



2010 Air Quality Progress Report for Richmondshire District Council

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

April 2010

**Prepared on behalf of Richmondshire District Council by
Dr Steven Holmes
HOLMES ENVIRONMENTAL HEALTH LTD**

Local Authority Officer	Mr Kevin Carr
--------------------------------	---------------

Department	Environment Services
Address	Richmondshire District Council Friars Wynd Richmond North Yorkshire DL10 4RT
Telephone	01748 829100
e-mail	kevin.carr@richmondshire.gov.uk

Report Reference number	KC/2010AQ PROGRESS REPORT
Date	30 th April 2010

Prepared by:

**Steven Holmes PhD MSc DMS FCIEH MIOA
Chartered Environmental Health Practitioner
Holmes Environmental Health Ltd**

Executive Summary

This report is the 2009 Progress Report on the current state of air quality in the Richmondshire District Council area. It has been prepared using the guidance TG(09) issued by the Department for Environment, Food and Rural Affairs (DEFRA).

The National Air Quality Strategy sets a series of Air Quality Objectives for a range of pollutants against which the air quality in the District has been assessed.

The report outlines the conclusions of previous air quality assessments undertaken by the Council and specifically examines the results of ongoing nitrogen dioxide monitoring undertaken in Richmond town centre and along the A66 Trunk Road.

In addition consideration has been given to any new transport infrastructure or developments which have the potential to impact on air quality within the District.

It is concluded that there are no likely exceedences of any of the Air Quality Objectives for any of the key pollutants.

No significant new transport infrastructure or new developments have been identified since the 2008 Update and screening Assessment.

Table of contents

1	Introduction	6
1.1	Description of Local Authority Area	6
1.2	Purpose of Progress Report	6
1.3	Air Quality Objectives	7
1.4	Summary of Previous Review and Assessments	9
2	New Monitoring Data	14
2.1	Summary of Monitoring Undertaken	14
2.2	Comparison of Monitoring Results with Air Quality Objectives	19
3	New Local Developments	22
4	Local / Regional Air Quality Strategy	23
5	Planning Applications	24
6	Air Quality Planning Policies	25
7	Local Transport Plans and Strategies	26
8	Climate Change Strategies	27
9	Conclusions and Proposed Actions	28
10	References	29

Appendices

- | | |
|------------|---|
| Appendix 1 | Calculation of Annualised nitrogen dioxide concentrations for the diffusion tubes along the A66 |
| Appendix 2 | List of Processes Regulated by and Environmental Permit |

List of Tables

- | | |
|-------------|--|
| Table 1.1 | Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England. |
| Table 1.4.1 | Summary of the First Round of Review and Assessment |
| Table 1.4.2 | Summary of the Second Round of Review and Assessment |
| Table 1.4.3 | Summary of the Third Round of Review and Assessment |
| Table 1.4.4 | Summary of the Fourth Round of Review and Assessment |
| Table 2.1 | Details of Non- Automatic Monitoring Sites in Richmond Town Centre |
| Table 2.2 | Details of Non- Automatic Monitoring Sites Along the A66 Trunk Road |
| Table 2.3 | Nitrogen Dioxide Diffusion Tube Monitoring QA/QC |
| Table 2.4 | Nitrogen Dioxide Diffusion Tube Monitoring Data |
| Table 2.5 | Comparison of Nitrogen Dioxide Concentrations at Location R5, R6 and R7 in 2008 and 2009 (A66 trunk road) |
| Table 2.6 | Annual Mean Nitrogen Dioxide Concentrations in Richmond Town Centre 2006 – 2009 |

List of Figures

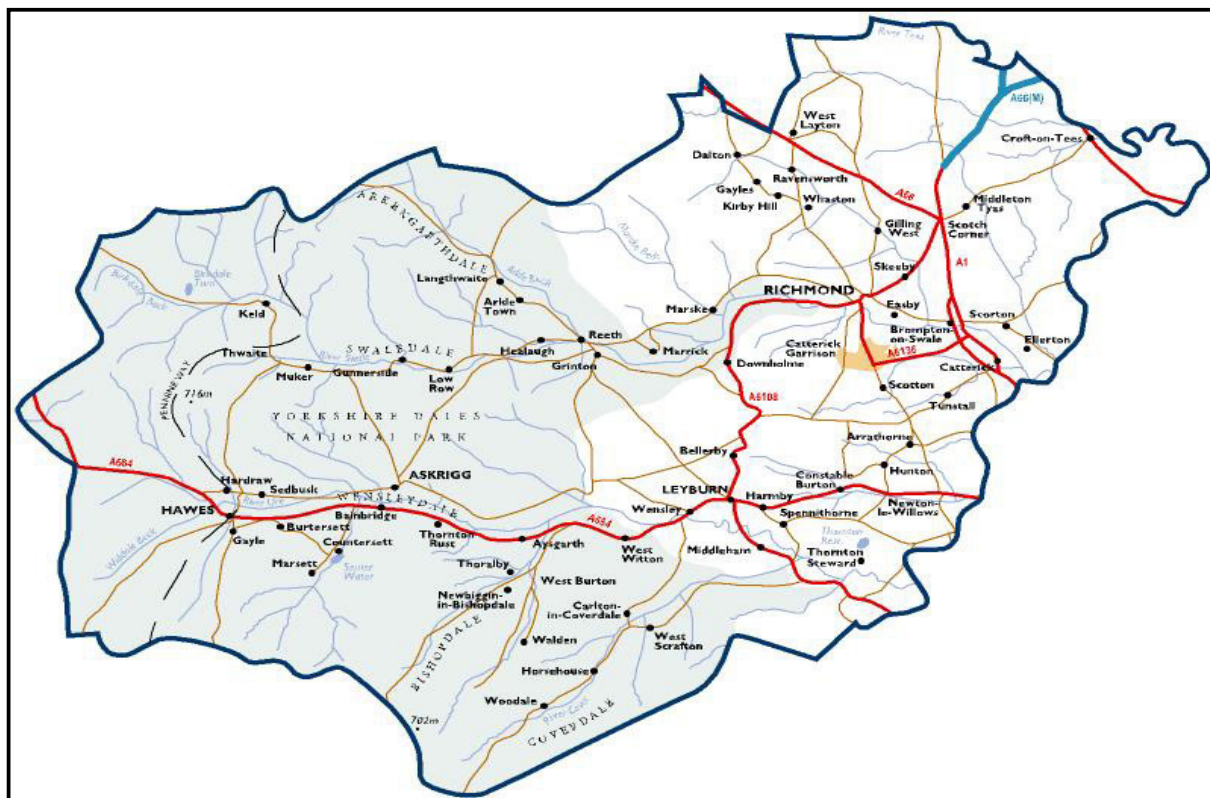
- | | |
|------------|--|
| Figure 1 | The District of Richmondshire |
| Figure 2.1 | Map of Non-Automatic Monitoring Sites |
| Figure 2.2 | Location of Diffusion Tubes Along A66 Trunk Road |
| Figure 2.3 | Jesmond Dene Bias Adjustment Factor |

1 Introduction

1.1 Description of Local Authority Area

The District of Richmondshire (Figure 1) is largely rural and incorporates Wensleydale and Swaledale within North Yorkshire. A large proportion of the District is located within the Yorkshire Dales National Park. It has a population of approximately 50,000 inhabitants, most of whom reside in the small towns of Richmond, Leyburn and Hawes. Industry is limited to quarry processes and light industrial activities. The main source of emissions to air is vehicles on the A1 and A66 trunk routes, which pass through the east of the District.

Figure 1 The District of Richmondshire



1.2 Purpose of Progress Report

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

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

1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Stage one of the Review and Assessment¹ undertaken in 1999 concluded that benzene, 1,3-butadiene, lead and sulphur dioxide were likely to meet the air quality standards throughout the District, but that carbon monoxide, nitrogen dioxide and PM₁₀ required further investigation.

The stage 2 report² included short-term monitoring data from a number of worst-case locations. These showed that exceedences of the carbon monoxide, nitrogen dioxide and PM₁₀ objectives were unlikely and therefore no further work was required for round one. The appraisal carried out on behalf of DEFRA, accepted the conclusions although it was noted that the approach taken was not in accordance with the LAQM Guidance. Reports from the first round Review and Assessment are summarised in Table 1.4.1.

The second round USA³ recommended that a Detailed Assessment be carried out for sulphur dioxide produced from domestic solid fuel burning in towns and villages without mains gas. The Detailed Assessment⁴ concluded that no further action was required for sulphur dioxide.

The 2005 progress report⁵ concluded that no action was required for any of the above pollutants. Reports from the second round Review and Assessment are summarised in Table 1.4.2.

The third round of Review and Assessment was undertaken in 2006 commencing with a further Updating and Screening Assessment (USA). The 2006 USA concluded that there was no likelihood of exceedences of any of the air quality objectives.

The 2007 Progress Report⁷ similarly concluded that there was no likelihood of the exceedence of any of the air quality objectives. However, following the upgrading of the A66 Trunk Road, as a precaution, nitrogen dioxide diffusion tubes were placed at strategic locations within the District to ascertain whether the carriageway upgrading had caused an exceedence of the nitrogen dioxide air quality objectives. The diffusion tubes were exposed monthly for a period of 12 months, however, it was concluded that there was no likelihood of exceedence of the annual mean nitrogen dioxide.

The 2008 Progress Report⁸ also confirmed that there was no likelihood of an exceedence of any of the air quality objectives but it was recognised that work to upgrade the A1 from a two lane to a three lane carriageway within the District was imminent, with an estimated completion date during 2010.

Reports from the third round Review and Assessment are summarised in Table 1.4.3.

The fourth round Updating and Screening Assessment (2009)⁹ included an assessment of the potential effect on air quality of the A1 carriageway improvements.

The Highways Agency's predictions (calculated using the Design Manual for Roads and Bridges; Vol 5) concluded that on completion of the scheme, the properties nearest to the carriageway within the Richmondshire District Council boundary would not be exposed to air pollution concentrations above the Air Quality Objectives for PM₁₀, nitrogen dioxide, carbon monoxide, benzene and 1,3-butadiene.

In addition to the A1 carriageway improvements, a source of pollution from a biomass combustion process (50kW to 20MW) was identified in the village of Ravensworth, 6 miles north of Richmond and within 750m of the A66 Trunk Road. The USA included a screening assessment for the effect of emissions from this plant (PM₁₀ and nitrogen dioxide) in accordance with the Technical Guidance TG(09).

The screening assessment included the emissions from the combustion process combined with other potential emission sources in the vicinity of the plant.

It was concluded that it was unnecessary to proceed to a Detailed Assessment for this process.

The overall conclusion of the 2009 USA was that there were no likely exceedences of any of the national Air Quality Strategy pollutant objectives but that the ongoing nitrogen dioxide diffusion tube monitoring should continue.

A summary of the fourth round Review and Assessment undertaken to date is presented in Table 1.4.4.

Table 1.4.1 Summary of the First Round of Review and Assessment

Stage 1	
Benzene	No significant industrial processes. No need for further consideration.
1,3 butadiene	No significant industrial processes. No need for further consideration
Carbon monoxide	No significant industrial processes. A1 greater than 50,000 vehicles per day. Stage 2 required.
Lead	No significant industrial processes. No need for further consideration
Nitrogen dioxide	No significant industrial processes. A1 greater than 20,000 vehicles per day. Stage 2 required.
PM ₁₀	Quarry processes at Redmire, Leyburn, Barton and Fawcett. A1 greater than 25,000 vehicles per day. Stage 2 required.
Sulphur dioxide	No significant industrial processes. No need for further consideration.
Appraisal Summary	Conclusions accepted for all pollutants other than SO ₂ . Coal or heavy fuel oil boilers > 5MWth were not considered. Exposure criteria have not been taken into account. Domestic sources of PM ₁₀ and SO ₂ not considered. Planned developments not considered.

Stage 2	December 1999
Carbon monoxide	3 months monitoring 6m from kerb of A1. Results well below the objective. No need for further consideration.
Nitrogen dioxide	Monitoring using diffusion tubes at 4 sites for a 3-month period, including a site 6m from the kerb of the A1. Results indicated that concentrations are below the objective. No need for further consideration.
PM ₁₀	Monitoring using a BAM at Brompton 6m from the A1 and near to quarries at Barton and Leyburn. Results indicated that concentrations are below the objectives. No need for further consideration.
Appraisal Summary	Conclusions accepted for all pollutants. Although, the approach taken is not in accordance with LAQM guidance.

Table 1.4.2 Summary of the Second Round of Review and Assessment

USA	July 2003
Sulphur Dioxide	Presence of densely populated villages without a mains gas supply requires a Detailed Assessment for emissions from domestic fuel use.
Appraisal Summary	Conclusions accepted for all pollutants.

Detailed Assessment	2004/2005
Sulphur Dioxide	Fuel use survey revealed Middleham to have over 100 properties within a 500m x 500m area that use solid fuel as primary heating source. 3 months monitoring between December 2004 and March 2005 revealed an AQMA was not necessary. As Middleham has the highest concentration of properties with solid fuel as their primary source of heating, no further action was required for other settlements.
Appraisal Summary	Conclusions accepted for sulphur dioxide.

Progress Report	April 2005
All pollutants	No exceedences of objectives expected. No further action required for all pollutants.
Appraisal Summary	Conclusions accepted for all pollutants.

Table 1.4.3 Summary of the Third Round of Review and Assessment

USA	April 2006
All pollutants	No exceedences of objectives expected. No further action required for all pollutants.
Appraisal Summary	Conclusions accepted for all pollutants.

Progress Report	April 2007
Nitrogen Dioxide	Upgrade of A66 to dual carriageway. A 12-month diffusion tube monitoring campaign along its length will determine whether there are any exceedences of the annual objective.
Appraisal Summary	Conclusions accepted for all pollutants.

Progress Report	April 2008
All pollutants	No exceedences of objectives expected (including interim results for the A66 monitoring campaign). No further action required for all pollutants except for continuation of monitoring campaign along A66.
Appraisal Summary	Conclusions accepted for all pollutants.

Table 1.4.4 Summary of the Fourth Round of Review and Assessment

USA	April 2009
All pollutants	Screening assessments undertaken for A1 carriageway improvements and a biomass combustion process. No exceedences of Air Quality Objectives expected. No further action required for all pollutants.
Appraisal Summary	Conclusions accepted for all pollutants.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Richmondshire District Council does not currently operate an automatic monitoring station in the District.

2.1.2 Non-Automatic Monitoring

There are two distinct areas in which diffusion tube monitoring is undertaken for nitrogen dioxide, Richmond town centre and at properties located adjacent to the A66 Trunk Road.

Richmond Town Centre

Nitrogen dioxide has been measured using diffusion tubes at four locations in Richmond, originally as part of the now disbanded National Diffusion Tube Network. They continue to provide valuable information regarding NO₂ levels and assist with the process of local air quality management. Table 2.1 below summarises the location and exposure for the tubes in Richmond town centre. The location of these tubes is also shown in the map at Figure 2.1.

Table 2.1 Details of Non- Automatic Monitoring Sites in Richmond Town Centre

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
R1	Roadside	X 416688 Y 501097	NO ₂	N	Y (0.5m)	2m	Y
R2	Roadside	X 417180 Y 501125	NO ₂	N	Y (8m)	2m	Y
R3	Roadside	X 418066 Y 501490	NO ₂	N	Y (22m)	1m	Y
R4	Urban Background	X 418504 Y 501455	NO ₂	N	Y (250m)	2m	Y

The tubes are positioned on lampposts adjacent to major roads running through Richmond. These locations were selected for the following reasons:

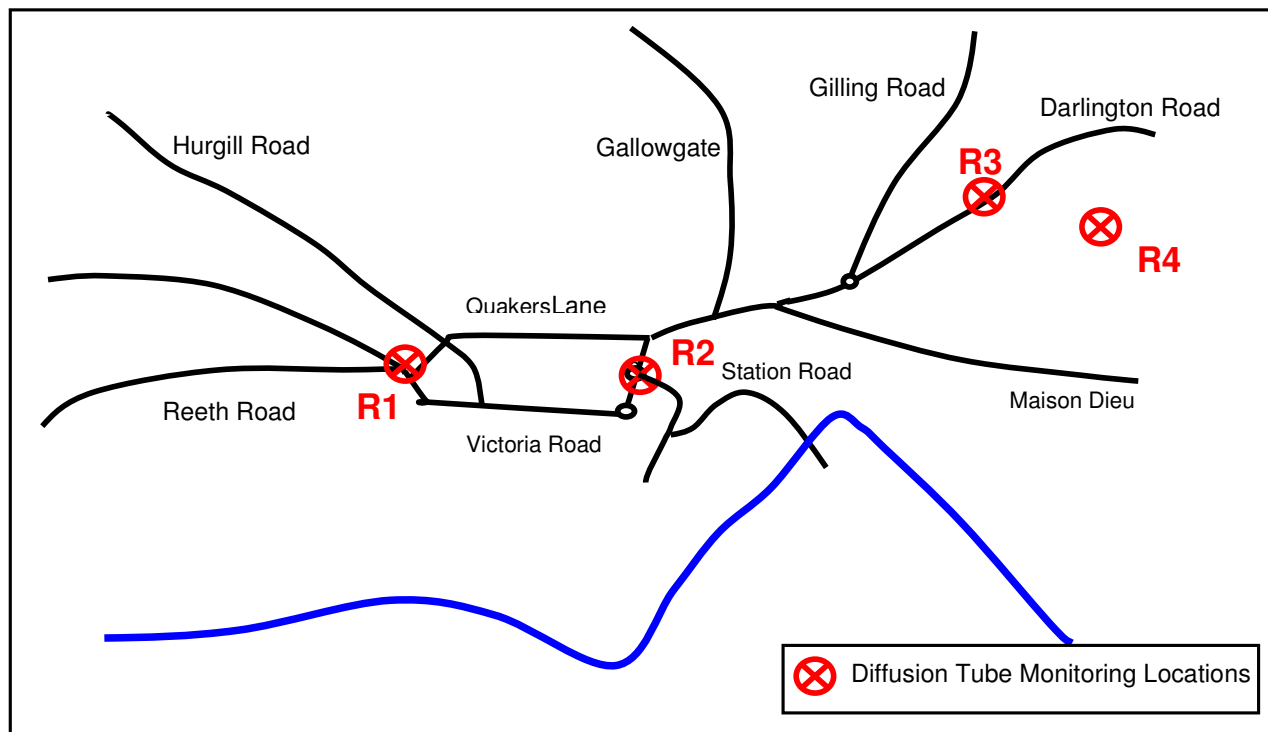
1. Richmond is the largest settlement in the District and therefore attracts the greatest volume of traffic;
2. Residential properties are located alongside these roads;

3. The route through Richmond is the main link from the A1 to Wensleydale and Swaledale.

Table 2.1 indicates the distances from the diffusion tube locations to the façade of the nearest residential dwelling. All have relevant exposure:

- R1 is located on a lamppost outside a property on the main road out of Richmond heading towards Wensleydale and Swaledale.
- R2 is located next to a roundabout at a junction in the centre of Richmond.
- R3 is located outside a children’s nursery on the main road into Richmond from the A1.
- R4 is located in a quiet estate 250m from the same road as the R3 location.

Figure 2.1 Map of Non-Automatic Monitoring Sites



A66 Trunk Road

The purpose of the nitrogen dioxide diffusion tube monitoring along the A66 Trunk Road is to re-assess the potential for an exceedance of the Air Quality Objective from the carriageway improvements undertaken in 2006 and 2007.

Diffusion tubes were exposed monthly at three locations from November 2007 to October 2008. Details of these locations are shown in Table 2.2. All are fixed at the facade of the buildings and are therefore relevant exposures.

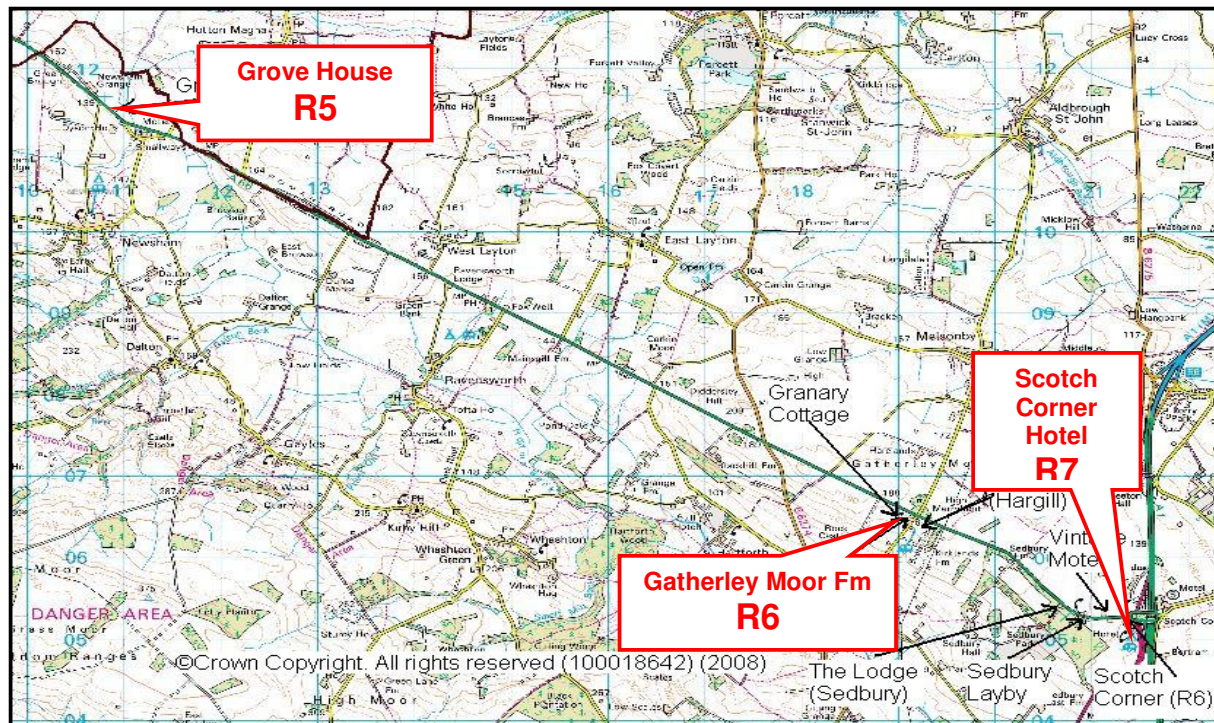
Following advice from the 2009 USA monitoring was continued from 30 Sept 2009 which means that there are only limited data for period covered by this report, however an annualised mean has been calculated.

A map of these locations is shown at Figure 2.2.

Table 2.2 Details of Non- Automatic Monitoring Sites Along the A66 Trunk Road

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
R5 Grove House	Roadside	X 410902 Y 511462	NO ₂	N	Y (0m)	9m	Y
R6 Gatherley Moor Farm	Roadside	X 419207 Y 506509	NO ₂	N	Y (0m)	8m	Y
R7 Scotch Corner Hotel	Roadside	X 421366 Y 505261	NO ₂	N	Y (0m)	22m	Y

Figure 2.2 Location of Diffusion Tubes Along A66 Trunk Road



Not to scale

QA/QC Details of the Nitrogen Dioxide Diffusion Tube Survey

The diffusion tubes are supplied by Harwell Scientifics. Jesmond Dene Laboratory in Newcastle upon Tyne, which is part of the WASP laboratory inter-comparison scheme, analyses the diffusion tubes. The tubes contain a mesh which is doped with 50% v/v triethanolamine (TEA) in acetone. They are exposed according to the monthly schedule supplied by NETCEN. The above arrangements remain the same as those described in the 2003, 2006 and 2009 Updating and Screening Assessments of Air Quality in the District of Richmondshire. A summary of the QA/QC arrangements applied to the diffusion tubes is provided in Table 2.3.

Table 2.3 Nitrogen Dioxide Diffusion Tube Monitoring QA/QC

Supply	AEA Technology, Harwell Scientifics
Analysis	Jesmond Dene Laboratory
Preparation Method	50% v/v TEA in acetone
Type of tube	Palmer tube
Type of absorbent	Doped triethanolamine mesh
Membership of inter-laboratory comparison scheme	WASP
Current Rating (as at Feb 09) (latest available)	Good (Old Criteria) Acceptable (New Criteria)
Method accreditation	No accreditation for laboratory
Conforms to Harmonisation Practical Guidance	No

The laboratory does not conform to the recent Harmonisation Practical Guidance “Diffusion Tubes Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users” AEA Energy and Environment (Feb 2008). Despite this, Richmondshire District Council has decided to continue using the laboratory for a number of reasons:

1. The laboratory is rated “Good” under the current WASP performance criteria¹⁰ set by the Health and Safety Laboratory. Under the new, tighter criteria to be introduced in April 2009, the laboratory is classed as being “Acceptable” based on data recorded between April 2007 and April 2008.
2. Richmondshire District Council does not carry out its own co-location studies with automatic nitrogen dioxide monitors. Historically, the bias adjustment figure has been calculated from data obtained from Newcastle City Council and Gateshead Council. As these Local Authorities have decided to continue using this laboratory, Richmondshire wishes to retain the continuity established over the years.
3. Jesmond Dene laboratory has consistently provided a good and reliable service.

It is known that there are systematic differences in the performance of different laboratories and preparation methods of diffusion tubes. Table 2.4 shows the studies that have been used to compare results from diffusion tubes (analysed by the same

laboratory as used by Richmondshire District Council) to results of co-located automatic chemiluminescence monitors, where data has been collected for 9 months or more. The most recent data available for the Jesmond Dene Laboratory at the time of preparing this report is for the 2008 studies. Enquiries with the Air Quality Helpdesk confirmed that this bias adjustment factor should be used for the purpose of the assessment

Only studies from Gateshead Council were available at the time of writing this report.

From these studies it can be seen that the bias adjustment factor (A) of 0.76 has therefore to be applied (multiplied) to the diffusion tube results for this period (see Figure 2.3.

Figure 2.3 Jesmond Dene Bias Adjustment Factor
(source www.uwe.ac.uk/aqm/review – 25th April 2010)

Follow the steps below in the correct order to show the results of relevant co-location studies							Spreadsheet Version Number: 03/10				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							This spreadsheet will be updated in late September 2010 on the R&A website				
Whenever presenting adjusted data, you should state the adjustment factor used											
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.											
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland											
Step 1:		Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668. aqm-review@uwe.ac.uk.							
Analysed By		Method	Year ⁵	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Jesmond Dene Laboratory		50% TEA in Acetone	2008	R	Gateshead Council	11	44	34	28.2%	P	0.78
Jesmond Dene Laboratory		50% TEA in Acetone	2008	R	Gateshead Council	12	42	32	31.4%	G	0.76
Jesmond Dene Laboratory		50% TEA in Acetone	2008	R	Gateshead Council	12	47	34	36.4%	P	0.73
Jesmond Dene Laboratory		50% TEA in Acetone	2008	R	Gateshead Council	11	40	30	32.6%	G	0.75
Jesmond Dene Laboratory		50% TEA in Acetone	2008			Overall Factor ³ (4 studies)			Use		0.76

¹ For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
 For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins use Environmental Scientific Groups
 For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.
 For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova.
 For Rotherham MBC use South Yorkshire Labs.
 For Dundee CC use Tayside SS.

² In this situation it would be reasonable to use data from the nearest year.

³ Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.

⁴ If you have your own co-location study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).

⁵ Where an annual data set falls into two years it has been ascribed to the year in which most of the data fall.

⁶ Tube precision is determined as follows: G = Good precision - coefficient of variation (CV) of diffusion tube replicates is considered good when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%, P = Poor precision - CV of four or more periods >20% and/or average CV >10%; S = Single tube, therefore not applicable; na = not available.

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

The monitoring data for the seven nitrogen dioxide diffusion tubes is shown at Table 2.4.

Table 2.4 Nitrogen Dioxide Diffusion Tube Monitoring Data

Period		Nitrogen Dioxide Concentration $\mu\text{g}/\text{m}^3$						
Date On	Date Off	Tube Ref No						
		R1	R2	R3	R4	R5	R6	R7
03 Dec 08	07 Jan 09	18.696	27.132	7.828	16.34			
07 Jan 09	4 Feb 09	28.652	31.996	25.46	21.66			
4 Feb 09	4 Mar 09	21.28	24.472	19.532	12.16			
4 Mar 09	1 Apr 09	16.34	17.936	17.1	8.512			
1 Apr 09	29 Apr 09	24.244	18.772	15.808	12.388			
29 Apr 09	4 Jun 09	16.796	19.608	12.54	7.98			
4 Jun 09	1 Jul 09	19.912	30.324	11.78	4.788			
1 Jul 09	29 Jul 09	9.5	22.116	9.88	4.864			
29 Jul 09	2 Sep 09	8.968	15.428	10.108	5.092			
2 Sep 09	30 Sep 09	11.172	20.824	12.464	5.776			
30 Sep 09	4 Nov 09	17.252	0.38*	18.62	9.88	22.724	12.996	27.208
4 Nov 09	2 Dec 09	30.248	60.42*	30.476	17.176	18.468	25.46	31.54
2 Dec 09	8 Jan 10	24.472	30.02	21.28	14.744	31.236	23.636	26.144
Annual Mean		19.0	24.6	16.4	10.9	24.1**	20.7**	28.3**
Annualised Mean						18.3	15.7	21.4

All concentrations corrected for bias adjustment factor = 0.76

***Suspect Data** - The annual mean of Tube R2 excluding these two months = 23.5 $\mu\text{g}/\text{m}^3$

** **Annualised means** based on the average ratio of the annual mean concentration (AM) and the mean of the corresponding data for the same period for the other 4 sites (PM) calculated in accordance with Box 3.2 TG(09) – see Appendix 1.

Table 2.5 Comparison of Nitrogen Dioxide Concentrations at Location R5, R6 and R7 in 2008 and 2009 (A66 trunk road)

	Annual mean NO_2 Conc $\mu\text{g}/\text{m}^3$ (bias corrected)		
	R5	R6	R7
2008	24	17	21
2009	18.3	15.7	21.4

Table 2.5 shows that the annualised 3 month data is reasonably consistent with the annual mean concentration measured over 12 months in 2008.

It will be possible to use a larger, and therefore more reliable data set in the 2010 report.

The annual mean nitrogen dioxide concentration for 2006 to 2009 for the four monitoring locations in Richmond Town centre are shown in Table 2.6.

Table 2.6 Annual Mean Nitrogen Dioxide Concentrations in Richmond Town Centre 2006 – 2009

Site ID	Location	Within AQMA?	Annual mean concentrations($\mu\text{g}/\text{m}^3$) Adjusted for bias (Factor used shown under each year)			
			2006 (0.86)	2007 (0.79)	2008 (0.76)	2009 (0.76)
R1	38 Victoria Road Richmond North Yorkshire DL10 4UA	No	22	21	20	19.0
R2	5 Queens Road Richmond North Yorkshire DL10 4AJ	No	27	27	23	24.6
R3	Ridgeway Nursery 47 Darlington Road Richmond North Yorkshire DL10 7BG	No	20	19	16	16.4
R4	1 White Rose Cres. Richmond North Yorkshire DL10 7DW	No	14	12	9	10.9

Table 2.6 indicates that the general trend of nitrogen dioxide concentrations within Richmond Town centre is falling.

All concentrations are below the Annual Mean Air Quality Objective of $40\mu\text{g}/\text{m}^3$.

Research has shown that where the Annual Mean nitrogen dioxide concentration is less than $60\mu\text{g}/\text{m}^3$ an exceedence of the 1-hour Air Quality Objective is unlikely, except for a few kerbside sites in London.

As all monitoring undertaken by Richmondshire District Council shows nitrogen dioxide concentrations to be well below this level, it is stated with some confidence that the **1-hour mean Air Quality Objective for nitrogen dioxide is unlikely to be exceeded.**

2.2.2 Summary of Compliance with AQS Objectives

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

3 New Local Developments

There have been no significant new local developments in the District since the publication of the 2009 Updating and Screening Assessment.

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

4 Local / Regional Air Quality Strategy

The monitoring undertaken to date has shown that there no areas within the District that are close to exceeding any of the Air Quality Objectives. Richmondshire District Council has not currently prepared a Local Air Quality Strategy however with ongoing major improvements to the road network, this is being kept under review.

The Council has recently formed a formal partnership with Hambleton District Council for the delivery of its services. It is possible a new combined strategy may emerge following this, when the shared services regime is fully implemented.

5 Planning Applications

There have been no significant major planning application approved since the 2009 USA, however, we are aware of plans to further develop Catterick Garrison which could result in a significant increase in local traffic. This is being kept under review and air quality will be considered as part of the planning process and in future Air Quality Updating and Screening Assessments/Progress Reports if this is deemed necessary.

6 Air Quality Planning Policies

Work had commenced on the Draft Local Development Framework Core Strategy, however the Council has recently formed a formal partnership with Hambleton District Council for the delivery of its services which has caused a delay in the adoption of new policies.

7 Local Transport Plans and Strategies

In March 2008 the Richmondshire District Council Staff and Member Green Travel Plan was produced. The aim of the document is to encourage staff to reduce single occupancy car travel and consider alternative methods of travel to, from and during work. This is relevant to this report, as any reduction in car travel will reduce emissions associated with road transport, especially nitrogen dioxide and PM₁₀. The Travel Plan will be developed on an ongoing basis. The intention is that this plan should evolve to suit local needs and should be kept up-to-date. It is recommended that this travel plan is reviewed and updated annually and/or during periods of significant change to working practices and/or location. The Policy Officer (Sustainable Development) will monitor the progress of the Action Plan and will submit reports to Members as appropriate.

The Council has recently formed a formal partnership with Hambleton District Council for the delivery of its services. It is likely that new combined plans and strategies may emerge following this, when the shared services regime is fully implemented.

8 Climate Change Strategies

In February 2010 Richmondshire District Council adopted a *Climate Change Action Plan 2009-2014*.

The Action Plan details the Council's plans for tackling climate change in the following areas:

- Richmondshire District Council's own estate
- Transport
- Planning and Building Regulations
- Waste
- Business engagement

Delivery of the plan will have a beneficial effect on air quality in the district.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Nitrogen dioxide monitoring in Richmond town centre and along the A66 trunk road has confirmed that there are no exceedences of the Air Quality Objectives for this pollutant.

9.2 Conclusions relating to New Local Developments

There have been no new developments since the publication of the previous Updating and Screening assessment.

9.3 Proposed Actions

As there is no need to continue to a Detailed Assessment for any of the pollutants covered by this report the next course of action for the Council in terms of air quality management will be to prepare the 2011 Progress Report.

10 References

- 1 Richmondshire District Council (1999) Stage 1 Air Quality Review and Assessment.
- 2 Laxen, D (December 1999) Air Quality Monitoring in Richmondshire
- 3 Richmondshire District Council (2003) Updating and Screening Assessment of Air Quality in the District of Richmondshire
- 4 Richmondshire District Council (2005) Detailed Assessment of Sulphur Dioxide Emissions from Domestic Solid Fuel Sources
- 5 Richmondshire District Council (2005) Air Quality in the District of Richmondshire Progress Report
- 6 Richmondshire District Council (2006) