2015 Updating and Screening Assessment for *Gedling Borough Council*

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

July 2015

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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.

The timetable for LAQM review and assessment process stipulates that Local Authorities conduct an "Updating and Screening Assessment" (USA) every three years. This is based on a checklist used to identify those matters that have changed since the last review was completed, and which may now require further assessment.

Where the USA has identified a risk that an air quality objective will be exceeded at a location with relevant public exposure, the Local Authority is 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 new monitoring and all potential sources of air pollution within the borough.

Concentrations within the AQMA still exceed or are close to the 40 µg/m^3 for NO_2 at critical receptors. It is therefore considered that the AQMA should remain.

Concentrations outside of the AQMA are below the objectives, although the location around tube 'Mile End Road' is still of concern so monitoring will continue.

Therefore, at this time the Council is **not** considering moving to a Detailed Assessment, at this time, but will continue to monitor.

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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.

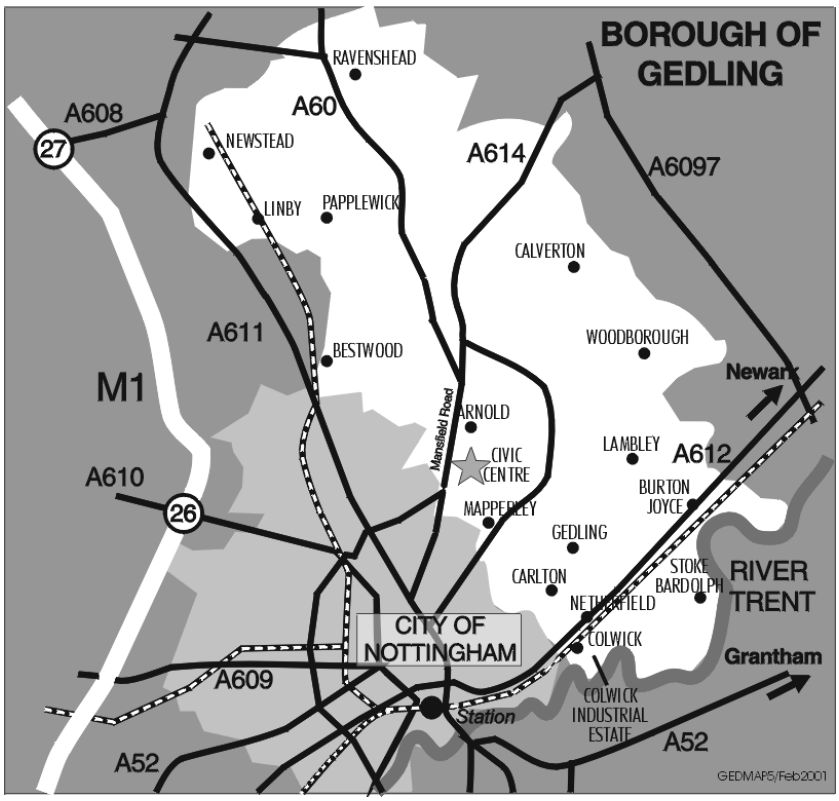


Figure 1.1 Gedling Borough Location Plan

1.2 Purpose of Progress Report

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre 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 (NO_2)	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 – 2014

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.
2013 Progress Report	No Further Action Required.
2014 Progress Report	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	Y (75m)	5m	N

2.1.2 Non-Automatic Monitoring Sites

Nitrogen Dioxide Diffusion Tubes

Gedling Borough has 24 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).

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	Y (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	Y (25m)	10m	N
87400	Daybrook Dental Surgery	Receptor	457867	345388	3m	NO_2	Y	Y (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	Y (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	Y (9m)	16m	N
87407	The Vale PH-Thackerays Ln	Receptor	457918	344358	3m	NO_2	Y	Y (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	Y (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
87460	Rectory Road/Vale Road	Receptor	461161	340122	3m	NO_2	N	Y (19m)	6.5m	N
87461	Mile End Road	Receptor	461196	340108	3m	NO_2	N	Y	3m	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 2014 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 2014 show no exceedences of the air quality objectives for NO_2. Data capture overall for 2014 was compromised due to a failure of the air conditioning unit in mid May 2014. The annual average has therefore been "annualised" as in Box 3.2 of TG (09) (see Appendix B for details)

Figure 2.2 shows a very slight increase in NO_2 levels over a ten-year period (2005-2014). This may be a result of poor data capture in 2012 and 2014.

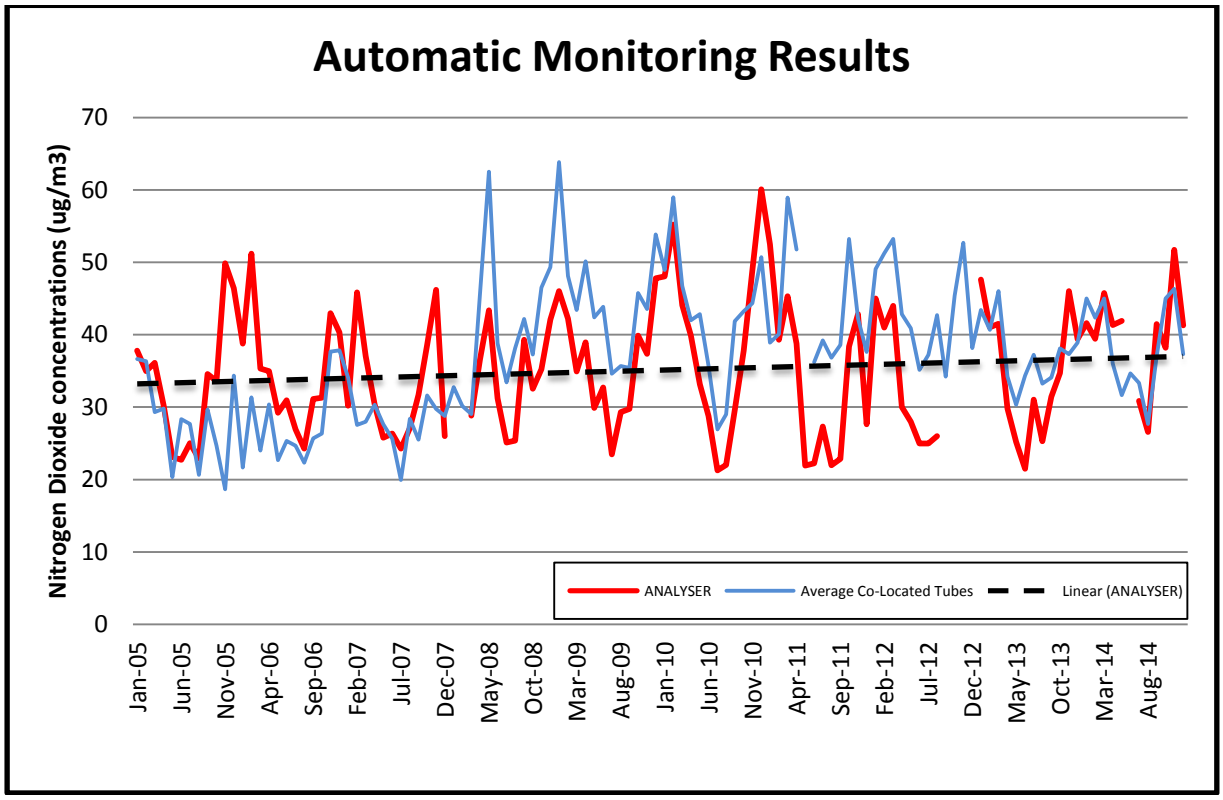


Figure 2.2 Trends in Monthly Mean Nitrogen Dioxide Concentration Daybrook Square.

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 2014 % [b]	Annual Mean Concentration (µg/m^3)								
				2006	2007	2008	2009	2010	2011	2012 [c]	2013	2014 [c]
Roadside	Y	80	80	35	32	34	36	39	33	35	35	36

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) as monitoring was not carried out for a full year (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 2014 % [b]	Number of Hourly Means > 200µg/m^3								
				2006	2007	2008 [c]	2009	2010	2011	2012 [c]	2013	2014 [c]
Roadside	Y	80	80	0	0	0 (127)	0	1	0	0 (144)	0	0 (167)

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%)

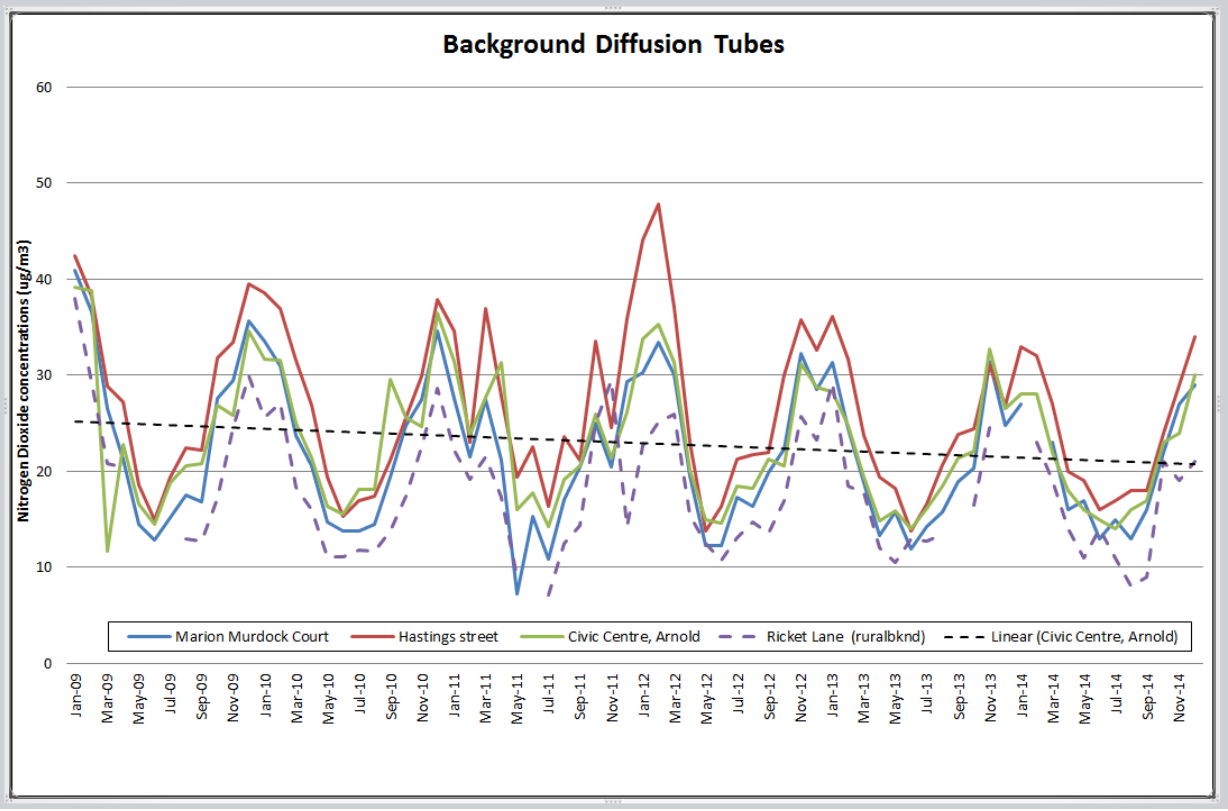
[c] If the data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets

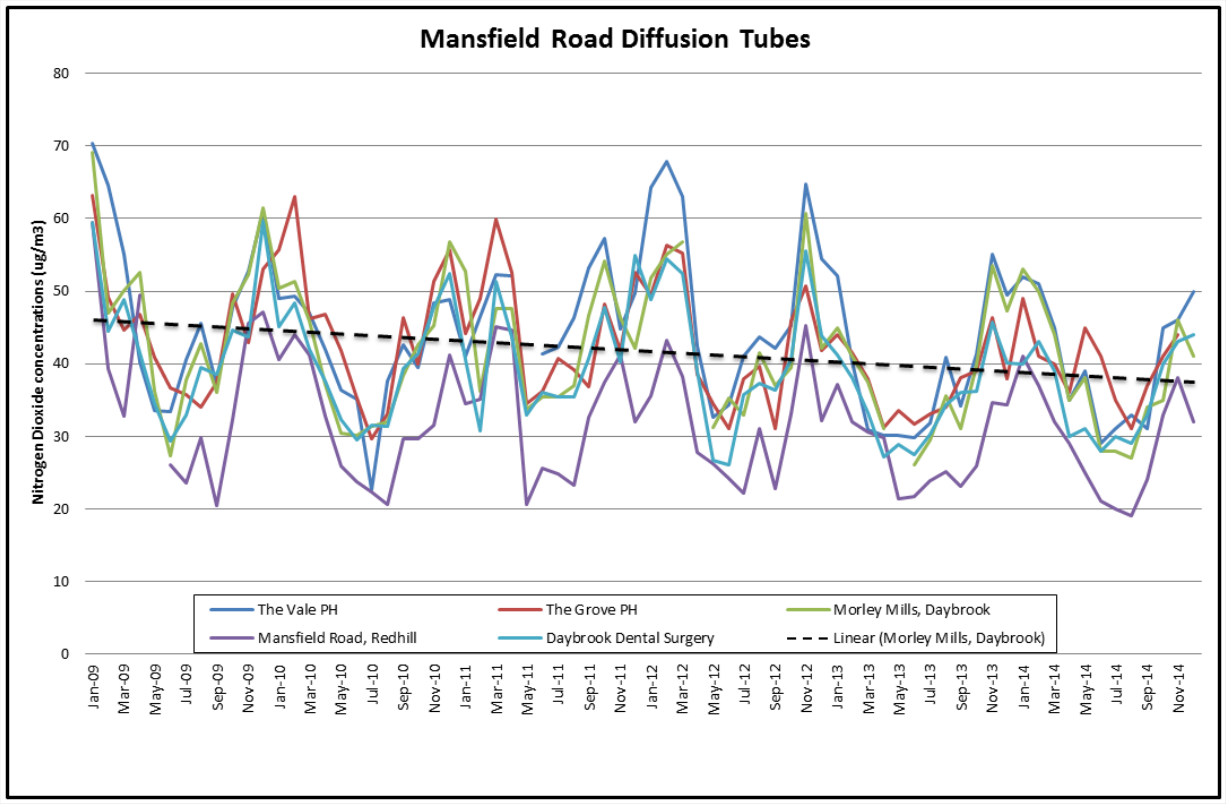
Diffusion Tube Monitoring Data

The results of diffusion tube monitoring for 2014 (Table 2.5) show some exceedences of the air quality objectives at receptors along the A60 Mansfield Road: other results along the A60 have fallen slightly below the objective. The result for the tube 'Mile End Road' was again slightly below the objective and this area continues to be an area of concern. Full diffusion tube monitoring dataset, including details of bias and location adjustments are available in Appendix B.

