exceed the **40 µg/m^3** for NO_2 at critical receptors and the AQMA should remain.

Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

No significant change since the Updating and Screening Assessment 2011.

3.2 Other Transport Sources

No significant change since the Updating and Screening Assessment 2011.

3.3 Industrial Sources

No significant change since the Updating and Screening Assessment 2011.

3.4 Commercial and Domestic Sources

No significant change since the Updating and Screening Assessment 2011.

3.5 New Developments with Fugitive or Uncontrolled Sources

No significant change since the Updating and Screening Assessment 2011.

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

Gedling Borough Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

In 2008 an air quality strategy for Nottinghamshire was published by the LA's in partnership with the Highways Agency, Environment Agency and the Health Protection Agency.

The document was designed to *"to help local authorities and partner organisations manage and improve ambient air quality and to protect the health and wellbeing of the public in a co-ordinated and integrated manner. In practice, having identified priorities to control air emissions and consulted the public on what action they might be prepared to take to minimise air pollution, the framework is a working document to provide and focus actions to improve air quality in Nottinghamshire."*

The document is available through all LA websites in Nottinghamshire:

http://www.gedling.gov.uk/notts_aq_strategy_2008.pdf

The strategy was due for review in 2011 but to date action has not been taken to undertake this review. A recent meeting of the Nottinghamshire Environmental Protection Working Group has agreed a review is required but in light of the resource requirement to undertake a review and the changes in the policy area the review will take place at a later time.

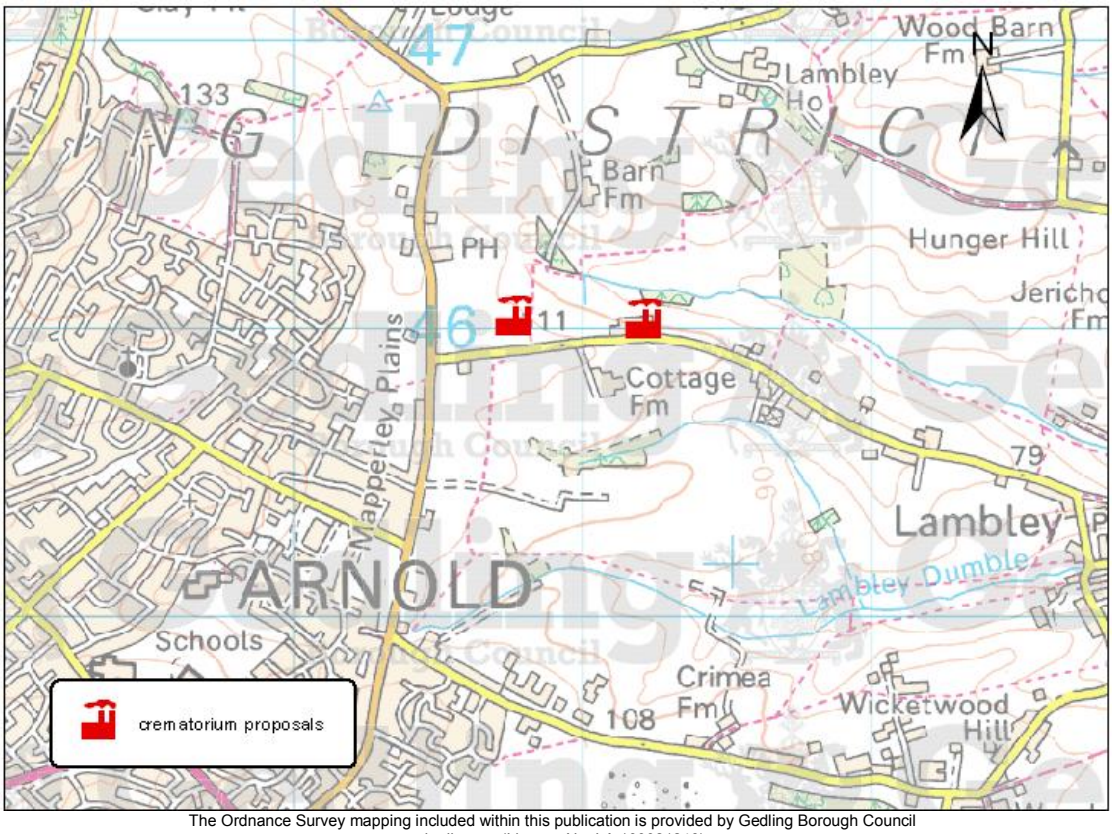
5 Planning Applications

The following are details of planning applications and Environmental Impact Assessment (EIA) applications (inc. scoping requests) that have been submitted in the last twelve months.

The Council has received two applications for crematorium; both proposals are along Catfoot Lane, Lambley. At this time the applicant(s) have submitted chimney height information (to inform the planning decision); at the time of writing the planning decision(s) have not been made. An environmental permit application is expected to follow should either/both applications be given planning permission:

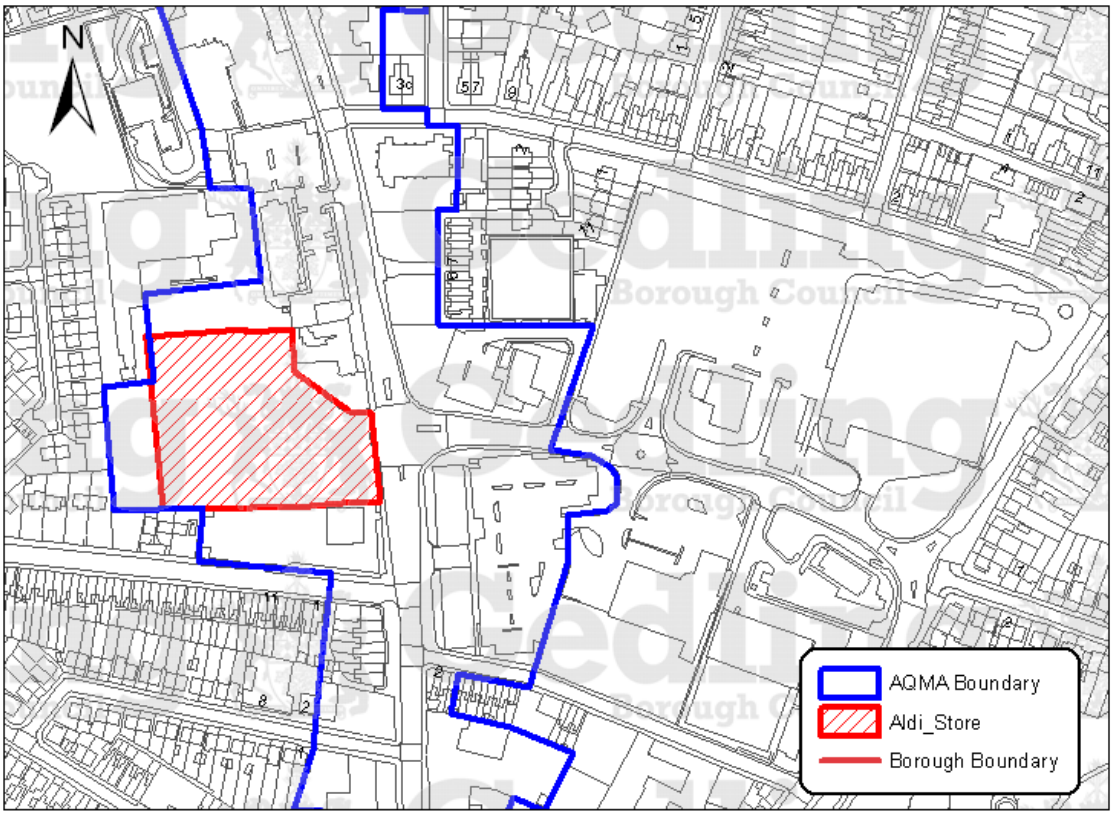
- **Proposed Crematorium (Westerleigh)** – (2012/0616) Proposed Crematorium and Cemetery.

- **Proposed Crematorium (Lymn)** – (2012/0799) Proposed development of a Crematorium building with memorial woodland, landscaping.



Title: **Proposed Crematorium**	April 2013
	Scale: nts

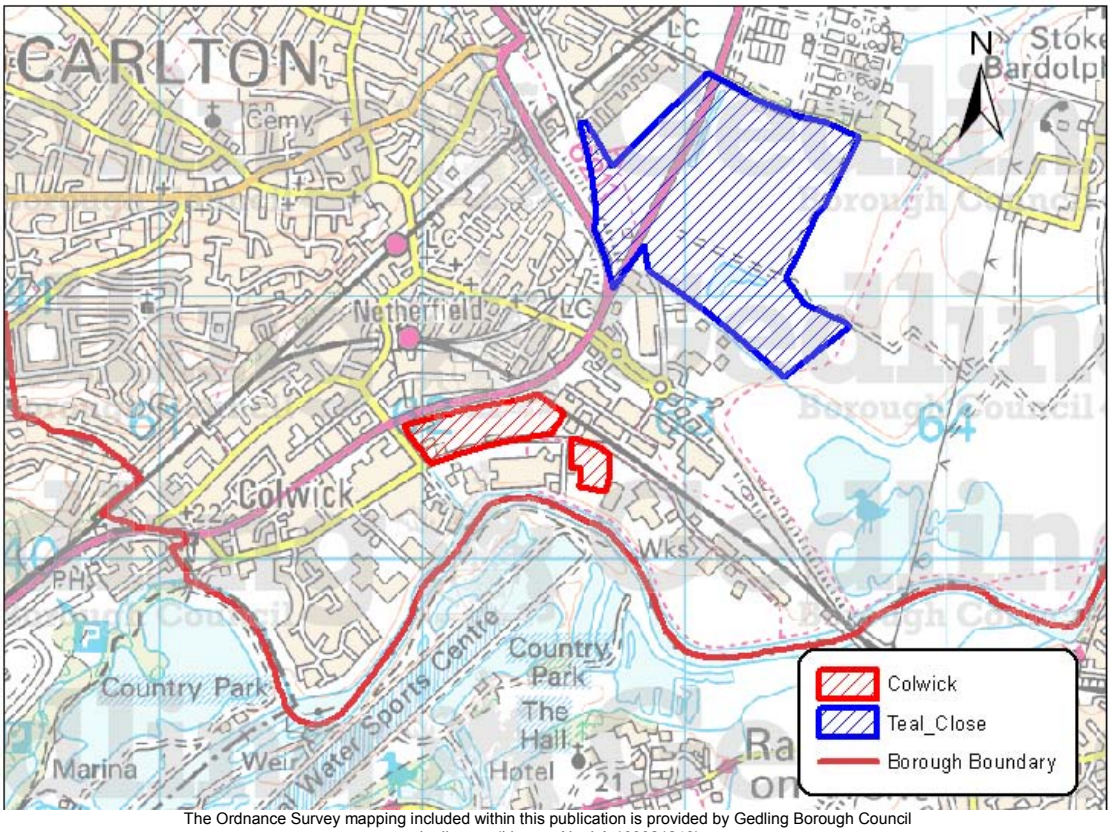
Proposed Aldi Store, former Daybrook Laundry – (2012/1373) Erection of a new Retail Food Store (Class A1) with associated car parking and landscaping. An air quality assessment was submitted with the planning application; the development was deemed to have a 'negligible' affect on the air quality within the AQMA.



Title:	April 2013
Proposed Aldi Store, Daybrook	Scale: nts

Re-development of Land Road No.3 Colwick Industrial Estate – (2013/0281EIA) proposals at this stage include; Sainsbury's foodstore (~126,814 sqft), a petrol filling station. Land to the south-east is to be re-developed for a mix of employment uses (~69,320sqft). Additionally, outline permission is being sort for a pub/restaurant near the foodstore. Following an initial air quality assessment (for a much larger proposal) air quality has been excluded from the EIA; however, a revised air quality assessment will be submitted as part of the planning application. (marked in red on map below)

Land surrounding Teal Close/Trent Valley Way – EIA Scoping Request (2013/0107EIA) proposals at this stage include; 830 residential dwellings, 18,000sqm of employment floor space, a local centre (2,800sqm), 150 room hotel, residential care-home, primary school and community buildings. An air quality assessment will be included within the EIA. (marked in blue on map below)



Title:	April 2013
Proposed Developments - South	Scale: nts

Additionally, we have been advising the development management section with regard to a number of pre-planning enquiries regarding development sites found in the Local Plan.

6 Air Quality Planning Policies

6.1 The Local Plan (formerly Local Development Framework)

Changes in planning legislation have sought to introduce a simpler and more effective planning system, and to strengthen community involvement in planning. The Saved Policies from the adopted Local Plans for each Council are therefore to be replaced by new Local Plans. These can consist of a number of Development Plan Documents taking into account the local demands of development and growth, while seeking to protect the environment and the well-being of local communities.

At the core of the development plan is a strategy which sets out what development will be required and broadly where it will go. The strategy will be followed by work to provide the details on matters such as housing and employment sites and design requirements.

To ensure that this strategy works across a wide area, Gedling Borough have decided to work together with Broxtowe Borough Council and Nottingham City Council to produce an aligned and consistent strategy; the Aligned Core Strategies.

The Aligned Core Strategy is currently at the Publication Draft stage of its development. With regard to air quality the documents makes the following references:

Section 3.1.5

The Local Development Framework needs to ensure the use and development of land will help slow down the rate of climate change and be resilient its effects. In this respect the Aligned Core Strategies' task is to:

- reduce consumption of natural and non-renewable resources
- reduce dependence on non-renewable energy sources and promote renewable energy use and development
- reduce pollution to levels that do not damage natural systems
- help improve **air quality**
- effectively manage and reduce the impacts of flood risk across the area

Section 3.2.34

Transport is a major contributor to climate change, and congestion has adverse economic impacts, as well as being detrimental to **air quality**. Upgrading existing infrastructure and providing new infrastructure will therefore be aimed at reducing the need to travel, especially by private car. There will be a strong focus on changing peoples' travel behaviour (see Policy 13) and improving opportunities for journeys to be made by public transport. Major improvements to highway capacity for private cars will be a last resort.

