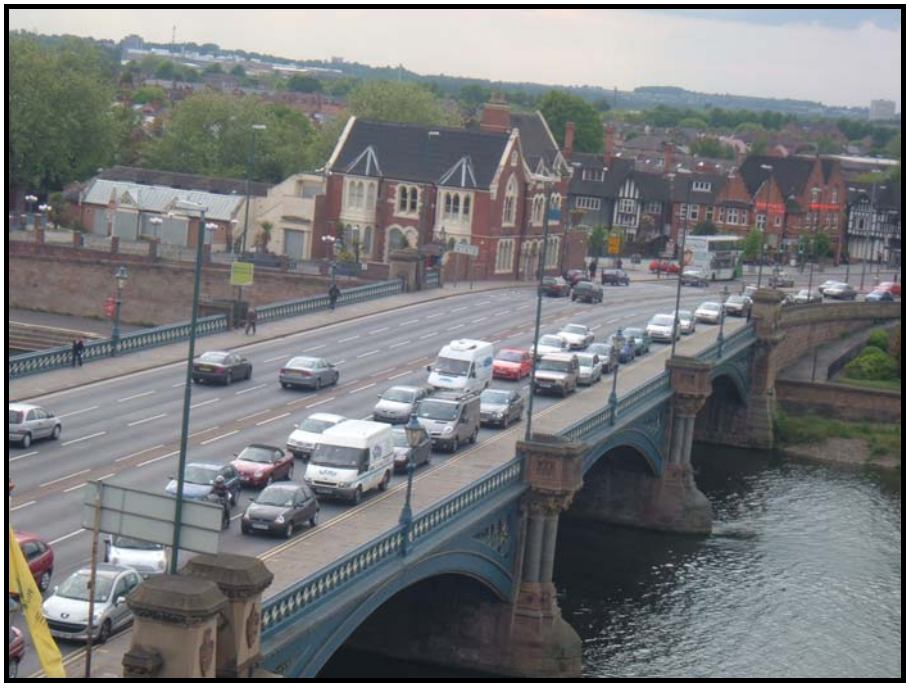
Rushcliffe
Borough Council

Environment & Waste Management Service

Air Quality Review and Assessment
And
Air Quality Action Plan

2008 Progress Report



June 2008

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Acknowledgements

The Council would like to acknowledge the help and co-operation of the many organisations and businesses who have contributed information and provided assistance to enable the Progress Report to be undertaken.

1. Executive Summary

This report provides an update on air quality over the year 2007 within the Borough of Rushcliffe as required by the Environment Act 1995 and also provides an update on the progress of implementation of the measures outlined in the Air Quality Action Plan (AQAP) published in May 2007. The AQAP contains a set of measures aimed at working toward ensuring the air quality in Rushcliffe meets the Air Quality Objectives set out in the National Air Quality Strategy due to excessive levels of Nitrogen Dioxide.

Rushcliffe has two air quality management areas both of which have been declared due to traffic pollution and in particular due to excessive levels of Nitrogen Dioxide above the objective levels in certain areas. The areas covered by the AQMA's are the Trent Bridge/Wilford lane area and part of the A52 ring road up to the Nottingham Knight traffic island. Both of these areas are major traffic routes into and out of Nottingham and are controlled by partner organisations to Rushcliffe; namely, the Highways Agency and Nottinghamshire County Council. Consequently in order to reduce the impact of NO2 derived traffic pollution these two partner organisations are key to meeting the AQ objectives.

Other pollutants that are required to be assessed are discussed in this report and updates provided. These other pollutants are not significant in Rushcliffe and no significant changes have taken place to warrant further investigation above and beyond the current monitoring that is taking place if any. Particulate matter below 10 µm in diameter, known as pm10, can be a concern where traffic levels are high but monitoring results have indicated the levels in Rushcliffe continue to be within objective levels. Pm10 is also a pollutant significantly derived from traffic.

Due to improvements in vehicle emission control techniques and the replacement of older more polluting vehicles over time it is expected that NO2 levels and other associated pollutants should fall and in conjunction with the measures outlined in the AQAP a cumulative effect is forecast to reduce NO2 levels in the Trent Bridge AQMA to below the objective levels by 2010. The A52 AQMA is less certain and monitoring is to continue to determine if current measures are sufficient to achieve this goal.

This report indicates that the NO2 levels during 2007 have increased rather than decreased as expected. Levels at roadside monitoring points continue to be high but are not exceeding 1 hour objective levels. Levels at façade locations to sensitive receptors within the AQMA's have increased and a number of other areas outside of the AQMA areas have got close to the objective levels necessitating further examination over the next year. Levels at a residential site on the A46, outside of any existing AQMA's, have exceeded the annual objective level for the first time. However, due to the major road improvements to be undertaken in the near future, a further AQMA is not planned to be declared in this area. The road changes will remove significant amounts of traffic from this receptor location.

Over the next year NO2 monitoring will continue with changes to the monitoring regime being undertaken due to new guidance being published and the joint procurement of NO2 diffusion tubes Nottinghamshire wide necessitating a change in

tube preparation technique. This will provide cost savings and produce data that can be better compared with neighbouring LA's with a greater certainty of accuracy for the overall survey.

The AQAP has been successful in implementing a number of measures with the aim of reducing car usage and reducing the impact of road vehicles in and around the AQMA areas. The progress with the measures in the AQAP is shown in Chapter 8 of this report. Rushcliffe BC continues to work toward reducing its own impact on the air quality by introducing a number of measures such as remote working, good fleet management, energy efficiency measures, green procurement strategy and working toward the introduction of a travel plan for employees. In addition, through its enforcement responsibilities emissions from industrial pollutants are controlled and sources of air pollution from bonfires and solid fuel burning within smoke control areas are actively investigated. Through close liaison with the Development Control Service the Environment & Waste Management Service are influencing the planning process where air quality is a material consideration. A draft guide for developers concerning air quality has been produced by E&WM with the aim to create a supplementary planning document with respect to air quality and development. Work is still required in this area and may result in the publication of a guidance document initially.

A comprehensive list of interventions undertaken to date by Nottinghamshire County Council through The Local Transport Plan is shown in Chapter 8, however, a number of measures that may have a larger impact on NO2 have yet to be implemented. These measures include major improvements in public transport infrastructure by partner organisations such as new park and ride site, the work place parking levy and the NET2 among others.

Developments that could introduce significant traffic increases into the AQMA areas are of a concern with several medium sized applications being received recently. Further development in the district leading to higher traffic levels may offset any expected improvements. Cumulatively these developments could have a detrimental effect on air quality, particularly on AQMA2, the A52 area.

2. Introduction.

The Environment Act 1995, Part IV, requires local authorities 'from time to time' to review and assess current and future air quality in their areas against air quality objectives detailed in the National Air Quality Strategy. The 'air quality objectives' are based on health based standards. Where it is unlikely that an air quality objective will be met in an area, a local authority must declare the area an 'air quality management area' and put in place an action plan setting out measures it intends to take in pursuit of the air quality objective. This process is known as the 'local air quality management process'.

The purpose of this Progress Report is to provide an annual review and update on air quality issues, including developments that might be significant to air quality and an update on the ongoing air quality monitoring within the Borough since the Updating and Screening Assessment 2006, and Stage 4 report 2006. In addition this report will provide an update on the progress of the air quality action plan. The action plan outlines the options that the council and partner organisations need to undertake to work towards reducing the levels of nitrogen dioxide in the West Bridgford Air Quality Management Areas to below the National Air Quality Objectives.

2.1. Overview of the local air quality management in Rushcliffe.

Summary of Rushcliffe Borough Councils Local Air Quality Management 2000 – 2008.

The following information can be viewed or downloaded from the Rushcliffe Borough Council Web Site www.rushcliffe.gov.uk

2.2. Air Quality Review and Assessment 2000.

In 2000, Rushcliffe Borough Council reported the findings of its original Review and Assessment of local air quality. This was a 3-stage process, concluding that with the exception of particulates, there was no need to proceed beyond Stages 1 and 2.

A more detailed Stage 3 assessment was carried out for particulates (PM_{10}), due to both potential inaccuracies in the atmospheric dispersion modeling and the predicted concentrations being close to the objective. Monitoring data was used to validate the computer modeling. It determined that the objective would be unlikely to be exceeded. It was therefore concluded that there was no need to declare an Air Quality Management Area (AQMA).

2.3. Updating and Screening Assessment. Review and Assessment of Local Air Quality 2003.

The 2003 Updating and Screening Assessment showed that a detailed assessment was required for traffic related nitrogen dioxide around some roads in West Bridgford, and for sulphur dioxide emissions from the kiln operations at Lafarge UK Ltd cement works in Barnstone.

2.4. Detailed Assessment of Sulphur Dioxide and Nitrogen Dioxide 2005.

The 2005 Detailed Assessment showed that the levels for both nitrogen dioxide and sulphur dioxide at the relevant locations exceeded the air quality objectives and as a result, three Air Quality Management Areas were declared on 1 September 2005 (see maps 1 and 4 – Rushcliffe Borough Council AQMA's and monitoring locations).

2.5. Air Quality Review and Assessment Progress Report – 2005.

The purpose of the Progress Report was to provide an annual review and update on air quality issues, and included developments that might be significant to air quality and an update on the ongoing air quality monitoring within the Borough since the last Updating and Screening Assessment.

2.6. Updating and Screening Assessment, Review and Assessment of Local Air Quality 2006.

The Updating and Screening Assessment 2006 re-examined those emission sources within the Borough, which were considered during the original 2000 Review and Assessment, the 2003 Updating and Screening Assessment, as well as any new emission sources.

This Updating and Screening Assessment 2006 determined that it was not necessary to undertake a detailed assessment with respect to:

- Benzene.
- 1,3 Butadiene.
- Carbon monoxide.
- Lead.
- Nitrogen dioxide outside of the declared AQMA's, and additional sources within the AQMA's.
- PM10.
- Sulphur dioxide outside of the declared AQMA, and additional sources within the AQMA.

2.7. Nottinghamshire Atmospheric Emissions Inventory.

The first Nottinghamshire Atmospheric Emissions Inventory was first compiled on behalf of all the Nottinghamshire Authorities in 1997, updated in 2001, and revised in 2006. The purpose of the inventory is:

As an underpinning tool for undertaking air quality reviews as described by the Air Quality Strategy (Department for the Environment, Transport and the Regions (DETR), 2000) and enshrined in the Environment Act 1995;

For assessing the impact of new development and the changes to road infrastructure; or their use of identifying the environmental benefits of proposed urban change;

For developing air quality action plans; and

To provide input to dispersion modeling which can be used to guide or refine air quality monitoring networks.

2.8. Stage Four Assessment for nitrogen dioxide and sulphur dioxide

The Stage Four assessment for nitrogen dioxide involved further monitoring and modeling, and confirmed the findings of the 2005 Detailed Assessment and also that the decision to declare the AQMA's was correct, and that the boundaries set do not require any adjustments. Modeling predictions carried out for 2010 suggest that reductions in the levels of nitrogen dioxide concentrations of 3 to 6µg/m^3 are required to meet the annual mean objective at Radcliffe Road, Trent Boulevard and Trent House in West Bridgford.

Source apportionment assessments have also confirmed that emissions from roads are found to be the main contributor to the annual average concentrations of nitrogen oxides (NOx = nitrogen dioxide (NO_2) plus nitric oxide (NO)) at all the relevant locations in AQMA1 and AQMA2, for 2005 and 2010.

The kiln operations that were responsible for these exceedences of the sulphur dioxide (SO2) objective, closed in May 2006, and ambient sulphur dioxide monitoring confirmed that the objectives are no longer being breached. AQMA3 was formally revoked on 27 April 2007.

2.9. Air Quality Action Plan 2007

The Air Quality Action Plan was accepted by DEFRA on May 2007 and outlines the options that the council and partner organisations need to undertake to work towards reducing the levels of nitrogen dioxide to below the National Air Quality Objectives. The Action Plan feeds directly into the Nottinghamshire County Council Local Transport Plan, which will contribute to improvements in air quality.

The main measures of the draft Action Plan are:

- Information and awareness.
- Consideration of alternative means of transport.
- Road network management.
- Management of emissions.

The Action Plan was consulted on and the published Plan took on-board the comments received from Department for the Environment, Food and Rural Affairs (DEFRA), consultees and stakeholders.

3. Monitoring Update

Rushcliffe Borough Council currently undertakes monitoring for particulate matter (PM_{10}) and nitrogen dioxide (NO_2).

E.ON UK plc are the operators of Ratcliffe on Soar Power Station and currently monitor for sulphur dioxide and nitrogen dioxide at Ruddington as part of the Station's Air Quality Management Plan.

The following sections detail the updated monitoring results since the Progress Report 2005, and Updating and Screening assessment undertaken by Rushcliffe Borough Council in 2006.

3.1. Particulate Matter (PM10)

3.1.1. Introduction.

The Updating and Screening Assessment Report 2006 concluded that the air quality objectives would be met and that there would be no need to go to a detailed assessment stage.

It was recommended that the situation should be reviewed and monitoring continued. The following section reviews the monitoring since that report.

3.1.2. Air Quality Objectives.

The objectives for PM_{10} are as follows:-

A fixed 24-hour mean of 50µg/m^3, not to be exceeded more than 35 times a year, by 31 December 2004

An annual mean of 40µg/m^3, not to be exceeded by 31 December 2004.

In addition to these objectives, the EU has set indicative values for PM_{10}, which are to be achieved by 1 January 2010. These limit values are for an annual mean of 20µg/m^3 and a 24-hour mean of 50µg/m^3, not to be exceeded more than 7 times a year, which are considerably more stringent. The Government has now introduced these limit values as provisional objectives, although it is not intended that these will be brought into the Local Air Quality Management system at this time.

3.1.3. Monitoring.

Monitoring is carried out using a 'Sven Leckel' gravimetric PM_{10} type SEQ 47/50 sampler approved to TA Luft and CEN EN 12341 standards. It is located close to the Loughborough Road – Melton Road -Wilford Lane junction at grid reference SK580905, 375276 . The sampler is 7 metres from the roadside which is representative of relevant public exposure at nearby domestic properties. (Map 1 – AQMA1 and monitoring location map)

3.1.4. Summary of Quality Control/ Quality Audit (QC/QA).

Full details of the QC/QA and analytical methods were provided in the Updating and Screening Assessment 2003 and a brief summary is included here.

The gravimetric analysis of the PM_{10} filters is carried out by a United Kingdom Accreditation Service (UKAS) and Health and Safety Executive Approved Laboratory and the final data is validated and ratified by officers of the Environment & Waste Management Service for any spurious readings and other anomalies.

The gravimetric sampler is subject to a service contract and any routine maintenance is carried out by competent staff from the Environment & Waste Management Service.