Figure 2.3 shows a series of graphs plotting diffusion tube results over a 6 year period (2009 – 2014), the results since the change to Gradko laboratory. These graphs all indicate a declining trend in NO_2 levels over this period:

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.





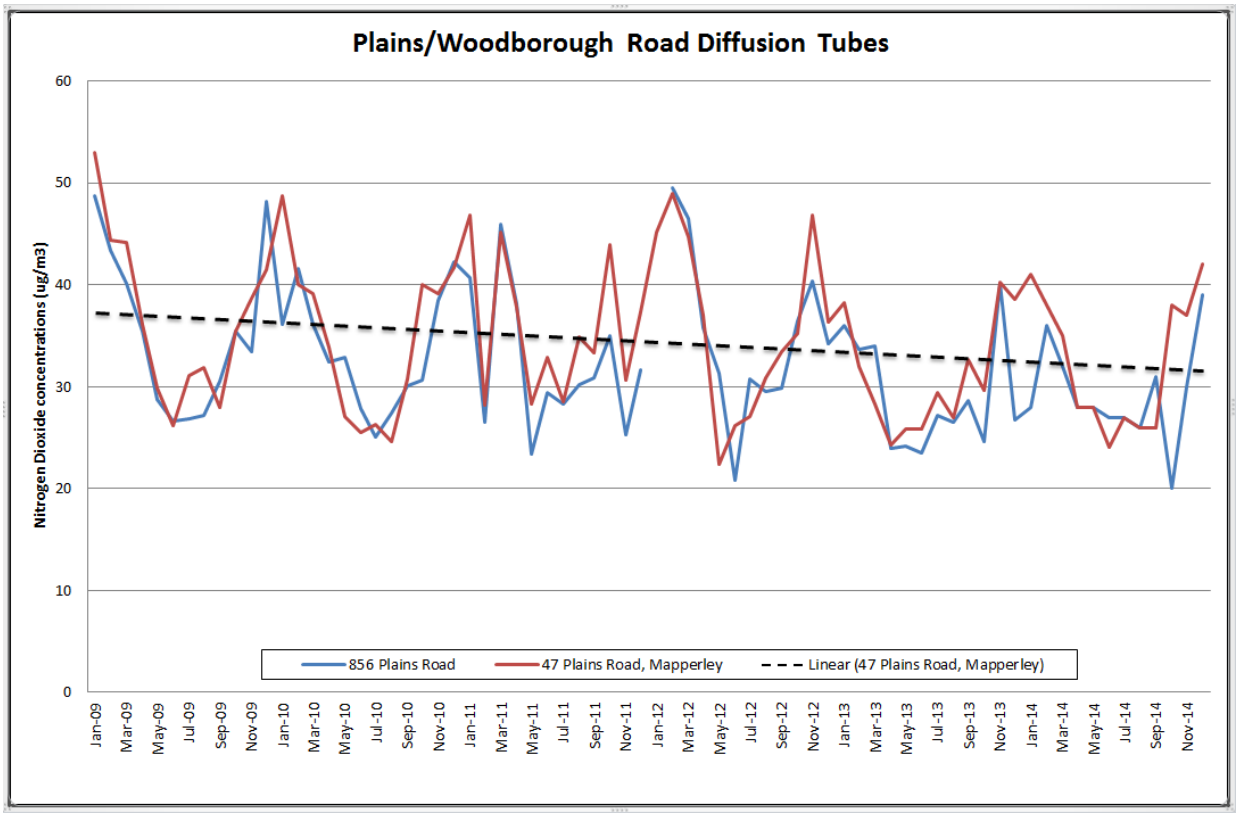


Figure 2.3 contd. **Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.**

Table 2.5 Results of NO_2 Diffusion Tubes 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (%) [a]	2014 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.91 [b]
82492	The Grove PH-Daybrook Sq	Receptor	Y	N	92	36
82494	Hastings street	Urban background	N	N	100	22
82495	Marion Murdock Court	Urban background	N	N	92	18
82937	47 Plains Road, Mapperley	Receptor	N	N	100	30
87398	Morley Mills Building	Receptor	Y	N	100	35
87399	Mansfield Road, Redhill	Receptor	Y	N	100	27
87400	Daybrook Dental Surgery	Receptor	Y	N	100	33
87401	19 Victoria Road	Receptor	N	N	100	29
87402	36 Victoria Road	Receptor	N	N	100	29[b]
87403, 87404, 87405	Daybrook Analyser	Co-located tubes	Y	Y	100	36,34,35
87406	Burton Rd/Shearing Hill	Receptor	N	N	92	24
87407	The Vale PH-Thackerays Ln	Receptor	Y	N	100	30[b]

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (%) [a]	2014 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.91 [b]
87408	Rickets Lane	Rural Background	N	N	92	14
87409	Wickes, Mansfield Road	Receptor	Y	N	100	31
87410	Civic Centre, Arnold	Urban background	N	N	100	19
87411	Colwick Park Close	Receptor	N	N	100	25
87412	Daybrook Fish Bar	Receptor	Y	N	100	39
87413	T&S Heating	Receptor	Y	N	100	**41**
87414	Frank Keys	Receptor	Y	N	100	37
87415	856 Plains Road	Receptor	N	N	100	27
87460	Rectory Road/Vale Road	Receptor	N	N	100	30
87461	Mile End Road	Receptor	N	N	75[a]	39[a]

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 2014)

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)	2013 (Bias Adjustment Factor = 0.95)	2014 (Bias Adjustment Factor = 0.91)
82492	The Grove PH-Daybrook Sq	Receptor	Y	**40**	38	**42**	**40**	**41**	35	36
82494	Hastings street	Urban background	N	23	24	24	24	28	23	22
82495	Marion Murdock Court	Urban background	N	19	21	21	18	22	19	18
82937	47 Plains Road, Mapperley	Receptor	N	31	32	32	32	35	29	30
87398	Morley Mills Building	Receptor	Y	**40**	**40**	38	38	**43**	36	35
87399	Mansfield Road, Redhill	Receptor	Y	27	32	29	29	31	27	27
87400	Daybrook Dental Surgery	Receptor	Y	37	37	37	36	**40**	33	33
87401	19 Victoria Road	Receptor	N	32	33	32	31	36	29	29
87402	36 Victoria Road	Receptor	N	39	37	35	37	38	32[b]	29[b]
87403, 87404, 87405	Daybrook Analyser	Co-located tubes	Y	**41, 40**, 39	38, 39**, 40**	39, 39, **40**	39, 38, 38	**42,42,43**	36,38,37	36,34,35
87406	Burton Rd/Shearing Hill	Receptor	N	24	26	27	25	32	27	24
87407	The Vale PH-Thackerays Ln	Receptor	Y	34	34	34	37	39	31[b]	30[b]
87408	Rickets Lane	Rural Background	N	18	19	16	16	18	16	14

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)	2013 (Bias Adjustment Factor = 0.95)	2014 (Bias Adjustment Factor = 0.91)
87409	Wickes, Mansfield Road	Receptor	Y	34	36	35	35	39	33	31
87410	Civic Centre, Arnold	Urban background	N	20	21	23	20	23	20	19
87411	Colwick Park Close	Receptor	N	27	27	30	26	29	28	25
87412	Daybrook Fish Bar	Receptor	Y	n/a	**48[a]**	**44**	**45**	**50**	**44**	39
87413	T&S Heating	Receptor	Y	n/a	**49[a]**	**45**	**47**	**54**	**44**	**41**
87414	Frank Keys	Receptor	Y	n/a	**43[a]**	**41**	**41**	**46**	39	37
87415	856 Plains Road	Receptor	N	31	30	31	29	34	28	27
87460	Rectory Road/Vale Road	Receptor	N	n/a	n/a	n/a	n/a	n/a	32	30
87461	Mile End Road	Receptor	N	n/a	n/a	n/a	n/a	n/a	**46[a]**	39[a]

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).

Figure 2.4 shows graphically the results over the last 10years. It can be seen that the annual average has not been recorded above 2 µg/m^3 at any of the monitoring points. This being the case the Council may consider scaling back monitoring in the future, as it is unlikely that the objective will be breached.

Table 2.7 Results of BTex Diffusion Tubes

Location	Benzene Annual mean concentrations (µg/m^3)					
	2010	2011	2012	2013	2014	Data Capture 2014 %
Private Road No.3	0.66	0.49	1.14	1.25	1.53	92
Bourne Mews	0.76	0.57	1.78	1.28	1.54	75
Ricket Lane (rural backgnd)	0.79	0.49	1.10	1.07	1.44	75
Chaworth Road	0.89	0.57	1.13	1.43	1.30	92

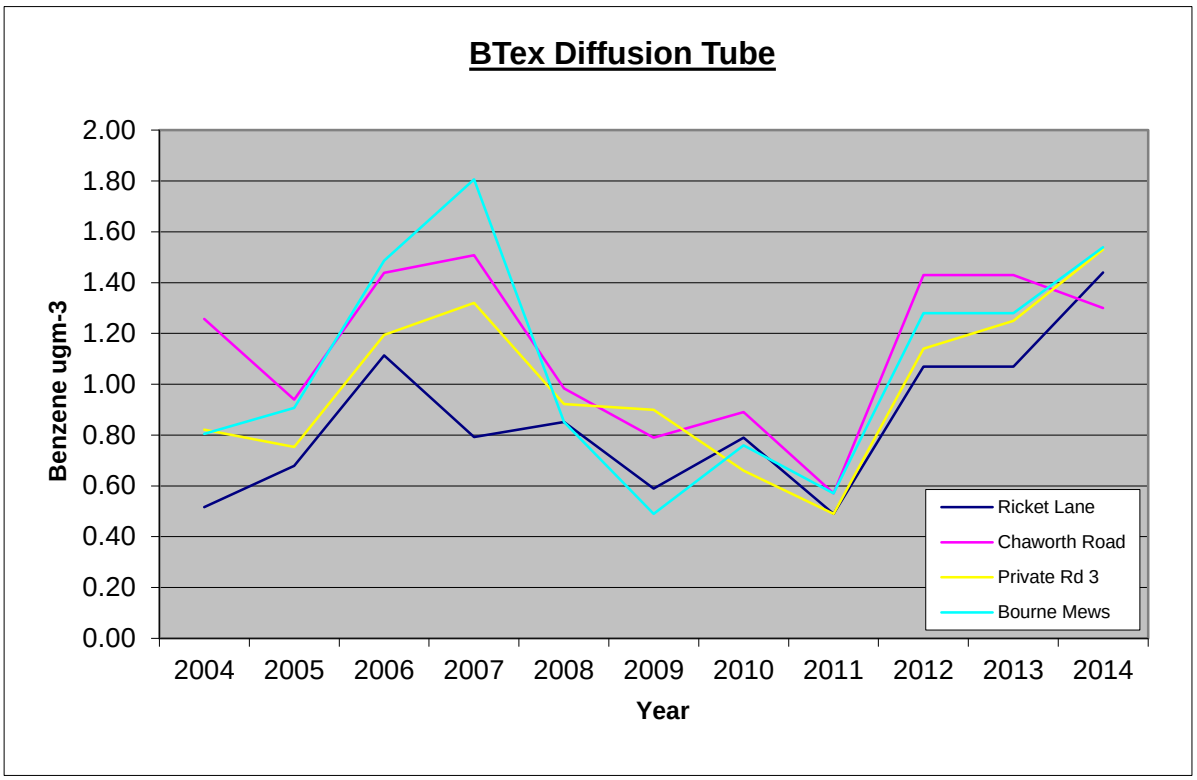


Figure 2.4 Annual Benzene (BTex tube) Results 2004 – 2014

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.

Nitrogen Dioxide

Concentrations within the AQMA still exceed or are close to the **40 µg/m^3** for NO_2 at critical receptors. It is therefore considered that the AQMA should remain. Concentrations outside of the AQMA are below the objectives, although the location around tube 'Mile End Road' is still of concern so monitoring will continue.

Benzene

Levels continue to well below the objective. The Council may look to scale back monitoring in the future.

Therefore, at this time the Council is not considering moving to a Detailed Assessment, at this time, but will continue to monitor.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

A review of all streets with flows over 5000 AADT was conducted. Traffic data was plotted on GIS and all streets affected were reviewed to confirm if any meet the criteria. (Box 5.3: A1) No newly identified locations failed to meet the new criteria.

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

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

An assessment of traffic flow data has revealed that there are no newly identified areas that would meet the criteria.

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

3.3 Roads with High Flow of Buses and/or HGVs

A review of the traffic data did not reveal any new roads which meet the criteria; greater than 20% HDV flows.

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

3.4 Junctions

There have been no fundamental changes to traffic flows since the last review and assessment.

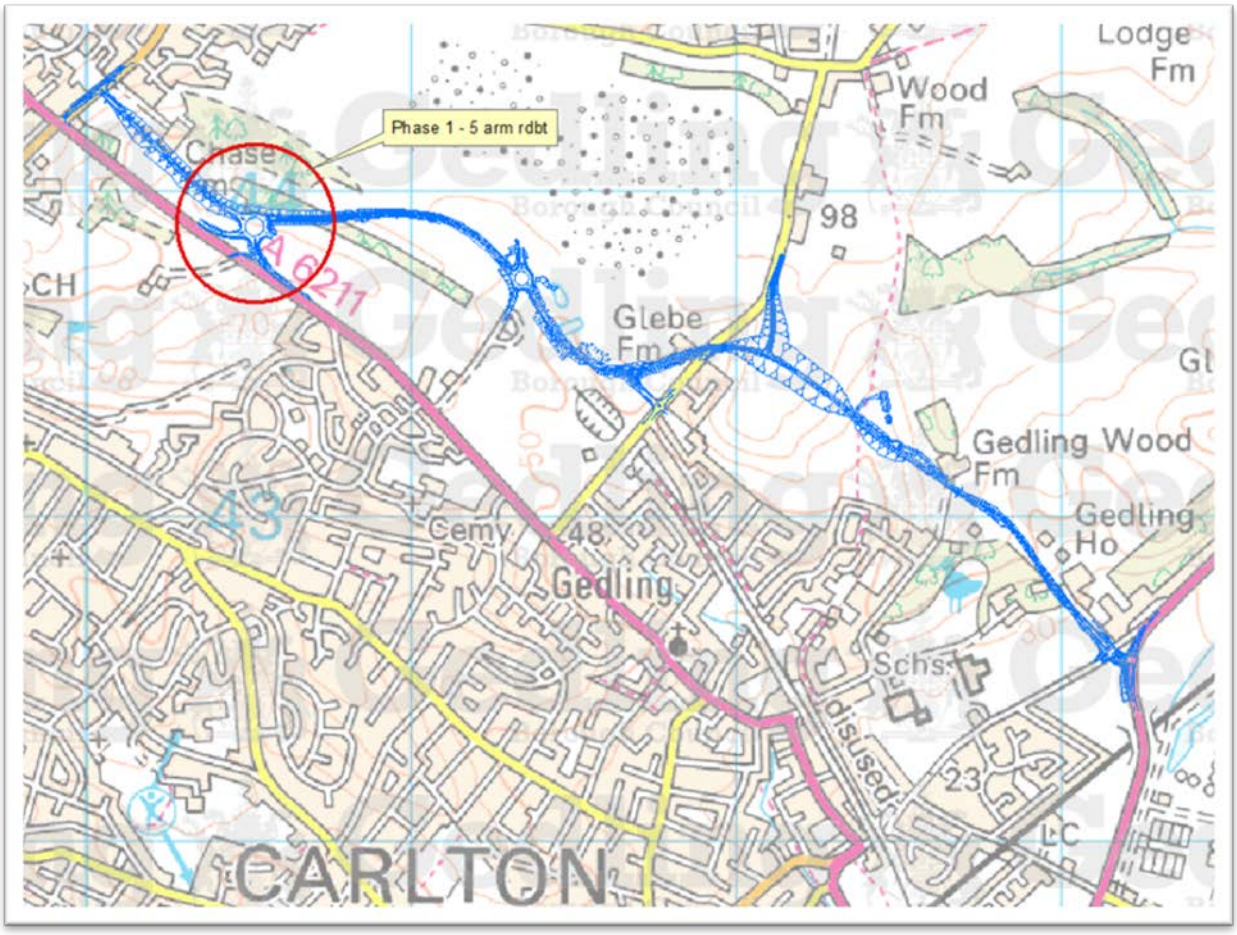
Gedling Borough Council confirms that there are no new/newly identified busy junctions/busy roads.

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

In the summer of 2014 a planning application was made: *'Construction of a 3.8km long road linking A612 Burton Road and B684 Mapperley Plains Road (Gedling Access Road)'.* Planning Reference: **2014/0915.**

The application was granted conditional permission; Phase one being the construction of the five arm roundabout off Arnold Lane, to be completed by the end of 2015; Phase two the construction of the rest of the road to be completed by the end of 2019. See map of proposal below.

Following initial comments a revised Air Quality Assessment was submitted in October 2014. The AQ Assessment submitted is available at: https://pawam.gedling.gov.uk/online-applications/



Title:	**Proposed Gedling Access Road (GAR)**	July 2015
		Scale: nts

The assessment considered the effect of both construction and operational phases of the new road on new receptors and the benefits to the existing receptors along Arnold Lane (A6211). With regard to the effects during construction the report concluded:

'Prior to the implementation of appropriate mitigation measures, the significance of emissions from the construction phase has been assessed as 'moderate adverse' at the worst affected receptors. Appropriate mitigation measures have been recommended based on best practice guidance. It is anticipated that with these mitigation measures in place, the risk of adverse effects due to emissions from the construction phase will be low.'

Condition 14 of the permission requires the submission of a Dust Management Plan.

Concerning the effects on receptors during the operation of the new road the report concluded that:

'All modelled residential receptor locations are predicted to meet the national AQOs for both NO_2 and PM_{10} in both the 'do minimum' and 'do something' scenarios.

The significance of the effects of the proposed development with respect to NO_2 exposure is determined to be 'moderate beneficial' to 'negligible'. With respect to predicted PM_{10} exposure, the significance of the proposed development is determined to be 'negligible', based on assumptions detailed throughout the report.'

Gedling Borough Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

There have been no fundamental changes to traffic flows since the last review and assessment.

Gedling Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Gedling Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Gedling Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

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

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

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

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

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

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

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

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

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

5.2 Major Fuel (Petrol) Storage Depots

Gedling Borough has one large-scale storage depot for petroleum product, which is located in the Colwick Industrial Estate.

- Total Lindsey Oil Refinery Ltd., Nottingham Terminal, Road Number 3, Colwick Industrial Estate.

As a whole the installation falls within Sections 6.4(B) of Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2010 (as amended) as cited in Environmental Protection (Prescribed Processes and Substances Etc.) (Amendment) (Petrol Vapour Recovery) Regulations 1996. As such the Local Authority permitted the process in 2007, updated in 2014 (Ref. PPC/07/3 (14)).

The storage facility appears in a table of Petrol Terminals (major fuel storage depots) required for consideration, in Annex 2, Appendix E (page A2-58) of the guidance.

Using mapping the nearest relevant receptor is 275m to the north, Holyoake Villas on Chaworth Road, a residential property. (See Appendix 1) Ongoing monitoring (Table 2.7) around the depot indicates no exceedences of the objective. There have been no other changes within the Borough that would indicate exceedence at any other location.

Gedling Borough Council has assessed a major petrol storage depot, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.3 Petrol Stations

A review of the public register has confirmed that no new petrol filling stations, that meet the assessment criteria, have been opened since the last review.

Gedling Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

A review of the public register has confirmed that Gedling Borough does not have any poultry farms meeting the criteria.

Gedling Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

In December 2014 an application was received **2014/1376** for the *'erection of a timber constructed heat cabin to house two biomass boilers, thermal store and pellet store (together with associated flues) following the removal of an existing oil tank on land to the north of the stores and Printing Building'* at the Nottinghamshire police Headquarters, Sherwood Lodge.

The cabin was to house two wood pellet boilers of 100kW and 99kW capacity (D'Alessandro CS Biomass Boilers); Planning Permission was granted.

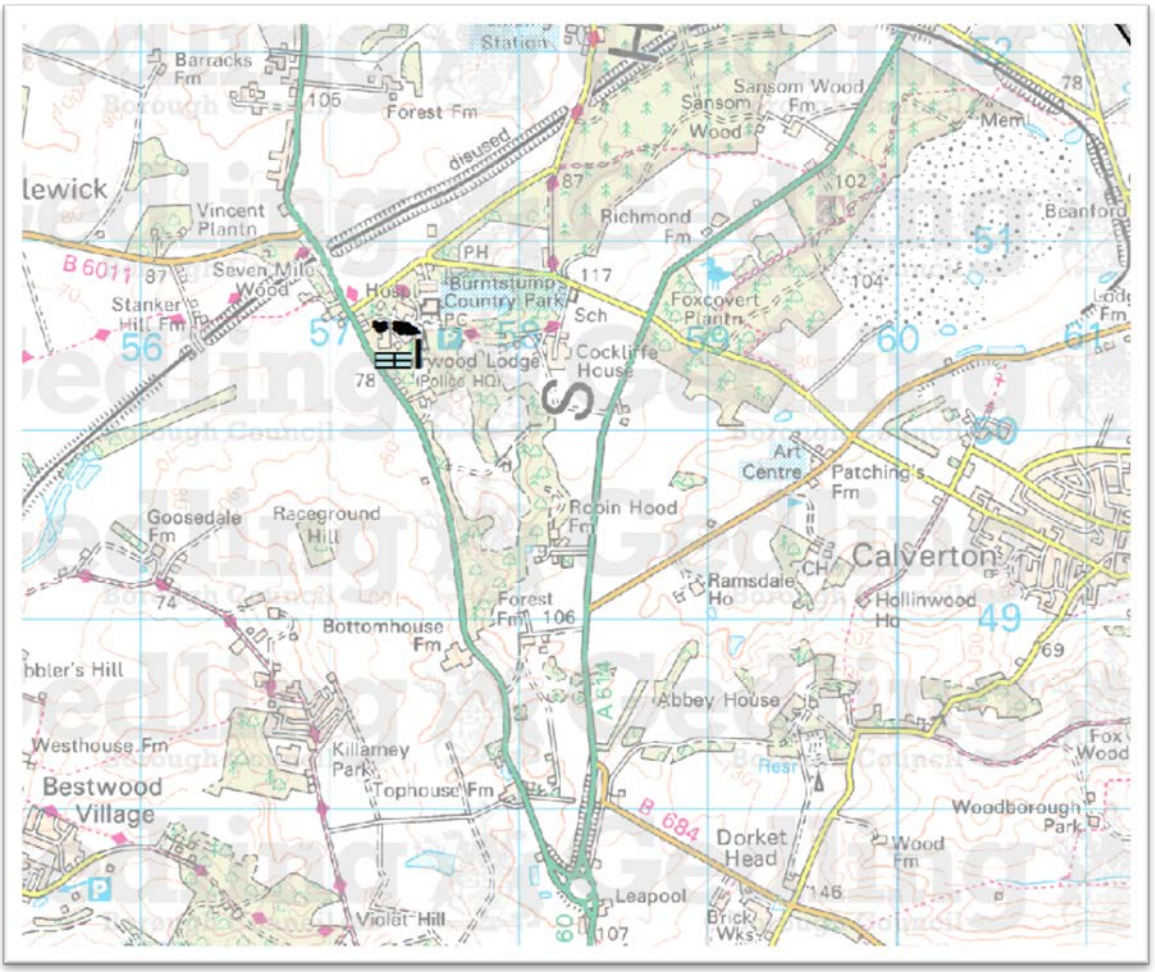
Subsequently, in January 2015 a second application was made **2015/0004** for *'Proposed erection of a timber constructed heat cabin to house two biomass boilers (320kW), thermal store, pellet store and flues, together with associated works, at land to the west of the Recreational Block.';* again at the Nottinghamshire police Headquarters, Sherwood Lodge.

This application, which was in addition to the first, was for two wood pellet boilers of 100kW and 230kW capacity (D'Alessandro CS Biomass Boilers).

The second application also benefited from an Air Quality Assessment the results of which concluded:

'Dispersion modelling of NO_2 and PM_{10} concentrations was undertaken using ADMS 5. Impacts at sensitive receptors were quantified and the results compared with the relevant AQOs. Predicted NO_2 and PM_{10} concentrations were below the relevant AQOs at all sensitive locations within the vicinity of the site. As such, impacts are not considered to be significant.'

Planning Permission was granted. The AQ Assessment submitted is available at: https://pawam.gedling.gov.uk/online-applications/



The Ordnance Survey mapping included within this publication is provided by Gedling Borough Council under licence (Licence No. LA 100021246)

Title:	**Proposed Biomass System Notts Police Headquarters**	July 2015
		Scale: nts

Gedling Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

Limited information is available regarding small scale (domestic) wood/solid fuel burners within the Borough. Based on experience of enquiries from prospective purchasers and complaints regarding smoke nuisance it is considered that use of 'biomass' is limited.

This coupled with the results of surveys (see Section 6.3) would lead us to believe that there is limited scope for air quality impacts from biomass at this time.

Gedling Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment. The Council will continue to review this potential impact.

6.3 Domestic Solid-Fuel Burning

An assessment of data from two sources has been used to assess fuel usage throughout the Borough: -

- The Home Energy Conservation Act (HECA) questionnaires and,
- a NI187 fuel poverty survey, using redacted data (personal information removed).

Both surveys were small (600 responses on each) they do however show the make up of primary fuel use within the Borough:

NI 187 Fuel Poverty Survey		**HECA Survey**	
Mains Gas	84.4%	Mains Gas	95%
Electricity	13.5%	Oil	1.5%
Wood	0.2%	No Answer	3.5%
Coal (inc Smokeless)	1.7%		
LPG	0.2%		

Based on the above percentages a 500m x 500m square of residential properties (approx 900 dwellings) equates to 15 properties burning coal/smokeless fuel as the primary source of heat; well below the threshold of 50 in Section D.2 of TG(09).

Whilst the surveys were carried out over 6 years ago it is not considered that there has been any fundamental change in the proportions of primary fuel uses above.

The above data and local knowledge information has therefore been used to conclude that:

Gedling Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

A review of the Borough inline with the guidance has revealed no new sources.

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

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

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

Nitrogen Dioxide

Concentrations within the AQMA still exceed or are close to the **40 µg/m^3** for NO_2 at critical receptors. It is therefore considered that the AQMA should remain. Concentrations outside of the AQMA are below the objectives, although the location around tube 'Mile End Road' is still of concern so monitoring will continue.

Benzene

Levels continue to well below the objective. The Council may look to scale back monitoring in the future.

Therefore, at this time the Council is not considering moving to a Detailed Assessment, at this time, but will continue to monitor.

8.2 Conclusions from Assessment of Sources

Largely, there have been no significant changes to sources throughout the Borough.

Therefore, no new or significantly changed sources identified have the potential to led to exceedences of the air quality objectives.

8.3 Proposed Actions

Gedling Borough Council proposes no further action as a result of this Updating and Screening Assessment Report.

Gedling Borough Council will next submit a 2016 Progress Report.

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. Found at: Air Quality Action Plan

9.1 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. Cost – Effectiveness analysis was used in assessing the measures (see Section 6 of the Air Quality Action Plan). 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.

9.2 Nottinghamshire County Council - Transport Measures

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. 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.

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'.

9.2.1 County Transport Funding

Central government funding for local transport improvements, such as addressing congestion and improving walking and cycling facilities, is called the integrated transport block. The integrated transport block allocation is calculated by DfT through a needs based formula and is based on a number of elements.

In March 2013 central government announced the introduction of the Single Local Growth Fund from April 2015. The Local Growth Fund (LGF) includes the key economic levers of skills, housing and transport funding meaning that from 2015 all of the funding for major transport schemes, the capital element of the Local Sustainable Transport Fund and approximately 43% of the national integrated transport block allocation will be included in the LGF. This reduced the amount of funding directly allocated for integrated transport nationally from £450m in 2014/15 to £258m in 2015/16.

The LGF will be distributed to Local Enterprise Partnerships (LEPs) based on a central government assessment of the priorities and actions set out within each LEPs' Strategic Economic Plan. Nottinghamshire is part of the D2N2 (Derby, Derbyshire, Nottingham, Nottinghamshire) LEP. The LEP, in discussions with government will therefore prioritise the projects that the LGF funding will be spent on and these form part of each LEP's Local Growth Deal. It is therefore important to note that the top-sliced transport funding will not necessarily be used for transport projects as it could be allocated to non-transport schemes, and may not be allocated to schemes within Nottinghamshire.

The top-slicing of the integrated transport block from 2015/16 onwards by the government and allocating it to the Local Growth Fund means that from 2015/16 the integrated transport funding allocated to individual highway authorities by DfT will be reduced. In addition to this the formula and data used to calculate each individual authority's allocation has been reviewed from 2015/16. These two changes to the funding arrangements have resulted in Nottinghamshire's integrated transport block funding allocated by DfT reducing by 47% from £7.406m in 2014/15 to £3.916m in 2015/16.

Recognising the importance of local transport improvements to help develop the economy and reduce harmful emissions, the County Council, however, determined to support the integrated transport funding with additional County Council capital funds of £0.5m in 2015/16 although budget pressures from reduced national funding levels mean that it is unlikely this will be continued in future years.

The reductions in central government funding will have a serious impact on the delivery of transport improvements within the AQMA.

The County Council submitted a successful joint Local Sustainable Transport Fund (LSTF) bid with Nottingham City Council for funding in 2015/16. The 2015/16 LSTF bid contains elements to support the newly employed travel to work sustainably and to promote cycling generally, **although these will not be specifically targeted in Gedling.**

9.2.2 County Major transport schemes

From 2015/16 funding (and prioritisation) of major transport schemes has been devolved to the LEPs. £31.2m funding has been allocated to the D2N2 LEP area for the period 2015/16 to 2018/19.

Major transport schemes have historically been large transport schemes costing more than £5m. The D2N2 LEP determined that from 2015/16 major transport schemes will be defined as schemes that cost at least £2.4m but it should be noted that a minimum local contribution of 20% of any scheme cost is required. No major schemes that would directly impact on the AQMA have been allocated funding during the 2015/16 to 2018/19 funding period. A review/identification of future potential major transport schemes will be undertaken during 2015.

9.2.3 General Transport Trends

Across the Nottingham built-up area the area wide road traffic mileage has reduced by 8% between 2005 and 2013. HGVs area wide road traffic mileage across the Nottingham built-up area has decreased by 23% during the same period. Correspondingly there has also been a 6% reduction in CO2 emissions. It is not possible to analyse these figures at a more local level. It should, however, be noted that there have been increases in the vkm travelled by all vehicles in the Nottingham built-up area of over 1.5% between 2012 and 2013 (HGV vkm travelled have remained constant).

Journey time delays continue to be constrained on the A60 between Leapool island and Woodthorpe Drive. Between 2009/10 (the earliest traffic master data for delays on this section of the A60) and 2013/14 (the most recently available data) there has been a decrease in journey times per mile on this section of the A60 in the AQMA.

Public transport patronage in the county has increased by 4% between 2005/06 and 2013/14. This information is supplied by public transport operators and is not currently available on a 'corridor by corridor' basis due to market confidentiality.

Between 2010 and 2013 cycling levels have increased by 7.5% across the county; almost 10% in the Greater Nottingham area of the county; and 6% in Gedling district.

9.2.4 Summary of Action Plan Outputs and Outcomes

The two 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 progress of the LTP indicators related to the air quality action plan measures and highlights the links between them and the action plan measures detailed within Table 9.2.

Table 9.2 Nottinghamshire County Council Lead Action Plan Measures - Progress

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
1. Park and Ride – Contributes to delivery of indicators LTP1, LTP2, LTP4, LTP5, LTP14, NI177			
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 aspiration for a park & ride site to the north of Nottingham and therefore further investigations will be undertaken to identify potential sites (potentially linked to new housing/employment development). The creation of a park and ride scheme along the A60 was included in the LTP Implementation Plan as a potential major transport scheme to be funded during 2015-2026. An assessment of all the potential schemes was undertaken by the D2N2 Local Transport Body during 2013 to determine the deliverability and priority of schemes for implementation during 2015-2019. A park & ride scheme along the A60 was not one of the schemes prioritised by the D2N2 Local Transport Body for delivery during the 2015-2019 funding period, although a scheme may be considered for delivery beyond this period.	A review of the potential future major transport schemes in Nottinghamshire will be undertaken during 2015. Following this review a programme of work will be established to further develop the feasibility and design of the prioritised schemes.	Dependent on review
2. Re-routing of freight operators			
a) Restriction of vehicle types using the road at certain times	A feasibility study to consider potential impacts and benefits of HGV restrictions and re-routing HGVs and buses was undertaken during 2013/14. The study considered a number of alternative routes for HGVs that normally travel along the A60. Each of the routes was, however, found to be unsuitable for a number of reasons, including: • the alternative routes were found to be longer, thereby increasing traffic mileage, emissions and significantly increase both fuel and time costs for businesses		Complete

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
	• the alternative routes would encompass more residential properties as well as school 20mph zones or a hospital • using the alternative routes would create significant delays at junctions which already operate at capacity, increasing congestion on the network • turning movements required on the alternative routes would increase idling time for HGVs and the resultant increase in emissions • large sections of existing on-street parking would likely be required to be removed to enable HGVs to use the routes. Buses use the A60 as it is a key public transport corridor serving large communities and therefore it is not practical to restrict their access. Doing so would also potentially negatively impact on the AQMA as more people would select to use private vehicles to make journeys (thereby increasing emissions within the AQMA) as using the bus would become less convenient .		
b) Restricting the road as appears on route finders and Satellite Navigation Systems	Given the unsuitability of alternative routes (and the A60 being a strategic route) it is not considered appropriate to investigate the removal of the A60 from route finders and satellite navigation systems.		Complete
c) Consider diverting HGVs	This measure was considered as part of the feasibility undertaken to consider freight movements along A60 as detailed above.		Complete
3. Traffic control and management Contributes to delivery of indicators LTP1, LTP2, LTP4, LTP5, NI177, NI178, LTP8, LTP14			
a) Consideration and installation of SCOOT/MOVA and other traffic signal efficiency improvements, including CCTV at appropriate junctions within the AQMA	There are 10 sets of traffic signals along the A60 between Redhill Road and Woodthorpe Drive, only one of which has 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. The planned junction widening scheme at the Thackerays Lane/A60 junction was not progressed due to road safety concerns highlighted as part of the design safety audit.	Complete

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
	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.		
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	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.	Ongoing
c) Consideration of bus priority measures at traffic signal junctions	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. It is not currently proposed to install these features at the remaining site but this may change should proposed development go ahead.	The bus detection enables the signals to detect when a bus approaches and extend the green phase so the bus passes through without delay, reducing delays for buses, reducing the idling time for buses at traffic signals, making bus journey times more reliable and thereby making bus travel more attractive.	Ongoing
d) Review of 24hr bus lane restrictions	A review of the 24 hour bus lane to consider potential impacts and benefits of changing existing restrictions was undertaken during 2013/14. It was considered that the bus lane would still be required during the peak periods to ensure that buses retain adequate priority in order to make bus travel attractive to existing and potential users, thereby reducing the volume of private cars on the road at peak time. The bus lane could not therefore be removed. Reducing the hours of the bus lane's operation was also considered but it was determined that doing so would have little/no impact on the AQMA as traffic rarely queues adjacent to the bus lane back into the AQMA outside the morning peak.		Complete

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
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 notice 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. Street designations and network hierarchy review is ongoing. Detailed journey time monitoring of key corridors (including the A60 which lies within the AQMA) has been undertaken annually since 2009/10. These show that journey time delays have reduced between 2009/10 and 2013/14 although traffic delays have started to go up again, reflecting the increases in traffic flows as the economy improves.	Ongoing
f) Effective management of incidents 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.	The Travelwise centre remains in operation 24hrs a day, every day. Incidents dealt with through agreed procedures and regular partnership meetings held. Working in close collaboration with the 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. Key locations on the local network are being identified and associated diversion routes investigated in line with the developing network hierarchy.	Ongoing
g) Effective contingency planning to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty	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.	Ongoing as above	Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
4. Gedling waste collection			
a) Ensure that collections around the AQMA occur outside of the rush hour	**GBC - See Table 9.4**		
5. Parking management and control – Contributes to delivery of indicators LTP1, LTP2, LTP4, LTP5, NI177, NI178, LTP14			
Ensure that car parking in and around the AQMA is managed and reviewed via: a) Civil parking enforcement b) Continual review of car parking charging, to promote public transport options	Civil Parking Enforcement was introduced on 12 May 2008 and is ongoing. Locations where illegal parking hinders the free flow of traffic (and particularly buses) are prioritised for regular enforcement. 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. **GBC - See Table 9.4**	Ongoing Residents' parking schemes were also introduced on Bond Street and Redhill Road, Arnold to deter commuter parking.	Ongoing
6. Low emission zone			
a) Consider feasibility of a low emission zone	Given the lack of an alternative HGV route it is not currently considered feasible to introduce a low emission zone on A60.		Complete

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
7. Improve links with local planning and Local Development Framework – Contributes to delivery of indicators LTP1, LTP2, LTP3, NI176, LTP4, LTP5, LTP7, NI177, NI178, LTP8, LTP13, LTP14, LTP20, LTP23, LTP24			
a) Ensure sustainable development on vacant sites within and in the vicinity of the AQMA	**GBC - See Table 9.4**		
b) Ensure AQAP and AQMA are considered in future planning policy frameworks (Local Plans)	**GBC - See Table 9.4** NCC - Work continues on the development of the Local Plan. An Aligned Core Strategy involving most of the district councils in the Core Nottingham Housing Market Area is being developed.	Nottingham City, Broxtowe Borough and Gedling Borough councils adopted Part 1 of the Aligned Core Strategy Local Plan in September 2014. A legal challenge was lodged against the Plan but was unsuccessful. Work on Part 2 of the Local Plans is underway.	Ongoing
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	**GBC - See Table 9.4** NCC - The County Council provides comments to Gedling BC on the impact of development on the transport networks, as well as suggested transport improvements to mitigate against these impacts, when requested as part of the planning application process.	Ongoing	Ongoing
d) 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	£538,500 of s106 funds for transport improvements has been secured by GBC during the last three financial years (up to 2013/14). 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). Approximately £80,000 s106 funding has been spent on infrastructure improvements in the vicinity of the AQMA in the last three years (up to 2013/14) including improvements to traffic signal phasing and accessibility improvements in Arnold town centre.	£67,000 of s106 funding was allocated during 2013/14 and 2014/15 to fund a smarter travel coordinator post in the Gedling area. The post led on smarter travel activities within targeted communities with the aim of reducing car journeys, particularly at peak times. The funding expired at the end of March 2015 and it was not possible to find alternative funding for the post – the post therefore ended at that time.	Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
e) Development of an Air Quality Supplementary Planning Document (SPD)	**GBC - See Table 9.4**		
f) Use of planning conditions for delivery times, travel plans etc.; including enforcement to ensure compliance	**GBC - See Table 9.4**	NCC - During 2014/15 the County Council approved one travel plan required through planning conditions for development in Gedling.	Ongoing
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.	Meetings are held twice a year to discuss the results of monitoring undertaken by both parties and where appropriate progress of measures to improve air quality within the district.	Ongoing
9. Target reductions in emissions from buses – Contributes to delivery of indicators LTP4, LTP5, LTP14			
a) ECOStars Fleet Recognition Scheme	**GBC - See Table 9.4**		
b) Promotion of the benefits of Eco-driving training for drivers	**GBC - See Table 9.4**		
c) Ongoing delivery of Quality Bus Partnerships through Gedling Borough. (Mansfield and Nottingham City)	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 was 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. 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.	Partnerships with all of the major bus operators are ongoing including the transport development group which is held every two months; and the Greater Nottingham Bus Quality Partnership which meets quarterly. The groups help determine future service and public transport scheme improvements. A statutory quality bus partnership was 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. Monitoring of operator standards and operation of the SQPS is ongoing.	Ongoing Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
d) Encouraging the use of emissions standards when procuring school bus contracts and supported bus services that operate within the AQMA	The Integrated Passenger Transport Strategy for the county is currently under review and is due to be completed during 2015. It is intended that procurement standards for contracts let by the County Council will be considered as part of the strategy review.		Ongoing
10. Target reductions in emissions from heavy and light goods vehicles – Contributes to delivery of indicators LTP4, LTP5, LTP14			
a) ECOStars Fleet Recognition Scheme b) Promotion of the benefits of Eco-driving training for drivers	Following the introduction of the scheme in Gedling Eco-Stars was expanded to include the whole of the Greater Nottingham area in March 2013 as part of the LSTF programme – SAFED driver training is included as part of the scheme. See above. Smarter driver training courses run by the Energy Saving Trust were offered to County Council staff that drive as part of their jobs during 2012.		 2012
11. Target reductions in emissions from Taxis – Contributes to delivery of indicators LTP4, LTP5, LTP14	**GBC - See Table 9.4**		
12. Target reductions in emissions from the council fleet and contract vehicles – Contributes to delivery of indicators LTP4, LTP5, LTP14	**GBC - See Table 9.4**		

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
13. Encourage the uptake of alternative fuels – Contributes to delivery of indicators LTP4, LTP5, LTP14			
Target reductions in emissions from all vehicles operating around the AQMA: a) GBC consider installing electric charging points for visitors and staff b) Consider a wider network of charging points	 **GBC - See Table 9.4** **GBC - See Table 9.4**	 A wider network of charging points was introduced at car parks in the City Centre as part of the delivery of the Local Sustainable Transport Fund.	
14. Communication and education – awareness raising of local air quality issues – Contributes to delivery of indicators LTP4, LTP5, LTP14			
a) Design and erect AQMA signs at various locations b) Roadside Vehicle Emissions Testing (RVET) c) Tackling the school run – communication with schools and parents d) Undertake a publicity campaign to raise awareness of the A60 AQMA	**GBC - See Table 9.4** **GBC - See Table 9.4** 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 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. **GBC - See Table 9.4**	 Central Government grant funding for the development of school travel plans is no longer available. All year round activities, such as cycle training and other road safety activities, are offered to schools to enable pupils to travel to schools safely on foot, cycle and bus.	 Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
15. Travel plans – Contributes to delivery of indicators LTP1, LTP2, LTP3, LTP4, LTP5, LTP7, NI177, LTP13, LTP14, LTP15			
a) Review/refresh Gedling Borough Council Travel Plan	**GBC - See Table 9.4**		
b) Nottinghamshire County Council to review travel plan for its sites within or close to the AQMA	The County Council 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. The travel plan has not been updated as the County Council had intended to sell the building in question but this has recently been taken off the market. The building may, however, be vacated by County Council staff as part of the Council's rationalisation of premises. This measure will therefore continue to be kept under review and will only be undertaken if the County Council continues to operate from the premises. In the meantime walking, cycling and car sharing activities and promotions will continue to be undertaken with County Council employees.	Travel surgeries were undertaken at the County Council site within the AQMA during 2014/15. This offered all County Council staff at the site the opportunity to receive one to one travel advice to encourage people to travel to work by bus, cycle, on foot, or by car sharing.	2015 Ongoing
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 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. Activities in schools include the junior road safety officer scheme and promotion of walk to school week.	Central Government grant funding for the development of school travel plans is no longer available. All schools are, however, offered free road safety training to enable pupils to travel on foot or bicycle safely. This training includes a range of both classroom based and practical education.	

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
d) Work with local businesses/ organisations to encourage the development and implementation of travel plans	Travel plans are developed with businesses both when a condition of the planning process and when businesses determine to voluntarily develop a plan. The County Council has produced and published guidance to help organisations wishing to develop travel plans.	In 2014/15 no new travel plans were received as part of the development control process but one travel plan was approved. The County Council also undertook targeted workplace travel planning with 44 businesses in the AQMA during 2014/15. Detailed travel clinics to give advice to staff on travel options were also held at 5 sites within the AQMA, including the County Council workplace site and two Gedling Borough workplace sites. The analysis of the workplace travel planning works are not available to report on at the time of writing.	Ongoing 2015
16. Promoting travel choices – Contributes to delivery of indicators LTP1, LTP2, LTP3, LTP4, LTP5, LTP7, NI177, LTP13, LTP14, LTP15, LTP19			
a) Undertake personalised travel planning within Gedling borough		Personalised travel planning was undertaken with 4,000 households within and close to the AQMA during 2014/15. The travel planning included before and after surveys and the analysis of these show that for a matched panel there has been: • 14% reduction in car journeys to work • 11% increase in walking journeys to work • 8% reduction in car use for shopping journeys • 9% increase in bus use for shopping journeys	2015
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, with the possibility of extending it to the county if it is successful.	A car club introduced as part of the Local Sustainable Transport Fund measures was launched by Nottingham City Council in April 2014. The tendered contract allows for the option of the 'club' to be extended to the county if NCC considers the 'club' to be successful and cost effective.	To be determined
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 and the CountyCouncil continues to support and advertise the 'nottinghamshare' car share website.	Whilst nottinghamshare is promoted throughout the year additional activities and promotion was held during liftshare week including features in the local press and other publications. The number of current registered users on the website has increased to 2,304 in 2015.	Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
		The number of County Council staff registered on the website is 364. County Council staff are estimated to make emission savings of 14.8tonnes of CO2; and 124.8kg of nitrogen oxides over the next 12 months as a result of car sharing through the website.	
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 were considered for development but have not been progressed due to available funding and potential ongoing costs of producing the materials.		
17. Public transport – Contributes to delivery of indicators LTP1, LTP2, LTP4, LTP5, NI177, NI178, LTP8, LTP14, LTP15, LTP16, LTP17, LTP23, LTP24, LTP25			
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.	An integrated ticketing strategy for the county was developed during 2014/15 and will inform the future development of ITSO smartcard ticketing options as well as the use of contactless ticketing etc.	Ongoing
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 countywide off-peak concessionary fare scheme for elderly and disabled residents has been in place since 1985. This has undergone significant changes in subsequent years and is now part of the English National Concessionary Travel Scheme. Concessionary fares for young people continue through the under 16 Travel Assistance scheme for school pupils which offers free bus passes to eligible children, and season passes to those who are not eligible. Nottinghamshire County Council refers pupils to all available bus operators for their route to promote the use of public transport. A continued Post 16 Travel Assistance scheme for further education pupils offers either a half-fare pass or season pass.	Over 85% of those eligible in the county have a concessionary pass. 2014 saw the enhancement of travel entitlement of tram travel with the removal of the evening peak restriction and the extension of scheme to cover new NET lines. In 2014 6,257 free under-16 home to school transport passes were issued in Nottinghamshire; 623 under-16 home to school season passes were issued in Nottinghamshire; 274 pupils received an under-16 waived season pass in Nottinghamshire; and 663 post-16 travel passes were issued in Nottinghamshire.	Ongoing

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
c) Investigate and publicise web based journey planners. Develop and undertake annual production of marketing literature	Web based journey planners are used to help people plan and make passenger transport journeys. Nottinghamshire is part of the national, multi-modal Traveline journey planner. NCC also produces area bus travel guides which detail the routes and services within the main towns and their hinterlands.	Web links to the Traveline site are publicised and available from the County Council'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. Further enhancements to web based journey planners in the county will be determined as part of the emerging Integrated Passenger Transport Strategy which will be completed during 2015. Any enhancements to web based journey planners will therefore be developed after this date.	Ongoing
d) 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.	An annual programme of updates and maintenance of all stops in the AQMA including updating network maps to ensure all information is current and accurate is ongoing.	Ongoing
e) Consider bus provision on the A60 and surrounding area. (Service review)	NCC periodically undertakes 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.	Increased capacity at peak times and introducing feeder services to high quality bus routes serving key towns in Nottinghamshire are considered when identified through the periodic service reviews and through the ongoing Bus Quality Partnership work with operators.	Ongoing
f) 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.		Complete
g) 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.		Ongoing
18. To encourage members of the community to adopt cycling and walking as alternatives to using private vehicles – Contributes to delivery of indicators LTP1, LTP2, LTP3, LTP4, LTP5, LTP13, LTP14			

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
a) Develop and undertake annual cycling promotional marketing campaigns/production of literature	A programme of marketing and promotion of walking and cycling is undertaken annually within the funding available. These include the production and distribution of cycle maps of Greater Nottingham area; travel planning; and mass participation events.	Cycle maps continue to be distributed throughout the county, and are available as a hard copy and on-line. Guided rides delivered across the county and a booklet promoting these rides were provided by a private organisation funded through the Local Sustainable Transport Fund. NCC, in partnership with Nottingham City Council, held a Greater Nottingham cycle forum during Bike Week and Cycle Live (including mass participation cycle rides and activities) was held in June to promote cycling. NCC allocated 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. These campaigns included promotions through websites, social media, newsletters and newspapers/radio. The personalised and workplace travel planning undertaken in 2014/15 aimed to encourage walking, cycling and bus use. Results of personalised travel planning show that it was successful in reducing reported car driver trips amongst participants for journeys to work (15% reduction) and shopping (9% reduction). Also a major role of the smarter travel coordinator was 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 was established during 2013/14 for a two year period. The 'first year evaluation' is not due to be undertaken until later in 2014. Cycling in the Nottingham built-up area part of the county has increased by 10% between 2010 and 2013; and in Gedling district there has been 6% increase in cycling between 2010 and 2013. It is not possible to analyse these figures at a more local level.	Ongoing Ongoing 2015 2015 2015

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
b) Deliver adult and child cycle training	Cycle training continues to be offered free of charge by the County Council. The County Council continues to offer nationally accredited cycle training to people of all ages and abilities. Cycle training is offered free of charge to children in the county and adult training is also available free to members of the public; whilst training is offered at workplaces at a cost to employers. 12 additional trainers were trained to accredited standards in 2008 to meet the national guidelines.	In 2014/15 6,550 children received cycle training, including 675 children in Gedling.	Ongoing
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.		Complete
d) Gedling Borough Council to hold 'Car Free Days' to encourage staff to cycle or walk to work	**GBC - See Table 9.4**		
e) Develop and undertake annual walking promotional marketing campaigns/production of literature	Marketing of walking and cycling is undertaken in a variety of formats. Various campaigns have been undertaken. The Big Wheel marketing organisation was established to deliver year round marketing campaigns; including walk week, bike week etc. in the Greater Nottingham area. The County Council also undertakes its own marketing.	Various campaigns undertaken including marketing of bike week, walk week, walk to school week. Nottinghamshire County Council, in partnership with Nottingham City Council, held a Greater Nottingham cycle forum during Bike Week and Cycle Live (including mass participation cycle rides and activities such as the Great Notts Bike Ride) was held in June to promote cycling.	Ongoing
	A number of walking leaflets are produced by NCC highlighting different levels of walks along its rights of way networks.	All of the work undertaken by the officers undertaking travel planning duties (e.g., publicity campaigns, personalised travel planning etc.) aim to deliver increases in the walking and cycling mode share.	Ongoing
		A major role of the smarter travel coordinator was 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 was established during 2013/14 for a two year period which expired in March 2015.	2015

Measure/Title	Progress to date	Progress in last 12 months	Estimated completion date
f) Consider walking and cycling infrastructure and facility enhancements	An annual programme of walking and cycling improvements is delivered across the county including schemes that will encourage more walking and cycling within the AQMA. 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. The travel planning planned to be undertaken in 2014/15 will help develop future infrastructure improvements. Also 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 was established during 2013/14 for a two year period. The 'first year evaluation' is not due to be undertaken until later in 2014.	To encourage walking and cycling within the AQMA schemes delivered during 2014/15 included: • new pedestrian refuge on the A60 Mansfield Road, Redhill • dropped kerbs at locations in Daybrook and Arnold • residents' parking schemes on Bond Street and Redhill Road, Arnold to deter commuter parking • pedestrian improvements on High Street, Arnold to improve safety • improvements to the zebra crossing on Worral Avenue/Front Street, Arnold • introduction of advisory 20mph speed limits outside all the schools in Arnold and Daybrook.	Ongoing

Table 9.3 Progress against LTP and links between action plan measures and delivery of indicators

Progress against trajectory legend:	
	Indicator meeting LTP target
	No clear trend, or narrowly missing LTP target
	Indicator not meeting LTP target
N/A	Data not available at time of writing

<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 2009 and 2013 there has been a decrease in journey times per mile across the county as well as on A60 as shown in the table below. As the economy begins to grow again, traffic volumes/mileage has increased and journey times have also increased. Data for 2013/2014 academic year 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>2008/09</th><th>2009/10</th><th>2010/11</th><th>2011/12</th><th>2012/13</th><th>2013/14</th><th>2014/15</th></tr>
<tr><td>Nottinghamshire</td><td>3mins 26secs</td><td>3mins 19secs</td><td>3mins 24secs</td><td>3mins 16secs</td><td>3mins 10secs</td><td>3mins 23secs</td><td>N/A</td></tr>
<tr><td>A60 Mansfield Road (Leapool island – Edwards Lane)</td><td>N/A</td><td>4mins 14secs</td><td>3mins 37secs</td><td>3mins 29secs</td><td>3mins 38secs</td><td>3mins 51secs</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, although 2013 has seen increases in overall traffic mileage.
<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><th>2013</th><th>2014</th></tr>
<tr><td>Nottinghamshire</td><td>102</td><td>99</td><td>100</td><td>99</td><td>98</td><td>96</td><td>97</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>95</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>94</td><td>95</td><td>N/A</td></tr>
</table>
Traffic mileage for HGVs has also decreased significantly (8% 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.
</td><td>1a)
2a), b), c)
3a), b), c), d), 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>

		Changes in area wide HGV mileage (vehicle kilometres travelled)	

Changes in area wide HGV mileage (vehicle kilometres travelled)	2007	2008	2009	2010	2011	2012	2013	2014
Nottinghamshire	114	111	100	98	98	96	96	N/A
Greater Nottingham	116	111	100	98	98	97	96	N/A

It should be noted that re-routing traffic would result in additional traffic mileage and therefore negatively impact on this indicator.

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	2013/14	
Nottinghamshire County NHS - Reception (age 4-5)	9.8%	8.9%	8.5%	7.9%	8.2%	8.1%	7.8%	
Nottinghamshire County NHS - Year 6 (age 10-11)	17.6%	17.3%	17.3%	16.1%	17.2%	17.5%	17.5%	

5a)
7a), c), d), f)
14c)
15c)
16a), d)
18a), b), c), 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	2013	2014
Nottinghamshire	106	103	100	100	97	97	97	N/A
Greater Nottingham	104	100	100	100	97	97	98	N/A
Gedling			100	100	99	97	99	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.

Indicator	2007	2008	2009	2010	2011	2012	2013	2014
Number of AQMAs on County Council managed roads	1	1	1	2	2	2	2	2

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.

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)
16a), b), c), d)
17a), b), c), d), e), f), g), h)
18a), b), c), d), e), f)

NI177
NI178
LTP8
LTP16
LTP17
LTP23
LTP24
LTP25

Bus services

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) although there was small increase between 2011/12 and 2012/13. 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.

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
No. of local bus and light rail passenger journeys originating in the authority	35.1m	35.4m	35.1m	34m	33.2m	34.6m	N/A	N/A

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 84% 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.

Indicator	2011/12	2012/13	2013/14	2014/15
Bus services running on time (Percentage of buses on time)	85%	85%	84%	84%
Bus services running on time (waiting time on frequent services)	0.89mins	0.93mins	0.9mins	1.03mins

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Public satisfaction with local bus services			69%	69%	66%	70%	69%	93%
Public satisfaction with passenger transport information			61.8%	61.4%	62.1%	64.8%	63.2%	83%
Public satisfaction with bus driver behaviour			70%	70.5%	70.1%	71.2%	72.6%	89%
Provision of information at bus stops	76%	80%	80%	95%	96%	97%	97%	98%
Provision of real-time information			29	64	111	N/A	212	355
Take up of concessionary fare passes	76	80	80	86%	89.3%	84.8%	89.9%	85.5%

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.

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)

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>LTP13
LTP19
LTP20</td><td>Cycling</td><td>In both Nottinghamshire as a whole and the Nottingham built-up area part of the county cycling has increased by 8% between 2010 and 2013; and in Gedling district there has been an increase of 6% in cycling levels between 2010 and 2012. It is not possible to analyse these figures at a more local level.
<table>
<tr><th>Cycling levels</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr>
<tr><td>Nottinghamshire</td><td>104</td><td>99</td><td>100</td><td>100</td><td>109</td><td>105</td><td>108</td><td>N/A</td></tr>
<tr><td>Greater Nottingham</td><td></td><td></td><td></td><td>100</td><td>109</td><td>105</td><td>110</td><td>N/A</td></tr>
<tr><td>Gedling</td><td></td><td></td><td></td><td>100</td><td>107</td><td>100</td><td>106</td><td>N/A</td></tr>
</table>
The numbers of children undertaking cycle training in the county has increased although the numbers undertaking training in Gedling borough decreased between 2012/13 and 2013/14.
<table>
<tr><th>Number of children undertaking cycle training</th><th>2010/11</th><th>2011/12</th><th>2012/13</th><th>2013/14</th><th>2014/15</th></tr>
<tr><td>Nottinghamshire</td><td>4,800</td><td>4,900</td><td>4,592</td><td>5,322</td><td>6,550</td></tr>
<tr><td>Gedling</td><td></td><td></td><td>514</td><td>391</td><td>675</td></tr>
</table>
<table>
<tr><th></th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr>
<tr><td>Length of shared or segregated cycle lane or path</td><td>354km</td><td>355km</td><td>355km</td><td>355km</td><td>355km</td></tr>
</table></td><td>5a), b)
6a)
7a), b), c), d), f)
14c)
15a), b), c), d)
16a), d)
18a)b), c), d), e), f)</td></tr>
<tr><td>LTP15</td><td>Car sharing</td><td>The numbers of registered car users continues to increase year on year.
<table>
<tr><th></th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr>
<tr><td>Number of registered car sharers on nottinghamshare</td><td>994</td><td>1,326</td><td>1,760</td><td>1,891</td><td>2,044</td><td>2,234</td><td>2,295</td><td>2,304</td></tr>
</table></td><td>5a), b)
7d), f)
14c)
15a), b), c), d)
16a), b), c), d)</td></tr>
</table>

9.3 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 March 2015.

Subsequently, funding has been found from Gedling Borough and Nottingham City Councils to continue the scheme into 2016.

The Nottingham scheme now has 75 members operating over 4800 vehicles in the conurbation.

Table 9.4 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 discussions with waste collection service	ongoing	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	Promotion of economy and town centres means that review is unlikely to be considered for the foreseeable future.	none	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	none	none	ongoing
7b	Ensure AQAP and AQMA are considered in future planning policy frameworks (Local Plans).		2012-	ongoing	Ongoing consultation with Core Strategy/Local Plan development	ongoing	involvement in development of Local Plan Document	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	Ongoing co-operation with County Council	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	none Also see County Council Table 9.2	ongoing

No.	Measure	Focus	Planning Phase	Implementation Phase	Indicator	Progress to Date	Progress in Last 12 Months	Estimated Completion Date
7e	Development of an Air Quality Supplementary Planning Document(SPD)		2013	2014-2015	Development of SPD	Draft Planning Guidance Document	Guidance produced available as informal planning guidance	not known
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.	Ongoing with existing members	2016
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	75 members operating around Nottingham. SAFED training available.	25 new members	2016
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 talks with LAs in conurbation.	none	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	Upgrade to 4* Member	Continued membership	ongoing
12b	Ensuring new vehicles procured are cleanest possible.		2012	ongoing	Indictors linked to the GBC Sustainability Strategy and Action Plan	Electric van purchased	none	ongoing
12c	Run Eco-driving training course for officers using own and GBC vehicles for work.		2012	2012-2013		56 staff received training	none	Ongoing subject to financial resources
12d	Consider alternative fuelled 'pool vehicles'		2012	2012-		See 12b, bicycles available for staff use	none	ongoing
12e	GBC Green Procurement (emission standards for vehicles making deliveries to the Council).		2013	2014-		none	none	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	Point installed	complete
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.	Car Park completed with charging point.	2014/ 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	none	Dependant of political and financial backing
14b	Roadside Vehicle Emissions Testing (RVET)		2012	2013-2015	Carry out RVET day.	Twice submitted Defra grant application. Unsuccessful.	Considering other funding options.	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.	none	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.	Draft copy of new Plan completed	complete
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	none	ongoing

10 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.

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

Appendices

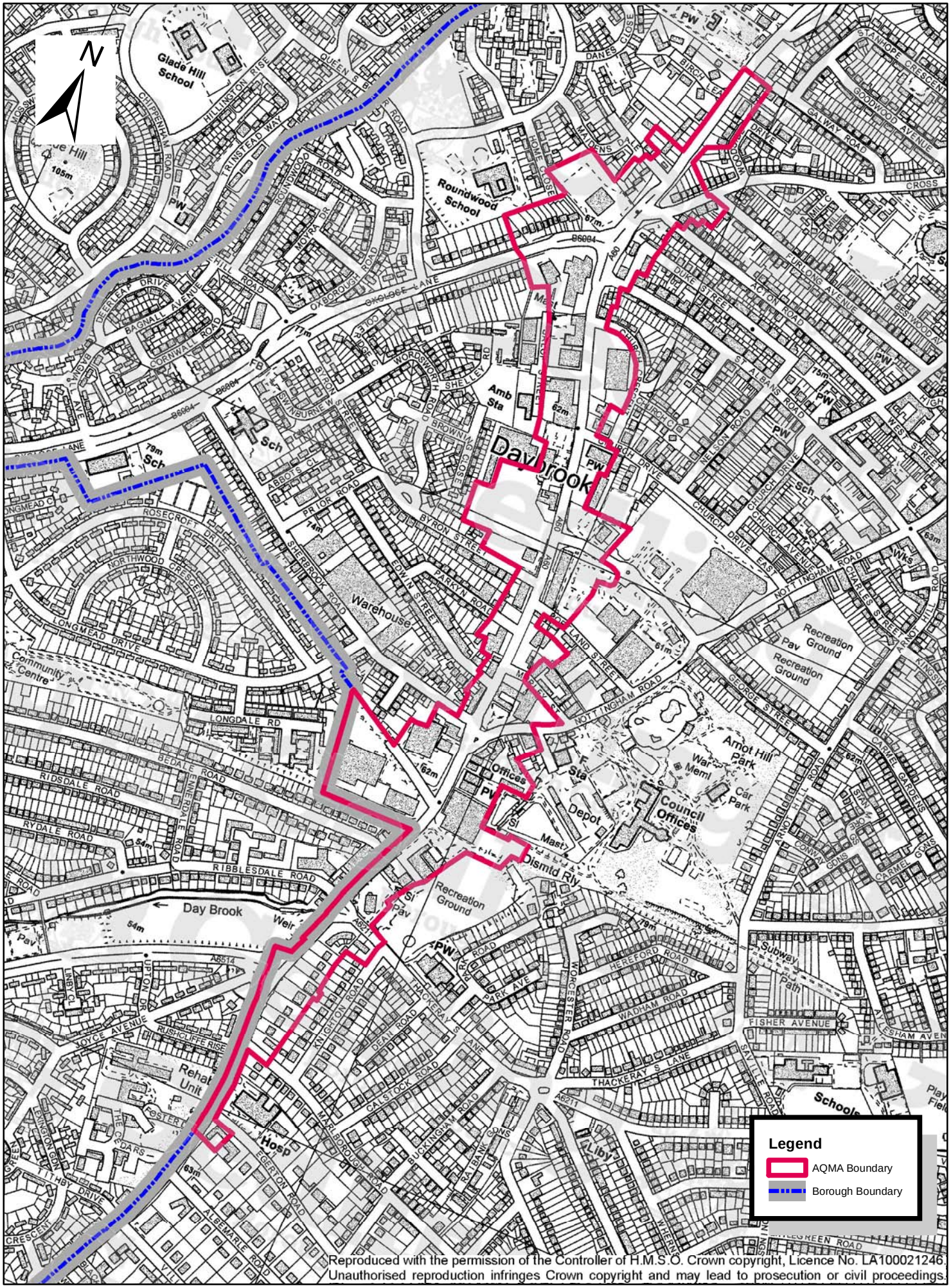
Appendix A: Maps

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

Appendix C: QA/QC Data

Appendix A

Maps

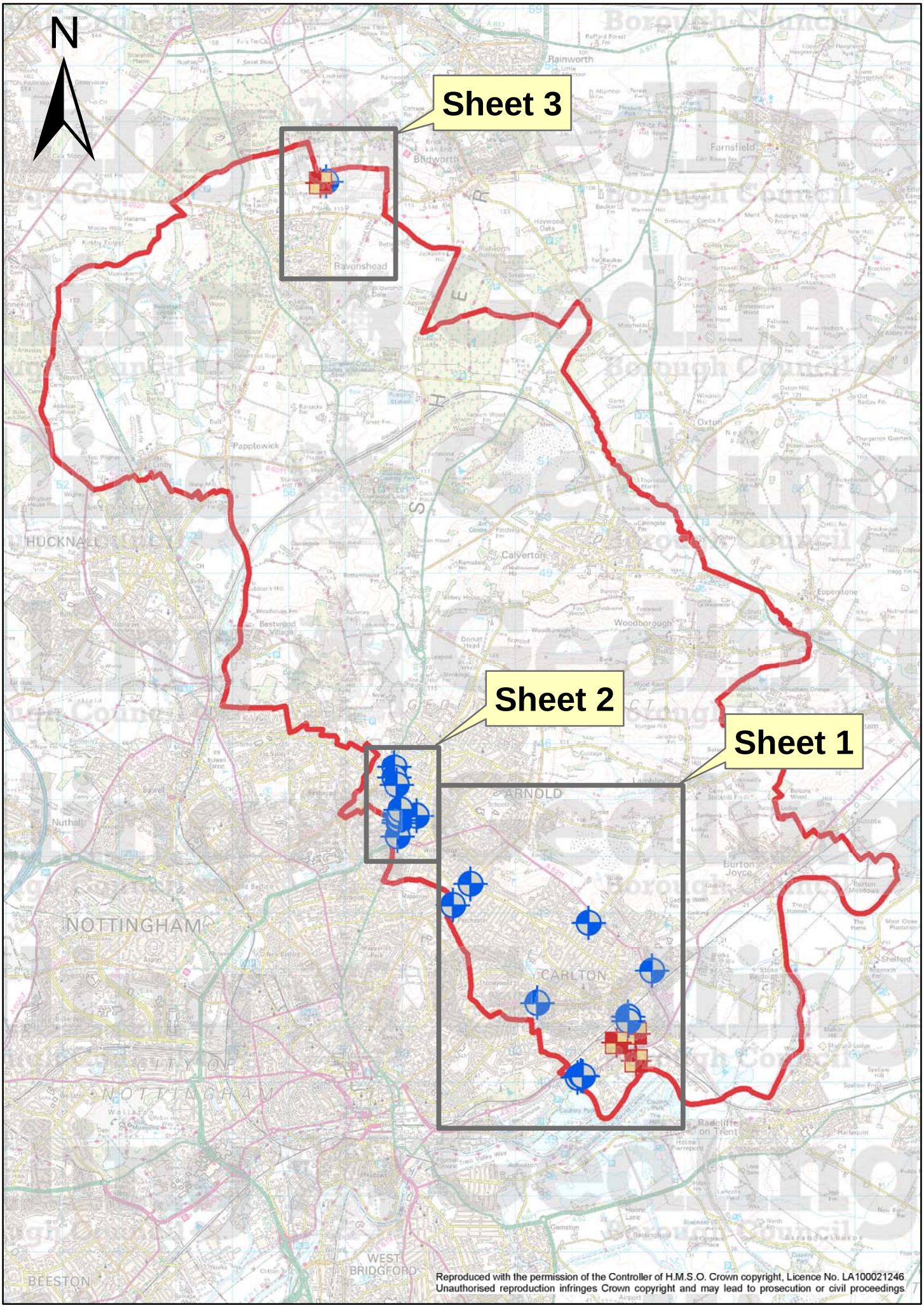


Gedling Borough Council

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

Scale 1:7,500

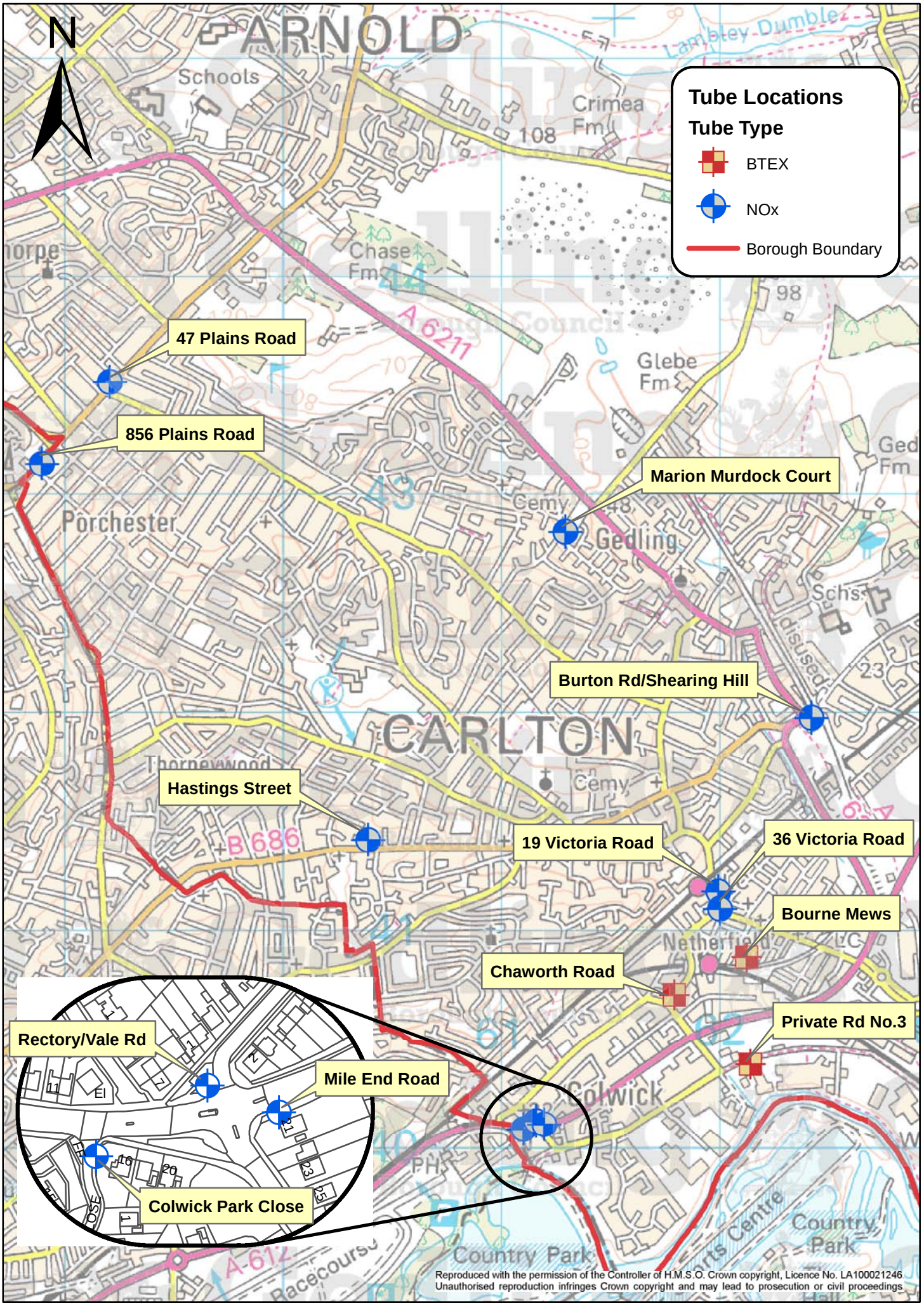
Date April 2011



Gedling Borough Council

Sheet Locations

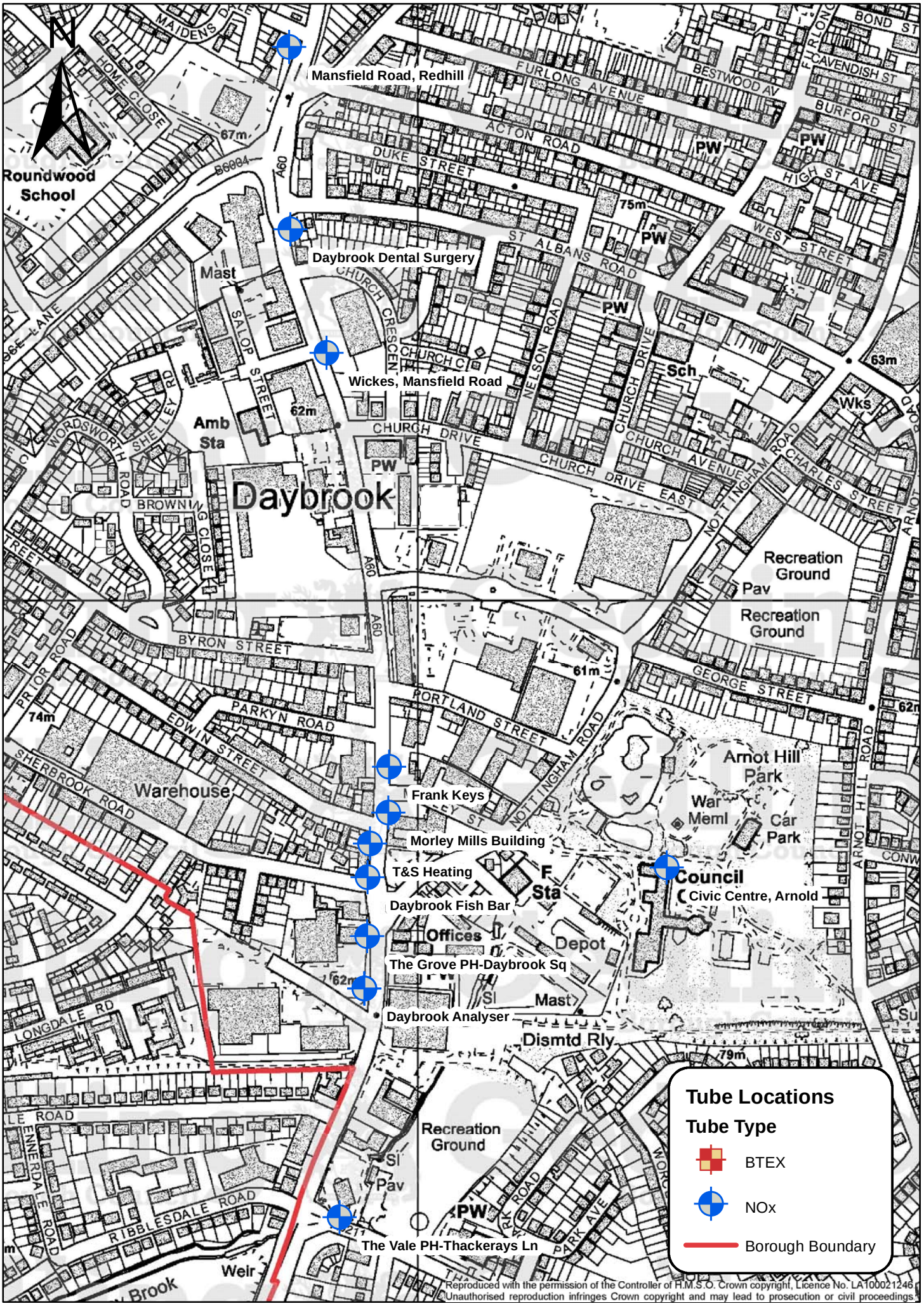
Scale: nts



Gedling Borough Council

DiffusionTube Locations - Sheet 1

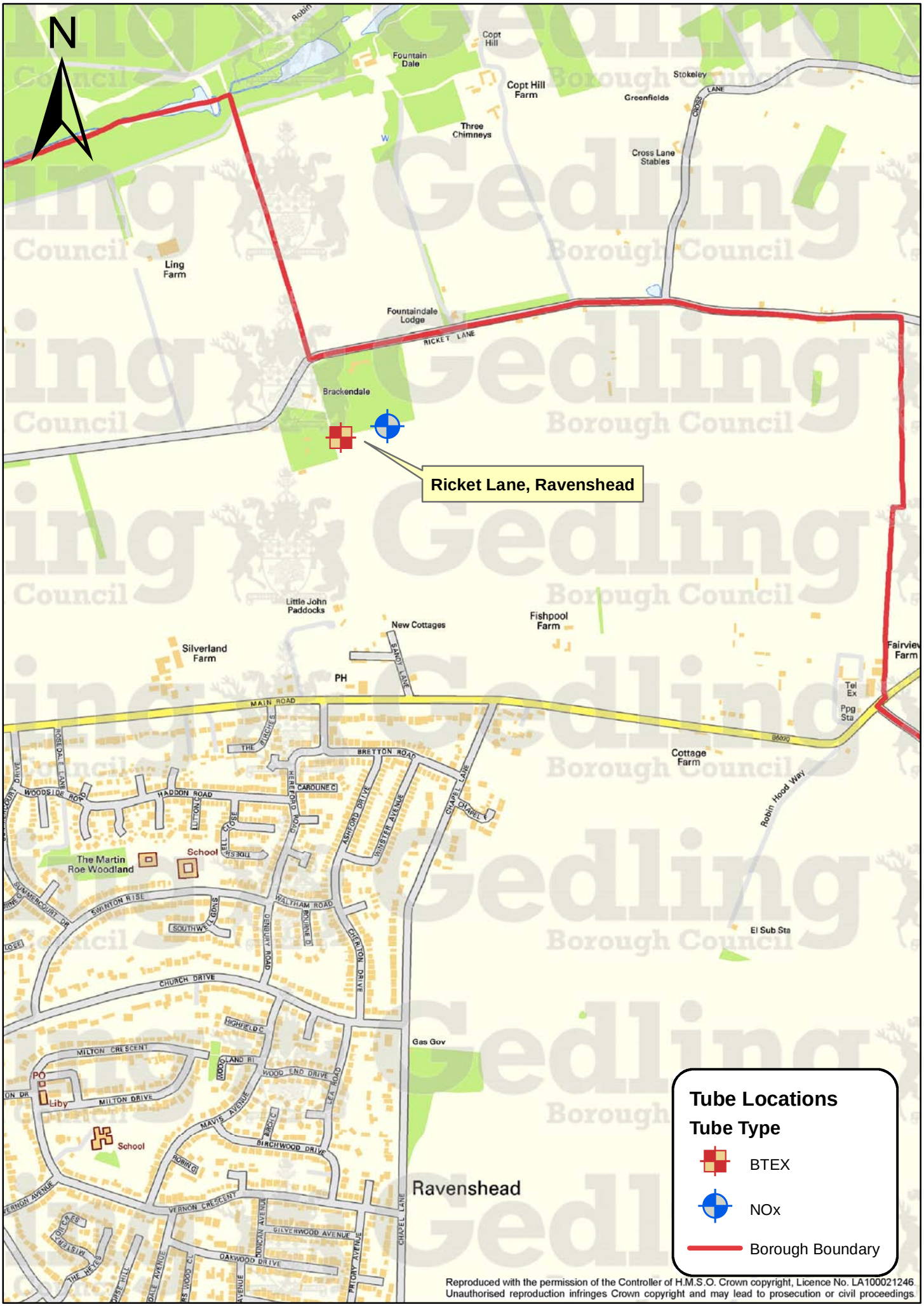
Scale: nts



Gedling Borough Council

DiffusionTube Locations - Sheet 2

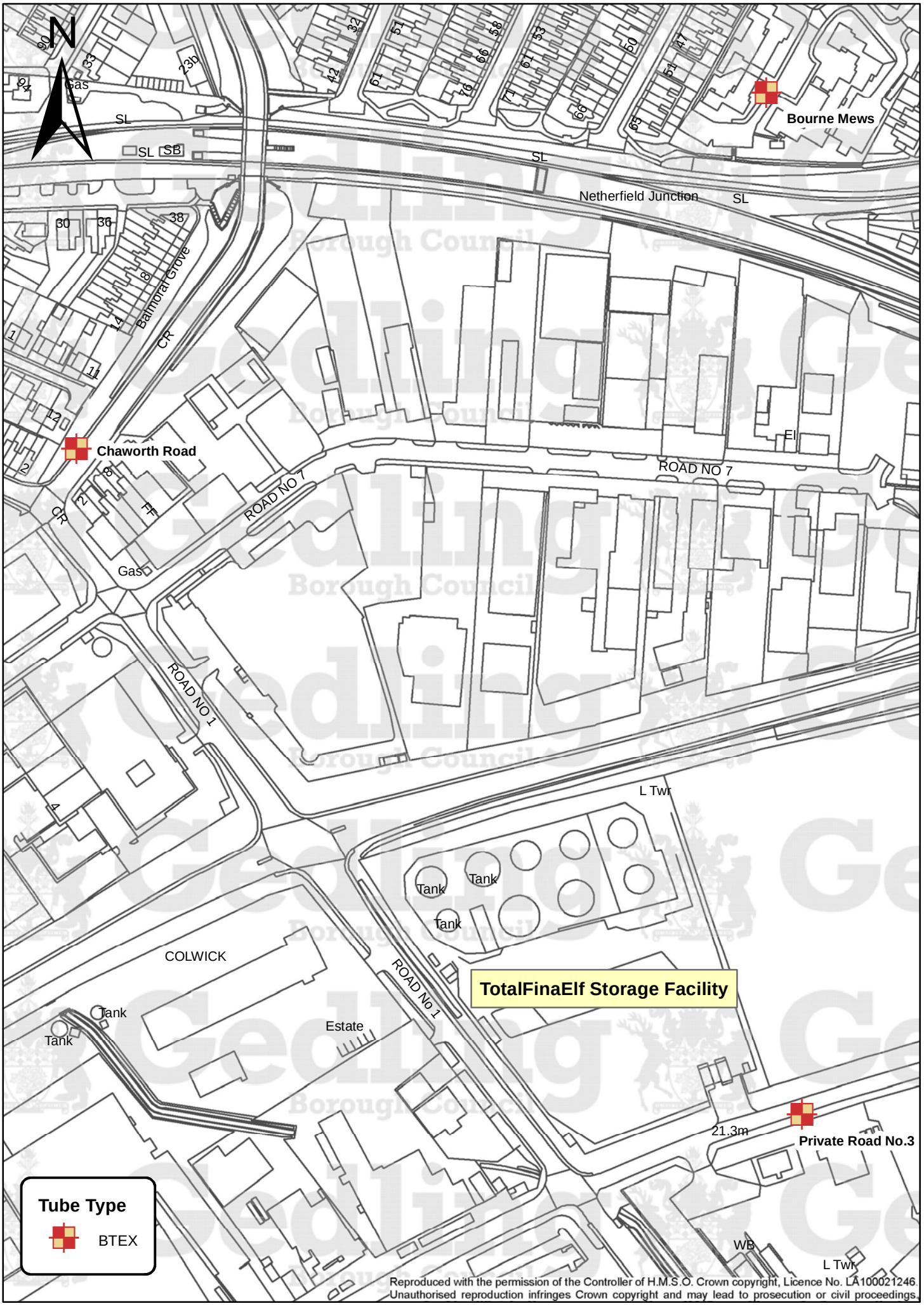
Scale: nts



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 2014 for 20% TEA in water is given as **0.91** from 21 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.
Attached to this appendix the AEA spreadsheet for calculating bias, precision and accuracy of triplicate tubes. The bias factor calculated is **1.02**.

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 nearest urban background diffusion tube; The Vale PH uses the "Civic Centre" UB tube (19 g/m^3) and 36 Victoria Rd uses the average of Marion Murdock Court and Hastings Street UB tubes. (20 g/m^3). Screen shots of these spreadsheets are attached to this appendix.

Short-term to Long-term Data adjustment

As mentioned tube data from Mile End Road (75% data capture) and the Analyser (less than 90% data capture) were incomplete for 2014. 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 tube results 9 months (Mile End Road) and Analyser which was below 90% data capture; to a 12 month average.

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

Mile End Road Tube

Long term site	Annual Mean 2014 (Am)	Period Mean 2014 (Pm)	Ratio
Lincoln Canwick Rd.	38.3	38.54	0.99
Nottingham Centre	34.1	33.02	1.03
Sheffield Tinsley	34.1	32.93	1.04
		Average ratio	**1.02**

Analyser

Long term site	Annual Mean 2014 (Am)	Period Mean 2014 (Pm)	Ratio
Lincoln Canwick Rd.	38.3	38.74	0.99
Nottingham Centre	34.1	35	0.97
Sheffield Tinsley	34.1	35.15	0.97
		Average ratio	**0.98**

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	08/01/2014	06/02/2014	50.9	39.3	44.9	45	5.8	13	14.4
2	06/02/2014	05/03/2014	38.3	42.5	46.7	42	4.2	10	10.4
3	05/03/2014	02/04/2014	47.2	43.8	43.6	45	2.0	5	5.1
4	02/04/2014	30/04/2014	35.5	36.3	36.2	36	0.4	1	1.0
5	30/04/2014	29/05/2014	37.4	35.9	21.7	32	8.6	27	21.5
6	29/05/2014	01/07/2014	35.7	33.5	34.6	35	1.1	3	2.7
7	01/07/2014	30/07/2014	34.1	32.3	34.2	34	1.1	3	2.7
8	30/07/2014	27/08/2014	27.7	25.6	28.6	27	1.5	6	3.8
9	27/08/2014	02/10/2014	39.0	35.9	35.5	37	1.9	5	4.8
10	02/10/2014	29/10/2014	45.4	43.0	46.6	45	1.9	4	4.7
11	29/10/2014	04/12/2014	45.3	47.4	46.6	46	1.0	2	2.6
12	04/12/2014	07/01/2015	35.6	37.2	38.8	37	1.6	4	4.0
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
42	95	Good	Good
39	98	Good	Good
46	92	Good	Good
41	95	Good	Good
42	57	Poor Precision	or Data Capture
0	0	Good	or Data Capture
31	61	Good	or Data Capture
27	94	Good	Good
41	96	Good	Good
38	78	Good	Good
52	98	Good	Good
41	94	Good	Good
Overall survey -->		Good precision	Poor Overall DC

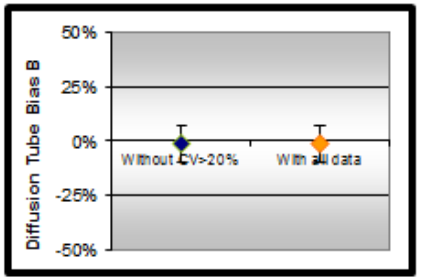
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Daybrook Square

Precision: 11 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 9 periods of data	
Bias factor A	1.02 (0.94 - 1.11)
Bias B	-2% (-10% - 7%)
Diffusion Tubes Mean:	40 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	41 μgm^{-3}
Data Capture for periods used:	93%
Adjusted Tubes Mean:	41 (38 - 45) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 9 periods of data	
Bias factor A	1.02 (0.94 - 1.11)
Bias B	-2% (-10% - 7%)
Diffusion Tubes Mean:	40 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	41 μgm^{-3}
Data Capture for periods used:	93%
Adjusted Tubes Mean:	41 (38 - 45) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Co-Location Spreadsheet 2014 Gradko Analysed

Adjustment of SINGLE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tube Measurements																Adjusted measurement (95% confidence interval) with all the data 9 periods used in this calcuations
Site Name/ID	Periods													Raw Mean	Valid periods	Bias Factor A 1.02 (0.94 - 1.11) Bias B -2% (-10% - 7%) Tube Precision: 6 Automatic DC: 93%
	1	2	3	4	5	6	7	8	9	10	11	12	13			
The Grove PH - Daybrook Sq	49.0	41.3	39.9	35.7	45.0	40.7	35.2	30.9	36.8	40.9	43.7	-		39.9	11	Adjusted with 95% CI 41 (38 - 44)
Hastings Street	33.0	31.7	26.6	19.5	19.0	16.2	16.7	18.3	18.3	23.5	29.1	34.0		23.8	12	Adjusted with 95% CI 24 (22 - 26)
Marion Murdock Court	27.0	-	23.5	16.1	17.0	12.9	15.4	12.8	16.2	22.3	26.8	29.0		19.9	11	Adjusted with 95% CI 20 (19 - 22)
47 Plains Road	41.0	37.7	35.3	28.3	28.0	24.0	27.5	25.8	26.1	38.2	37.0	42.0		32.6	12	Adjusted with 95% CI 33 (31 - 36)
Morley Mills, Daybrook	53.0	49.8	43.6	35.0	38.0	28.0	27.7	26.6	33.7	35.1	45.9	41.0		38.1	12	Adjusted with 95% CI 39 (36 - 42)
Mansfield Road, Redhill	41.0	37.2	32.3	28.8	25.0	21.4	20.1	18.6	23.5	33.5	38.1	32.0		29.3	12	Adjusted with 95% CI 30 (28 - 33)
Daybrook Dental Surgery	40.0	43.2	38.7	30.3	31.0	28.0	29.8	29.5	33.3	40.2	43.3	44.0		35.9	12	Adjusted with 95% CI 37 (34 - 40)
Victoria Road, Netherfield	43.0	35.0	33.8	29.7	30.0	27.5	24.8	22.0	26.5	29.8	40.3	34.0		31.4	12	Adjusted with 95% CI 32 (29 - 35)
Victoria Road, Netherfield	46.0	46.0	42.4	30.5	35.0	29.5	29.1	28.5	32.4	37.3	40.3	45.0		36.8	12	Adjusted with 95% CI 38 (35 - 41)
Burton Rd/Shearing Hill	29.0	23.7	30.9	23.7	-	23.4	24.6	20.6	26.4	21.4	31.3	34.0		26.3	11	Adjusted with 95% CI 27 (25 - 29)
The Vale PH - Thackerays Lane	52.0	51.1	45.1	34.7	39.0	29.3	31.0	32.8	31.3	44.8	45.8	50.0		40.6	12	Adjusted with 95% CI 41 (38 - 45)
Ricket Lane (ruralbknd)	-	22.8	18.7	13.5	11.0	13.8	11.2	8.3	9.3	21.1	19.3	21.0		15.5	11	Adjusted with 95% CI 16 (15 - 17)
Wickes Store, Daybrook	48.0	43.8	36.7	28.3	29.0	23.4	25.9	24.7	27.7	40.5	42.7	39.0		34.1	12	Adjusted with 95% CI 35 (32 - 38)
Civic Centre, Arnold	28.0	27.7	21.9	17.5	16.0	14.7	14.0	15.6	16.5	22.9	24.5	30.0		20.8	12	Adjusted with 95% CI 21 (20 - 23)
Colwick Park Close	27.0	30.1	33.0	29.5	23.0	24.3	25.5	22.6	27.8	21.1	29.8	30.0		27.0	12	Adjusted with 95% CI 28 (25 - 30)
Daybrook Chip Shop	52.0	49.1	41.0	38.3	41.0	35.0	32.8	38.6	36.8	53.1	42.6	48.0		42.4	12	Adjusted with 95% CI 43 (40 - 47)
T&S Heating, Daybrook	58.0	51.5	44.7	36.4	35.0	33.9	35.5	36.6	41.1	51.5	53.9	58.0		44.7	12	Adjusted with 95% CI 46 (42 - 50)
Frank Keys, Daybrook	56.0	54.1	44.3	35.3	37.0	30.5	32.8	29.4	32.6	46.8	42.5	44.0		40.4	12	Adjusted with 95% CI 41 (38 - 45)
856 Plains Road	28.0	35.6	32.2	28.1	28.0	27.3	26.8	26.1	30.6	19.6	30.1	39.0		29.3	12	Adjusted with 95% CI 30 (28 - 33)
Rectory Road/Vale Road	43.0	39.8	33.5	28.7	29.0	28.6	26.4	28.6	27.7	33.7	38.5	39.0		33.0	12	Adjusted with 95% CI 34 (31 - 37)
Mile End Road	-	-	-	41.3	43.0	42.7	35.8	36.5	39.9	42.6	45.3	47.0		41.6	9	Adjusted with 95% CI 42 (39 - 46)

The bias adjustment factor used in these calculations include all the data and no screening of data due to poor precision has been applied.

2014 Diffusion Gradko Analysed Tube Results

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 06/15

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

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

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

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

This spreadsheet will be updated at the end of September 2015

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

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

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[a]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2014	UC	Belfast City Council	11	33	32	5.6%	G	**0.95**
Gradko	20% TEA in water	2014	R	Borough Council of King's Lynn & West Norfol	12	29	21	37.7%	G	**0.73**
Gradko	20% TEA in water	2014	R	Brighton & Hove City Council	12	55	48	15.2%	G	**0.87**
Gradko	20% TEA in water	2014	R	Brighton & Hove City Council	11	60	57	6.2%	G	**0.94**
Gradko	20% TEA in water	2014	R	Cheshire West and Chester	11	40	40	-1.0%	G	**1.01**
Gradko	20% TEA in water	2014	R	Dudley MBC	12	36	31	18.1%	G	**0.85**
Gradko	20% TEA in water	2014	UB	Dudley MBC	12	26	23	11.2%	G	**0.90**
Gradko	20% TEA in water	2014	R	Dudley MBC	12	41	35	15.2%	G	**0.87**
Gradko	20% TEA in water	2014	R	Dudley MBC	12	52	60	-12.6%	G	**1.14**
Gradko	20% TEA in water	2014	R	Gateshead Council	10	35	32	10.8%	G	**0.90**
Gradko	20% TEA in water	2014	R	Gateshead Council	12	36	36	-0.1%	G	**1.00**
Gradko	20% TEA in water	2014	R	Gateshead Council	12	34	32	6.4%	G	**0.94**
Gradko	20% TEA in water	2014	UB	Luton Borough Council	9	36	37	-4.0%	G	**1.04**
Gradko	20% TEA in water	2014	KS	Marylebone Road Intercomparison	12	115	80	42.8%	G	**0.70**
Gradko	20% TEA in water	2014	R	Monmouthshire County Council	10	42	38	10.1%	G	**0.91**
Gradko	20% TEA in water	2014	R	NOTTINGHAM CITY COUNCIL	12	44	39	14.9%	G	**0.87**
Gradko	20% TEA in water	2014	R	Bedford Borough Council	12	38	39	-2.7%	G	**1.03**
Gradko	20% TEA in water	2014	R	City of Lincoln Council	12	45	38	16.8%	G	**0.86**
Gradko	20% TEA in water	2014	R	East Herts Council	11	37	33	14.5%	G	**0.87**
Gradko	20% TEA in water	2014	R	Lancaster City Council	11	36	38	-4.0%	G	**1.04**
Gradko	20% TEA in water	2014	R	Wokingham Borough Council	12	40	37	9.3%	G	**0.91**
Gradko	20% TEA in water	2014		**Overall Factor[3] (21 studies)**				**Use**		**0.91**

Gradko 20%TEA in Water Co-location Studies 2014

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)	20	$\mu g/m^3$
Step 3	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	33	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	29.9	$\mu g/m^3$

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.

Air Quality Consultants

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)	19	$\mu g/m^3$
Step 3	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	37	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	30.3	$\mu g/m^3$

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

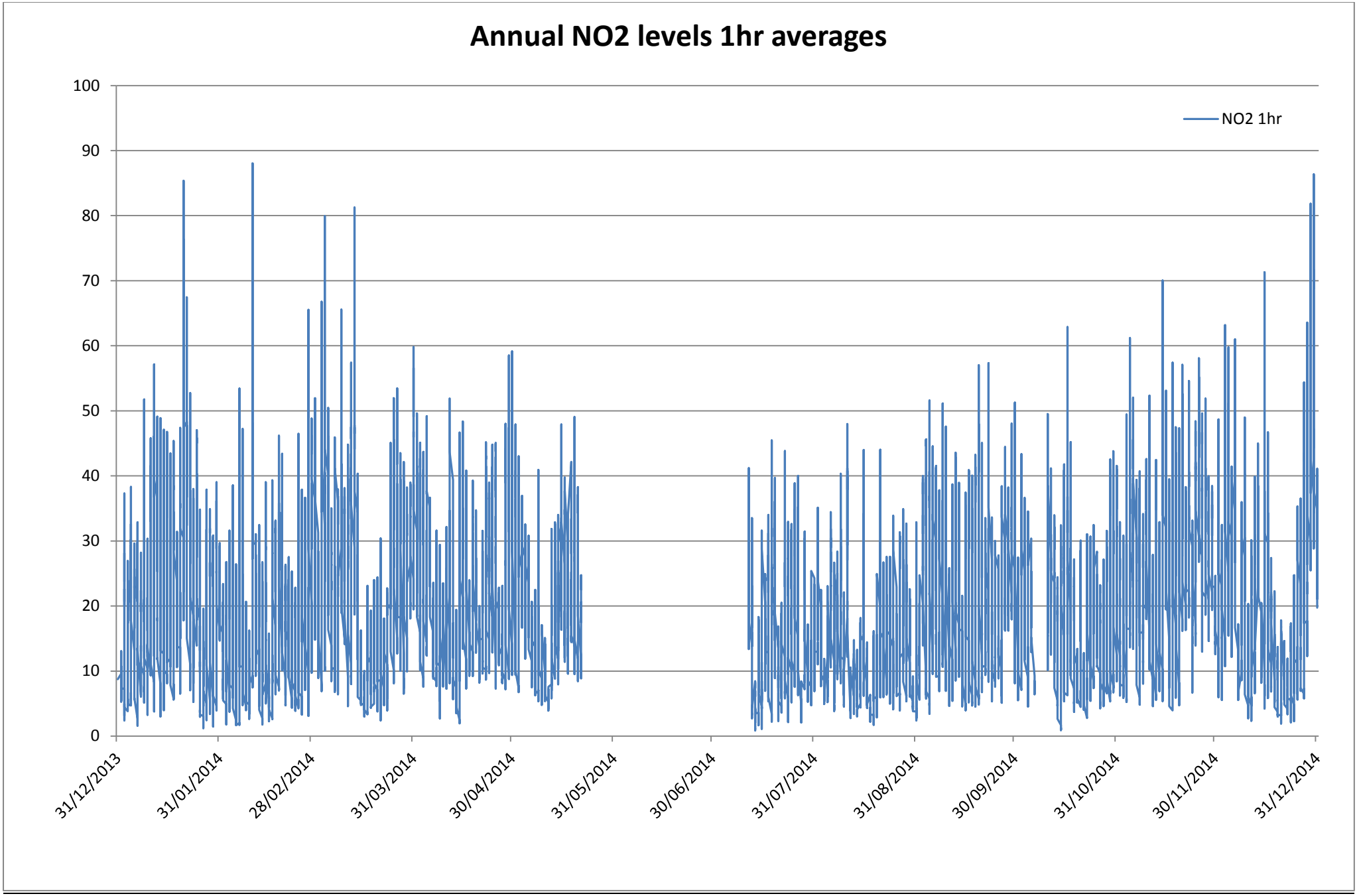
Vale PH Calculation for Distance to Receptor

Nitrogen Dioxide Diffusion Tube Monitoring 2014

Site	NO2 /ugm-3 2014 jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	Annual Mean	Adjusted for bias	Distance Adjmnt	Annualised	Data Capture
The Grove PH - Daybrook Sq	49	41	40	36	45	41	35	31	37	41	44	-	40	36			92
Hastings Street	33	32	27	20	19	16	17	18	18	24	29	34	24	22			100
Marion Murdock Court	27	-	23	16	17	13	15	13	16	22	27	29	20	18			92
47 Plains Road	41	38	35	28	28	24	27	26	26	38	37	42	33	30			100
Morley Mills, Daybrook	53	50	44	35	38	28	28	27	34	35	46	41	38	35			100
Mansfield Road, Redhill	41	37	32	29	25	21	20	19	24	33	38	32	29	27			100
Daybrook Dental Surgery	40	43	39	30	31	28	30	29	33	40	43	44	36	33			100
19 Victoria Road, Netherfield	43	35	34	30	30	28	25	22	27	30	40	34	32	29			100
36 Victoria Road, Netherfield	46	46	42	31	35	29	29	29	32	37	40	45	37	33	29		100
Burton Rd/Shearing Hill	29	24	31	24	-	23	25	21	26	21	31	34	26	24			92
The Vale PH - Thackerays Ln	52	51	45	35	39	29	31	33	31	45	46	50	41	37	30		100
Ricket Lane	-	23	19	14	11	14	11	8	9	21	19	21	15	14			92
Wickes Store, Daybrook	48	44	37	28	29	23	26	25	28	40	43	39	34	31			100
Civic Centre, Arnold	28	28	22	18	16	15	14	16	17	23	24	30	21	19			100
Colwick Park Close	27	30	33	30	23	24	26	23	28	21	30	30	27	25			100
Daybrook Chip Shop	52	49	41	38	41	35	33	39	37	53	43	48	42	39			100
T&S Heating, Daybrook	58	51	45	36	35	34	36	37	41	52	54	58	45	**41**			100
Frank Keys, Daybrook	56	54	44	35	37	31	33	29	33	47	42	44	40	37			100
856 Plains Road	28	36	32	28	28	27	27	26	31	20	30	39	29	27			100
Rectory Road/Vale Road	43	40	33	29	29	29	26	29	28	34	39	39	33	30			100
Mile End Road	-	-	-	41	43	43	36	36	40	43	45	47	42	38		39	75
Analyser in ppb	21.78	20.65	23.95	21.65	21.94	0.00	16.16	13.92	21.72	20.00	27.08	21.62	19				
ANALYSER IN ug/m-3	**42**	**39**	**46**	**41**	**42**	**0**	**31**	**27**	**41**	**38**	**52**	**41**	**37**				
DATA CAPTURE %	95	98	92	95	57	0	61	94	96	78	98	94	80	%			

Bias Adjustment Factors (BAF) used	gradko	**0.91**	21 National (various)

Nitrogen Dioxide Diffusion Tube Monitoring 2014 - Adjusted for Bias


Annual NO2 levels 1hr averages
NO2 1hr
100
90
80
70
60
50
40
30
20
10
0
31/12/2013
31/01/2014
28/02/2014
31/03/2014
30/04/2014
31/05/2014
30/06/2014
31/07/2014
31/08/2014
30/09/2014
31/10/2014
30/11/2014
31/12/2014

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 DEFRA 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 (NO_2). The instrument consists of a pneumatic system, an NO_2-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	93% 2006	92% 2011
95% 2002	83% 2007	54% 2012*
97% 2003	81% 2008	91% 2013
98% 2004	95% 2009	80% 2014**
96% 2005	95% 2010	

*data logger failure in mid August 2012

** air conditioning unit failure in mid May

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)].