7 Local Transport Plans and Strategies

The Nottinghamshire Local Transport Plan (LTP) is produced by the County Council and sets out the long-term transport strategy for the whole of Nottinghamshire. It was developed in consultation with a range of stakeholders and the public to identify existing and potential challenges and how to address these challenges.

The LTP consists of two separate documents:

- A strategy document detailing how transport improvements will be delivered in the county, and
- An implementation plan which sets out where investment will be prioritised to deliver the local transport strategy.

The local transport strategy element of the LTP covers the fifteen year period 1 April 2011 to 31 March 2026 and will be reviewed at least every five years; whilst the implementation plan mirrors central government's Comprehensive Spending Review periods and will be reviewed annually to ensure:

- Consideration of changes in transport conditions
- Consideration of the effectiveness of the strategy to deliver transport improvements in Nottinghamshire
- The priorities and focus are still relevant and address the transport issues in Nottinghamshire, as well as national and regional priorities, and
- Consideration of changes in corporate priorities such as those detailed within the sustainable community strategy 2010-2020
- The effectiveness of the measures used to deliver the strategy.

The main functions of the LTP are to:

- Draw links with wider economic, health, land-use planning, social, and sustainability agendas
- Detail how the national and local priorities for transport will be delivered in Nottinghamshire
- Detail local objectives and indicators that will form the basis of the County Council's investment in transport, and
- Demonstrate best value solutions to transport issues in the county.

The third LTP for Nottinghamshire was drawn up in consultation with the public, stakeholders and County Council elected members. The strategic goals of the LTP3 are to:

- Provide a reliable, resilient transport system which supports a thriving economy and growth whilst encouraging sustainable and healthy travel
- Improve access to key services, particularly enabling employment and training opportunities, and
- Minimise the impacts of transport on people's lives, maximise opportunities to improve the environment and help tackle carbon emissions.

The strategic transport goal to minimise the impacts of transport on people's lives, maximise opportunities to improve the environment and help tackle carbon emissions will focus on:

- Adapting to climate change
- CO_2 emissions
- Congestion management
- Air quality
- Noise, and Biodiversity, the natural, historic and physical environment.

Addressing transport related air quality issues, particularly within air quality management areas (Section 7.4 of the LTP) will involve the County Council working with district councils to: assess and monitor air quality, and develop action plans to improve air quality where necessary.

Given the close links between air quality and congestion, the measures detailed within Section 4.1 – *Making the best use of our existing transport networks*, are used to manage congestion and therefore help maintain air quality and will form the basis for air quality action plans. Where assessments identify existing or likely future exceedences additional resources will, however, be prioritised to address such exceedences.

Sites that are identified as borderline, or requiring further investigation, but do not require an AQMA to be declared, will receive more regular monitoring to help predict future air quality levels. Such sites are also factored into the prioritisation of programmes of work, such as 'smarter choices' and integrated transport schemes to help improve air quality, and ensure that exceedences do not occur.

The LTP can be viewed or downloaded from:
http://www.nottinghamshire.gov.uk/home/traffic_and_travel/strategy-policy/ltp.htm

Gedling Borough regularly meets with the County Council's transport planning team to discuss the progress of the measures set out in the AQAP and delivered as part of the LTP implementation plan. The meetings enable Gedling Borough to improve air quality by working in partnership with the County Council on transport planning issues within the borough that may be directly outside of its control. These meetings are held 2 times each year to monitor delivery of the key objectives set out in the action plan, explore potential improvements and to consider air quality impacts from major developments.

8 Climate Change Strategies

Gedling Borough has recently published its Sustainability Strategy and Action Plan which is seen as fundamental in taking forward the Council's objective, set out in the 2012/13 Council Plan, to ***"reduce the Council's and the Borough's carbon footprint and energy usage"***. It delivers the specific commitment in the Council Plan ***"to develop and implement a sustainability action plan'.***

The strategy aims are to:

- Reduce the overall carbon emissions of the Borough.
- Continually improve the energy efficiency and performance of the Council's own estate and wider community.
- Continually improve the energy efficiency of the Gedling housing stock and to reduce fuel poverty of residents.
- Increase the proportion of renewable energy generated and used in the Council's own estate and within the Borough.
- Promote a shift to a more sustainable mode of public and private transport system.
- Reduce the amount of waste going to landfill.
- Protect, conserve and improve the Borough's biodiversity.
- Promote behavioural change towards more sustainable ways of living among staff and members of the public and enabling community resilience to a changing climate.
- Accelerate the shift towards a low carbon economy and facilitate the creation of "green" jobs.

9 Implementation of Action Plans

The air quality action plan was drawn up to outline the actions to be undertaken by Nottinghamshire County Council, Gedling Borough Council and other partner organisations to reduce nitrogen dioxide levels within the AQMA to below the National Air Quality Objectives. The Action Plan was formally published in November 2012; therefore this update of progress represents approx 6months.

Summary of measures in Action Plan

Road transport is the major source of NO_2 within the AQMA and is the underlying cause of the declaration of the AQMA. Therefore the main measures of the action plan are to:

No.	Measure	Timescale
1	Improve links with Local Planning and Development Framework	On-going
2	Improve links with Local Transport Strategy	On-going
3	Target reductions in emissions from Buses	Short/Medium Term
4	Target reductions in emissions from Heavy and Light Goods Vehicles	Short/Medium Term
5	Public Transport	Short/Medium Term
6	Traffic Control and Management	Short/Medium Term
7	Promoting Travel Choices	Short/Medium Term
8	GBC waste collection	Short-term
9	Promotion of Cycling and Walking	Short/Medium Term
10	Travel Plans	Short/Medium Term
11	Communication and Education	Short/Medium Term
12	Parking Control and Management	Short/Medium Term
13	Target reductions in emissions from Taxis	Medium-term
14	Target reductions in emissions from the Council Fleet & Contract Vehicles.	Short/Medium Term
15	Encourage the uptake of alternative fuels.	Long-term
16	Park and Ride*	Long-term
16	Low Emission Zone*	Long-term
17	Re-routing Freight Operators**	Long-term

NOTE
* this option is included but may not be feasible.
** this option is included but considered potentially unacceptable.

Nottinghamshire County Council - Transport Measures (Local Transport Plan)

The third Local Transport Plan (LTP) for Nottinghamshire came into effect from 1 April 2011 and was drawn up in consultation with the public, stakeholders and County Council elected members.

Most of the actions relate to the County Council's countywide transport strategy objectives as detailed below and above in Section 7. Delivery of all of the LTP objectives is set out in the LTP implementation plan which is reviewed annually to ensure its effectiveness.

The consultation undertaken when developing the third LTP identified twelve local transport objectives that will be addressed to help deliver the LTP strategic goals. Delivery of the local transport objectives will also help deliver air quality improvements as nine of the twelve objectives will help lead to improved air quality. The table below details the impact that implementation of each of the objectives will have on the air quality improvements within the AQMA.

Major positive Impact	Positive Impact	Minor positive impact	No impact	Minor negative Impact	Negative Impact	Major negative imapct

Local Transport Plan objectives	
Tackle congestion and make journey times more reliable	
Improve connectivity to inter-urban, regional and international networks, primarily by public transport	
Address the transport impacts of planned housing and employment growth	
Encourage people to walk, cycle and use public transport through promotion and the provision of facilities	
Support regeneration	
Reduce transport's impact on the environment	
Adapt to climate change and the development of a low-carbon transport system	
Improve levels of health and activity by encouraging active travel instead of short car journeys	
Address and improve personal safety when walking, cycling or using public transport	
Improve access to employment and other key services, particularly from rural areas	
Provision of an affordable, reliable, and convenient public transport network	
Maintain the existing transport infrastructure	

Table 9.1 LTP - 12 Objectives and their impact on Air Quality

The LTP3 commits to working in partnership with the district councils to deliver air quality improvements generally; but particularly within AQMAs as a result of road traffic on the road network for which the County Council is responsible. The LTP3 also recognises the role of the Air Quality Action Plan (AQAP) to help provide a systematic way of joining up air quality management and transport planning.

Table 9.1 above details the LTP objectives and their impact on the delivery of the AQAP.

Table 9.2 below details the progress on the delivery of the AQAP measures; whilst Table 9.3 details progress on the indicators used to evaluate the individual measures. A colour coding scheme has been used to easily identify which targets are being met and which are behind schedule. Given that several of the indicators are reported on a financial year basis, data/analysis is still outstanding for several indicators. Indicators where data is not yet available are marked 'N/A'.

LTP Funding

The Comprehensive Spending Review, announced on 20 October 2010, detailed several changes in local transport funding. The DfT announced reductions in overall transport funding by 15% in real terms over the period 2011/12 to 2014/15, making savings of 21% from the revenue budget and an 11% reduction in capital spending. The funding for local transport improvements, such as addressing congestion or air quality, is called the integrated transport block and is calculated by DfT through needs based formulas.

As a result of announced funding reductions, central government integrated transport funding in 2012/13 represented a reduction of £5.39m or 50% in comparison with 2010/11 proposed funding levels (pre in-year cuts). Recognising the importance of local transport improvements to help develop the economy and reduce harmful emissions, the County Council determined to support the integrated transport funding with additional County Council capital funds of over £1.5m in 2012/13 to minimise the overall reductions.

These reductions in central government funding will, however, have an impact on the volume of delivery of transport improvements within the AQMA.

The County Council submitted a successful joint Local Sustainable Transport Fund (LSTF) bid with Nottingham City Council and Derbyshire County Council. The LSTF bid contains several elements that will help improve journey times, and reduce emissions from transport which will have a positive impact on the AQMA and these schemes have been included within the table where appropriate.

Summary of outputs and outcomes

The three tables below detail the outputs to date on the delivery of the AQMA action plan and their resultant outcomes.

Table 9.2 details progress in the delivery of each of the measures in the action plan to date. Table 9.3 then details the links between the outputs (measures undertaken) detailed within Table 9.2 and the outcomes as highlighted in progress against the performance indicators (Table 9.4). Table 9.4 details progress against each of the indicators including progress against the targets.

Table 9.2 Nottinghamshire County Council Action Plan Measures - Progress

Measure/Title	Progress with measure
1. Park and Ride a) The creation of a park and ride scheme	The development of the third LTP in 2010 included a review of transport schemes that currently have land safeguarded along their proposed route, or would require NCC to safeguard a route. The review recognised the need for a park & ride site to the north of Nottingham and therefore further investigations will be undertaken to identify a site (potentially linked to new housing/employment development). The creation of a park and ride scheme along the A60 was therefore included in the LTP implementation plan as a potential major transport scheme to be funded during 2015-2026. An EAST (early assessment sifting tool) assessment of all the potential schemes is to be undertaken during 2013 to determine its priority and its likelihood of progress to the Local Transport Body for consideration of funding approval for the period 2015-2019. Should the scheme be shortlisted for implementation during 2015-2019 a feasibility study will be undertaken during 2014/15.
2. Re-routing of freight operators a) Restriction of vehicle types using the road at certain times b) Restricting the road as appears on route finders and Satellite Navigation Systems c) Consider diverting HGVs	A feasibility study to consider potential impacts and benefits of such a scheme is due to be undertaken during 2013/14 and therefore there is no progress to report as yet. This measure will be dependent upon the above feasibility study but given that the A60 is one of the county's strategic transport corridors it is unlikely that it will be removed from route finders and satellite navigation systems. This measure will be considered as part of the feasibility to be undertaken to consider freight movements along A60.
3. Traffic control and management a) Consideration and installation of SCOOT/MOVA and other traffic signal efficiency improvements, including CCTV at appropriate junctions within the AQMA b) Nottinghamshire County and City Councils jointly fund the traffic control centre that monitors traffic movement and provides real time traffic control over many traffic signal installations c) Consideration of bus priority measures at traffic signal junctions d) Review of 24hr bus lane restrictions	There are 10 sets of traffic signals along A60 between Redhill Road and Woodthorpe Drive, only one of which have not been equipped with SCOOT or MOVA to help ensure the efficient movement of traffic along A60. The signals at Oxclose Lane do not have SCOOT as it is not currently considered that the benefits of doing so would merit the costs (in excess of £250k). All SCOOT and MOVA equipped signals are relayed back to the Traffic Control Centre so that they can be altered in real time as required. During 2012/13 improvements to the signals were undertaken at the High Street/Cross Street, Arnold junction to improve the capacity for all traffic travelling through the junction; as well as at nine other sites along A60 to provide bus priority. NCC and Nottingham City Council jointly fund the Traffic Control Centre that monitors traffic movement and provides real time traffic control over many traffic signal installations. Real time information is conveyed onto the local media and disseminated via NCC's web site. The Travelwise centre remains in operation 24hrs a day, every day as the central real time information hub for reporting road conditions, congestion, road works, events, incidents, travel information and useful advice to the travelling public. During 2012/13 bus detection (AVL TLP - automatic vehicle location traffic light priority) was installed at nine signals along the A60 corridor within and on the approach to the AQMA. A further site will be upgraded should proposed development go ahead. The bus detection will enable the signals to detect when a bus approaches and extend the green phase so the bus passes through without delay, reducing delays for buses, making bus journey times more reliable and thereby making bus travel more attractive. A review of the 24 hour bus lane to consider potential impacts and benefits of changing existing restrictions will be undertaken during 2013/14 and therefore there is no progress to report as yet.

Measure/Title	Progress with measure
e) Effective co-ordination of street works to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty	Systems for notice management and coordination have been upgraded to enhance noticing handling, monitoring of works proposals, coordination of works and directing timing of works. Staff awareness and training has been undertaken to ensure that powers are used effectively. Promoters of highway works have been made aware of the requirement to manage works to minimise the impact on traffic to reduce disruption. Regular coordination meetings have been held between all works promoters in conjunction with the City Council and Highways Agency (HA) and also additional regular meetings between the HA and the Nottinghamshire, Nottingham, Derbyshire and Derby local authorities to create a composite framework programme of planned works affecting major routes in the region. Detailed journey time monitoring of key corridors (including the A60 which lies within the AQMA) has been undertaken annually since 2005/06. This monitoring now utilises TrafficMaster data provided by the DfT. Data for 2012 is not available yet.
f) Effective management of incidents to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty g) Effective contingency planning to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty	NCC has processes in place to ensure that communication about incidents is passed effectively to those who need to deal with the matter and also to the road user. The local operating agreement between NCC and the HA has been comprehensively reviewed to identify the relevant parts of the network which have interaction on each authority and to put in place appropriate communication channels for management of incident information. Working in close collaboration with Nottingham City and HA, tactical diversion routes have been developed for the emergency diversion of traffic from any part of the trunk road network, to reduce the delay in implementation of alternative routes and to ease congestion at the time of incidents.
5. Parking management and control Ensure that car parking in and around the AQMA is managed and reviewed via: a) Civil parking enforcement	Civil Parking Enforcement was introduced on 12 May 2008. Surveys were undertaken before the introduction of the scheme in 2008 and again in 2009. These surveys have shown that illegal parking on weekdays fell from 45% in 2008 before introduction of the scheme to 31% in 2009 after its introduction; and from 43% in 2008 to 32% in 2009 on weekends. Surveys are not due to be undertaken again in the near future due to financial constraints.
6. Low emission zone a) Consider feasibility of a low emission zone	A feasibility study to consider potential impacts and benefits of such a scheme is not due to start until 2013/14 and therefore there is no progress to report as yet.
7. Improve links with local planning and Local Development Framework c) Co-ordination of land-use planning and transport infrastructure (including through the Local Plan). Development of car parking standards that encourage cycling, walking and public transport use	NCC provides comments on impacts of development on the transport networks to GBC as part of the planning application process.
d) Secure appropriate levels of developer contributions (Section 106 and/or CIL) for use on air quality improvement projects.	£306,500 of s106 funds for transport improvements have been secured by GBC during the last three financial years. All of this funding is not, however, available to spend on improvements within or near the AQMA (as the development it relates to may not be close to the AQMA). £33k of s106 funding was used during 2012 for infrastructure improvements that would impact on the AQMA which was for a scheme on High Street, Arnold.

Measure/Title	Progress with measure
7d) contd. Use of collected development control contributions to provide cycling, walking and public transport improvements within AQMA	S106 funding has been allocated during 2013/14 and 2014/15 to fund a smarter travel coordinator post in the Gedling area; and the post is currently being advertised. The post will lead on smarter travel activities within targeted communities with the aim of reducing car journeys, particularly at peak times. Supporting funding for infrastructure improvements will be available from the Local Sustainable Transport Fund.
f) Use of planning conditions for Delivery Times, Travel Plans etc.; including enforcement to ensure compliance	During 2012/13 NCC received no travel plans required through planning conditions for development in Gedling for approval. This, however, is a reflection of the level of development currently going ahead within the borough.
8. Improving links with local transport strategy a) Continue links with both County and City transport planners to ensure AQAP is considered in future transport planning	Regular meetings have been undertaken and are scheduled to take place between GBC and NCC. The meetings, held twice a year discuss the results of monitoring undertaken by both parties and where appropriate progress of measures to improve air quality within the district.
9. Target reductions in emissions from buses b) Promotion of the benefits of Eco-driving training for drivers c) Ongoing delivery of Quality Bus Partnerships through Gedling Borough. (Mansfield and Nottingham City) d) Encouraging the use of emissions standards when procuring school bus contracts and supported bus services that operate within the AQMA	Smarter driver training courses run by the Energy Saving Trust were offered to NCC staff that drive as part of their jobs during 2012. Operators are encouraged to take-up cleaner vehicles through partnership working. Due to the sustained high level of investment by the two main operators the average age of the bus fleet operating in the AQMA is already less than six years old and by the end of 2007 all of the two main operators fleet were low-emission Euro2, 3 or 4 standards. Partnerships with all of the major bus operators are on-going including the transport development group which is held every two months. The group helps determine future service and public transport scheme improvements. Nottingham city centre has a statutory bus quality partnership which requires a minimum standard of services for all buses that use stops within the city centre. A similar statutory quality bus partnership is currently being introduced in Mansfield which will help ensure a minimum standard of buses from all operators (including those that travel through the AQMA) using stops in Mansfield. The Integrated Passenger Transport Strategy for the county is currently under review and is due to be completed during 2013/14. It is intended that this measure will be considered as part of the strategy review.
14. Communication and education – awareness raising of local air quality issues a) Design and erect AQMA signs at various locations c) Tackling the school run – communication with schools and parents	A feasibility study to consider the benefits of such signs is due to be undertaken during 2013/14 and therefore there is no progress to report as yet. School travel plans have been developed with 43 of the 45 schools in Gedling Borough; with one of the schools without a travel plan falling within the AQMA. In addition to all year round activities, such as cycle training, activities were undertaken at schools during walk week and bike week to encourage children to walk and cycle to school. In 2009/10 academic year 25% of school pupils travelled to school by car; a 9% reduction when compared to 2004/05. These figures were provided by DfES and are not available for a smaller geographical area. DfES no longer collects and/or publishes this data so it can no longer be reported.

Measure/Title	Progress with measure
15. Travel plans b) Nottinghamshire County Council to review travel plan for its sites within or close to the AQMA	The NCC travel plan has been in operation for over 15 years and an annual programme of activities are undertaken to coincide with national campaigns to promote alternatives to the car, including involvement in 'walk week', 'bike week', car sharing, personalised travel planning etc. Travel to work surveys were undertaken in 2007 and 2011 and these showed that driving to work alone had reduced from 95% to 90%. More detailed travel to work surveys are to be undertaken again in May 2013 and any programmes of work to reduce the numbers of people driving to work alone will be established once these have been analysed. The building in question is, however, going to be vacated by NCC staff as part of the Council's rationalisation of premises. This measure will therefore only be undertaken if NCC continues to operate from the premises.
c) Continue to support the implementation of school travel plans	School travel plans have been developed with 43 of the 45 schools in Gedling Borough; with one of the schools without a travel plan falling within the AQMA. In addition to all year round activities, such as cycle training, activities were undertaken at schools during walk week and bike week to encourage children to walk and cycle to school. In 2009/10 academic year 25% of school pupils travelled to school by car; a 9% reduction when compared to 2004/05. These figures were provided by DfES and are not available for a smaller geographical area. DfES no longer collects and/or publishes this data so it can no longer be reported.
d) Work with local businesses/ organisations to encourage the development and implementation of travel plans	No new travel plans were received from businesses within Gedling during 2012/13. There are, however, nine businesses within the borough with an approved travel plan.
16. Promoting travel choices a) Undertake personalised travel planning within Gedling borough	This measure is not due to be undertaken until 2014/15 and therefore there is no progress to report as yet.
b) Establishment of a City Car Club and consideration of extending this into the county	A feasibility study was undertaken by consultants on the merits of introducing such a scheme. The study concluded that the greatest benefits would be seen by a scheme evolving out of the car share club introduced in the City. Consideration of a car club will be undertaken as part of the Local Sustainable Transport Fund measures and Nottingham City Council are currently in discussions with service providers. Nottingham City Council is not, however, due to implement this measure until late 2013/14 at the earliest and therefore there is no further progress to report as yet.
c) The promotion and facilitation of car sharing schemes, www.nottinghamshare.com was launched in April 2006	www.nottinghamshare.com was launched in April 2006 and continues to be marketed across the county. NCC continues to support and advertise the 'nottinghamshare' car share website, including press releases and web articles during liftshare week. The numbers of people registered on the website increased from 2,044 to 2,234 between 2012 and 2013. Based on the current levels of sharing this has resulted in estimated reductions of over 1.5million miles; 516 tonnes of CO2; and 58.1kg of NOx.
d) Residential Travel Packs, to be issued to all new built homes identified through planning process; promotion of walking, cycling and public transport	Residential travel packs are being developed as part of the Local Sustainable Transport Fund measures. The packs are not due to be produced until 2013/14, with distribution commencing the following year and therefore there is no progress to report as yet.
17. Public transport a) Development of ITSO smartcard ticketing	ITSO smart card ticketing was introduced in the county in 2007 and its development is ongoing. The emerging Integrated Passenger Transport Strategy for the county will include the development of smartcard ticketing, including multi-operator ticketing.

Measure/Title	Progress with measure
b) Deliver the free countywide off-peak concessionary fare scheme for the over 60s and disabled. Consideration of introduction of concessionary fares for young people	A free countywide off-peak concessionary fare scheme for the over 60s and disabled was introduced on 1 April 2006; and a discretionary concessionary fares scheme for all year 7 pupils has been introduced across the county. Almost 90% of those eligible have taken up their concessionary pass.
c) Investigate and publicise web based journey planners. Develop and undertake annual production of marketing literature	Nottinghamshire is part of the national, multi-modal Traveline journey planner. Web links to the Traveline site are publicised and available from NCC's website. In addition to this, links to all of the area's public transport operators' journey planner information are also available from NCC's website. NCC also produces area bus travel guides which detail the routes and services within the main towns and their hinterlands.
e) Review, install/ replace flagpoles/ timetable cases along key AQMA corridors	Flagpoles and timetable cases have been installed at all bus stops along the A60 AQMA corridor.
f) Consider bus provision on the A60 and surrounding area. (Service review)	NCC is currently undertaking a review of all of the bus services in the county, including commercial, supported and specialist services. The aim of this work is to review and design cost effective services that meet local needs. Given the extent of this project it will not be completed until late 2013/14 at the earliest.
g) Install 'real time' bus information along key AQMA corridors	Real time bus displays have been installed at stops along the A60 corridor to provide up to date bus arrival/departure time information.
h) Consider capacity increases on the GO2 services along the A60 corridor	Capacity increases will be considered should passenger information demonstrate that there is insufficient capacity on existing services. 'Double decker' bus services already operate along some of the routes travelling through and within the AQMA where capacity had been highlighted as an issue.
18. To encourage members of the community to adopt cycling and walking as alternatives to using private vehicles a) Develop and undertake annual cycling promotional marketing campaigns/production of literature	Cycle maps for the whole county and more detailed maps for the towns are produced and distributed by NCC; they are also available on the NCC website. Guided rides delivered across the county and a booklet promoting these rides are provided by a private organisation but are funded through the Local Sustainable Transport Fund. Smarter choices marketing campaigns have been undertaken during 2012/13 at all of the major sporting venues to encourage walking and cycling (Nottinghamshire County Cricket Club, Nottingham Forest Football Club and Nottingham Rugby Club) at matches during the 2010/11, 2011/12 and 2012/13 seasons. NCC has committed to a funding contribution through the Local Sustainable Transport Fund to the 'Big Wheel' to undertake various marketing campaigns throughout the year to encourage cycling, walking and passenger transport use. A major role of the smarter travel coordinator will be to work with communities to encourage cycling and to identify infrastructure enhancements that may be required to enable people to make the journeys they would like to. This post should be established during 2013/14 for a two year period.

Measure/Title	Progress with measure
b) Deliver adult and child cycle training	The County Council offers nationally accredited cycle training to people of all ages and abilities. Cycle training continues to be offered free of charge to children in the county. Adult training is also provided by a private organisation (which was initially supported financially by NCC until it established itself) and is available free to members of the public, whilst training is offered at workplaces at a cost to employers. In 2011/12 4,900 children received free cycle training.
c) Consider the use of advance cycle stop lines at feasible junctions within the AQMA	This action has been completed as advance cycle stop lines have been installed at all feasible major signal junctions within the AQMA.
e) Develop and undertake annual walking promotional marketing campaigns/production of literature	A number of walking leaflets are produced by NCC highlighting different levels of walks along its rights of way networks. In addition to the walking events that are held throughout the year (such as guided organised walks), a number of events were held during Walk Week including a celebration event in the Market Square to promote health and walk to work events. National walk to school week was also promoted by NCC in all schools across the county. It is hoped that the events in Walk Week will encourage people to continue walking and lead healthier lifestyles. Smarter choices marketing campaigns have been undertaken during 2012/13 at all of the major sporting venues to encourage walking and cycling (Nottinghamshire County Cricket Club, Nottingham Forest Football Club and Nottingham Rugby Club) at matches during the 2010/11, 2011/12 and 2012/13 seasons. NCC has committed to a funding contribution through the Local Sustainable Transport Fund to the 'Big Wheel' to undertake various marketing campaigns throughout the year to encourage cycling, walking and passenger transport use. A major role of the smarter travel coordinator will be to work with communities to encourage walking and to identify infrastructure enhancements that may be required to enable people to make the journeys they would like to. This post should be established during 2013/14 for a two year period.
f) Consider walking and cycling infrastructure and facility enhancements	The Local Sustainable Transport Fund is currently considering the introduction of additional secure cycle parking in Arnold to provide better integration for cyclists to make longer distance journeys by bus. These facilities will be accessible by bus smartcard. To encourage walking and cycling it is proposed to deliver the following schemes during 2013/14: • improved pedestrian facilities at signals at A60/A6514 junction • a residents parking scheme in the Redhill Road area to deter commuter parking • feasibility of providing pedestrian refuges on A60 at Redhill and at Arnot Hill Road in future years' programmes. A major role of the smarter travel coordinator will be to work with communities to help identify walking and cycling infrastructure enhancements that may be required to enable people to make the journeys they would like to. This post should be established during 2013/14 for a two year period.

Table 9.3 Links between action plan measures and delivery of indicators

<table>
<tr><th>Indicator no.</th><th>Indicator</th><th>Progress in this indicator</th><th>Measures in the action plan that will impact on delivery of the indicator</th></tr>
<tr><td>LTP1
LTP2</td><td>Traffic flows</td><td>
Detailed journey time monitoring of key corridors (including the A60) has been undertaken annually since 2005/06. Between 2005 and 2011 there has been a decrease in journey times per mile across the county as well as on A60 as shown in the table below. Data for 2011/2012 and 2012/2013 academic years is not available yet.
<table>
<tr><th>Average journey time per mile during the morning peak on the urban centre networks in the county</th><th>2007/08</th><th>2008/09</th><th>2009/10</th><th>2010/11</th><th>2011/12</th><th>2012/13</th></tr>
<tr><td>Nottinghamshire</td><td>3m 26s</td><td>3m 19s</td><td>3m 24s</td><td>3m 16s</td><td>N/A</td><td>N/A</td></tr>
<tr><td>A60 Mansfield Road (Leapool island – Edwards Lane)</td><td>3m 48s</td><td>2m 54s</td><td>3m</td><td>3m 6s</td><td>N/A</td><td>N/A</td></tr>
</table>
The tables below detail the changes in area wide traffic mileage for all vehicles and HGVs based on an annualised index where 2009 is the base year. As can be seen following significant decreases between 2007 and 2008 (probably due to the start of the economic recession) there have been further decreases in traffic mileage from all vehicles.
<table>
<tr><th>Changes in area wide traffic mileage (vehicle kilometres travelled)</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Nottinghamshire</td><td>102</td><td>99</td><td>100</td><td>99</td><td>98</td><td>N/A</td></tr>
<tr><td>Greater Nottingham</td><td>105</td><td>99</td><td>100</td><td>99</td><td>97</td><td>N/A</td></tr>
<tr><td>Gedling</td><td>106</td><td>98</td><td>100</td><td>96</td><td>96</td><td>N/A</td></tr>
</table>
Traffic mileage for HGVs has also decreased significantly (6% decrease in the county since 2007). It is not possible to report vehicle kilometres at a district level due to the level of data available.
<table>
<tr><th>Changes in area wide HGV mileage (vehicle kilometres travelled)</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Nottinghamshire</td><td>114</td><td>111</td><td>100</td><td>98</td><td>98</td><td>N/A</td></tr>
<tr><td>Greater Nottingham</td><td>116</td><td>111</td><td>100</td><td>98</td><td>98</td><td>N/A</td></tr>
</table>
It should be noted that re-routing traffic may result in additional traffic mileage and therefore negatively impact on this indicator.
</td><td>1a)
2a), b), c)
3a), b), c), e), f), g)
4a)
5a), b)
7a), c), d), f)
14c)
15a), b), c), d)
16a), b), c), d)
17a), b), c), d), e), f), g), h) 18a), b), c), d), e), f)</td></tr>
</table>

LTP3 — **Child obesity levels**

Child obesity levels are recorded at reception year and year 6. Whilst national trends between 2007/8 and 2011/12have remained static amongst reception year pupils and have increased by 2% for year 6 pupils; in Nottinghamshire the rates have decreased amongst both age groups. It is not currently possible to report these figures at a more local level.

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Nottinghamshire County NHS - Reception (age 4-5)	9.8%	8.9%	8.5%	7.9%	8.2%	N/A
Nottinghamshire County NHS - Year 6 (age 10-11)	17.6%	17.3%	17.3%	16.1%	17.2%	N/A

5a)
7a), c), d), f)
14c)
15c)
16a), d)
18a), b), c), e), f)

NI176 LTP15 LTP16 LTP17 LTP18 LTP19 — **Accessibility**

Accessibility to a number of destinations by public transport is calculated by NCC as shown below. The transport measures being undertaken by NCC (and GBC through effective planning) is helping to maintain the high levels of accessibility to these destinations.

	2007	2008	2009	2010	2011	2012
Working age people with access to employment by public transport (and other specified means)	79.5%	80.8%	80.9%	81.2%	81.9%	N/A
Percentage of 16-19 year olds with access to further education colleges within 40mins travel time by public transport				92%	94%	92%
Percentage of households with access to GP surgeries within 20mins travel time by public transport				94%	94%	93%
Percentage of households with access to hospital within 40mins travel time by public transport				86%	86%	90%
Percentage of households with access to a supermarket or local convenience store within 40mins travel time by public transport				99%	99%	99%
Percentage of households within 800m of a bus stop with an hourly or better bus service Monday–Saturday (0600-1800)				96%	95%	94%

7a), c), d), f)
15a), b), c), d)
16a), b), c), d
17a), b), c), f)
18a), b), e), f)

LTP4 LTP5 — **Air quality**

The table below shows CO_2 emissions from transport as an annualised index where 2009 is the base year. In line with traffic mileage reductions, CO2 emissions from transport also continue to decrease.

CO_2 emissions from transport on County Council managed roads	2007	2008	2009	2010	2011	2012
Nottinghamshire	106	103	100	100	98	N/A
Greater Nottingham	104	100	100	100	97	N/A
Gedling			100	100	98	N/A

The total number of air quality management areas on NCC managed roads has not increased since Gedling BC declared the AQMA on the A60.

1a)
2a), b), c)
3a), b), c), d), e), f), g)
5a), b)
6a)
7a), b), c), d), e), f)
9a), b), c), d)
10a), b)
11a)
12a), b), c), d), e)
13a), b)
14a), b), c), d)
15a), b), c), d)

<table>
<tr>
<td></td>
<td></td>
<td>
<table>
<tr><th>Indicator</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Number of AQMAs on County Council managed roads</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td><td>2</td></tr>
</table>

It should be noted that re-routing traffic may result in additional traffic mileage and therefore increased CO_2 emissions, and therefore negatively impact on this indicator.
</td>
<td>16a), b), c), d)
17a), b), c), d), e), f), g), h)
18a), b), c), d), e), f)</td>
</tr>
<tr>
<td>NI177
NI178
LTP22
LTP23
LTP27
LTP28
LTP29
LTP30</td>
<td>Bus services</td>
<td>
The numbers of people using passenger transport rose year on year up to 2009 but has plateaued since then possibly due to the nationwide recession (a trend mirrored elsewhere across the country). Passenger transport information is provided by operators and given their commercial sensitivity it is not possible to report these on a corridor by corridor basis.
<table>
<tr><th></th><th>2007/08</th><th>2008/09</th><th>2009/10</th><th>2010/11</th><th>2011/12</th><th>2012/13</th></tr>
<tr><td>No. of local bus and light rail passenger journeys originating in the authority</td><td>35.1m</td><td>35.4m</td><td>35.1m</td><td>34m</td><td>33.2m</td><td>N/A</td></tr>
</table>

It is not considered that the decrease in bus use is due to poorer services as services running on time and satisfaction levels continue to grow whilst investment in infrastructure continues as can be seen below.

The percentage of bus services running on time continues to meet its targets with 85% of all buses running on time and buses on frequent services arriving on average within less than 1 minute of their scheduled time. The methodology for determining these figures was changed in 2011 and therefore historical data does not exist. Similarly, historical data for services running through the AQMA cannot be reported but it will be possible to report this in future year's progress reports.
<table>
<tr><th>Indicator</th><th>2011/12</th><th>2012/13</th></tr>
<tr><td>Bus services running on time (Percentage of buses on time)</td><td>85%</td><td>85%</td></tr>
<tr><td>Bus services running on time (waiting time on frequent services)</td><td>0.89mins</td><td>0.93mins</td></tr>
</table>

<table>
<tr><th></th><th>2007/08</th><th>2008/09</th><th>2009/10</th><th>2010/11</th><th>2011/12</th><th>2012/13</th></tr>
<tr><td>Public satisfaction with local bus services</td><td></td><td></td><td>90%</td><td>71%</td><td>71.5%</td><td>87%</td></tr>
<tr><td>Public satisfaction with passenger transport information</td><td>59%</td><td>80%</td><td>82%</td><td>89.3%</td><td>91.5%</td><td>75%</td></tr>
<tr><td>Public satisfaction with bus driver behaviour</td><td></td><td></td><td>61%</td><td>59.5%</td><td>63.5%</td><td>79%</td></tr>
<tr><td>Number of fully accessible bus services</td><td></td><td></td><td></td><td>70%</td><td>N/A</td><td>N/A</td></tr>
</table>
</td>
<td>1a)
3a), b), c), d), e), f), g)
5a), b)
7c), d), f
9a), b), c), d)
14c)
15a), b), c), d)
16a), d)
17a), b), c), d), e), f), g), h)</td>
</tr>
</table>

		Provision of information at bus stops: 76% / 80% / 80% / 95% / N/A / N/A Provision of real-time information: [ ] / [ ] / 29 / 64 / 111 / N/A Take up of concessionary fare passes: 76 / 80 / 80 / 86% / N/A / 89.3% It should be noted that the change of operation of the bus lanes in the vicinity of the AQMA could negatively impact on the punctuality of services, satisfaction with services and therefore passenger numbers.	
LTP13 **LTP25** **LTP26**	**Cycling**	In both Nottinghamshire as a whole and the Nottingham built-up area part of the county cycling has increased by 5% between 2010 and 2012 despite the very poor weather in 2012; but in Gedling district there has been no change in cycling levels between 2010 and 2012. It is not possible to analyse these figures at a more local level. **Cycling levels** / 2007 / 2008 / 2009 / 2010 / 2011 / 2012 Nottinghamshire: 104 / 99 / 100 / 104 / 113 / 108 Greater Nottingham: [ ] / [ ] / 100 / 105 / 114 / 110 Gedling: [ ] / [ ] / [ ] / 100 / 107 / 100 The numbers of children undertaking cycle training in the county has increased. It is not currently possible to report the levels undertaking cycle training in Gedling, although this may be possible in future years. 2010/11 / 2011/12 / 2012/13 Number of children undertaking cycle training: 4,800 / 4,900 / N/A 2010 / 2011 / 2012 Length of shared or segregated cycle lane or path: 354km / 355km / 355km	5a), b) 6a) 7a), b), c), d), f) 14c) 15a), b), c), d) 16a), d) 18a)b), c), d), e), f)
LTP21	**Car sharing**	The numbers of registered car users continues to increase year on year. Based on the current levels of sharing this has resulted in estimated reductions of over 1.5million miles; 516 tonnes of CO2; and 58.1kg of NOx. 2007 / 2008 / 2009 / 2010 / 2011 / 2012 Number of registered car sharers on nottinghamshare: 994 / 1,326 / 1,760 / 1,891 / 2,044 / 2,234	5a), b) 7d), f) 14c) 15a), b), c), d) 16a), b), c), d)

Table 9.4 Progress against targets

Progress against trajectory legend:	
	Going strongly in the right direction
	No clear trend/slowly going in the right direction, perhaps not fast enough to meet agreed targets
	Going in wrong direction
N/A	Data not available at time of writing

Indicator no.	Indicator	Performance	Year								
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
LTP1	Average journey time per mile during the morning peak on the urban centre networks in the county	Trend data			3mins 26secs	3mins 19secs	3mins 24secs				
		Targets						3mins 26secs	3mins 27secs	3mins 29secs	3mins 30secs
		Actual						3mins 16secs	N/A	N/A	
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP2	Changes in area wide traffic mileage (vehicle kilometres travelled)	Trend data	100	102	99	100					
		Targets					101	102	103	104	105
		Actual					99	98	N/A		
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
LTP3	Child obesity levels NHS Nottinghamshire County – Reception (age 4-5)	Trend data			9.8%	8.9%	8.5%	7.9%			
		Targets							8.20%	8.00%	7.80%
		Actual							8.2%	N/A	
	Child obesity levels NHS Nottinghamshire County – Year 6 (age 10-11)	Trend data			17.6%	17.3%	17.3%	16.1%			
		Targets							17.00%	16.51%	16.00%
		Actual							17.2%	N/A	
				2007	2008	2009	2010	2011	2012	2013	2014
NI176	Working age people with access to employment by public transport (and other specified means)	Trend data		79.5%	80.8%	80.9%					
		Targets					80.9%	80.9%	80.9%	80.9%	80.9%
		Actual					81.2%	81.9%	N/A		

				2007	2008	2009	2010	2011	2012	2013	2014
LTP4	Number of AQMAs on County Council managed roads	Trend data		1	1	1	2				
		Targets						2	2	2	2
		Actual						2	2		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP5	CO_2 emissions from transport on County Council managed roads	Trend data	105	106	103	100					
		Targets					101	102	103	104	105
		Actual					100	98	N/A		
			2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
LTP7	Organisations with a travel plan	Trend data							N/A	N/A	
		Targets									
		Actual									
			2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
NI177	No. of local bus and light rail passenger journeys originating in the authority	Trend data	32.6m	34.0m	35.1m	35.4m	35.1m				
		Targets						35.4m	35.8m	36.1m	36.5m
		Actual						34m	33.2m	N/A	
			2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
NI178	Bus services running on time (Percentage of buses on time)	Trend data									
		Targets									
		Actual							85%	85%	
	Bus services running on time (waiting time on frequent services)	Trend data									
		Targets									
		Actual							0.89mins	0.93mins	
							2009/10	2010/11	2011/12	2012/13	2013/14
LTP8	Public satisfaction with local bus services	Trend data					90%				
		Targets						90%	90%	90%	90%
		Actual						71%	71.5%	87%	

			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP13	Cycling levels	Trend data	103	104	99	100	100				
		Targets						100	100	100	100
		Actual						109	105		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP14	Footfall in towns and district centres	Trend data							N/A		
		Targets									
		Actual									
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP15	Percentage of 16-19 year olds with access to further education colleges within 40mins travel time by public transport	Trend data					92%				
		Targets						92%	92%	92%	92%
		Actual						94%	92%		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP16	Percentage of households with access to GP surgeries within 20mins travel time by public transport	Trend data					94%				
		Targets						94%	94%	94%	94%
		Actual						94%	93%		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP17	Percentage of households with access to hospital within 40mins travel time by public transport	Trend data					86%				
		Targets						86%	86%	86%	86%
		Actual						86%	90%		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP18	Percentage of households with access to a supermarket or local convenience store within 40mins travel time by public transport	Trend data					99%				
		Targets						99%	99%	99%	99%
		Actual						99%	99%		
			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP19	Percentage of households within 800m of a bus stop with an hourly or better bus service Monday–Saturday (0600-1800)	Trend data					96%				
		Targets						96%	96%	96%	96%
		Actual						95%	94%		

			2006	2007	2008	2009	2010	2011	2012	2013	2014
LTP20	Particulate levels in air quality management areas (AQMAs) on County Council managed roads - Gedling	Trend data						N/A			
		Targets									
		Actual									
LTP21	Number of registered car sharers on nottinghamshare		2006	2007	2008	2009	2010	2011	2012	2013	2014
		Actual	790	994	1,326	1,760	1,891	2,044	2,234		
LTP22	Public satisfaction with passenger transport information		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12			
		Actual		59%	80%	82%	89.3%	91.5%		75%	
LTP23	Public satisfaction with bus driver behaviour		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12			
		Actual				61%	59.5%	63.5%		79%	
LTP24	Rates of cycle theft per 1,000 population		2006	2007	2008	2009	2010	2011	2012	2013	2014
		Actual		2.1	2.1	1.8	N/A	N/A	N/A		
LTP25	Number of children undertaking cycle training		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12			
		Actual					4,800	4,900	N/A		
LTP26	Length of shared or segregated cycle lane or path		2006	2007	2008	2009	2010	2011	2012	2013	2014
		Actual					354km	355km	355km		
	On-road cycle lane	Actual					21km	21km	21km		
	Off-road shared use	Actual					158km	158km	158km		
	Off-road cycle track	Actual					175km	176km	176km		
LTP27	Number of fully accessible bus services		2006	2007	2008	2009	2010	2011	2012	2013	2014
		Actual					70%	N/A	N/A		
LTP28	Provision of information at bus stops		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12			
		Actual	74%	76%	80%	80%	95%	N/A	N/A		
LTP29	Provision of real-time information		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13		
		Actual				29	64	111	N/A		
LTP30	Take up of concessionary fare passes		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13		
		Actual	74	76	80	80	86%	N/A	89.3%		

Gedling Borough Council – Strategic, Promotion and Other Measures

Table 9.5, below, indicates the measures that have been identified for Gedling Borough to implement and provides an update on the progress made to date.

ECOStars Fleet Recognition Scheme

The ECOStars scheme (measures 9a, 10a and 12a) ran as a DEFRA funded project from Nov 2011 until Nov 2012. The membership at the project close was 24 members operating over 1300 vehicles. The scheme in Gedling has now been expanded to cover the whole of the Nottingham conurbation, due to funding from the Greater Nottingham Transport Partnership; ECOStars Nottingham was launched in March 2013 and has funding (LSTF) to run into 2015. The LSTF funding also includes monies to provide free Safe and Fuel Efficient Driving (SAFED) to members (measure 9b and 10b).

Table 9.5 Gedling Borough Council Action Plan Measures - Progress

No.	Measure	Focus	Planning Phase	Implementation Phase	Indicator	Progress to Date	Progress in Last 12 Months	Estimated Completion Date
4	Ensure that collections around the AQMA occur outside of the rush hour.	Reduce traffic congestion along the AQMA.	2012	2012-	Review of collection timetables	ongoing	n/a	ongoing
5b	Parking Management and Control Continual review of car parking charging, to promote public transport options	Promote public transport through review of car parking arrangements.	2013	ongoing	Improved journey times and bus patronage	ongoing	n/a	ongoing
7a	Ensure sustainable development on vacant sites within and in the vicinity of the AQMA.	Local planning considerations aim to mitigate the cumulative negative air quality impacts of new development.	2012-	ongoing	No. of AQ impact assessments related to AQMA	1 AQ assessment, Aldi Supermarket (See Section 5)	n/a	ongoing
7b	Ensure AQAP and AQMA are considered in future planning policy frameworks (Local Plans).		2012-	ongoing	Ongoing consultation with Core Strategy development (see Section 6)	ongoing	n/a	ongoing
7c	Co-ordination of land-use planning and transport infrastructure (including through the Local Plan). Development of car parking standards that encourage cycling, walking and public transport use.		2012-	ongoing	n/a	ongoing	n/a	ongoing
7d	Secure appropriate levels of developer contributions (Section 106 and/or CIL) for use on air quality improvement projects. Use of collected development control contributions to provide cycling, walking and public transport improvements within the AQMA.		ongoing	ongoing	Sums collected for air quality projects	none	n/a	ongoing
7e	Development of an Air Quality Supplementary Planning Document(SPD)		2013	2014-2015	Development of SPD	none	n/a	not known
7f	Use of planning conditions for Delivery Times, Travel Plans etc.; including enforcement to ensure compliance.		ongoing	ongoing	No of applications conditioned, where applicable	none	n/a	ongoing

No.	Measure	Focus	Planning Phase	Implementation Phase	Indicator	Progress to Date	Progress in Last 12 Months	Estimated Completion Date
8	Continue links with both County and City Transport Planners to ensure AQAP is considered in future transport planning.	Measures to ensure the current poor air quality in the AQMA is improved where possible and to avoid future problems are implemented via the Local Transport Plan.	2012-	ongoing	n/a	Meeting with NCC officers March 2013	n/a	ongoing
9a, 9b,	ECOStars Fleet Recognition Scheme. Promotion of the benefits of Eco-driving training for drivers.	Target reduced emissions from buses operating within the AQMA.	2012	2012-2015	Scheme membership	4 members (2 bus, 2 coach operators) Coach operators undergoing SAFED training.	n/a	2015
10a 10b	ECOStars Fleet Recognition Scheme. Promotion of the benefits of Eco-driving training for drivers.	Target reduced emissions from HGV's and LGV's operating within the AQMA	2012	2012-2015	Scheme membership	27 members operating around Nottingham. SAFED training available.	n/a	2015
11	Promotion of low emission vehicles through taxi licensing.	Target reduced emissions from Taxi's operating within the AQMA	2013	2013-2014	Review of Taxi Licence criteria	ongoing	n/a	ongoing
12a	Gedling Borough membership of ECOStars scheme.	Target reduced emissions from Council fleet vehicles and Council contract fleet vehicles operating within AQMA.	2012	2012-	membership	3* Member	n/a	ongoing
12b	Ensuring new vehicles procured are cleanest possible.		2012	ongoing	Indictors linked to the GBC Sustainability Strategy and Action Plan	Electric van purchased	n/a	ongoing
12c	Run Eco-driving training course for officers using own and GBC vehicles for work.		2012	2012-2013		56 staff received training	n/a	Ongoing subject to financial resources
12d	Consider alternative fuelled 'pool vehicles'		2012	2012-		See 12b, bicycles available for staff use	n/a	ongoing
12e	GBC Green Procurement (emission standards for vehicles making deliveries to the Council).		2013	2014-		none	n/a	ongoing

No.	Measure	Focus	Planning Phase	Implementation Phase	Indicator	Progress to Date	Progress in Last 12 Months	Estimated Completion Date
13a	GBC consider installing electric charging points for visitors and staff.	Encourage the uptake of alternative fuels with infrastructure improvements.	2012	2013	Indictors linked to the GBC Sustainability Strategy and Action Plan	One Charging point part of Plugged in Midlands	n/a	2013-2014
13b	Consider a wider network of charging points.		2012	2014-2015		Proposal for one charging point at a GBC car park in Arnold. Part of Plugged in Midlands	n/a	ongoing
14a	Design and erect AQMA signs at various locations	To increase awareness of local air quality issues and encourage change in behaviour that will contribute to improving local air quality.	2013	ongoing	Feasibility assessment	none	n/a	Dependant of political and financial backing
14b	Roadside Vehicle Emissions Testing (RVET)		2012	2013-2015	Carry out RVET day.	Obtained costing	n/a	Dependant of financial resources
14d	Undertake a publicity campaign to raise awareness of the A60 AQMA.		2012	ongoing	Publication of relevant promotional material	Articles in Contacts magazine regarding Action Plan and ECOStars.	n/a	ongoing
15a	Review/refresh Gedling Borough Council Travel Plan;	To encourage a shift to more sustainable forms of travel, or reducing the need for travel.	2013	2013-2014	Review GBC travel plan; improved journey times; increased bus patronage; increased active travel	Carried out employee travel to work survey.	n/a	2014
18d	Gedling Borough Council to hold 'Car Free Days' to encourage staff to cycle or walk to work.	To encourage the shift away from the use of private motor vehicles for travelling to more sustainable forms of transport, or reducing the need for travel.	2013-	ongoing	No. of 'car free days'	none	n/a	ongoing

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Gedling Borough Council has examined the results from monitoring in the borough. Concentrations for all pollutants except NO_2 are below the objectives, therefore there is no need to proceed to a Detailed Assessment.

Gedling Borough Council has measured concentrations of NO_2 above the annual mean objective at relevant locations within the AQMA; therefore it will remain.

10.2 Conclusions relating to New Local Developments

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

10.3 Proposed Actions

Gedling Borough Council proposes no further action as a result of this Progress Report.

Gedling Borough Council will next submit a Progress Report in 2014.

11 References

Part IV of the Environment Act 1995 - Local Air Quality Management: Policy Guidance; LAQM.PG(09); Department for Environment and Food and Rural Affairs; 2009.

Part IV of the Environment Act 1995 - Local Air Quality Management; Technical Guidance; LAQM.TG(09); Department for Environment and Food and Rural Affairs; 2009.

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007. Department for Environment and Food and Rural Affairs.

ML®9841B Nitrogen Oxides Analyser Operational and Service Manuals; Monitor Labs; Rev H; October 1998.

Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users, 2008. AEA Energy & Environment.

A Breath of Fresh Air for Nottinghamshire; The Nottinghamshire Environmental Protection Working Group, 2008

Aligned Core Strategies; Broxtowe Borough Council, Gedling Borough Council and Nottingham City Council; June 2012.

LTP3, 3rd Local Transport Plan for Nottingham, 2011-2026; Nottinghamshire County Council; 2011.

Appendices

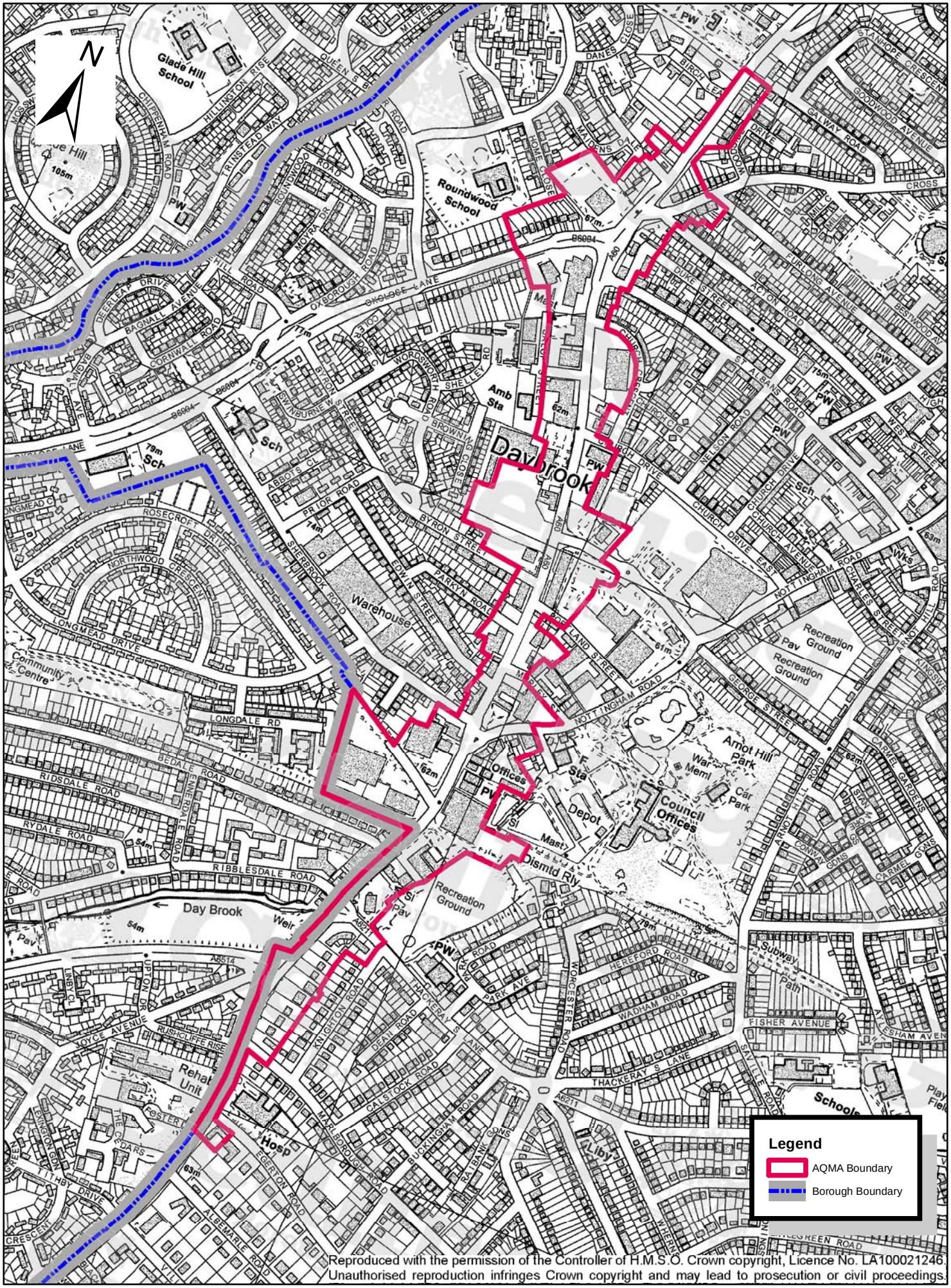
Appendix A: Maps

Appendix B: Nitrogen Dioxide Diffusion Tube Results and Bias Adjustment Details

Appendix C: QA/QC Data

Appendix A

Maps

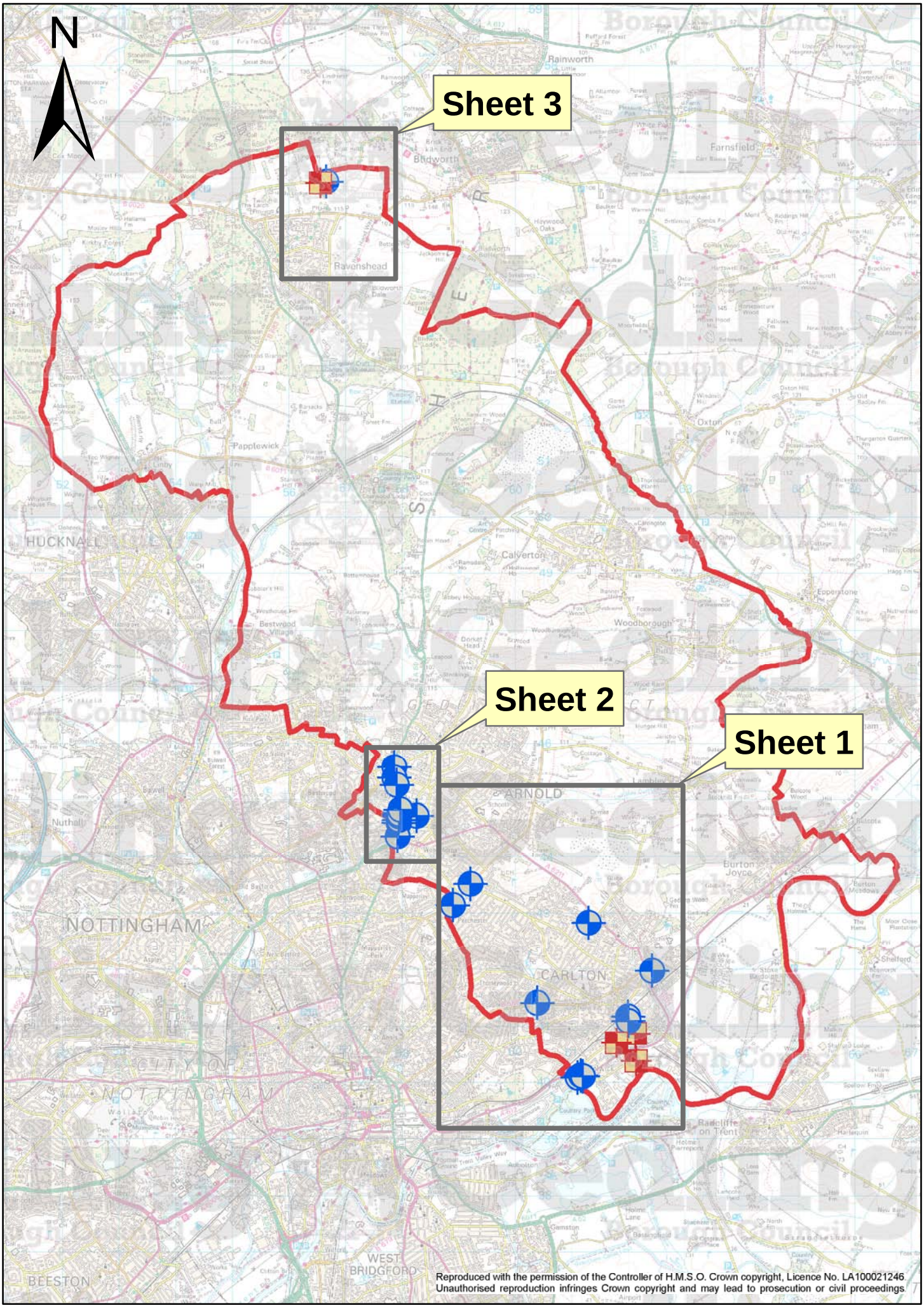


Gedling Borough Council

Map referred to in the
Gedling No: 2 Air Quality Management Order 2011
(Nitrogen Dioxide)

Scale 1:7,500

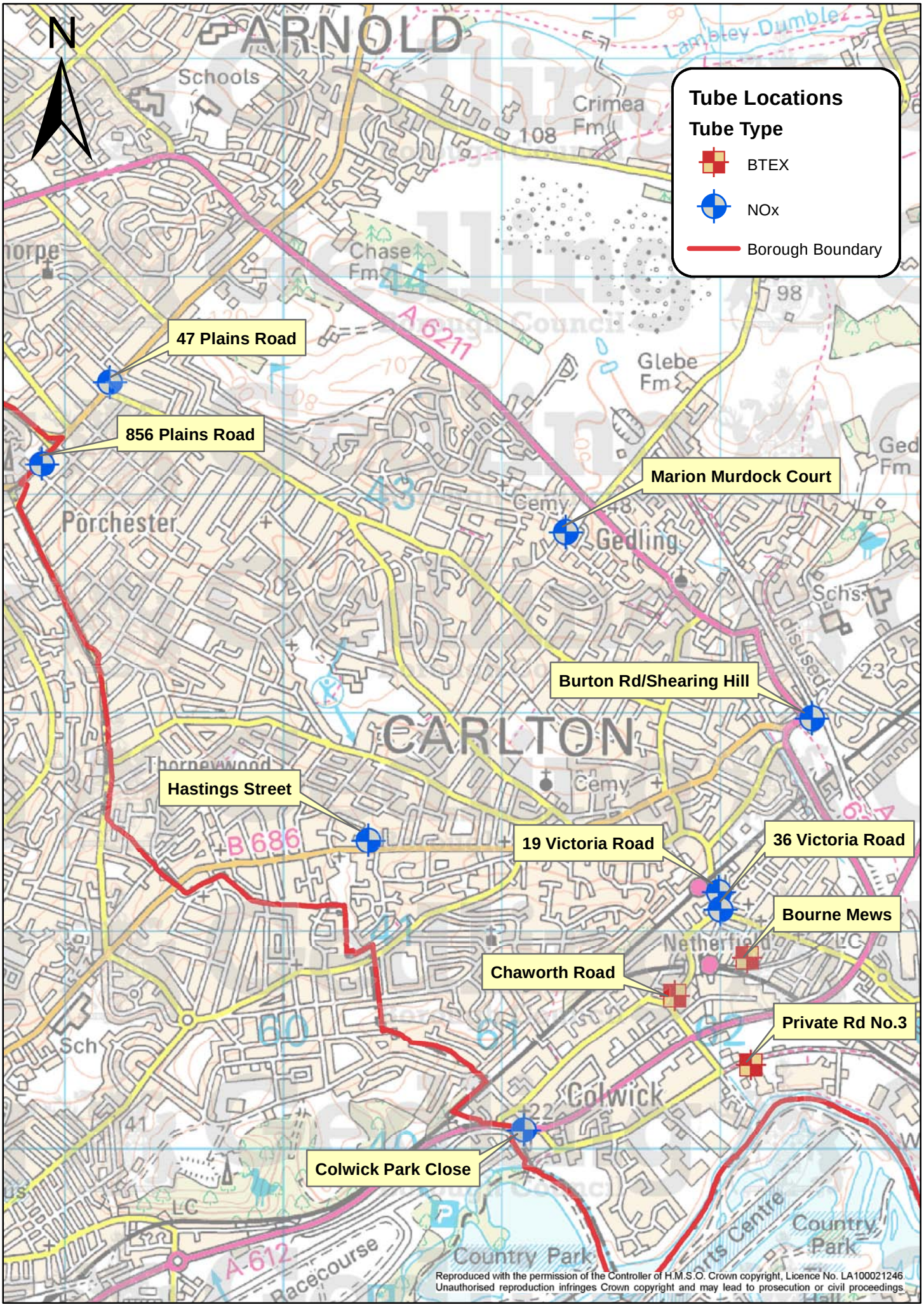
Date April 2011



Gedling Borough Council

Sheet Locations

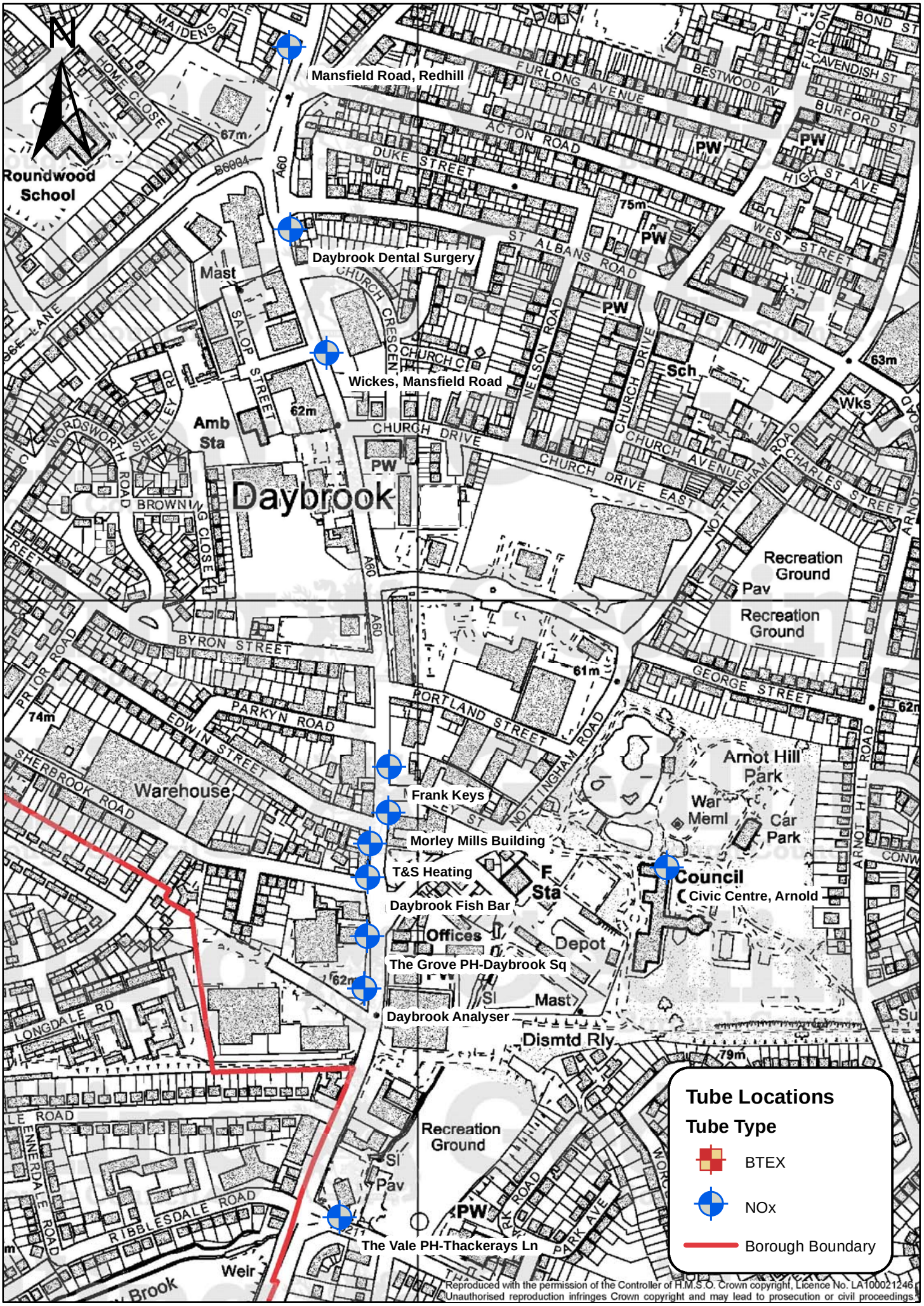
Scale: nts



Gedling Borough Council

DiffusionTube Locations - Sheet 1

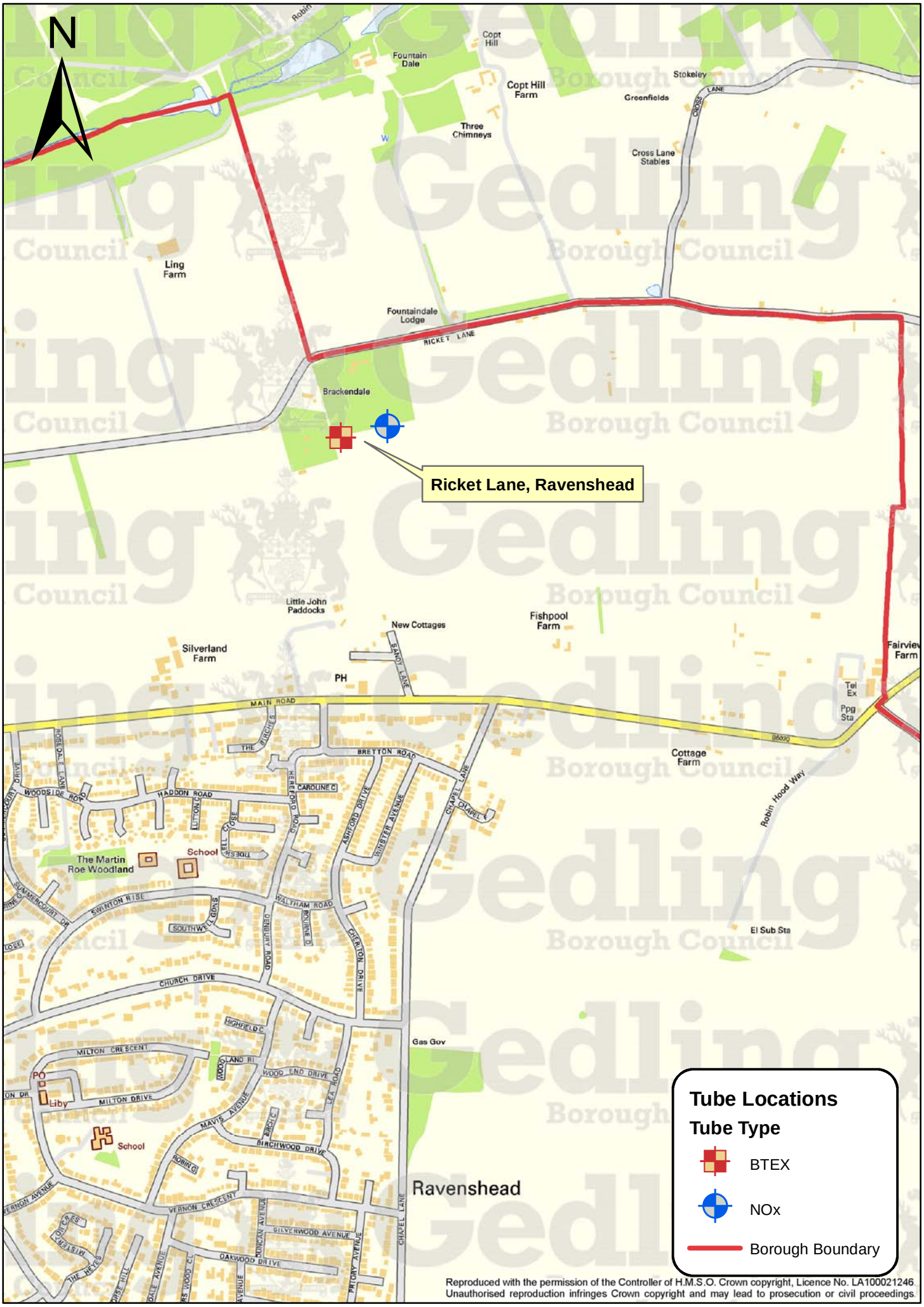
Scale: nts



Gedling Borough Council

DiffusionTube Locations - Sheet 2

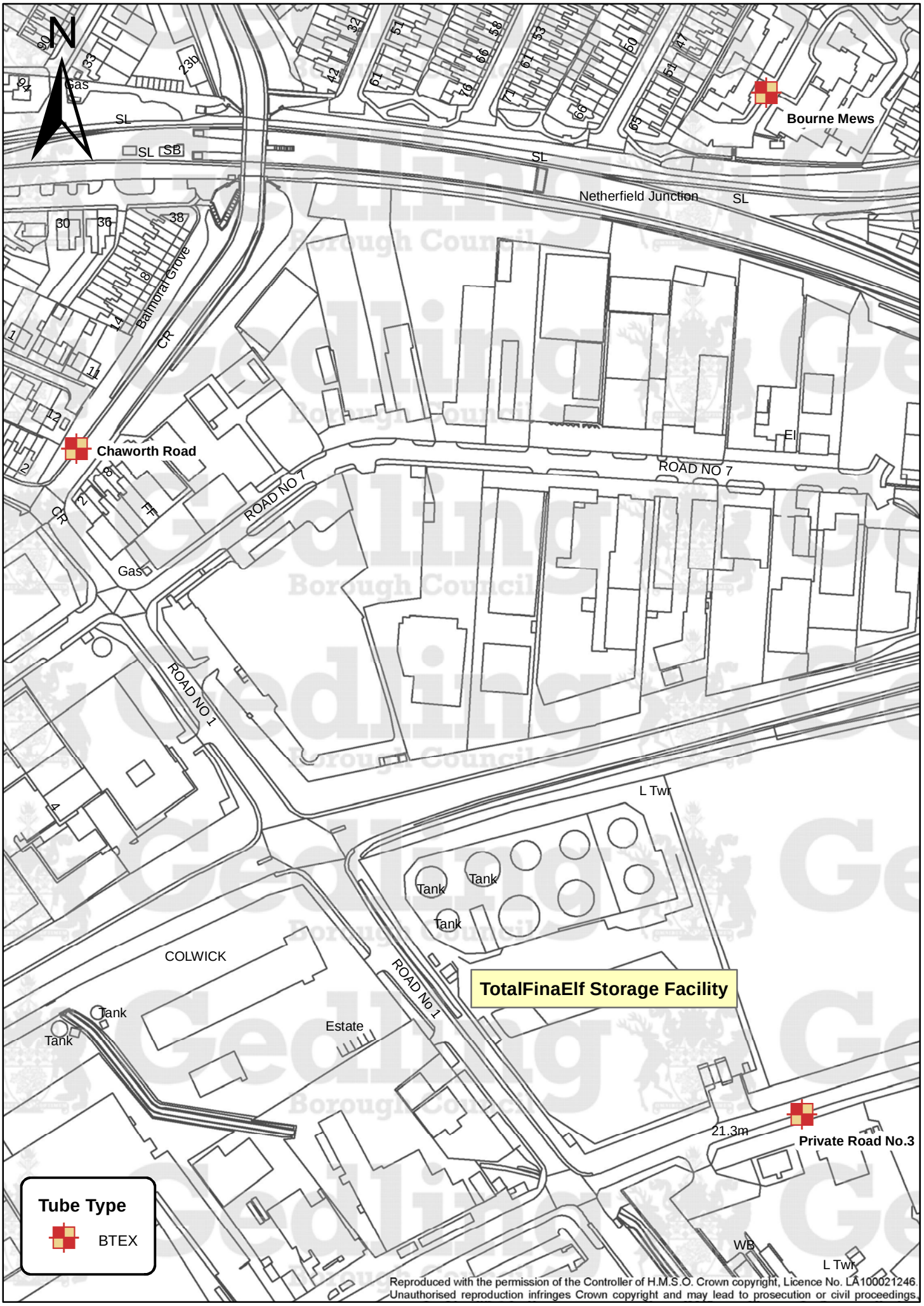
Scale: nts



Gedling Borough Council

DiffusionTube Locations - Sheet 3

Scale: nts



Gedling Borough Council

Btex Tube Locations

Scale: nts

Appendix B

Nitrogen Dioxide Diffusion Tube Results And Bias Adjustment Details

Diffusion Tube Bias Adjustment Factors

National Bias Adjustment Factors (BAF) have been obtaining using the co-location studies spreadsheet available at http://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html

The Gradko national BAF 2012 for 20% TEA in water is given as **0.97** from 27 studies of various types. (See screen shot in this appendix)

Factor from Local Co-location Studies

A co-location study was carried out with the GBC NOx analyser. However, due to a data logger failure in mid August no continuous NOx analyser data is available from that date in 2012. Due to the incomplete nature of the data no local bias adjustment factor has been calculated. (For completeness, attached to this appendix the AEA spreadsheet for calculating bias, precision and accuracy of triplicate tubes).

Discussion of Choice of Factor to Use

Based on guidance supplied by the Review and Assessment Helpdesk (http://laqm.defra.gov.uk/laqm-faqs/faq69.html) GBC has used the **national** bias adjustment factor when adjusting diffusion tube results.

Adjustment for Receptor Distance

Two of the diffusion tube locations are not representative of the receptors concerned:

1. 36 Victoria Road
2. The Vale PH

Due to site constraints the tubes are located as close as possible to the receptors. The two results have therefore been adjusted using the 'NO_2 with distance from roads' spreadsheet; available at http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html

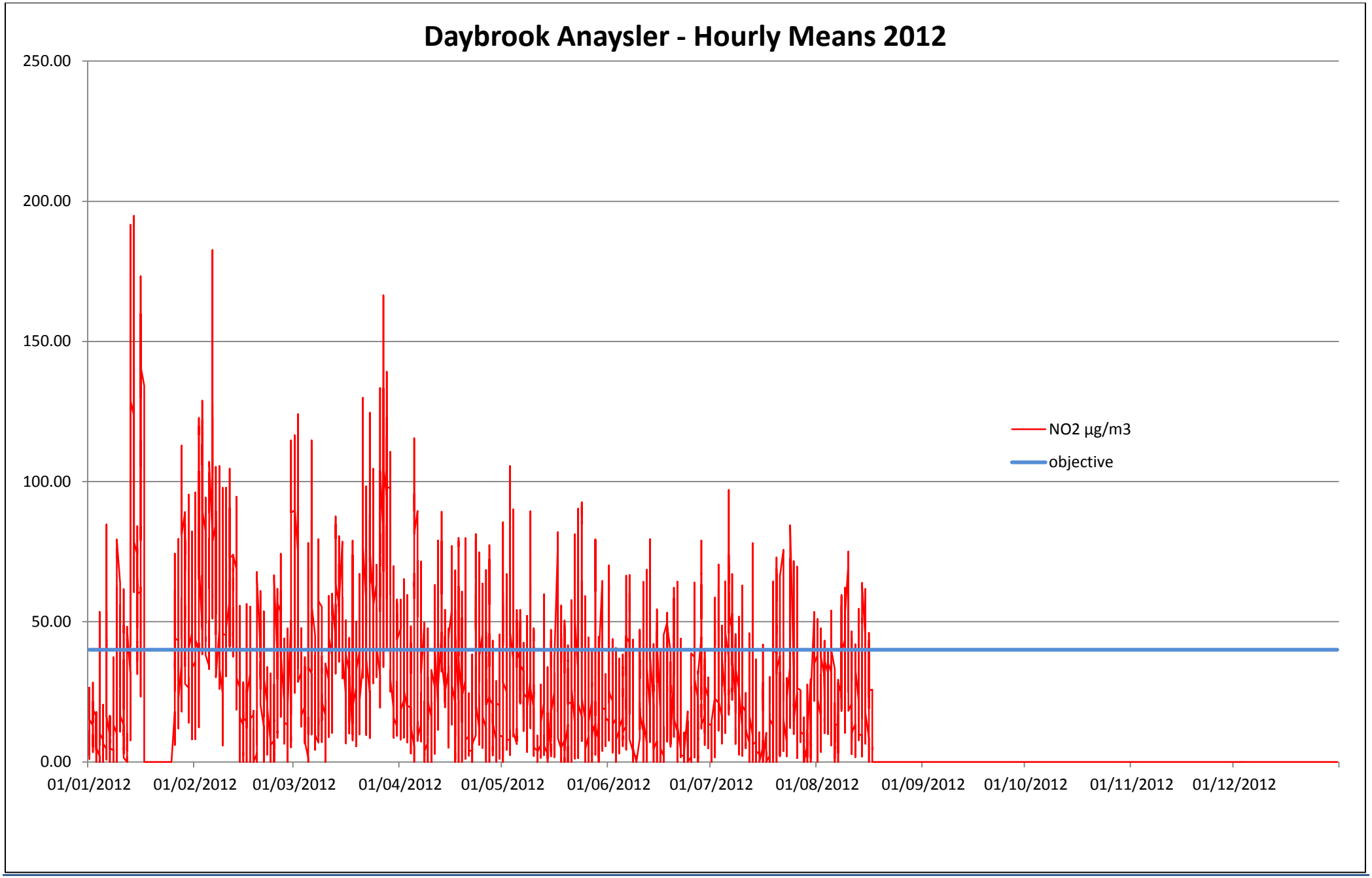
Background concentrations have been taken from the background mapping v2010 (found at http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html) NB v2011 was not available at the time of writing. Screen shots of these spreadsheets are attached to this appendix.

Short-term to Long-term Data adjustment

As mentioned data from the continuous NOx analyser was incomplete for 2012; due to a data logger failure in mid August 2012. As such the annual average has been "annualised" as in Box 3.2 of TG(09). Table A1 below shows details of the data used and factors produced to adjust the 7 months of data (jan-july) to a 12 month average.

Table A.1 Short-Term to Long-Term Monitoring Data Adjustment

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
Leicester Centre	Urban Background	29.76	28.30	1.0517
Lincoln Canwick Rd	Urban traffic	43.53	45.04	0.9665
Nottingham Centre	Urban Background	37.07	35.77	1.0364
Average				1.0182


Daybrook Anaysler - Hourly Means 2012
250.00
200.00
150.00
100.00
50.00
0.00
01/01/2012
01/02/2012
01/03/2012
01/04/2012
01/05/2012
01/06/2012
01/07/2012
01/08/2012
01/09/2012
01/10/2012
01/11/2012
01/12/2012
NO2 µg/m3
objective

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	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	04/01/2012	01/02/2012	48.6	48.6	50.1	49	0.9	2	2.2	45	64	Good	or Data Capture
2	01/02/2012	29/02/2012	52.9	48.0	52.8	51	2.8	5	7.0	41	93	Good	Good
3	29/02/2012	29/03/2012	49.4	53.7	56.6	53	3.6	7	9.0	44	96	Good	Good
4	29/03/2012	25/04/2012	42.2	43.9	42.4	43	0.9	2	2.3	30	93	Good	Good
5	25/04/2012	31/05/2012	42.3	42.9	37.5	41	2.9	7	7.3	28	91	Good	Good
6	31/05/2012	04/07/2012	30.8	37.2	37.5	35	3.8	11	9.4	25	83	Good	Good
7	04/07/2012	01/08/2012	37.9	38.5	35.3	37	1.7	5	4.3	25	83	Good	Good
8	01/08/2012	29/08/2012	41.3	41.7	45.1	43	2.1	5	5.2	26	50	Good	or Data Capture
9	29/08/2012	03/10/2012	35.0	33.6	34.0	34	0.7	2	1.9			Good	
10	03/10/2012	31/10/2012	47.3	42.9	46.1	45	2.3	5	5.7			Good	
11	31/10/2012	28/11/2012	54.5	52.7	50.8	53	1.9	4	4.6			Good	
12	28/11/2012	02/01/2013	38.0	38.9	37.6	38	0.6	2	1.6			Good	
13													
											Overall survey -->	Good precision	Poor Overall

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

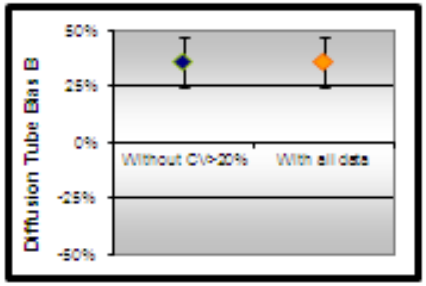
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Daybrook Square

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

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 6 periods of data	
Bias factor A	0.75 (0.69 - 0.81)
Bias B	34% (23% - 45%)
Diffusion Tubes Mean:	43 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	32 μgm^{-3}
Data Capture for periods used:	90%
Adjusted Tubes Mean:	33 (30 - 35) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 6 periods of data	
Bias factor A	0.75 (0.69 - 0.81)
Bias B	34% (23% - 45%)
Diffusion Tubes Mean:	43 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	32 μgm^{-3}
Data Capture for periods used:	90%
Adjusted Tubes Mean:	33 (30 - 35) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Co-Location Spreadsheet 2012 Gradko Analysed

Adjustment of SINGLE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tube Measurements															
Site Name/ID	Periods													Raw Mean	Valid periods
	1	2	3	4	5	6	7	8	9	10	11	12	13		
Marion Murdock Court	30.3	33.5	30.0	19.5	12.2	12.2	17.3	16.4	19.9	22.4	32.2	28.6		22.9	12
Hastings Street	44.1	47.8	37.1	23.0	13.8	16.3	21.2	21.7	21.9	30.1	35.8	32.7		28.8	12
856 Plains Road	-	49.5	46.6	35.8	31.3	20.9	30.8	29.5	29.9	36.5	40.4	34.2		35.0	11
Morley Mills, Daybrook	51.8	55.1	56.8	-	31.1	35.2	33.0	41.4	37.0	39.6	60.8	42.1		44.0	11
Mansfield Road, Redhill	35.6	43.2	38.2	27.8	26.3	24.2	22.1	31.1	22.9	33.1	45.2	32.1		31.8	12
Daybrook Dental Surgery	48.9	54.5	52.4	39.0	26.7	26.0	35.7	37.2	36.3	40.6	55.6	43.8		41.4	12
Victoria Road, Netherfield 1	44.2	47.8	47.6	32.2	27.4	27.4	31.3	33.9	29.1	36.0	43.2	44.7		37.1	12
Victoria Road, Netherfield 2	56.9	57.6	53.6	37.1	32.0	31.5	40.3	41.6	45.8	46.0	58.6	34.8		44.6	12
47 Plains Road	45.1	48.9	44.7	37.0	22.4	26.2	27.1	30.9	33.4	35.3	46.9	36.3		36.2	12
Burton Rd/Shearing Hill	40.9	46.8	40.4	33.1	26.1	19.4	27.5	23.2	27.0	31.9	39.6	37.1		32.8	12
Vale PH - Thackerays Ln	64.3	67.9	63.1	42.5	32.6	34.3	41.0	43.7	42.1	45.2	64.8	54.5		49.7	12
Grove PH - Daybrook Sq	49.4	56.3	55.3	38.6	34.5	31.1	38.0	39.7	31.1	45.9	50.8	41.9		42.7	12
Ricket Lane	22.7	25.1	25.9	15.5	12.5	10.8	13.1	14.7	13.6	17.0	25.8	23.3		18.3	12
Wickes Store, Daybrook	53.0	52.9	47.2	34.4	22.5	24.8	27.8	37.9	35.1	44.5	55.8	43.5		39.9	12
Civic Centre, Arnold	33.8	35.4	31.4	20.2	14.9	14.6	18.5	18.2	21.3	20.6	31.3	28.8		24.1	12
Mile End Road	42.3	41.2	42.3	22.1	24.3	13.6	26.8	22.2	23.2	35.4	33.0	33.1		30.0	12
Daybrook Chip Shop	62.8	67.3	64.5	50.6	35.6	38.8	58.1	45.6	44.7	52.4	59.3	42.7		51.9	12
T&S Heating, Daybrook	63.2	71.9	69.1	49.4	37.3	41.6	46.2	56.6	50.8	52.4	73.8	53.1		55.4	12
Frank Keys, Daybrook	60.2	63.9	55.8	44.3	28.3	32.7	37.1	44.7	40.9	47.8	67.4	45.7		47.4	12

Adjusted measurement (95% confidence interval)	
with all the data	
6 periods used in this calcuations	
Bias Factor A	0.75 (0.69 - 0.81)
Bias B	34% (23% - 45%)
Tube Precision: 6	Automatic DC: 90%
Adjusted with 95% CI	17 (16 - 19)
Adjusted with 95% CI	22 (20 - 23)
Adjusted with 95% CI	26 (24 - 28)
Adjusted with 95% CI	33 (30 - 36)
Adjusted with 95% CI	24 (22 - 26)
Adjusted with 95% CI	31 (29 - 34)
Adjusted with 95% CI	28 (26 - 30)
Adjusted with 95% CI	33 (31 - 36)
Adjusted with 95% CI	27 (25 - 29)
Adjusted with 95% CI	25 (23 - 27)
Adjusted with 95% CI	37 (34 - 40)
Adjusted with 95% CI	32 (29 - 35)
Adjusted with 95% CI	14 (13 - 15)
Adjusted with 95% CI	30 (28 - 32)
Adjusted with 95% CI	18 (17 - 19)
Adjusted with 95% CI	22 (21 - 24)
Adjusted with 95% CI	39 (36 - 42)
Adjusted with 95% CI	42 (38 - 45)
Adjusted with 95% CI	36 (33 - 38)

2012 Diffusion Gradko Analysed Tube Results

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/13

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2013

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 make your selection, choose [All] from the pop-up list)	Year[2] (To make 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[5]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2012	R	Exeter City Council	11	34	34	-0.3%	G	**1.00**
Gradko	20% TEA in water	2012	R	Scarborough B C	11	32	37	-11.3%	G	**1.13**
Gradko	20% TEA in Water	2012	KS	Marylebone Road Intercomparison	11	106	94	12.1%	G	**0.89**
Gradko	20% TEA in water	2012	KS	New Forest DC	10	46	40	13.4%	G	**0.88**
Gradko	20% TEA in water	2012	R	New Forest DC	10	33	29	11.8%	G	**0.89**
Gradko	20% TEA in water	2012	R	Brighton & Hove City Council	11	41	37	10.5%	G	**0.91**
Gradko	20% TEA in water	2012	R	City of Lincoln Council	11	53	44	18.4%	G	**0.84**
Gradko	20% TEA in water	2012	R	Fareham Borough Council	9	38	39	-4.1%	G	**1.04**
Gradko	20% TEA in water	2012	R	NOTTINGHAM CITY COUNCIL	10	44	44	-0.2%	G	**1.00**
Gradko	20% TEA in water	2012	R	NOTTINGHAM CITY COUNCIL	11	43	41	4.9%	G	**0.95**
Gradko	20% TEA in water	2012	R	NOTTINGHAM CITY COUNCIL	10	46	47	-0.3%	G	**1.00**
Gradko	20% TEA in water	2012	R	The Highland Council	9	24	32	-24.1%	G	**1.32**
Gradko	20% TEA in water	2012	R	Wiltshire Council	10	36	35	3.9%	G	**0.96**
Gradko	20% TEA in Water	2012	UB	LB Waltham Forest	11	33	38	-11.8%	S	**1.13**
Gradko	20% TEA in water	2012		**Overall Factor[3] (27 studies)**				**Use**		**0.97**

Gradko 20%TEA in Water Co-location Studies 2012

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality Consultants

Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	4.5	metres
Step 4	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	19.99	$\mu g/m^3$
Step 3	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	43	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	37.5	$\mu g/m^3$

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 1: 30/06/08. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

36 Victoria Road Calculation for Distance to Receptor

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

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Enter data into the yellow cells

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)	14	metres
Step 4	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	22.68	$\mu g/m^3$
Step 3	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	48	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	38.5	$\mu g/m^3$

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Vale PH Calculation for Distance to Receptor

Site	NO2 /ugm-3 2012 jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	Annual Mean	Adjusted for bias	Distance Adjmnt	Data Capture
Marion Murdock Court	30	33	30	20	12	12	17	16	20	22	32	29	23	22		100
Hastings Street	44	48	37	23	14	16	21	22	22	30	36	33	29	28		100
856 Plains Road	-	50	47	36	31	21	31	29	30	37	40	34	35	34		92
Morley Mills, Daybrook	52	55	57	-	31	35	33	41	37	40	61	42	44	**43**		92
Mansfield Road, Redhill	36	43	38	28	26	24	22	31	23	33	45	32	32	31		100
Daybrook Dental Surgery	49	54	52	39	27	26	36	37	36	41	56	44	41	**40**		100
19 Victoria Road, Netherfield	44	48	48	32	27	27	31	34	29	36	43	45	37	36		100
36 Victoria Road, Netherfield	57	58	54	37	32	31	40	42	46	46	59	35	45	**43**	38	100
47 Plains Road	45	49	45	37	22	26	27	31	33	35	47	36	36	35		100
Burton Rd/Shearing Hill	41	47	40	33	26	19	27	23	27	32	40	37	33	32		100
The Vale PH - Thackerays Ln	64	68	63	42	33	34	41	44	42	45	65	55	50	**48**	39	100
The Grove PH - Daybrook Sq	49	56	55	39	34	31	38	40	31	46	51	42	43	**41**		100
Ricket Lane	23	25	26	15	13	11	13	15	14	17	26	23	18	18		100
Wickes Store, Daybrook	53	53	47	34	23	25	28	38	35	44	56	44	40	39		100
Civic Centre, Arnold	34	35	31	20	15	15	18	18	21	21	31	29	24	23		100
Colwick Park Close	42	41	42	22	24	14	27	22	23	35	33	33	30	29		100
Daybrook Chip Shop	63	67	65	51	36	39	58	46	45	52	59	43	52	**50**		100
T&S Heating, Daybrook	63	72	69	49	37	42	46	57	51	52	74	53	55	**54**		100
Frank Keys, Daybrook	60	64	56	44	28	33	37	45	41	48	67	46	47	**46**		100
Analyser in ppb	23.53	21.63	23.18	15.74	14.91	13.17	13.12	13.82	data logger fault - no data				17			
ANALYSER IN ug/m-3	**45**	**41**	**44**	**30**	**28**	**25**	**25**	**26**	**0**	**0**	**0**	**0**	**22**			
DATA CAPTURE %	64	93	96	93	91	83	83	50	0	0	0	0	54	%		

Bias Adjustment Factors used	gradko	**0.97**	27 National (various)

Nitrogen Dioxide Diffusion Tube Monitoring 2012 - Adjusted for Bias

Appendix C

QA / QC Data

Quality Assurance and Quality Control – Nitrogen Dioxide Diffusion Tubes

Overview

Diffusion tubes are small clear plastic tubes open at one end with a pollutant-absorbing chemical matrix or gel at the closed end. The tubes are prepared and sealed before being transported to the monitoring site. At site, the tube is exposed, by removal of the end cap, for a period of one month. After the month the tube is resealed and sent to an analytical laboratory.

The laboratory analysis measures the quantity of pollutant absorbed and then calculates an average ambient pollutant concentration over the exposure period. Diffusion tube results are for NO_2, concentrations measured in parts per billion (ppb) and micrograms per cubic metre (μgm^3).

Tubes are exposed on a monthly basis, following the timetable prescribed by the Diffusion Tube Network in which tubes are replaced generally on the first Wednesday of the month.

Historical, Walsall Metropolitan Borough Council Laboratory have supplied and analysed GBC NO_2 diffusion tubes, using 50% solution TEA in acetone.

From April 2008 GBC entered into a Countywide contract with Gradko Ltd. for the supply and analysis of NO_2 diffusion tubes. At the same time it was agreed to use the same preparation method (20% solution of TEA in water). This harmonisation of laboratory and method for the county will allow easier comparisons of results across LA boundaries.

QA/QC Procedures

<u>Gradko</u>

The European Union Daughter Directive for NO_2 sets out data quality objectives for overall accuracy. Annual average NO_2 concentration results must comply with the objective of $\pm$25% of the reference concentration therefore, average diffusion tube measurements should comply with this objective.

The precision of analytical measurements is also an important consideration, as it is possible to arrive at an average bias of less than ±25% with very imprecise measurements. Following previous intercomparisons of laboratory results an arbitrary guideline figure of 3ppb for acceptable precision has been adopted.

Gradko's NO_2 diffusion tube procedures follow the Defra guideline document[1] related to the preparation, extraction, analysis and calculation procedures for NO_2 passive diffusion tubes. Their internal analysis procedures are assessed by U.K.A.S. on an annual basis for compliance to ISO17025.

Results from the ongoing Workplace Analysis Scheme for Proficiency (WASP) programme for Gradko generally show a "Satisfactory" performance classification.

Gedling Borough Council

Tubes are stored in a refrigerator until the day of exposure. On site, when the tubes are collected the date, site and time are recorded, referenced to the tube numbers assigned by the laboratory. The tubes are then forwarded to Gradko for analysis on the day of collection, along with a 'blank' trip diffusion tube.

The Council has conducted a co-location study, details are found in Appendix B.

Quality Assurance and Quality Control – BTex Diffusion Tubes

The tubes used are Perkin Elmer thermal desorption (ATD) tubes packed, with nominally 100mg of Chromosorb 106. They are analysed using a Perkin Elmer ATD 400 automatic thermal system; Perkin Elmer 8700 gas chromatography with an ion trap detector. The uptake rate for benzene onto Chromosorb 106 is 0.54cm3 /min. Tubes were analysed by Walsall Metropolitan Borough Council Laboratory (WMBCL) from 1997 until 2003. However, WMBCL were unable to continue processing Btex tubes and so Harwell Scientifics took over with supply and analysis from April 2003.

[1] Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users

Tubes are stored in a refrigerator until the day of exposure. On site, when the tubes are collected the date, site and time are recorded, referenced to the tube numbers assigned by the laboratory. The tubes are then forwarded to Scientific Ltd for analysis on the day of collection.

Tubes are exposed on a monthly basis, following the timetable prescribed by NETCEN in which tubes are replaced generally on the first Wednesday of the month.

Chemiluminescent Monitor Data

Overview

The automatic monitoring system used (Monitor Labs ML®9841B) uses gas-phase chemiluminescence detection to perform continuous analysis of nitric oxide (NO), total oxides of nitrogen (NOx), and nitrogen dioxide (NO2). The instrument consists of a pneumatic system, an NO2-to-NO converter (molycon), a reaction cell, photomultiplier tube (PMT) detector, and processing electronics.

During 2001-2007 the analyser was housed in the basement of the Daybrook Baptist Chapel. This site provides a safe and secure, dry location with a constant temperature and electrical supply. In January of 2008 the analyser was moved to a Casella ROMON enclosure on the opposite side of the A60 Mansfield Road.
The analyser has been operational since August 2000; data capture levels are: -

96% 2001	96% 2005	95% 2009
95% 2002	93% 2006	95% 2010
97% 2003	83% 2007	92% 2011
98% 2004	81% 2008	54% 2012*

*data logger failure in mid August 2012

The ML®9841B analyser has a quoted detection of ± 0.5ppb and a precision of ± 0.5ppb or 1% of reading, whichever is largest. Accuracy of the analyser is dependent on the calibration and the calibration gases used.

QA/QC Procedures

The analyser is subject to a fortnightly two point manual calibration, by a suitably trained site operative, which is conducted in accordance with the manufacturer's quality control procedures. Filters at the sample head are changed concurrently with calibration. The equipment is serviced twice a year by the manufacturer's accredited engineers.

Calibration gases (Air and NO) used during the fortnightly calibration are supplied by BOC, who have demonstrated compliance with relevant quality control procedures in the preparation of gas mixtures. Gas cylinders are replaced before use by dates or when the gas levels fall below 50 bar.

Data Validation and Ratification

A process of data validation is carried out by GBC on a fortnightly basis after application of the calibration factors. Validation is carried out in accordance with good practise [Annex 1.164 of LAQM TG(09)].

Then every quarter the data undergoes a process of ratification; assessing for drift, removing spurious data etc. Again this process is carried out in accordance with good practise [Annex 1.164 of LAQM TG(09)].