3.1.5. Monitoring Data.

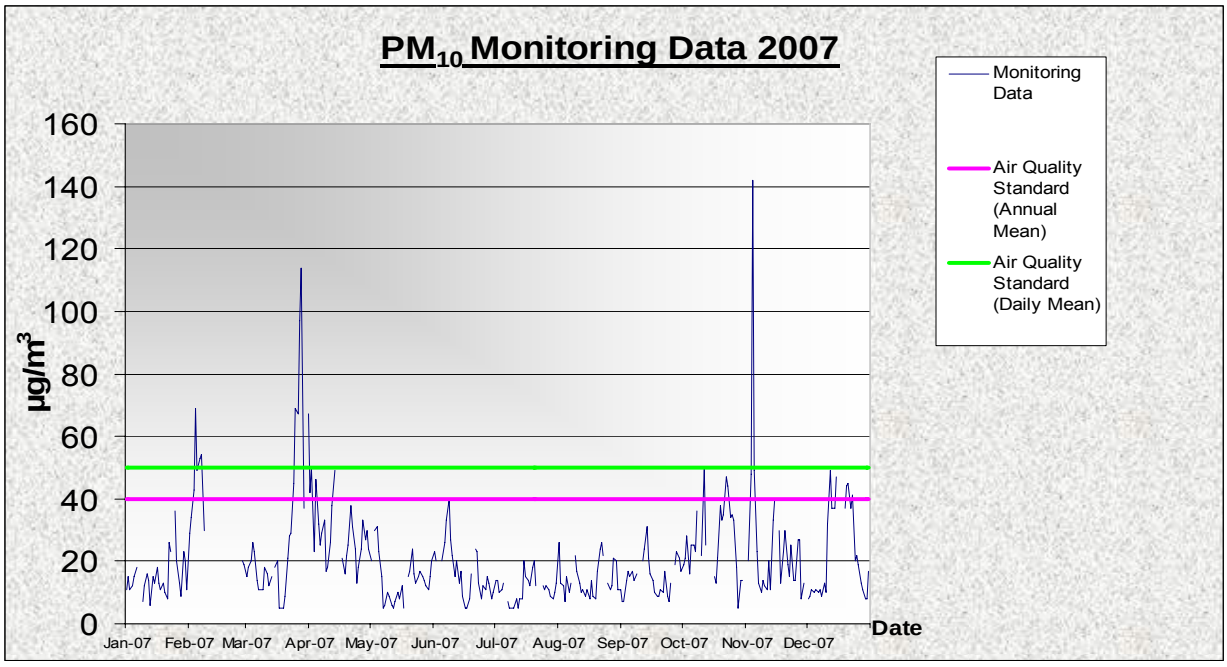


Figure 1 pm10 results 2007. (No. of exceedences of 24hr Mean = 9. Annual mean = 20 µg/m^3. Data capture 86%)

3.1.6. Other sources of PM10

The Updating and Screening Assessment 2006 report also considered the following;

- Junctions
- Roads with high flows of buses and/or heavy goods vehicles
- New roads constructed or proposed since the first Review and Assessment
- Roads close to the objective during the first Review and Assessment
- Roads With significantly changed traffic flows
- Industrial sources
- Large poultry farms
- Areas with domestic solid fuel burning

- Quarries, landfill sites, open cast coal & handling of dusty cargoes at ports
- Aircraft

Since the USA 2006 report, the following intensive farming installations have applied for permits under the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No. 1973):

- Hall Farm, Langar. 100000 chickens
- Windyridge Farm, Thorpe in the Glebe. 76500 chickens
- Sherwood Farms, Hickling. 85000 chickens

The guidance issued in the update to LAQM TG (03) suggested that poultry farms were not specifically identified as a cause for concern, and particulate monitoring carried out by other authorities so far, suggests that the PM10 objectives will not be breached. The permits, when issued by the Environment Agency will also contain conditions relating to the control of particulate emissions.
In 2007 the following installations have applied or have been granted a permit under the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No. 1973) and may give rise to particulate matter:

- Trent Shot Blasting, 06/001, Trent Shot Blasting, Harby Road, Langar, 6/23 (04) - Coating of metal and plastic, Part B PPC Process

- Cemex Quarry, East Leake Quarry, Lings Farm, East Leake has expanded the existing site boundary involving the extraction of sand and gravel.

- John Brooks saw mills, Fosseway Upper Broughton, permission has been granted in April 2007 by the County Planning Authority (CPA) for a green waste composting facility.

Trent Shot Blasting is a coating process with a shot blasting unit technically connected to its process operation. The installation is permitted as a part B coating process under the Environmental Permitting Regulations 2007 with the shot blaster having to meet emission limits under the relevant process guidance note. The site is located in an industrial area well away from local receptors and is not likely to cause concern due to its operation.

CEMEX quarry is an existing quarry process that has had planning permission to extend the site boundary to access further sand and gravel approved with conditions to control the impacts of the quarrying process. The current site has been operated by CEMEX since 2000 and has not been the subject of any complaint concerning emissions of dusts in that time. It is located in a rural location with no sensitive receptors near the site. The application was subject to an Environmental Impact Assessment with dust mitigation measures being identified. The original quarry was assessed during the USA2006 and the extension is not considered to be a cause for concern for the emission of pm10.

In April 2007 John Brooks saw mills was granted planning permission to operate a green waste composting facility, upper Fosseway Upper Broughton. The site has the potential to emit bio-aerosols and part of the planning permission is for the operator to submit a risk assessment study to determine the operation can operate without

risk to any workplace or private residents within 250metres of the site. The site in question is in any case situated in a rural location adjacent to a busy road and it is not expected to cause a breach of any pm10 objective. A copy of the risk assessment has recently been requested to confirm this assumption.

There are no other significant changes or new industrial sources of particulate matter in the Borough since the Updating and Screening Assessment 2006 and the Progress Report 2007.

3.1.7. Conclusion

The monitoring shows that the objectives are currently being met with the average for 2007 falling to **20 µg/m^3** from **23 µg/m^3** in 2006 and the number of daily exceedences also reducing from **17** in 2006 to **9** in 2007. It is difficult to predict trends, and the exceedences caused by country wide pollution episodes are outside of the control of local authorities. The 2010 EU indicative value was achieved in 2007 with daily EU target only marginally being exceeded.

The spikes evident in the chart above are attributed to non traffic related events. The April 07 spike was due to the demolishing of a building which was close to the monitor. The event in early November is attributed to particulates cased by fireworks and/or bonfires around the 5th November celebrations.

Since the last progress report there has not been any significant changes in the sources of pm10 that warrant further investigation. The monitoring carried out continues to indicate the pm10 objectives are being met within AQMA1 the most likely area where levels are expected to be higher than background. Consequently no further action is planned to assess pm10 within the Rushcliffe area.

Monitoring will continue to be carried out for pm10 using the existing monitor. There are plans to replace the current particulate monitor due to the current equipment having been operational for a number of years. Consideration is being given to enabling the ability of monitoring pm2.5 for any new monitor purchased.

3.2. Nitrogen Dioxide (NO2)

3.2.1. Introduction

The 'Detailed Assessment for Nitrogen Dioxide' at traffic related sites in West Bridgford was submitted to DEFRA in February 2005 and approved in April 2005. Consequently two Air Quality Management Areas were declared in September 2005. A Stage Four assessment involving further monitoring and modelling was carried out for nitrogen dioxide emissions within AQMA's 1 and 2, and confirmed that the annual mean objectives for nitrogen dioxide are still being exceeded, that the declaration of the AQMA's was justified, and that the boundaries set do not require any adjustments.

This section of the report updates the monitoring data and progress since that date, and considers other sources.

3.2.2. Air Quality Objectives.

There are two objectives set for NO_2, both of which were to be achieved by 31 December 2005. These are an hourly mean of 200µg/m^3, which must not be exceeded more than 18 times per year, and an annual mean of 40µg/m^3.

3.2.3. Monitoring.

Continuous monitoring for nitrogen dioxide is carried out using a chemiluminesence analyser type ML9841B manufactured by Monitor Europe and is located at a building façade at the junction of Loughborough Road and Millicent Road, West Bridgford, grid reference SK 58172.37775 and is 5 metres from the roadside.

Passive monitoring is carried out using a network of diffusion tubes at the locations shown on the maps 1 to 7 (see paragraph 3.2.15)

3.2.4. Summary of Quality Control/ Quality Audit.

Full details of the QC/QA and analytical methods are provided in appendix 8 of the Detailed Assessment, but a brief summary is included here.

3.2.5. Diffusion Tube Monitoring

The diffusion tube network exposes each set of diffusion tubes to the atmosphere for approximately 4 weeks. The exposed tubes are sent to Gradko International Limited for analysis, together with an unexposed tube as a blank 'control'. The tubes are then collected and analysed by Gradko International Limited, in accordance with a quality control procedure. The tubes used in the 2007 sampling survey are prepared using 50%TEA/water. From June 2008 the diffusion tube preparations will change to 20%TEA/water with GRADKO undertaking the preparation and analysis for Rushcliffe and the other Local Authorities in Nottinghamshire area as part of the joint procurement of diffusion tubes. This process will also see each Authority examining each diffusion tube mounting/location ensuring that it complies with the latest guidance on diffusion tube monitoring as published by Defra. As well as providing cost savings this will enable greater comparison with diffusion tube studies within the Nottinghamshire area.

The accuracy of the measurements made by Gradko are also monitored by participation in an external laboratory measurement proficiency scheme, the 'Workplace Analysis Scheme for Proficiency' (WASP), implemented by the Health and Safety Laboratory, Sheffield.

The analysis is carried out in accordance with Gradko International Ltd, Internal Laboratory Quality Procedure GLM 5, and within their U.K.A.S. Accreditation Schedule.

All diffusion tube data is checked on a monthly basis to identify any spurious data and compared with other local monitoring sites to further identify any suspect data.

The ratified diffusion tube monitoring data is required to be adjusted to improve the accuracy of the sampling programme. This revised data set is termed the bias adjusted diffusion tube results and is a requirement for submission to Defra. This

can be achieved by adjusting the mean annual diffusion tube value for each site by a bias adjustment figure, bias A. This can be the national bias figure, available online based on other studies using the same laboratory and preparation, or by calculating a local bias correction factor derived from the collocation of tubes at a continuous monitoring analyser. A local bias figure would be preferred as this should be more accurate. However where a local bias A factor is to be used a high level of data capture is required at the continuous monitor to ensure accuracy of results. 90% data capture should be achieved. To determine the bias factor locally a spreadsheet has been made available by Defra which calculates the factors and accuracy of the diffusion tube comparison with the NO2 monitor monthly data.

For 2007 a local bias factor has been used; details of the calculation process are shown later on in this report (see 3.2.10). The resultant diffusion tube values are shown in paragraph 3.2.11and spatially on maps 1-7, (Paragraph 3.2.15).

In 2006 the national bias adjustment factor used was supplied by the air quality monitoring help desk.

3.2.6. Nitrogen Dioxide Continuous Analyser (NO2)

The NO_2 continuous analyser is a Monitor Europe ML9841B single chamber chemiluminesence analyser and is approved by

- TUV (Technischer Uberwachungs-Verein) An organization approved for testing products to VDE standards)
- US EPA (United States Environmental Protection Agency)
- NETCEN. (National Environmental Technology Centre)

The analyser is covered by a service and maintenance contract with Casella ETi, which covers calibration checks, flow and leak checks, cleaning of components, analyser diagnostic checks and replacement of faulty components and consumables.

3.2.7. Operator Instruments Checks and Calibration of the Analyser

The following checks are also undertaken:

Daily automatic calibration by the monitor (zero and span)
Analyser inspection and manual calibration by officers (fortnightly)

3.2.8. Data Handling and Ratification

Data handling - raw data is downloaded via a modem connection and ME-COMM software into excel files and manipulated in an in house developed access database. Access to the raw data and other stations in the Nottinghamshire area is being made available in real time and to historic data of up to a year via the Nottinghamshire Air Quality Monitoring website available at http://air-quality.fdns.net/. The site is still under construction with further improvements planned for the future.

Data ratification - the raw data set is retained and the rescaled data is examined for suspicious and spurious data. Data is also checked for reliability and consistency

and any suspect data is deleted. Information from nearby AURN sites are also checked for consistent pollutant concentrations.

3.2.9. 2007 NO2 Monitor Monitoring Data

Results of the Chemiluminesence monitor for the same periods of exposure as the diffusion tubes is shown below in
Figure 2 Chemiluminesence results for 2007:

2007 NO2 chemi-luminescence monitor results for 1 Loughborough Road, West Bridgford			
Date	**ug/m3**	**Date**	**ug/m3**
Jan-07	**42.45**	Aug-07	**36.96**
Feb-07	**50.42**	Sep-07	**43.33**
Mar-07	**40.45**	Oct-07	**56.71**
Apr-07	**41.4**	Nov-07	**55.01**
May-07	**34.37**	Dec-07	**47.69**
Jun-07	**33.73**		
Jul-07	**34.98**	Average for 2007	**43.20**
99.8 percentile	**119.19 µg/m3 January – June 07**	Data capture	**89%**
99.8 percentile	**159.70 µg/m3 July – December 07**		

Figure 2 Chemiluminesence results for 2007

3.2.10. Diffusion Tube Bias Adjustment Factor Calculation.

In 2006 prolonged IT problems, as reported in the previous progress report, led to only limited continuous analyser data capture and the diffusion tube bias adjustment factor being taken from the Review and Assessment Helpdesk. In 2007 data capture from the Chemiluminesence analyser at 1 Loughborough Road had increased to 89% and was considered acceptable to use this data to determine a local diffusion tube bias adjustment factor, although ideally a 90% data capture should be attained. For comparison purposes a search of the University West of England (UWE) website indicated only one other study in 2007 listed using 50%TEA in water for Gradko Labs NO2 diffusion tubes and is shown in figure 3 below. The table below has been downloaded from http://www.uwe.ac.uk/aqm/review/diffusiontube310308.xls and indicates a Bias A factor of 0.99.

Analysed by	Method	Year	Site type	Local Authority	Length of study (mnths)	Tube Mean concentration (µg/m^3)	Automatic Monitor mean concentration (µg/m^3)	Bias	Tube precision	Bias A adjustment factor
Gradko	50% TEA in Water	2007	K	AEA Tech Inter comparison	12	103	103	0.9%	G	**0.99**

Figure 3 Calculation of bias adjustment factor

The monthly mean diffusion tube concentrations at the continuous monitor are shown in Figure 4 below. The mean diffusion tube value for this location is **42.03ug/m3**.

2007 diffusion tubes results for 1 Loughborough Road, West Bridgford. Collocated with chemi-luminescence monitor				
Date	Tube 1	Tube 2	Tube 3	Average
Jan-07	39.26	41.21	38.80	39.76
Feb-07	46.95	44.07	45.29	45.44
Mar-07	**n/a**	**n/a**	**n/a**	**n/a**
Apr-07	32.80	32.86	31.72	32.46
May-07	35.47	36.47	33.54	35.16
Jun-07	30.36	29.10	31.15	30.20
Jul-07	40.99	35.73	37.91	38.21
Aug-07	40.2	39.8	41.3	40.43
Sep-07	38.23	43.51	41.25	41.00
Oct-07	48.31	50.82	48.31	49.15
Nov-07	61.38	57.29	59.33	59.33
Dec-07	49.20	51.08	53.47	51.25
			Average	42.03

Figure 4 Co-located diffusion tube data and mean

Using the bias adjustment spreadsheet provided by Casella-stanger and available from http://www.uwe.ac.uk/aqm/review/diffusiontube300307.xls the diffusion tube data for each month and the monthly mean data for the same periods from the continuous monitor on Loughborough Road are inputted into the spread sheet to determine the local bias adjustment factors and confirmation of the accuracy of the study. The results obtained are shown in Figure 5 below:

Accuracy with 95% confidence interval
11 periods of data
Bias A **1.03** (0.96 – 1.11)
Bias B -3% (-10% -4%)
Diffusion tube mean **42 ug/m3**
Mean CV (precision) 4
Automatic Mean 43 ug/m3
Adjusted Tubes Mean 43(40-47) ug/m3

Figure 5 Bias adjustment factors

The results from the spreadsheet indicated a good level of precision but due to the data capture being below 90% it remarked that data capture was poor. Where the overall coefficient of variance (CV) is below 10 the precision is stated as good as in this instance. Further for each period the CV should be less than 20. The spreadsheet indicated the highest single period CV of 7 well within the precision requirements.

By comparing the Bias A in Figure 3 and the local Bias A calculated in Figure 5 above it can be seen that they compare well with each other. By using the local factor of 1.03 this will ensure that NO2 levels are examined more robustly as this value will marginally increase raw diffusion tube results when applied, whereas the value of 0.99 would marginally decrease the diffusion tube values.

Applying the local 1.03 Bias A adjustment to the diffusion tube data produced the following adjusted results, Figure 6, Figure 7 and Figure 8 for each diffusion tube site and an estimated 2010 annual road side mean.

The estimated annual mean for 2010 was calculated using the future Year Adjustment Factors Spreadsheet from a base year of 2004.

The 'Year Adjustment Calculator' is a simple MS Excel tool which incorporates updated year adjustment factors from those published in LAQM.TG(03) and are suitable for use with the LAQM TG(03) update. The spreadsheet was downloaded from http://www.airquality.co.uk/archive/laqm/tools.php?tool=year04

3.2.11. NO2 Diffusion tube data.

The tables below show the bias adjusted diffusion tube results for 2007 and estimated 2010 results.

Location AQMA 2	Grid Ref (SK)	Site Type	Annual Meanµg/m3 (2006)	Annual Meanµg/m3 (2007)	Bias adjusted (1.03) Mean µg/m3 (2007)	Estimated Annual Mean(Road side) (2010 AQ Objective 40 µg/m3)
Landmere Nursing home, WB.	456785, 335359	F	28.98	30.03	30.9	28.4
8 Saltby Green, WB. (Compton Acres)	456893, 335226	F	30.25	33.3	34.3	31.6
Windyways, Loughborough Road, WB . (A60/A52)	457651, 334840	F	42.96	42.76	44	40.5
Cloverlands, WB.	457223, 335033	F	41.5	46.6	48	44.15
A60/A52 Junction, WB.	457595, 334815	RS	51.36 (8 months)	55.25	56.9	52.3
A52 Botany Close, WB.	457222, 335016	RS	53.16	60.38	62.2	57.2

Figure 6 Nitrogen dioxide diffusion tube results for 2007 AQMA 2

Location AQMA 1	Grid Ref (SK)	Site Type	Annual Meanµg/m3 (2006)	Annual Meanµg/m3 (2007)	Bias adjusted (1.03) Mean µg/m3 (2007)	Estimated Annual Mean(Road side) (2010 AQ Objective 40 µg/m3)
AWG, Musters Road, WB	458352, 337846	F	29.18	32.37	33.3	30.6
Swans Hotel, Radcliffe Road, WB.	458919, 338120	F	32.25	33.58	34.6	31.8
The Point, Loughborough Road, WB.	458114, 337518	F	33.76	36.22	37.3	34.3
Particulate Monitor, Loughborough Road, WB.	458090, 337527	F	35.57	38.52	39.7	36.51
1 Loughborough Road, WB (Continuous Monitor).	458172, 337775	F	37.40*	42.04 *	43.3	39.8
Trent Boulevard A, WB.	458752, 338278	F	39.02	43.14	44.4	40.84
Loughborough Road , WB. (Residential)	458126, 337727	F	37.65	44.49	45.8	42.1
Midlands Communication, Radcliffe Road, WB.	458453, 338211	F	42.42	46.82	48.2	44.3
Trent Boulevard B, WB.	458756, 338267	F	45.69	49.17	50.6	46.5
Trent House (Residential), WB.	458218, 338209	F	46.53	50.95	52.5	48.3
Radcliffe Road, WB.	458284, 338150	Façade (F)	45.42 (9 months)	49.89	51.4	47.27
Lady Bay	458724, 338266	Roadside (RS)	51.52	57.86	59.6	54.8
Wilford Lane, WB.	458100, 337601	RS	54.49	64.4	66.3	61
Trent Bridge, West Bridgford (WB)	458252, 338146	RS	60.69	68.17	70.2	64.56

Figure 7 Nitrogen dioxide diffusion tube results for 2007 AQMA 1

Location Non AQMA sites	Grid Ref (SK)	Site Type	Annual Meanµg/m3 (2006)	Annual Meanµg/m3 (2007)	Bias adjusted (1.03) Mean µg/m3 (2007)	Estimated Annual Mean(Road side) (2010 AQ Objective 40 µg/m3)
7 Caldbeck, Gamston.	460191, 338120	F	26.16	31.25 (9months)	32.2	29.6
21 Heathervale, WB. (Compton Acres)	456893, 336768,	F	31.02	32.36	33.3	30.6
Hickory House, Loughborough Road, WB.	458049, 337340	F	31.84	32.55	33.5	30.8
Wilford Lane (Residential), WB.	458037, 337578	F	31.64	33.04	34	31.27
34 Bridgford Road ,West Bridgford (WB).	453501, 337854	F	30.31	33.91	34.9	32.1
The Beeches Hotel, Wilford Lane, WB.	457701, 337342	F	33.57	37.57	38.7	35.6
Peveril Court, Musters Road, WB.	458393, 337173	F	33.46	38.52	39.7	36.5
East Bridgford	451678, 330913	F	38.92	42.38	43.7	40.2
Saxondale	466630, 339652	RS	36.9	44.68	46	42.3
Radcliffe on Trent	464661, 338732	RS	46.53	46.52	47.9	44.1
A453, Thrumpton	451678, 330949	RS	46.45	48.25	49.7	45.7
A52 Lings Bar, Gamston, WB.	460674, 336879	RS	45.45	50.56	52.1	47.9
Thrumpton	451635, 330947	Rural	26.44	28.16	29	26.7
Hampton Road, WB.	458310, 336703	Urban back ground	21.61	4.56	25.3	23.3

Figure 8 Nitrogen dioxide diffusion tube results for 2007 NON AQMA

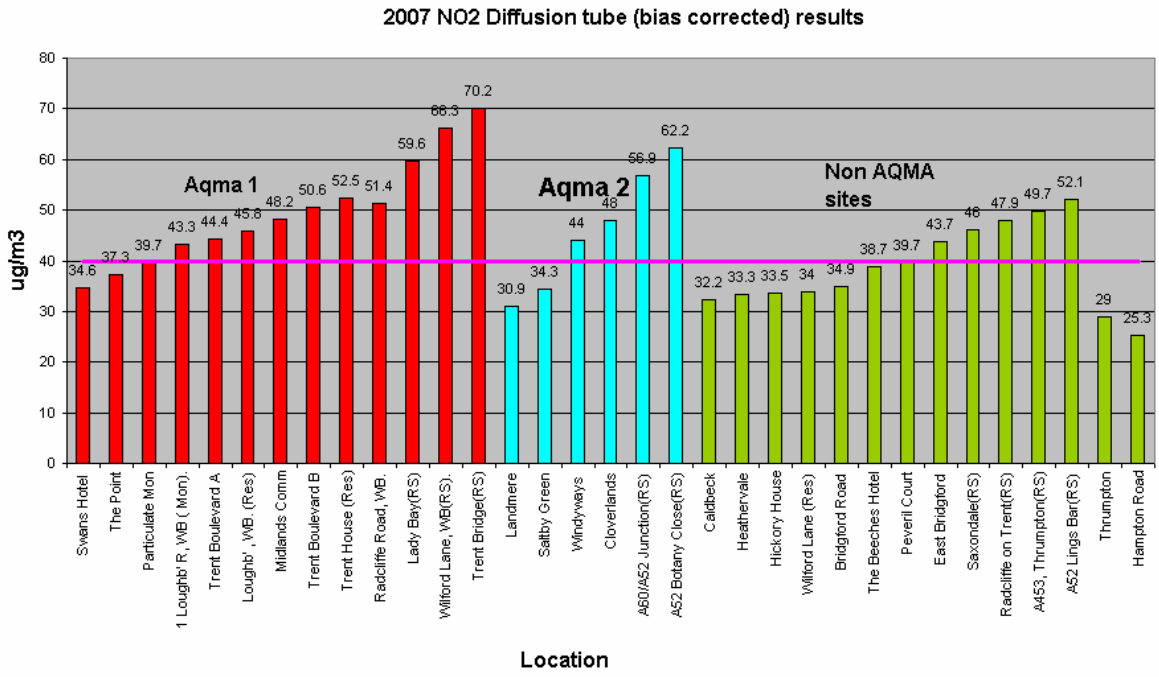


Figure 9 Results of 2007 NO2 diffusion tube bias corrected results.

Figure 9 above shows all the diffusion tube sites in chart format to enable comparison of results. It can be seen that the annual mean nitrogen dioxide concentrations continue to be exceeded at roadside and some domestic property façade sites within the air quality management areas with a number showing upward trends from 2006 to 2007. A further discussion on the diffusion tube results for 2007 is produced below.

3.2.12. Receptor sites outside of existing AQMA's

The **A453 road side** tube for 2007 is 49.7 ug/m3 however this tube is 35m from the nearest receptor at Thrumpton where a further tube is located. This result shows the receptor location is at 29.0 ug/m3 with an estimated annual mean of 26.7ug/m3 in 2010. This site does not require further consideration at this time. An air quality assessment of the duelling of the A453 will examine the extent of any impacts on this receptor location due to any increases in traffic flows along this road. In any case diffusion tube monitoring will continue.

The **Radcliffe on Trent** diffusion tube (47.9 ug/m3 2007) site is approximately 15 m from the nearest receptor, and using an empirical approach of multiplying the kerbside mean by 0.75 to allow for the concentration fall off through distance, this would give a concentration of 35.9µg/m^3, which is below the objective level. Monitoring is to continue in this location. Consideration to be given to siting this tube on a façade location in the same vicinity.

Peveril Court is outside of both AQMA's and has seen an increase in levels from 2006 (32.06 ug/m3) to 2007 (39.7ug/m3) but still remains compliant. The tube is

situated on a façade of the building. The predicted level for 2010 (est. 36.5) is below the objective level and compliance is still expected to be achieved. Monitoring to continue.

A46 East Bridgford site is located on the façade of a residential property. Along this road exist a number of isolated properties close to the A46. The 2007 annual bias adjusted mean has exceeded the 40 ug/m3 objective with a 2007 exposure of 43.7ug/m3 it is estimated that by 2010 the objective will still be marginally exceeded if based on 2007 levels. However this road is subject to improvement and the route of the A46 will be altered. For this location the new duelled road will be moved further away from the property boundary and it is expected that a reduction in exposure to NO2 will occur at this site. The existing road will remain but will be for local traffic flows only. The air quality impact assessment undertaken for the proposal concludes that the scheme would not result in any significant air quality problems due to changes in road traffic emissions. Due to the substantial road alterations taking place in this area it is currently proposed to take not further action at this site at this time but to maintain the diffusion tube in this location to verify the air quality objective will be met following completion of the road alterations.

The Beeches Hotel is a façade mounted tube along the building line. The tube is below the objective in 2007 and is forecast to remain so in 2010. Monitoring to be continued.

Saxondale tube is a kerbside located tube on a lamp post on the A52. A residential property is situated near to this tube. The reported bias adjusted result for 2007 is above the objective level as well as the predicted kerbside location for 2010 (42.3ug/m3). However the exposure at the receptor location will diminish with distance from the road. The distance from the tube location to the building facade is approximately 11m. It is expected the objective will not be exceeded, however this site does warrant further monitoring and investigation to confirm the receptor location at this site will comply. Consideration is being given to locating the tube on the façade of the property to assess the level of NO2 at the property concerned.

3.2.13. AQMA 1 receptor locations

Trent house flats has risen to a bias adjusted result of 52.5ug/m3 and predicted 2010 level of 48.3ug/m3. This particular tube is in an exposed area and consideration is given to ensuring the tube is exposed less to high wind which may affect its accuracy. However, from 2006 to 2007 at the same location under the same annual condition this tube identified a worsening of NO2 levels.

Loughborough Road residential is mounted on a residential property façade location within a front garden. The results for this site have indicated a worsening of the NO2 results over 2007 moving from 37.7ug/m3 2006 to 45.8ug/m3 bias adjusted in 2007 and is still expected to be marginally exceeding the objective by 2010.

Swans hotel results continue to be below objective level.

Trent Boulevard 2 tubes. The tube (Trent Boulevard B) shows an increase in NO2 levels for 2007 of 50.6ug/m3 and continues to breach the objective level. It is located close to the main A52 and busy junction.

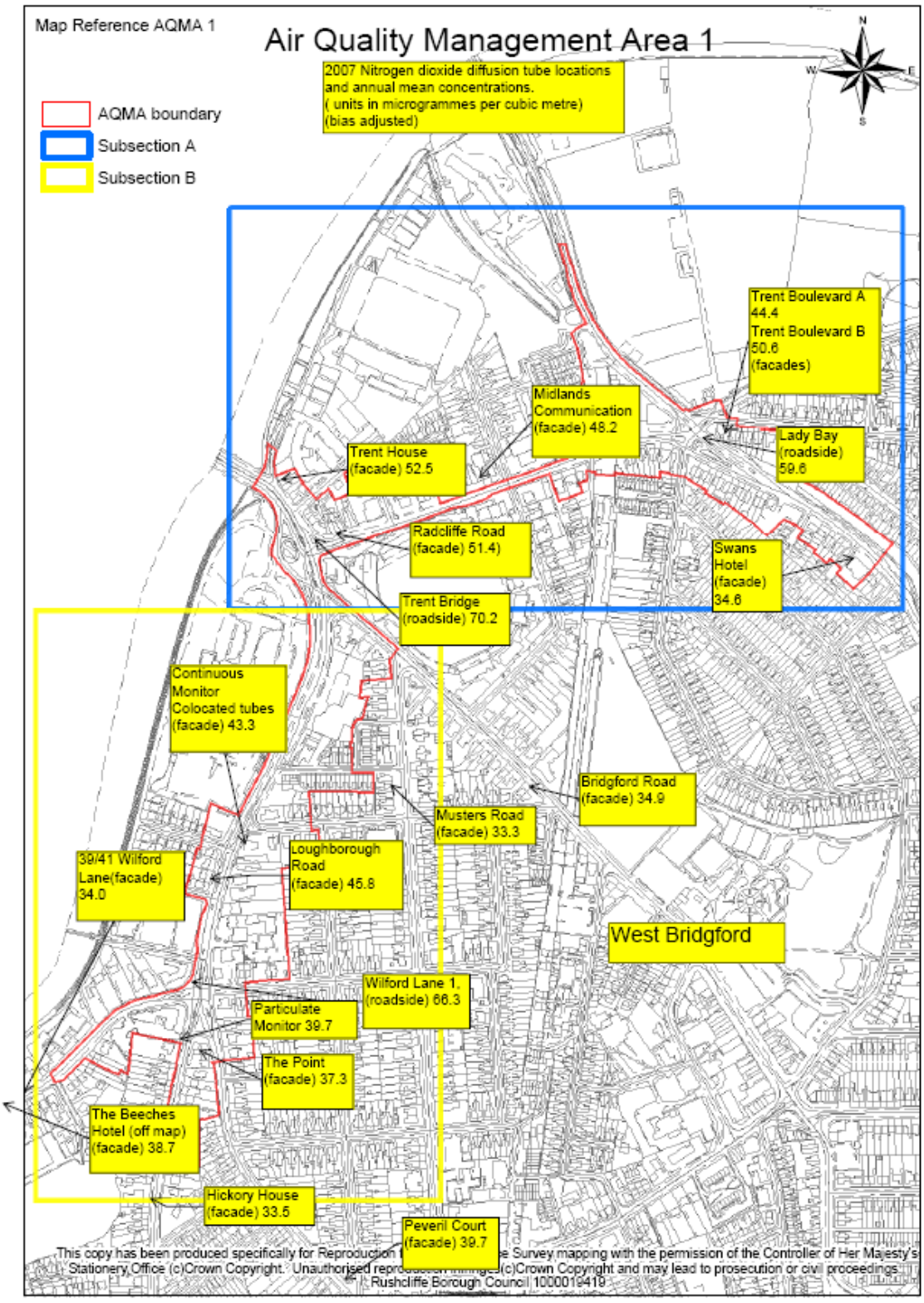
Monitoring will continue for all receptor sites in AQMA 1.

3.2.14. AQMA2 receptor locations

Landmere below the objective level and expected to meet 2010 objective.
Salty green is below the objective level and expected to meet 2010 objective
Cloverlands site has diffusion tube located on a façade and is on the building line close to the A52. This site has seen an increase in NO2 levels from 2006 (41.5 ug/m3) to 2007 (48 ug/m3) and continues to exceed the NO2 objective.
Windy ways is a residential property that is currently not occupied. Levels have increased in 2007 to 44ug/m3 and are still expected to be marginally exceeding the objective by 2010.
Monitoring to continue for all current receptor sites with in AQMA 2.

3.2.15. Diffusion Tube Location Maps

Diffusion tube monitoring locations, maps 1 to 7, are shown overleaf.


Map Reference AQMA 1
Air Quality Management Area 1
2007 Nitrogen dioxide diffusion tube locations and annual mean concentrations. (units in microgrammes per cubic metre) (bias adjusted)
AQMA boundary
Subsection A
Subsection B
N
W
E
S
Trent Boulevard A 44.4
Trent Boulevard B 50.6 (facades)
Midlands Communication (facade) 48.2
Lady Bay (roadside) 59.6
Trent House (facade) 52.5
Radcliffe Road (facade) 51.4)
Swans Hotel (facade) 34.6
Trent Bridge (roadside) 70.2
Continuous Monitor Colocated tubes (facade) 43.3
Bridgford Road (facade) 34.9
Musters Road (facade) 33.3
39/41 Wilford Lane(facade) 34.0
Loughborough Road (facade) 45.8
West Bridgford
Wilford Lane 1, (roadside) 66.3
Particulate Monitor 39.7
The Point (facade) 37.3
The Beeches Hotel (off map) (facade) 38.7
Hickory House (facade) 33.5
Peveril Court (facade) 39.7
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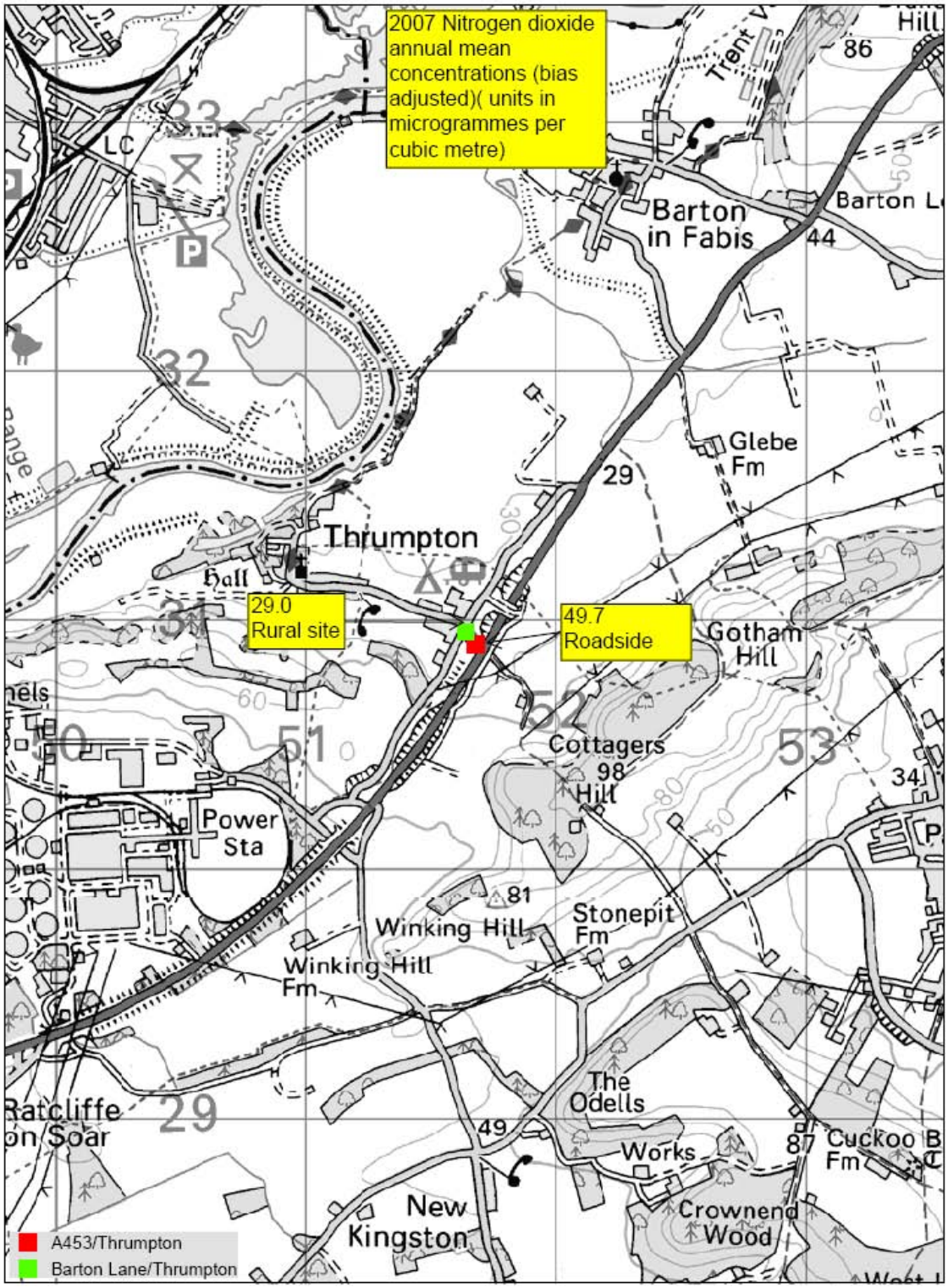
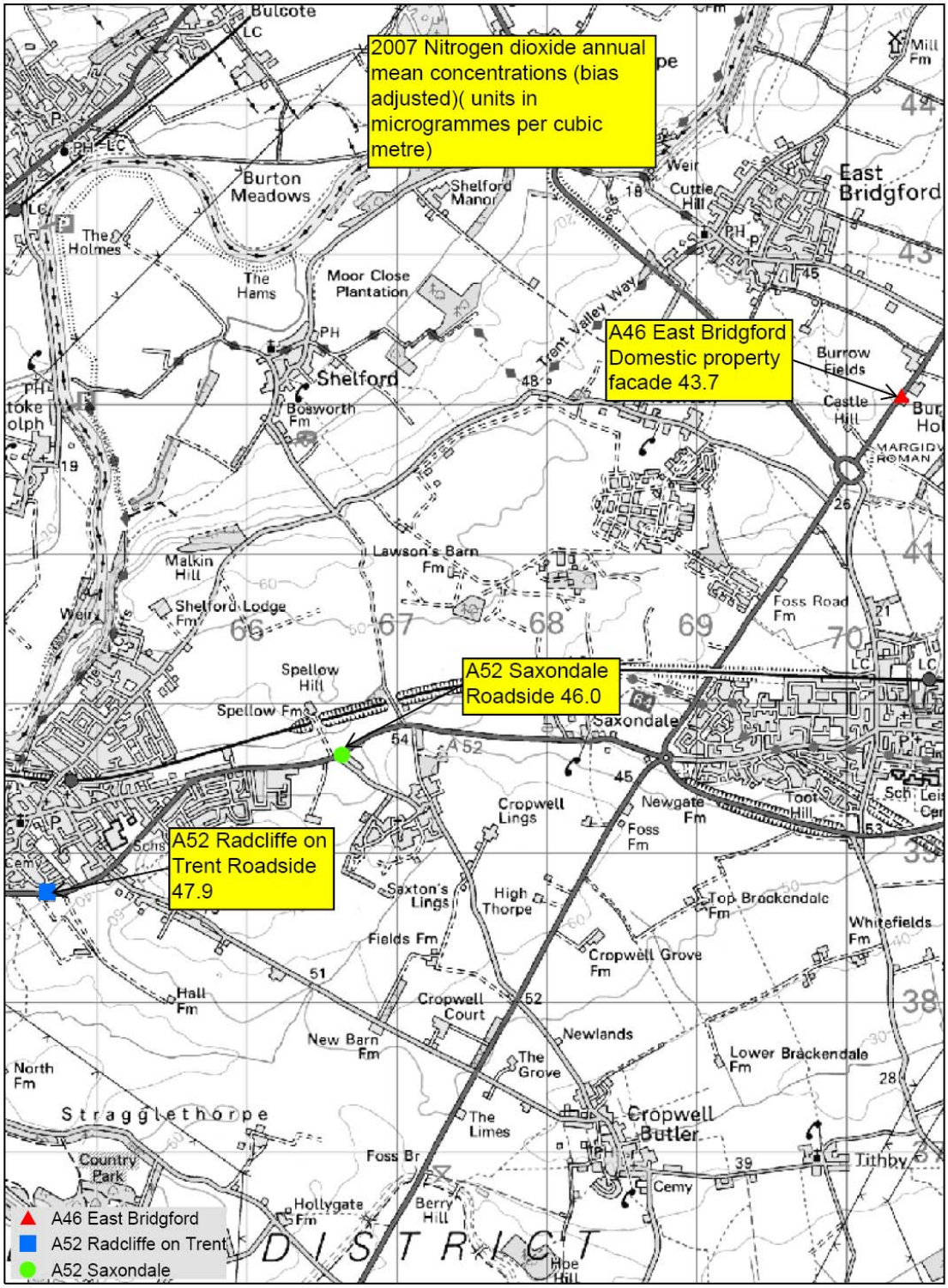
MAP 1

Diffusion Tube Monitoring Sites on the A453

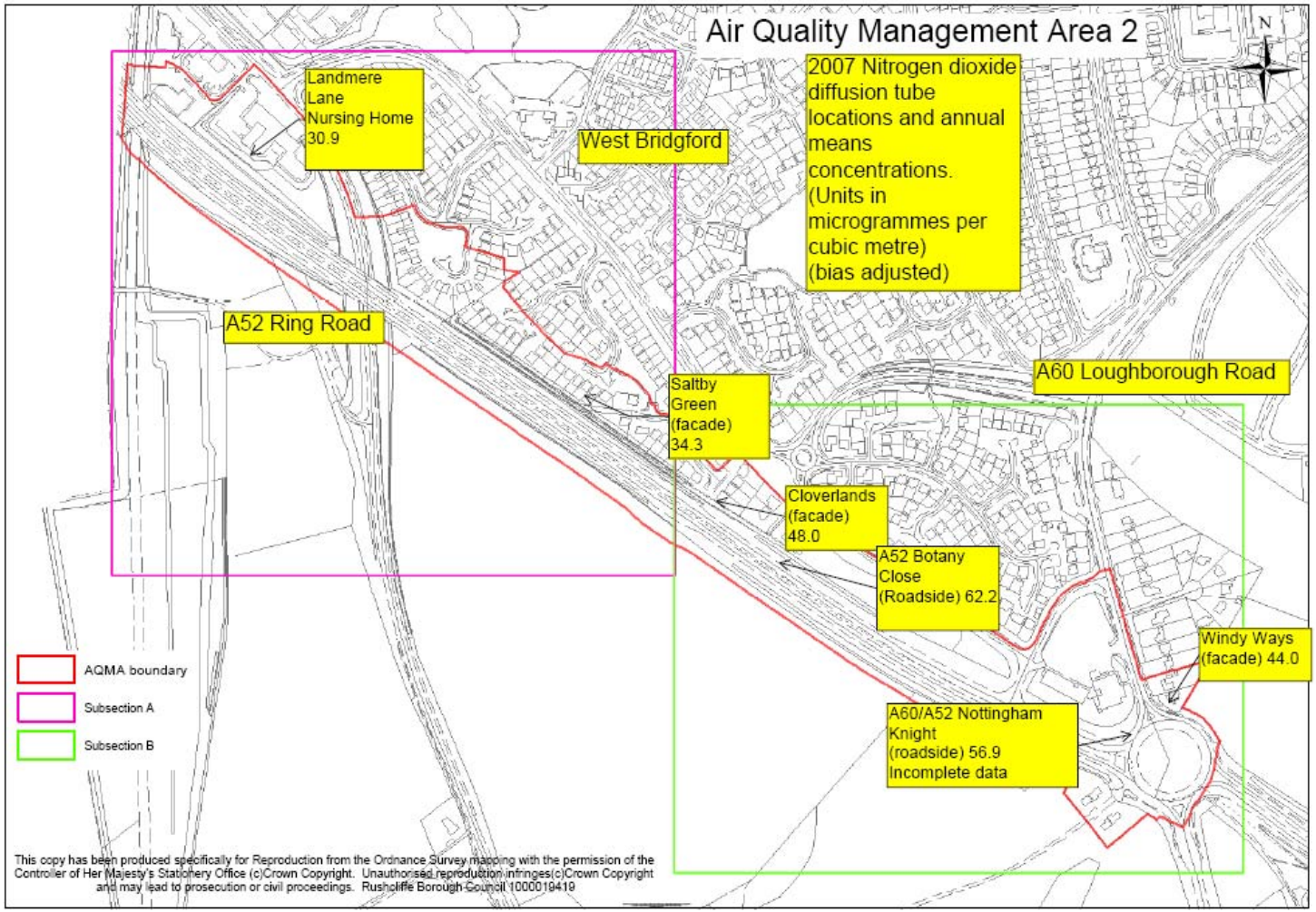


MAP 2

Diffusion Tube Monitoring Points Along The A46/A52 Trunk Roads



MAP 3


Air Quality Management Area 2
2007 Nitrogen dioxide diffusion tube locations and annual means concentrations. (Units in microgrammes per cubic metre) (bias adjusted)
N
Landmere Lane Nursing Home 30.9
West Bridgford
A52 Ring Road
A60 Loughborough Road
Saltby Green (facade) 34.3
Cloverlands (facade) 48.0
A52 Botany Close (Roadside) 62.2
Windy Ways (facade) 44.0
A60/A52 Nottingham Knight (roadside) 56.9 Incomplete data
AQMA boundary
Subsection A
Subsection B
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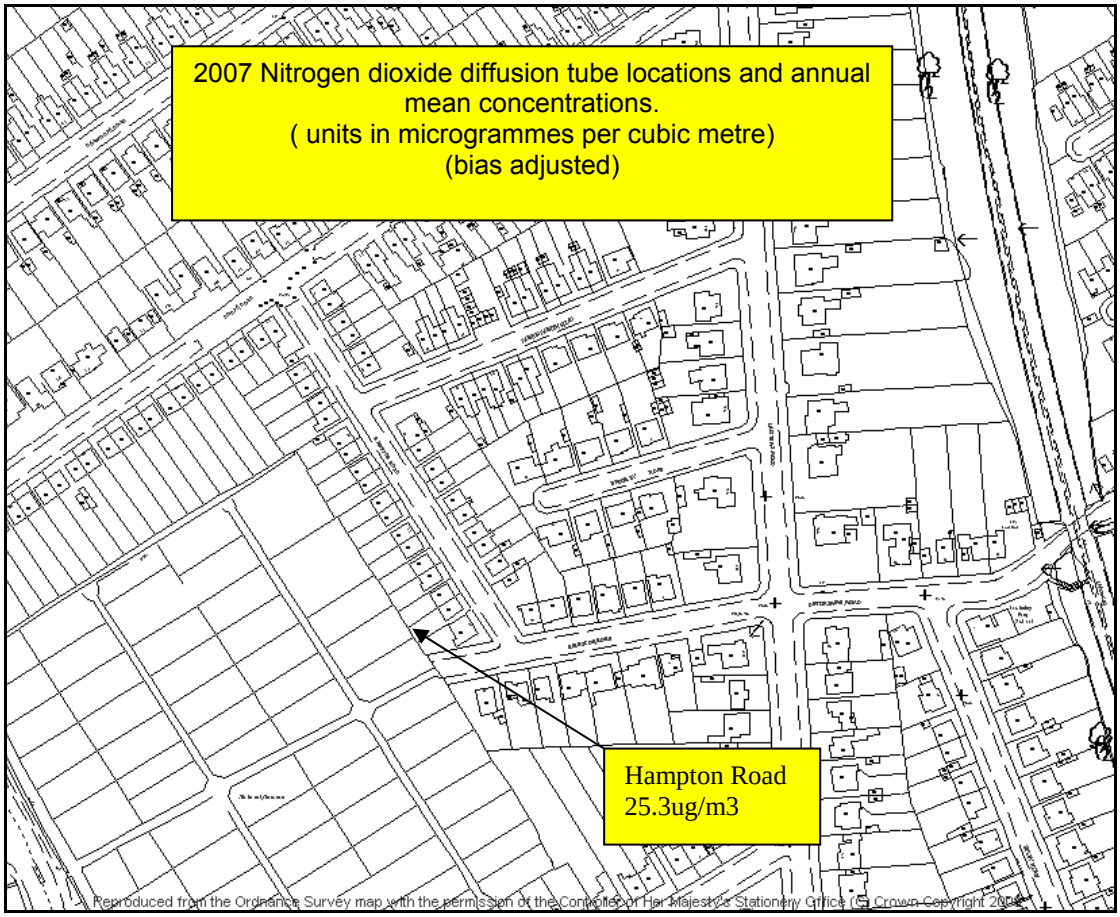
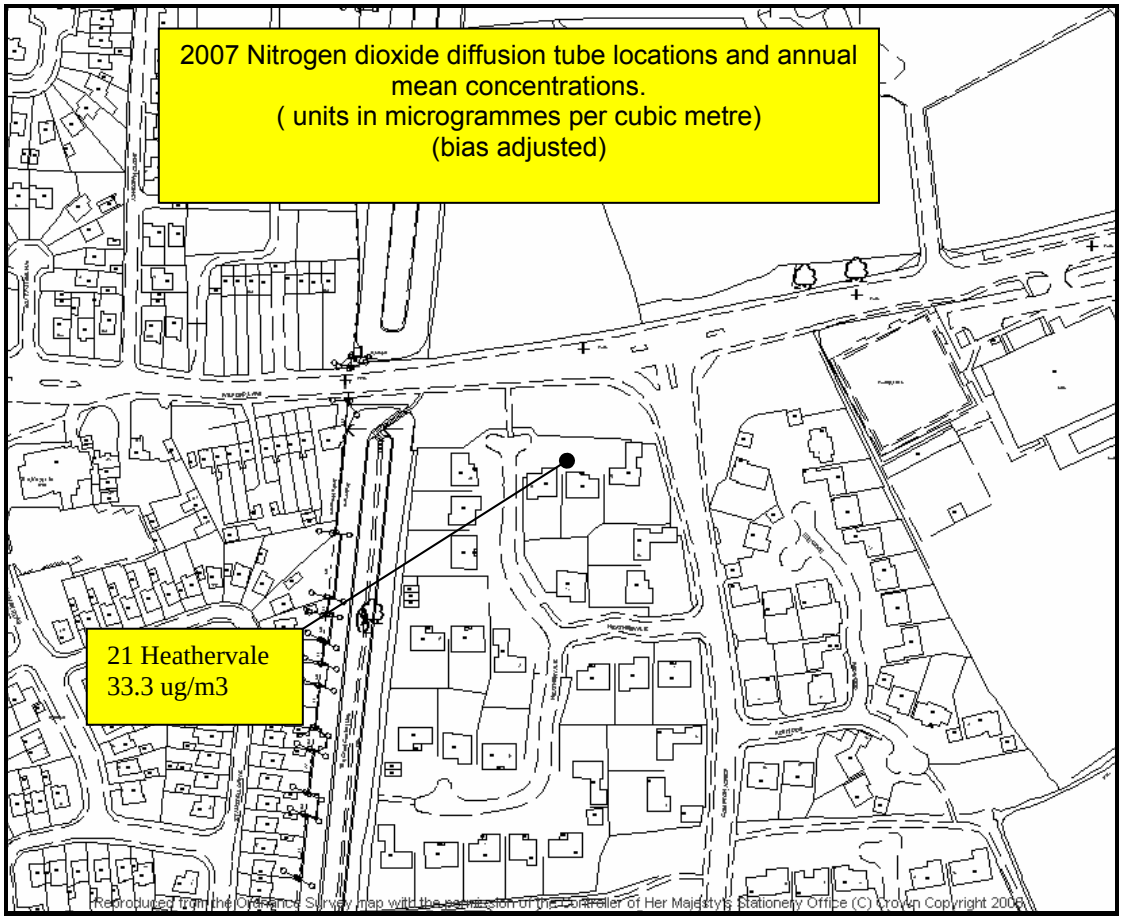
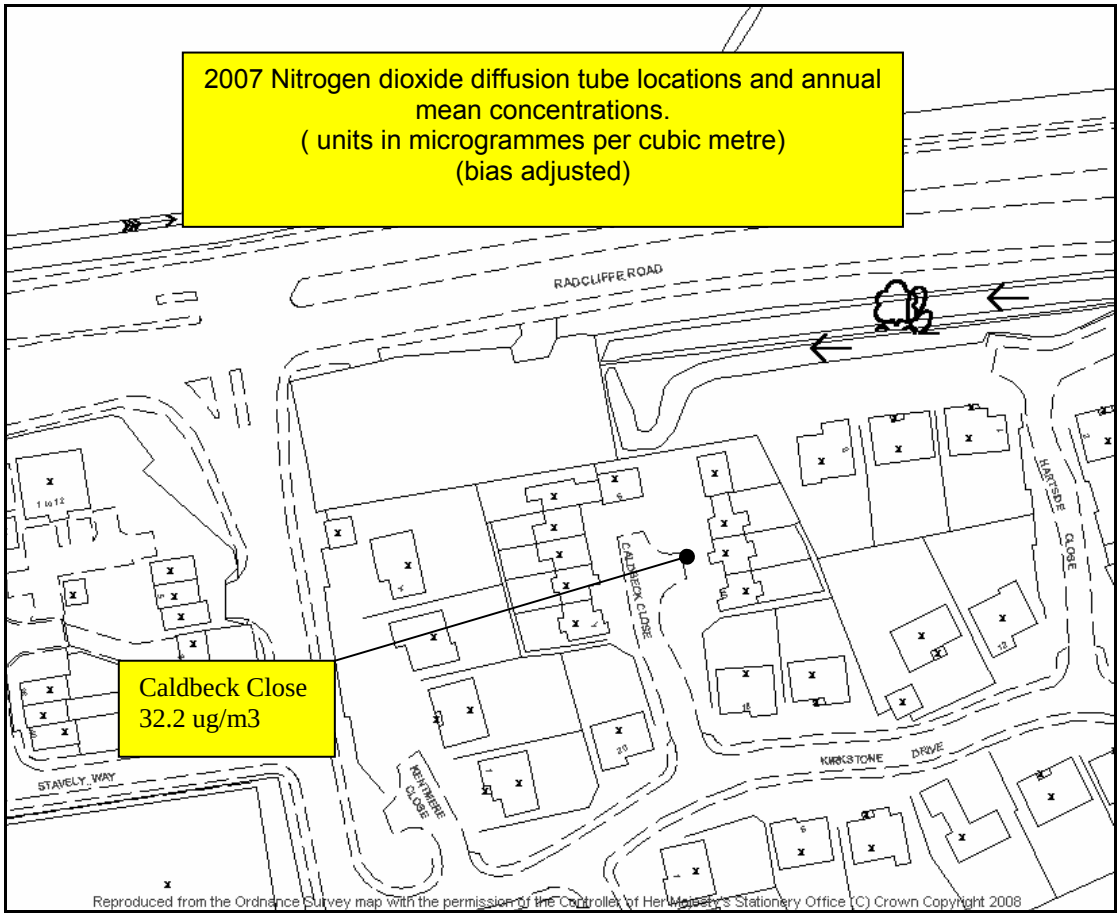
MAP 4


2007 Nitrogen dioxide diffusion tube locations and annual mean concentrations.
(units in microgrammes per cubic metre)
(bias adjusted)
Hampton Road
25.3ug/m3
Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (C) Crown Copyright 2008

MAP 5


2007 Nitrogen dioxide diffusion tube locations and annual mean concentrations.
(units in microgrammes per cubic metre)
(bias adjusted)
21 Heathervale
33.3 ug/m3
(Reproduced from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (C) Crown Copyright 2008)

MAP 6


2007 Nitrogen dioxide diffusion tube locations and annual mean concentrations.
(units in microgrammes per cubic metre)
(bias adjusted)
RADCLIFFE ROAD
Caldbeck Close
32.2 ug/m3
STAVELY WAY
KIRKSTONE DRIVE
HARTSIDE CLOSE
CALDBECK CLOSE
KESTREL CLOSE
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MAP 7

3.2.16. NO2 Other Monitoring Data.

3.2.17. E.ON UK Plc Monitoring

E.ON UK plc, operate Ratcliffe on Soar Power Station and currently monitor for nitrogen dioxide at a site in Ruddington within the Borough.

The Power Station Air Quality Assessment and Air Quality Management Plan states that from monitoring (see Figure 10 below), and modelling evidence, ground level concentrations of nitrogen dioxide from the plant will not lead to any exceedences of the air quality standards and will not have a significant impact on human health.

January to December 2005	Air Quality Standard ($\mu g/m^{3)}$	Ruddington	No. of exceedences	Data Capture
Period Mean	40	17.1	nil	95%
1hr mean	200	83	nil	
January to December 2006				
Period Mean	40	13.9	nil	98%
1hr mean	200	63	nil	
January to December 2007				
Period Mean	40	17.1	Nil	99.6%
1hr mean	200	77	Nil	

Figure 10 Summary of E.ON NO2 monitoring 2005/2007 Ruddington

3.2.18. Other Sources.

In addition to traffic related sites, the updating and screening assessment report also considered the following;

- Industrial Sources.
- Aircraft.

There have been no significant changes or additional monitoring since the last report to make any significant alterations to the original assessments carried out.

3.2.19. Conclusion.

This report provides an update on the progress of Rushcliffe Borough Councils air quality management monitoring and assesses any changes since the Progress Report 2007 and Updating and Screening Assessment 2006.

The results indicate that NO2 at certain receptor locations continue to exceed the NO2 Air Quality objectives and that the AQMA's should remain in place. NO2 in general has increased over 2007 rather than decreased and it is unlikely that the predicted reductions in NO2 will see an improvement in NO2 levels such that all sites are below the objective level by 2010 as predicted in the USA.

The cause of NO2 exceedences in Rushcliffe are solely attributed to traffic flows.

The diffusion tube site on the A46 indicates that 2007 levels were above the objective levels at the façade to a domestic dwelling, however the major road improvements to be undertaken and the relocation of the trunk road in the near future is expected to see an improvement in NO2 exposure at this site. Consequently there are no plans to declare a further AQMA at this site.

The Peveril Court location has seen an increase in 2007 to levels just below the objective level but again at this stage there are no plans to declare in this area. Consideration is being given to placing a further tube in this area to enable the exposure around this junction to be examined in more detail.

Locations along the main transport corridor of the A52 into Nottingham have roadside levels in the mid 40's with housing at various distances from the kerbside. It is proposed to review these tube locations and to either relocate the current tubes at façade locations in the same vicinity or to compliment the existing tubes with additional tubes on façade locations in order to confirm levels at receptor locations are below the objective.

All tube locations are to be assessed for compliance with the latest guide to diffusion tube monitoring. It is expected also that due to the change in tube preparation the diffusion tube values and bias factor will be markedly different for future reports. However the benefits brought about by this change out weigh the disadvantages.

Long term it is expected that the levels of NO2 will still fall and although this year has seen an increase, in the long term trends in NO2 should reduce as the measures in the action plan and improvements in vehicle emissions brought about by national measures take effect. If however the continuing monitoring of the AQMA's indicates that this is not the case consideration will need to be given to determining what firmer measures can be put in place by this Authority and partner bodies to improve NO2 emissions. In particular Nottingham County Council and the Highways Agency will need to reflect upon what measures could be introduced to control traffic flows as the roads that are the significant contributors of NO2 are under their control.

3.3. Sulphur Dioxide (SO2)

3.3.1. Air Quality Objectives

There are three objectives for SO_2:

266µg/m^3 measured as a 15 minute mean, not to be exceeded more than 35 times a year (99.9 percentile), by 31 December 2005.

350µg/m^3 measured as a 1 hour mean, not to be exceeded more that 24 times a year (99.73 percentile), by 31 December 2004.

125µg/m^3 measured as a 24 hour mean, not to be exceeded more than 3 times a year (99.18 percentile), by 31 December 2004.

It was concluded in the 2003 Updating and Screening Assessment that it was necessary to proceed to a detailed assessment in relation to the coal-fired kiln at Lafarge UK, Barnstone. Modelling and monitoring confirmed exceedences of the 24-hour, 1-hour and 15-minute mean sulphur dioxide objectives, at areas of relevant public exposure, in the vicinity of this specialist cement works. As a result an Air Quality Management Area was declared in September 2005.

Lafarge UK Ltd ceased the kiln operations, which were responsible for the emissions of sulphur dioxide during clinker production at Barnstone, on 30 May 2006, and this has resulted in a significant improvement in the local air quality.

The Stage 4 Assessment confirmed that the air quality objectives are no longer being breached and AQMA3 was formally revoked on 27April 2007.

There are no new significant industrial sources of sulphur dioxide in the Borough and there have been no changes since the Progress Report 2005 and the Updating and Screening Assessment 2006.

As part of planning permission for the East Midlands Parkway railway station a 3 month assessment of SO2 will take place to confirm the findings of the predictive model used. The EMP is discussed in Paragraph 5.3 of this report.

3.3.2. Monitoring for SO2

Rushcliffe do not carry out monitoring for sulphur dioxide.

3.3.3. Other sources of sulphur dioxide.

3.3.4. Ratcliffe on Soar Power Station.

The updating and screening assessment 2006 also considered other sources of sulphur dioxide, notably Ratcliffe on Soar power station operated by E.ON UK plc, and currently monitor for sulphur dioxide at a site in Ruddington within the Borough (see Figure 11 & Figure 12).

The station operators, E.ON UK plc, have an "Air Quality Management Plan" and undertake an annual review of air quality.

In order to ensure that Ratcliffe on Soar Power Station (flue gas desulphurisation equipped) continues to meet the relevant air quality objectives, the station's "Air Quality Management Plan" provides for an annual review of air quality. This identifies any changes made to the power station operation, as well as any improvements in air quality prediction methodology.

The 2006 Air Quality Management Plan stated that at the maximum impact point, using worst case meteorological data, modelling predicted a 99th percentile ground level concentration of the sulphur dioxide 15 minute means of 111µg/m^3, including background contribution. This has not lead to any exceedences of the Air Quality Standards and will not have a significant impact on human health.

January to December 2005	Air Quality Standard (µg/m$^{3)}$	Ruddington	No. of exceedences	Data Capture
Daily mean (99.18%tile	125	14.8	Nil	99.6%
1hr mean (99.73%tile	350	30	Nil	
15 minute mean (99.9%tile)	266	45	Nil	
January to December 2006				
Daily mean (99.18%tile	125	16	Nil	
1hr mean (99.73%tile	350	27	Nil	97.67%
15 minute mean (99.9%tile)	266	43	1	95.45%
January to December 2007				
Daily mean (99.18%tile	125	9.3	Nil	
1hr mean (99.73%tile	350	20	Nil	97.59%
15 minute mean (99.9%tile)	266	28	Nil	99.58%

Figure 11 Summary of E.ON SO2 monitoring 2005/2007 - Ruddington

Exceedances of 266 mg m^3 15-min SO2		
Date	**Time**	**Value**
24-Jul-06	**15:00**	**273**

Figure 12 Measured Exceedences at Ruddington

Note: Eon report that it is believed this SO2 15Minute exceedences was due to a fire on the railway embankment local to the Ruddington site and hence is unrelated to the operation of the power station

3.3.5. Conclusion

The only area where SO2 is likely to be increased is due to the EMP development. It is not expected that these emissions will cause any concern. However, a report has been requested though the planning process to confirm SO2 levels. There are no plans to monitor for SO2 in the future in the district.

3.4. Other Pollutants

The Updating and Screening Assessment 2006 considered benzene, 1,3-butadiene, carbon monoxide and lead, and recommended that there was no need to proceed to a Detailed Assessment for those pollutants.

3.4.1. Benzene.

No monitoring is carried out for benzene.

There are no new significant industrial sources of benzene in the Borough and there have been no changes since the last Progress Report and the Updating and Screening Assessment 2006. The nearest site is Nottingham City Centre with average Benzene reading for 2007 of 0.86 ug/m3.

3.4.2. 1,3-butadiene.

No monitoring is carried out for 1,3-butadiene.

There are no new significant industrial sources of 1,3-butadiene in the Borough and there have been no change since the last Progress Report and the Updating and Screening Assessment 2006.

3.4.3. Carbon monoxide.

No monitoring is carried out for carbon monoxide in the borough.

The nearest AURN site at Nottingham City Centre gives a 2007 annual mean of 0.2mg/m^3, and there were no exceedences of the 8 hour running mean Air Quality Standard of 10mg/m^3.

There are no new significant industrial sources of carbon monoxide in the Borough, and there have been no changes since the last Progress Report and the Updating and Screening Assessment 2006.

3.4.4. Lead.

No monitoring is carried for lead.
There are no new significant industrial sources of lead in the Borough, and there have been no changes since the last Progress Report and the Updating and Screening Assessment 2006.

4. Air Quality Strategies

4.1. Nottinghamshire Air Quality Strategy.

The Nottinghamshire Air Quality Strategy was published in November 2001, adopted by all the Nottinghamshire local authorities and was the precursor to each local authority's strategy.

The strategy outlined the aims and objectives in a "framework for action" to manage and improve air quality in Nottinghamshire and to protect the health and well being of the public in a coordinated and integrated manner.

The strategy included a countywide pollutant emissions inventory and consultation exercise.

This strategy was prepared by a partnership of Nottinghamshire Local Authorities, the Environment Agency, The Health Protection Agency and the Highways Agency. The work has been led by the Nottinghamshire Environmental Protection Working Group. This framework identifies and agrees an effective strategy to improve air quality in the next decade throughout the whole of Nottinghamshire and also reduce greenhouse gas emissions particularly CO2.
In 2007 the strategy was revised and updated and the new, revised strategy entitled 'A breath of fresh air for Nottinghamshire, An Air Quality Improvement strategy for the next Decade' was launched on April 25th 2008.

The strategy seeks to fulfil the following main objectives:

- Minimise air pollution and the impact of global warming and climate change.
- Encourage sustainable development in Nottinghamshire to protect the health and wellbeing of the population.
- To work with businesses, stakeholders and the residents of Nottinghamshire to encourage sustainable improvements in air quality.
- Support and maintain the work of the Nottinghamshire Air Quality Steering Group.
- Complement other county wide groups and strategies adopted and supported by Local Authorities and the County Council and other organisations such as the Environment Agency, Primary Care Trusts, Highways Agency and the Health Protection Agency.
- Ensure that the strategy to improve air quality in Nottinghamshire is reviewed by 2011.

A copy of the document is now available for download from www.rushcliffe.gov.uk .

4.2. Rushcliffe Borough Council Air Quality Strategy

Rushcliffe Borough Council published its Air Quality Strategy in July 2002 and updated it in July 2003. The Strategy can be viewed or downloaded from The Councils website: www.rushcliffe.gov.uk. The Strategy outlined the Councils roles and responsibilities with regards to the services it carries out to improve air quality through air quality management, pollution control, planning policies, development control and energy efficiency.

The Strategy also considered internal and external liaison and consultation as a means of enabling a consistent approach across service areas and local authority boundaries.

The Strategy included an action plan intended to provide aims for focusing on reducing levels of pollutants. This action plan has been incorporated in Rushcliffe's AQAP.

The revised and recently published Nottinghamshire air quality strategy, "A Breath of Fresh Air" has now been formally adopted by Rushcliffe Borough Council and supersedes the 2002 strategy.

4.3. Nottinghamshire Environmental Protection Working Group

The Council is a member of the Nottinghamshire Environmental Protection Working Group (NEPWG) formed in partnership with Nottinghamshire County Council, Ashfield District Council, Bassetlaw District Council, Broxtowe Borough Council, Gedling Borough Council, Mansfield District Council, Newark and Sherwood District Council Nottingham City Council, Environment Agency, Health Protection Agency and the Highways Agency.

The NEPWG works under the direction of the Nottinghamshire Chief Environmental Health Officers Group. The NEPWG enables the authorities to work collaboratively on the full range of pollution issues, demonstrating that liaison on a technical level is already well established.

4.4. The Nottinghamshire Air Quality Steering Group

The Nottinghamshire Air Quality Steering Group was formed in 1998 and comprises representatives from each local authority, Health Protection Agency, Highways Agency, Nottinghamshire County Council, University of Nottingham and the power generators. The group acts as a consultation body to advise local authorities of procedures, to ensure wide consultation in relation to air quality issues, and in particular air quality reviews and assessments.
Nottinghamshire Authorities have agreed to employ a single laboratory to undertake the supply and analysis of diffusion tubes over the next 3 years. All

authorities have agreed to use Gradko Laboratories utilising the 20% TEA in Water. This will enable the authorities to effectively compare results over the whole of the county. Rushcliffe are currently using 50%TEA in Water. To accompany the change in supplier it has been decided to review the diffusion tube network and ensure that tubes and locations reflect the most appropriate areas and exposures.

5. New Local Developments

5.1. Industrial Processes

There are no new significant industrial processes within the Borough that requires further assessment. In 2007 the PPC regulations 2000 (Pollution Prevention Control Regulations 2000 (as amended) introduced dry cleaners as new permitted processes. RBC has permitted 6 dry cleaners; however, none of these new processes will have any affects on local air quality. The PPC regulations have recently been superseded by the Environmental Permitting Regulations 2007.

5.2. Landfill sites and quarries

There are no new landfill sites or quarries within the Borough that have been granted planning permission. There has been a granting of an expansion of the CEMEX sand and gravel quarry; this has been discussed previously in the report.

5.3. East Midlands Parkway

The Network Rail (Infrastructure) Ltd proposal to build a new railway station with park and ride facilities for 1000 cars, adjacent to the Ratcliffe on Soar power station was granted in 2007.

The initial outline planning permission was granted to Midland Mainline in November 2002, and as part of the application Midland Mainline originally undertook an Environmental Impact Assessment. The report concluded that there will be a 2% increase in traffic along the A453 and modelling suggests that there would be an increase in the nitrogen dioxide annual mean of 0.1µg/$m^{3,}$ and an increase of 2% in PM_{10} concentrations in the vicinity of the site.

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The Planning Decision Notice requires the applicant to undertake a scheme for air quality monitoring to validate the air quality model. Confirmation that this validation work will be undertaken was received in February 2007 consisting of a 3 month study using 1 chemi-luminescent monitor (NO2), 1 FDMS TEOM(PM10) 1 Ultra-violet Fluorescence Analyser (SO2), and various methods to determine dust concentrations in the area.

It is expected however that the park and ride system may have a positive impact on the West Bridgford AQMA1 and 2, due to potential reduction in traffic levels coming into West Bridgford and on into the city centre.

Construction at EMP has begun very recently and is planned to open in December 2008.

5.4. The Nottingham Express Transit Phase Two

The proposed development involves the construction and operation of two extensions to the existing tram system from Nottingham City centre to Chilwell and to Clifton via Wilford, which within Rushcliffe takes in the former Great Central rail line through Compton Acres (see Figure 13). The implementation of the NET Phase two has the potential to reduce traffic flows through the main traffic routes within the Rushcliffe area.

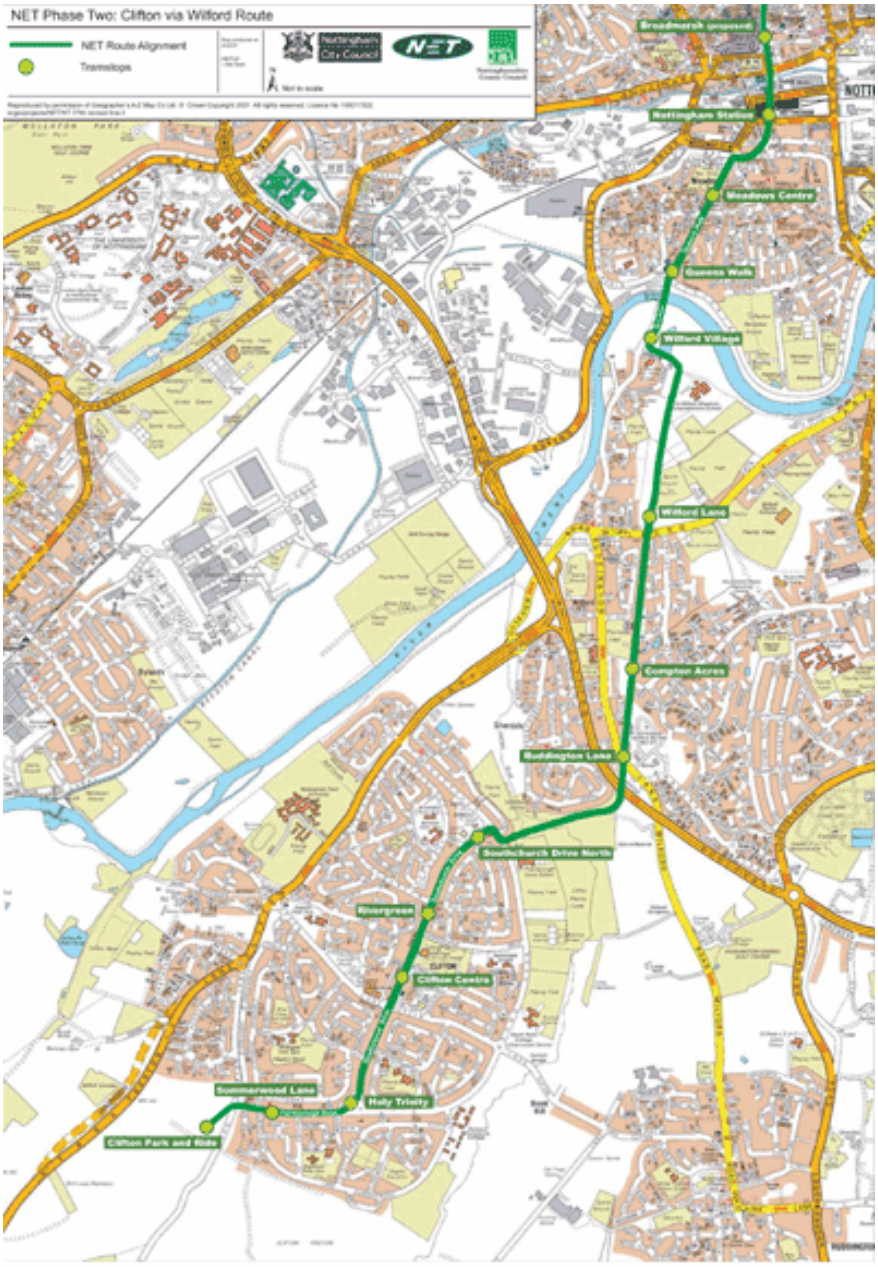

Figure 13 Plan showing proposed route of NET two.

The promoters of the NET system, Nottingham City Council and Nottinghamshire County Council, recently submitted an application for a Transport & Works Act Order (TWAO), which will give the Councils the powers to acquire land, build and run the two new tram extensions. The application was submitted on 26 April 2007.

The seven week Transport and Works Act Order (TWAO) Public Inquiry undertaken by the independent Inspector, Mr Barker finished before Christmas 2007, considered the merits of the proposed tram routes. Mr Barker is expected to present his Public Inquiry findings to the Government in July 2008. The Government has the ultimate authority to approve or reject the tram proposals. It's hoped that the Government will announce its TWAO decision, including the Inspector's findings, in early 2009. Should the Government approve the proposals, then private companies will be invited to bid for the work of building and running NET Phase Two. Subject to further design work and approvals, construction could start in 2010 with trams running on the extended NET system in 2013.

The Government have already agreed to pay 75% of the NET Phase Two costs, but the City and County Councils must jointly find a local contribution of 25%.

Nottingham City Council is considering introducing a Workplace Parking Levy (WPL) to help manage congestion and contribute towards the 25%. Around 500 businesses in the City of Nottingham would pay the levy if they provide over 10 parking spaces for their staff. The money raised would be invested in improving public transport. NET Phase Two is a key part as well as running the Link Bus network and improving Nottingham Station as part of the 'Hub' project.

In May this year City Councillors have decided whether to adopt a Workplace Parking Levy and apply to the Government to introduce a WPL from 2010. Other contributions from the two Councils towards the 25% may be found from a number of sources including sales of assets, developer contributions, grants, efficiency savings or council tax. It is considered that this measure along with NET2 could see a reduction in commuter traffic through the Rushcliffe area.

5.5. A453 widening.

The A453 east of the M1 is a major route between Nottingham, the M1 and Nottingham East Midlands Airport, with a 10 kilometre section passing through Rushcliffe. The existing single-carriageway road has become increasingly congested, carrying up to 32,000 vehicles a day, has a poor safety record and poses maintenance difficulties.

The proposed scheme, (see Figure 14) with an approved budget of £90 million, is to widen the A453 to dual carriageway between the M1 and the Crusader roundabout on the approach to Clifton (in the Nottingham City Council area), and to four-lane single carriageway through Clifton from the

Crusader roundabout to Farnborough Road, at the start of the A52 Nottingham Ring Road.

Figure 14 Location of A453 Widening

The scheme will benefit everyone using the route between the M1 and Nottingham. It will improve safety, reduce congestion and make journeys more reliable for travellers and businesses in the region. Although traffic volumes are not expected to change, the flows may be smoothed.

It is predicted that there will be no adverse effects on air quality in the borough from the proposal.

Until recently it had been expected that draft Orders would be published and an Environmental Statement produced in late 2007, but because of the need for additional traffic assessment work, publication is currently programmed to take place in summer 2008. Following this, there will be a 12-week period for further consultation, to support or object to the draft Orders.

Depending on the objections received, a Public Inquiry may be held before an independent Inspector.

Following any Inquiry, the Secretary of State for Transport and the Secretary of State for Communities and Local Government would consider the Inspector's Report, together with any objections and representations made, before making their decision on the future of the scheme. If the scheme proceeds, statutory Orders and land purchase required for the project will commence.

Subject to the decision by the Secretaries of State, construction could start in 2009/10, with the road open to traffic in winter 2012.

5.6. A46 Duelling.

The A46 is an important regional trunk road connecting the East and West Midlands. The section between Widmerpool and Newark (see Figure 15) carries between 16200 and 25300 vehicles per day, of which up to 15% are heavy goods vehicles. This level of traffic gives rise to frequent congestion and delay.

Figure 15 Location of A46 road improvements

The existing A46 is generally straight and undulating as it follows the line of the old Roman Road - Fosse Way. This can make safe overtaking difficult and it is made worse by many junctions and accesses to fields, farms and houses. The road has a poor safety record - in the five years between 2001 and 2005 there have been 13 fatal, 56 serious and 222 slight accidents.

Bridleways and footpaths join and cross this section of the A46 but walkers, cyclists and horse-riders find it difficult to cross because of the traffic.

The Highways Agency propose a new 28km long two-lane dual carriageway from the A606 two level junction at Widmerpool in the south of the borough to an improved roundabout at Farndon, outside of the borough, just south of Newark.

In July 2005, the Government sought advice from the East Midlands Regional Assembly on their priorities for local authority transport schemes costing over £5m and schemes on trunk roads and motorways on the Highways Agency's regional network up to 2015/16.

The Regional Assembly considered the A46 Newark to Widmerpool Improvements as part of that assessment and submitted their views to the Secretary of State for Transport at the end of January 2006.

The Secretary of State considered and accepted the advice from the East Midlands region on its funding priorities. In the light of competing priorities across the East Midlands, he recommended a programme of major schemes to 2015/16 which includes slipping the start of construction of the A46 Newark to Widmerpool Improvement from 2008/09 until 2012/2013. The Scheme would be delivered over five years with advanced works starting in 2011/12 and main works running from 2012/13 to 2016/17.

It is predicted that there will be no adverse effects on air quality in the borough from the proposal. The air quality impact assessment undertaken for the proposal concludes that the scheme would not result in any significant air quality problems due to changes in road traffic emissions – this is especially the case as the DMRB procedures that have been used are designed to over-predict traffic emissions. Thus, it can be assumed with confidence that no significant air quality problems would occur in either 2014 or 2016 as a result of Scheme operation.

5.7. Housing Development.

The following housing developments are ongoing and may have an impact on air quality and will, therefore, need to be considered in the next Review and Assessment; (see Figure 16 & Figure 17)

Housing Permissions Over 20 Dwellings to Apr 2007		
Parish	**Address**	**Total Number of Dwellings**
BINGHAM	Land Adj to Mill Hill Road/ Mallow Way	204
BINGHAM	Land To The South Side Of Nottingham Road	249
BINGHAM	64/66 Nottingham Road	23
BINGHAM	Belvoir Training Centre, Grantham Road	32
COSTOCK	Gables Farm, Main Street	25
COTGRAVE	Land Adjacent 18 Plumtree Road	23
EAST LEAKE	East Leake Hall Station Road	56
EAST LEAKE	East Leake Garage, Main Street, East Leake	24
EAST LEAKE	Lantern Lane	84
GAMSTON	Pedigree House/Gamston Piggeries	134
RADCLIFFE ON TRENT	Lamcote Motors, 49 Main Street	23
RADCLIFFE ON TRENT	93-105 Bingham Road	24
RUDDINGTON	Pasture Lane	180
RUDDINGTON	Pasture Lane	36
RUDDINGTON	Former Station Yard, Clifton Road	64
RUDDINGTON	Camelot Street Depot	72
WEST BRIDGFORD	Land between Lady Bay Bridge & Radcliffe Road	24
WEST BRIDGFORD	Leawood Old Peoples Home, Hilton Cres/Leahurst Rd	62
WEST BRIDGFORD	Land Between Lady Bay Bridge / Radcliffe Road	41
WEST BRIDGFORD	1 - 27 Loughborough Road & 2 - 6 Bridgford Road	215
WEST BRIDGFORD	The South Notts Hussar	24
WEST BRIDGFORD	Holme Lodge, Cheshire Home, 1 Julian Road	21
WEST BRIDGFORD	Windsor Lodge Hotel, 112-118 Radcliffe Road	40
WIDMERPOOL	Widmerpool Hall, Keyworth Road	24

Figure 16 Housing permissions over 20 dwellings up to April 2006

Housing Permissions Over 20 Dwellings to Apr 2008		
Bingham	Land South Of Mallow Way And Mill Hill Road Bingham Nottinghamshire	204
Ruddington	Orchard House Manor Park Ruddington Nottinghamshire NG11 6DS	40 units (residential care)
Cotgrave	Land West Of 18 Plumtree Road Cotgrave Nottinghamshire	27
Sutton Bonington	The Rectory 70 Main Street Sutton Bonington Nottinghamshire LE12 5PF	28

Figure 17 Housing permissions over 20 dwellings up to April 2008

Rushcliffe BC has received a number of applications in recent months of significance as shown below. These developments are currently in the process of being consulted upon by development control which includes Environment & Waste Management and no decisions have been made to date as to whether permissions will be granted.

- Cotrgave Colliery approx 500 houses, business development (B1, B2 & B8) plus school
- Hollygate Lane, Cotgrave Approx 480 houses
- Sharphill Woods Development approx 1200 house plus school

Rushcliffe BC recognise that such developments could impact on the existing AQMA's or lead to increased concerns in other areas close to these proposed developments. The planning process will be used to asses these potential impacts and appropriate advice provided to the Development Control Service to mitigate any impacts on air quality as far as is possible.

6. Rushcliffe Borough Councils Local Development Frameworks

In the Planning and Compulsory Purchase Act (2004), the Government announced proposals for reforming the planning system. These include the introduction of 'Regional Spatial Strategies' (RSS) and the replacement of the current Local Plans system with 'Local Development Frameworks'.

The Local Development Framework for Rushcliffe is the mechanism for delivering the spatial element of the Community Strategy. The Local Development Framework will also complement the objectives of the Borough Councils Corporate Plan.

The Borough Council has an important role to play in enforcing environmental control and also in consultation with other bodies such as the Environment Agency. Development proposals that would give rise to an unacceptable level of pollution or are sensitive to pollution, planning permission will not be granted. Where development is permitted the Borough Council will, where

appropriate attach conditions to the approval to minimise any potential pollution levels or, where appropriate, a section 106 agreement sought to ensure that mitigation measures are implemented.

6.1. Rushcliffe Borough Non-statutory Replacement Local Plan

On 21 September 2006 Council resolved that work on the Local Plan should cease and work be commenced on the Rushcliffe Local Development Framework documents. In addition it was resolved that in order to provide a planning policy basis for Development Control purposes in the meantime, the Replacement Local Plan, with the omission of the elements relating to allocations, should be adopted on a non statutory basis, and is known as the Rushcliffe Borough Non-Statutory Local Plan and was formally adopted in December 2006.

6.2. Employment Land Provision

The following significant sites are allocated land for employment use in the Local Plan for existing commitments and for new sites:

- Chapel Lane, Bingham - Development of land for employment use within classes B1, B2 and B8.
- Bunny Brickworks – B1, B2 and B8.
- Pasture Lane, Ruddington – B1, B2 and B8.

Where B1 is for light industrial, office and high technology use, B2 is for general industry, and B8 is for warehousing.
Figure 18 below details the planning permissions granted for employment purposes within the Borough for the period 2007 to date.

Employment land availability: Permissions granted April 07-March 08

Site	Reference	Date Granted	Date Expires	Detail (ha)	Permission granted
Bunny; Field House Farm	07/02256/FUL	12/07	12/10	0.60	Full
Costock; Leake Road	07/01508/FUL	09/07	09/10	0.40	Full
East Bridgford; Manor Farm	07/00977/FUL	07/07	07/10	0.34	Full
Keyworth; Kingsley Dunham	07/01723/FUL	10/07	10/10	0.28	Full
Stanford on Soar; Stanford Hall Estate	07/01395/FUL	08/07	08/10	0.10	Full
West Bridgford; Radcliffe Road	07/00298/FUL	04/07	04/10	0.10	Full

Figure 18 Planning permissions granted 2007-2008

In addition to the local plan process, the Environment & Waste Management Service continues to liaise with Development Control and this ensures that the air quality of large planning applications are assessed, and where appropriate, suitably controlled.

7. Local Transport Plan for Greater Nottingham 2006 – 2011

Nottinghamshire County Council, in partnership with Nottingham City Council has produced the Local Transport Plan and the main function of the Plan is to set out the local transport strategy and priority areas for investment over the next five years.

The Plan area includes Rushcliffe, the City of Nottingham, and the neighbouring boroughs of Broxtowe, Gedling, and part of Ashfield. The objectives of the plan are based on the Governments "Shared Priority for Transport" as well as three locally determined objectives. The three relevant themes for the Plan are managing congestion and improving air pollution and improving quality of life.

The LTP Objectives are:

A. To increase sustainable accessibility to the City Centre and district centres in ways which enhance economic activity, encourage development in and reduce social exclusion from these centres,

B. To reduce traffic growth and to encourage modal change away from the private car particularly for work journeys to the City Centre,

C. To encourage safe walking and cycling for short journeys including travel to schools, shops and other local facilities

D. To improve integration and interchange between modes

E. To integrate land-use and transport planning by ensuring all new major development is well connected to the public transport system and accessible by foot / cycle,

F. To maintain and enhance Greater Nottingham's accessibility to regional, national and international markets, particularly by modes other than the car

G. To reduce social exclusion and to improve the accessibility to transport for disadvantaged groups, particularly disabled people

H. To relieve communities from the adverse effects of through traffic, particularly heavy goods vehicles,

I. To maximise the efficiency and maintain the structural integrity of existing transport networks,

J. To increase transport choice in rural areas,

K. To improve air quality within the Plan area and to alleviate other transport impacts upon health, and

L. To improve road safety, particularly for vulnerable road users.

Road transport is the major source of pollution in Rushcliffe and the Greater Nottingham Local Transport Plan (LTP) will play an important role in working towards improving air quality, and the main focus of the air quality action plan will be linked around the measures in the LTP to reduce transport emissions in AQMA1 and 2 in West Bridgford, and along the A52 Ring Road.

In addition due to the declaration of the 2 AQMA's for NO2, Rushcliffe Council regularly meets with the Local Transport Plan Manager at the Nottinghamshire County Council to discuss the progress of the measures set out in the AQAP. The aim of the meeting is to move forward the key objectives set out in the action plan looking at such matters as improving traffic flows, park and ride systems, bus priority routes, improvements to public transport and considering air quality impacts from major developments. The meetings enable this authority to link into the LTP and influence transport planning to improve air quality with in the Borough that may be directly outside of its control.

The Local Transport Plan for Greater Nottingham 2006 – 2011 can be viewed or downloaded from http://www.nottinghamshire.gov.uk/home/traffic_and_travel/strategy-policy/ltp.htm

8. Update on AQMA interventions

8.1. Introduction

The air quality action plan was drawn up to outline what actions can be taken by Rushcliffe BC and other partner organisations to work toward reducing nitrogen dioxide levels with in the AQMA's to below the National Air Quality Objectives. The main measures of the action plan are to:

- provide information and awareness
- consideration of alternative means of transport
- road network management
- management of emissions
- planning considerations

Within Rushcliffe and for most Local Authorities road transport is the major source of NO2 and is the underlying cause of the declaration of AQMA's.

The LTP sets out the local transport strategy and priority areas for investment over the next five years and includes the City of Nottingham, the boroughs of Broxtowe, Gedling, Rushcliffe and part of Ashfield. The integration of the Action Plan with the Greater Nottingham Local Transport Plan (LTP) was and will continue to be the main focus of this action plan and will revolve around measures to reduce congestion, promotion of alternatives to car travel and the general reduction measures to reduce transport emissions.

Regular meetings continue to take place between Rushcliffe BC and the Local Transport Team Manager at the Nottinghamshire County Council in recognition of the main cause of declaring AQMA's being traffic pollution. The aim being the reduction in the impact of traffic emissions within the AQMA's.

It is unclear as to whether the measures in the action plan are sufficient to enable the air quality in these areas to be compliant with the air quality objectives by 2010, as stated in the AQAP, particularly in light of the results for NO2 observed in 2007. However the Council and other partner organisation are committed to working towards achieving the objectives in the long term and this may require the amendment or addition of further measures within the action plan.

The following tables indicate the interventions programmed to be undertaken as part of the AQAP by Rushcliffe Council and other partner organisations and the progress made in implementing each measure to date.
Figure 19 indicates the measures that have been identified for Rushcliffe BC to implement and provides an update on the progress made to date. Figure 20 lists the measures identified in the Local Transport Plan, which are primarily being implemented by the County Council.

Figure 19 Air Quality Action Plan options and Measures progress table

Intervention	Measure	Air Quality Impact	Time scale	Cost	Progress
RBC Travel Plan	Reduce impact of RBCs business and staff travel. Review Travel Plan	L	S	£	The travel plan has partly been reviewed but progress has not been made as expected. Awaiting decision on whether the travel plan will be progressed.
Nottinghamshire Air Quality Strategy	Review the strategy through the Nottinghamshire Air Quality Steering Group	L	S	£	The Nottinghamshire Air quality Strategy has been published and has been adopted by RBC. Measure implemented
Remote/home working	Expand to other Service areas as appropriate	L	S	£	Environmental Health staff currently undertake a significant proportion of work from home negating the need to travel through the aqma areas.
RBC EMAS	Consolidate objectives and integrate with management systems. Reduce NOx emissions. Promote walking, cycling car sharing	L	S	£	Progress on this task has not moved forward at the pace hoped. Awaiting a decision on the future of EMAS at RBC.
RBC procurement	Implement a green corporate procurement strategy to reduce pollution	L	S	£	The Council published 'Green purchasing guidelines' in Jan 2004. The Council requires pre-qualification of suppliers to ensure that they practice equal opportunities and environmental policies. A procurement strategy is in place covering 2006-2009. currently RBC is working toward a regional Sustainable Procurement with Improved environmental performance across the range of goods purchased being a key aim
Bonfires	Encourage composting recycling and enforce bonfire controls on demolition sites	L	S	£	Implemented
Smoke control	Enforce the requirements of the Smoke Control Areas In West Bridgford	L	S	£	Implemented

Intervention	Measure	Air Quality Impact	Time scale	Cost	Progress
Local Plans. Development Control Strategies.	Develop Supplementary Planning Documents. Ensure air quality is a material consideration for key developments in the Borough	L	S	£	Air quality is a material consideration in planning matters and specific conditions relating to land use and traffic impacts are being commented on and attached as planning conditions currently. A draft informal SPD has been drafted by EH&WM but requires further revision prior to consultation. An un adopted guide for developers is likely to be published this year but formal adoption by development control is yet to be discussed
Control of industrial emissions	Liaise with Environment Agency to ensure that air quality is considered as part of the IPPC regime	L	S	£	Incorporated into existing procedures. Measure implemented
RBC fleet and fuel policy	Use good vehicle management. Evaluate cleaner fuels/vehicles	L	M	££	Implemented. Fleet operated on bio diesel. Currently have 1 Euro V vehicle with 2 more to be delivered in June 08. Older vehicles on 8 year rolling programme of change. Has 1 electric all terrain vehicle for country park. To review fuel policy again in 2009. Driver awareness training in place.
Energy efficiency	Reduce emissions of greenhouse gases and nitrogen dioxide from RBC premises and domestic premises and establish targets	L	M	£	An energy strategy is in place for the period 2000-2010 with the aim or reducing energy usage in general. However progress on this measure is linked to the EMAS action which is currently under review.

Intervention	Measure	Air Quality Impact	Time scale	Cost	Progress
AQ monitoring/ information	Continued monitoring throughout the borough. Development of County wide AQ website and develop consistent monitoring procedures.	L	M	£	Air quality monitoring information is updated onto RBC website regularly and the recent development of the Notts pollution working group joint venture on real time analyser information handling has lead to NO2 information being posted in real time to the web. Measure implemented
Local Strategic Partnership	Develop key actions on air quality improvement within the Environmental Issues Group	L	M	£	Rushcliffe Community Partnership have developed an Action Plan ' A Better Future for Rushcliffe – Protecting and Improving Our Environment' Key actions with the aim of reducing Rushcliffe's Eco footprint and air quality being one aspect of the action plan. To be implemented over 08/09
Liaison with the Highways Agency	Develop further actions for the improvement of air quality within the AQMA's	L	M	£	Despite contacting the HA on a number of occasion in 2007 this measure has not been progressed satisfactorily.
VOSA vehicle emissions testing	Liaise with NCC and evaluate feasibility of enforcement of emission standards within AQMA's	L	M	£	Discussions have taken place in the Nott's Pollution Working Group to undertake monitoring within each LA area on a joint procurement basis. This would not be VOSA testing and no progress has been made with the NCC on formal VOSA testing

Figure 20 AQMA interventions programmed to be introduced during 2006/07-2010/11 from the Nottinghamshire Council Local Transport Plan

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
Parking	Gamston Park and Ride	NCC	Delays have been encountered due to the need to undertake further traffic modelling to satisfy Highways Agency requirements. This has now been completed. Recent outline planning application has been received Not due for completion until 2011. No outcome from the scheme will be measurable until at least one year after scheme completion	2007/08 2010/11	££££	M	Subject to business case
	Civil parking enforcement	NCC/RBC	Implementation took place in May 2008. No outcome from the scheme will be measurable until at least one year after scheme implementation	2007/08	£££	L	Borough Council buy-in
Smarter Choices	NCC travel plan	NCC	The County Council travel plan has been in operation for the past 10 years and has been incorporated into the climate change action plan for the County Council	1996 and ongoing	£	L	Under implementation
	Investigate staff car park charging and its implications	NCC	A car park focus group has been established for NCC staff to ensure equality of any implications. However, a decision on any 'on-site' charging regime has been delayed, however, due to an impending change in Chief Executive in 2008. Staff car park charging has been introduced for NCC employees at 'off-site' nearby previously free parking facilities. Charging at 'off-site' car parks introduced April 2008. There has been significant	2007/08	£	L	County Council/ Union buy-in

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			reductions in the numbers of observed vehicles parking in the car parks but there is no evidence to demonstrate that this parking has not just been displaced on-street				
	Undertake measures to deliver 1% per year increase in cycle mode share.	NCC	All of the work undertaken by the NCC travel plan co-ordinator (e.g., publicity campaigns, personalised travel planning etc.) aim to deliver increases in cycle mode share. The NCC Carbon Management Plan was approved in April 2007 and new baseline data was gathered in July 2007 (7% of all NCC employees currently cycling to work). No comparison data will be available to report until surveys are undertaken in Summer 2008. Across the county a 1.3% increase in cycling levels has, however, been seen between 2006 and 2007	2007/08 and ongoing	£	L	Subject to adoption of draft Carbon Management Plan
Smarter Choices	Undertake measures to deliver 1% per year reduction in business mileage	NCC	Various measures are underway to help deliver the reductions in business mileage including new terms and conditions which affect business mileage rates and driver training to help motorists drive more sustainably. The NCC Carbon Management Plan was approved in April 2007 and new baseline data was gathered in July 2007 (7% of all NCC employees currently cycling to work). No comparison data will be available to report until surveys are undertaken in Summer 2008. Across the county a 1.3% increase in cycling levels has, however,	2007/08 and ongoing	£	L	Subject to adoption of draft Carbon Management Plan

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			been seen between 2006 and 2007				
	Workplace travel plans. 24 workplace travel plans have been developed in Rushcliffe Borough. Two further sites have been identified in the vicinity of the AQMA for prioritisation and will be contacted concerning the development of a plan: • Environment Agency • Nottingham Forest Football Club	NCC/ employers	Nottingham Forest has developed an approved travel plan which covers not only its employees but also supporters. Match day smarter choices promotion has been undertaken and discussions are now underway on hard measures to support the travel plan Insufficient data currently exists to compare mode of travel with previous years A revised monitoring system is being investigated to enable year on year comparisons on mode of transport for businesses with travel plans The other sporting venue within the AQMA, Nottinghamshire County Cricket Club, has also taken part in various smarter choices promotional activities at matches during the 2007 season and are keen to develop a travel plan upon completion of the development of the ground in Summer 2008	2006/07 and ongoing 2007/08 2007/08	£	L	Lack of employee/ employer buy-in
	School travel plans	NCC/ school community	All schools within West Bridgford have been contacted. NCC's school travel plan officers are currently working with 12 of the 13 schools in West Bridgford. 11 of the schools have approved travel plans with one school due to have its travel plan 'signed off' in March 2008. Approved travel plans have been developed at 11 of the 13 schools in West Bridgford.	2001 and ongoing 2007/08	£	L	Lack of parent/ school buy-in

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			The way that the travel mode to school is recorded/determined was changed last year by DfT and therefore no trend data exists to compare performance				
	Personalised travel planning	NCC	A pilot 'travel smart' scheme was undertaken in the Meadows and Lady Bay areas adjoining the AQMA Undertake further travel smart scheme within the Rushcliffe area a further travel smart scheme is due to be undertaken - 2008/09. The measure is not due to commence yet and therefore there are no progress or outcomes to report	2003/04 2008/09	£	L	Lack of take-up
	Marketing campaigns	NCC	NCC has committed to a funding contribution to the 'Big Wheel' and a service level agreement between the two parties is in place for the period 2007/08. 'Big Wheel' has undertaken various marketing campaigns throughout the year including 'Stan's Plan', which is a lay person's guide to the local transport plan. Cycling numbers within the Greater Nottingham area of the county have increased by 1% between 2006 and 2007. Public transport patronage in Greater Nottingham has increased year on year since 2000, growing by 8% between 2000 and 2006.	2003/04 and ongoing	£	L	Lack of public buy-in

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			During the Stan's Plan campaign there was a 67% increase in website hits. In the quarter following the campaign there was a 2% increase in both use and satisfaction with public transport				
	Car clubs Investigate the introduction/ promotion of car sharing schemes at NCC (nottinghamshare.co.uk).	NCC	nottinghamshare.com was launched in April 2006. 1,000 users are now registered on the website, of which 100 live within the West Bridgford area. A total of 331 NCC staff and 1 RBC staff are registered on the website. Matching of users shows that 34% of registered users are currently able to car share.	2007/08	£	L	Under implementation
Smarter Choices	Car sharing Investigate the feasibility of the introduction of car share club at County Hall.	NCC	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. A feasibility study was undertaken on the merits of introducing such a scheme. The City Council are currently in discussions with service providers. No outcome from the scheme will be measurable until at least one year after scheme completion	2007/08	£	L	Under implementation
	Establishment of Greater Nottingham Car Club	City Council/ NCC	A feasibility study was undertaken on the merits of introducing such a scheme. The City Council are currently in discussions with service providers. No outcome from the scheme will be	2008/09	£	L	Lack of take-up

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			measurable until at least one year after scheme completion				
	Create guidance for developers to provide travel plans as part of the planning process for residential developments	NCC/RBC	No work has been undertaken on this by NCC. The Environment & Waste Management Service at RBC has produced a draft Supplementary guidance (SPG) document which is due for consultation later on in 2008. The SPG details possible mitigation measures	2006/07	£	L	Adoption of guidance by planning authority
	Create guidance for developers to provide travel plans as part of the planning process for leisure developments	NCC/RBC	Travel plans are requested for developments that may affect AQMA's	2007/08	£	L	Adoption of guidance by planning authority
	Integrate personalised travel planning into planning conditions	NCC/RBC	Travel plans are requested for developments that may affect AQMA's	2007/08	£	L	Adoption of guidance by planning authority
Walking	Promotion. Develop walking map for West Bridgford employees	NCC	A walking map was developed and distributed to employees in West Bridgford. The map was launched to coincide with 2007 Walk Week. 8,500 maps have been distributed in the West Bridgford area (2,500 to employees at the three largest employers; 2,500 to libraries; and 3,500 to households in the area	2006/07	£	L	Under implementation
	Involvement and promotion of Greater Nottingham walk week and walk to work day		Involvement in Walk Week during 19-27 May 2007 included guided walks, a chance to try out activities (such as Urban Nordic Walking) and 'walk to work' events.	2006/07 and ongoing	£	L	Under implementation

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			During Walk Week, over 500 people took part in the 32 events. Research from those who pledged online revealed that 77% of the walkers didn't normally walk to work and 40% never or only occasionally walked for their other journeys. It is hoped that the events in Walk Week will encourage people to continue walking and lead healthier lifestyles				
	Schemes. City centre to Trent Bridge primary pedestrian route	City Council	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2008/09	£	L	Subject to business case/ design
Cycling	Promotion. Develop and distribute cycle maps of Greater Nottingham area	NCC/ City Council	Maps continue to be distributed throughout the county, and are available as a hard copy and on-line. Across the county a 1.3% increase in cycling levels has been seen between 2006 and 2007. Cycling numbers within the Greater Nottingham area of the county have increased by 1% between 2006 and 2007	1999 and ongoing	£	L	Under implementation
Cycling	Promotion Development of West Bridgford cycling zipmap	NCC	See above	2008/09	£	L	Lack of take-up
	Training. RideWise and child cycle training	NCC	Cycle training continues to be offered free of charge to children in the county. Adult training is also available free to members of the public, whilst training is offered at workplaces at a cost to employers. 182 adults undertook cycle training between March and December 2007. 2,671 children undertook cycle training	Ongoing	£	L	Subject to funding

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			during the 2006/07 financial year. Across the county a 1.3% increase in cycling levels has been seen between 2006 and 2007. Cycling numbers within the Greater Nottingham area of the county have increased by 1% between 2006 and 2007				
	Schemes. Lady Bay Bridge cycle lane as part of Eastside Regeneration scheme	City Council	This measure is not due to commence yet. No progress on outcome to report. To be implemented as part of the east field side regeneration scheme.	2010/11	££££	L	Subject to funding
	Cycle lane on approach to Lady Bay Bridge	NCC	This measure will be delivered once the Lady Bay Bridge cycle lane has been delivered	2010/11	££	L	Subject to bridge improvements
	Advance cycle stop lines introduced at all feasible junctions within the AQMA	NCC	Advance cycle stop lines have been installed at all feasible major signal junctions within the AQMA	2006/07	£	L	Under implementation
	Wilford Lane cycle route	NCC	A 330m off-road 3m wide shared-use cycle route was installed on Wilford Lane during 2007/08. No outcome from the scheme will be measurable until at least one year after scheme completion	2007/08	£	L	Subject to business case
Public transport	Services. Introduction of SkyLink direct 24 hour bus service to the airport	NCC/ Operators	Implemented. Now operating every 30 minutes. Re-routed via Trent bridge. In 2007 over 350,000 people used this service	2004/05 - ongoing	££	L	Under implementation
	Ticketing. Introduction of ITSO smartcard ticketing	NCC/ Operators	It was planned to introduce ITSO smartcards in replacement of the NCC legacy concessions smartcard in March/April 2007 and this was carried out	2007/08	£	L	Subject to feasibility

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			in the Bassetlaw District. When government announced the introduction of the English National Concessions Scheme (ENCTS) commencing 1st April 2008 it was decided, however, that, rather than carrying out two complete card re-issues, the ITSO and ENCTS cards would be introduced together. The production of over 130,000 concessions cards (including 21,000 in Rushcliffe) is underway ready for distribution to pass holders in the last week of March 2008. Scholars' cards were issued in ITSO format starting July 2007				
	Introduction of multi-operator kangaroo ticket allowing travel on all forms of public transport	City Council/ NCC/ Operators	Nottinghamshire is now part of the national, multi-modal Traveline journey planner. 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. Monitoring of the County Council's journey planning pages indicates that approximately 65 people view the pages each day	2003/04	£	L	Under implementation
	Free countywide off-peak concessionary fare schemes for the over 60s and disabled	Borough Councils/ City Council/ NCC/ Operators	A free countywide off-peak concessionary fare scheme for the over 60s and disabled was introduced on 1 April 2006. In 2006/07 over 74% of those eligible had taken up a concessionary fare pass	2006/07	££££	L	Under implementation

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
Public transport	National free concessionary fare schemes for the over 60s and disabled	Borough Councils/ City Council/ NCC/ Operators	A free countywide off-peak concessionary fare scheme for the over 60s and disabled was introduced on 1 April 2006. In 2006/07 over 74% of those eligible had taken up a concessionary fare pass	2008/09	Not yet known	L	Subject to Central Government
	Consideration of introduction of concessionary fares for young people	NCC/ Operators	A pathfinder bid to progress the introduction of concessionary fares for young people at an earlier date than planned was submitted to Government in Dec 2007. The bid was successful which mean that consideration of introduction of such a scheme will remain as 210/2011	2010/11	Not yet known	L	Subject to business case
	Information. Investigate and publicise web based journey planners	NCC/ Operators	Nottinghamshire is now part of the national, multi-modal Traveline journey planner. 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. Monitoring of the County Council's journey planning pages indicates that approximately 65 people view the pages each day	2006/07	£	L	Under implementation
	Install 'real time' bus information along key AQMA corridors	NCC/ Operators	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2010/11	££	L	Subject to business case
	Infrastructure. Install/ replace flagpoles/ timetable cases along key AQMA corridors	NCC	Flagpoles and timetable cases have been installed/replaced along the key AQMA corridors	2006/07	££	L	Under implementation

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
	Construction of the East Midlands Parkway station on the A453 with adjoining park and ride site, reducing the need for longer distance travelling vehicles to enter the AQMA	Rail industry	Construction started at the site in December 2007 with a projected opening in December 2008. Parkway station not due for completion until December 2008. No outcome from the scheme will be measurable until at least one year after scheme completion	2008/09	££££	L	Subject to business case
	Ikm of bus lane along with a bus gate have been implemented on Radcliffe Road. Further bus lane/priority measures are planned to be introduced to complement the proposed park and ride site at Gamston	NCC	Await completion park and ride at Gamston	2003/2004 2009/10	££	L	Subject to park & ride business case
	A 0.4km bus lane has been installed on the A60 in both directions south of Trent Bridge. Further bus lane priority will be considered on the A60	NCC	A 0.4km bus lane has been installed on the A60 in both directions south of Trent Bridge. Improvements to the 'bus gate' signals on the southerly approach are being considered to improve bus priority. The further improvements have not been implemented yet and therefore there are no progress or outcomes to report	2008/09	£	L	Subject to feasibility
Public transport	Fleet. Operators are encouraged to take-up of cleaner vehicles through partnership working. Due to the sustained high level of investment by the two main operators the average age of the bus	Operators	Operators are encouraged to take-up cleaner vehicles through partnership working. Due to the sustained high level of investment by the two main operators the average age of the bus fleet operating in the AQMA is already less than six years old and by the end of 2007 all of the two	2010/11	££££	L	Subject to continued operator

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
	fleet in Nottingham is already less than six years old and by the end of 2006 approximately 84% of the conurbation's fleet were low-emission Euro2 or 3 standards. Nottingham City Transport fleet investment along key AQMA corridors		main operators fleet were low-emission Euro2, 3 or 4 standards. Nottingham City Transport fleet investment along key AQMA corridors				fleet investment
	Capacity increases on the GO2 services along the A60 corridor	Operators	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2008/09	£	L	Subject to fleet investment
Cleaner vehicles	NCC's fleet. Develop and implement an action plan to improve fleet	NCC	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2010/11	££££	L	Subject to adoption of draft Carbon Managemen t Plan
	Introduce increasing proportion of bio-fuels	NCC	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2008/09 and ongoing	£	L	Subject to adoption of draft Carbon Managemen t Plan
Network management	Traffic control and information. The County and City Councils jointly fund the traffic control centre that monitors traffic movement and provides real time traffic control over many traffic signal	NCC	The 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. Real time information is conveyed onto the local media and disseminated via NCC's web site. A review of the Travelwise Centre was	Ongoing	£	L	Under implementat ion

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
	installations. Real time information is conveyed onto the local media and disseminated via the County Council's web site		undertaken in early 2007 which resulted in a complete restructuring of Travelwise in May 2007. The review included how the traffic and travel information is conveyed to the public, taking into account advances in communication systems, the internet, mobile phones, satellite navigation and radio broadcasting. The existing Travelwise web site was completely rebuilt and developed to become the central real time information hub for reporting road conditions, congestion, road works, events, incidents, travel information and useful advice for the travelling public.				
	SCOOT/MOVA and other traffic signal efficiency improvements, including CCTV at junctions within AQMA	NCC	SCOOT/MOVA and other traffic signal efficiency improvements, including CCTV at junctions within AQMA MOVA was installed at the junction of Radcliffe Road/ Ambleside during 2007/08 No outcome from the scheme will be measurable until at least one year after scheme completion	Ongoing	£	L	Under implementation
	Traffic management. Trent Bridge gateway	City Council	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2009/10	££	L	Subject to development proposals
	Introduction of MOVA at junction of Radcliffe Road/ Ambleside	NCC	MOVA was installed at the junction of Radcliffe Road/ Ambleside during 2007/08	2006/07	£	L	Under construction

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			No outcome from the scheme will be measurable until at least one year after scheme completion				
	Co-ordination of streetworks. Effective co-ordination of streetworks to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty	NCC	Systems for notice management and coordination have been upgraded to enhance noticing handling, monitoring of works proposals, coordination of works and directing timing of works. Staff awareness and training has been undertaken to ensure that powers are used effectively. Promoters of highway works have been made aware of the requirement to manage works to minimise the impact on traffic to reduce disruption. A review of street designations and network hierarchy has commenced to improve data quality for works promoters and network managers and to prioritise works management. Regular coordination meetings have been held between all works promoters in conjunction with the City Council and HA and also additional regular meetings between the HA and the local authorities of Nottinghamshire, Nottingham, Derbyshire and Derby to create a composite framework programme of planned works affecting major routes in the region. In addition, workshops have been held with major works promoters including utility companies to promote	Ongoing	£	L	Under implementation

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
			good practice and to encourage alternative working methods with a review to reducing peak period working and thereby address the most disruptive aspect of working on the highway				
	Incident management. Effective management of incidents to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty	NCC	As indicated under Traffic Control and Information, the joint County/City control centre and travelwise web site have been comprehensively revised. This has improved the manner in which incident information can be dealt with to ensure that communication about the incident is passed effectively to those who need to deal with the matter and also to the road user. The local operating agreement between the authority 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. Detailed journey time monitoring of key corridors (including the A60, A6011 and A6520 which lie within the AQMA) has been undertaken in 2007 as part of the Greater Nottingham Congestion Delivery Plan and Road User Charging feasibility study. This data will be used as a baseline to monitor congestion through journey times in future years.	Ongoing	£	L	Under implementation
	Contingency planning.	NCC	Working in close collaboration with the	Ongoing	£	L	Under

Intervention	Measure	Responsibility	Progress	Action	Cost	Impact	Impact
	Effective contingency planning to minimise traffic disruption and unnecessary congestion as part of the County Council's network management duty		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. Detailed journey time monitoring of key corridors (including the A60, A6011 and A6520 which lie within the AQMA) has been undertaken in 2007 as part of the Greater Nottingham Congestion Delivery Plan and Road User Charging feasibility study. This data will				implementation
Network management	Signing. Highway direction signing upgraded to improve accessibility, safety and make best use of existing networks	NCC	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2010/11	£	L	Subject to feasibility and design
	Interactive ParkSmart directional signing to zones within the City	City Council	The measure is not due to commence yet and therefore there are no progress or outcomes to report	2010/11	££	L	Subject to business case
Major schemes	A52 ring road upgrade. The scheme is currently considered a medium priority in regional funding priorities. Regional priorities are, however, due to be reviewed within three years	City Council	A business case has been submitted to DfT by the City Council but no decision has been made on its success or progression	2010/11	£££££	L	Subject to DfT approval and programme entry

8.2. Conclusion

Rushcliffe Borough Council remains committed to the local air quality management process and will continue to ensure that work progresses in line with the relevant policy and technical guidance documents.

The above tables have summarised the progress with the Air Quality Action plan and work continues on any outstanding tasks still listed.

Regular meetings with the County Council are ensuring the actions in the plan are moving forward where possible with some major improvements yet to be introduced. These include the park and ride scheme at Gamston, the operation of the East Midlands Parkway and potentially the NET2 development, all of which could have significant impact on commuter traffic through the AQMA's.

Concerns exist on levels of NO2 within certain parts of AQMA2. It is not feasible or cost effective to control traffic on this road and with any further development for housing or commercial development of any significant proportion this could lead to an increase in traffic levels along the A52 corridor which may offset any gains made to date. Consequently as this road is under the control of the Highways Agency further discussions will take place with them over continuing exceedences in this area.

9. Glossary of terms.

Air Quality Standard – these standards represent minimal/no risk health based standards, for ambient concentrations of pollutants. They are based purely on medical evidence, taking no account of costs, benefits or technical feasibility.

Air Quality Objective – these objectives take account of both costs and benefits, forming benchmarks in time, against which "Air Quality Standards" can be achieved.

Annual mean – The average of the concentrations measured or calculated for each pollutant for one calendar year.

AQMA – Air Quality Management Area

Assessment – The consideration of whether estimated levels for the relevant future period are likely to exceed the levels set in the objectives.

AURN – Automated Urban and Rural Network of air quality monitoring stations

Background concentration – Concentration of a particular pollutant thought to be present in an area, which cannot be accounted for by dispersion modelling from local emissions. It is generally caused by transportation of pollutants over long distances.

CO – Carbon Monoxide

Data Capture – The percentage of all the possible measurements for a given period that were validly measured

DEFRA – Department for Environment, Food and Rural Affairs

DETR – Department for the Environment and the Regions (Now DEFRA)

Emissions Inventory – A full list of sources that emit pollutants into the atmosphere over a sustained period of time.

Exceedences – A period of time where the concentration of a pollutant is greater than, or equal to, the appropriate air quality objective.

IPPC – Integrated Pollution, Prevention and Control Act 2000

Maximum hourly average – The highest hourly reading of air pollution obtained during the time period under study.

NETCEN – National Environmental Technology Centre

NO_2 – Nitrogen Dioxide

NO_x – Nitrogen Oxides

Part A installations – Large emitters of pollution, which are regulated by either the Environment Agency (A1) or Local Authorities (A2)

Part B installations – Smaller emitters of pollution, which are regulated by local authorities

Percentile – A value found by listing a set of numbers in order and calculating the number below which a certain percent of the data set lies. For example, the 99^{th} percentile of values in a data set, is the value below which 99% of the data falls.

PM_{10} – Particulate Matter with a diameter of 10µm or less.

QA/QC – Quality Assurance/Quality Control.

Running Mean – A mean or series of means, calculated for overlapping time periods. For example, a daily running 8 hour mean equals any 8 hour period within that day.

SO_2 – Sulphur Dioxide.

µg/m^3 – Microgrammes per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m^3 means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

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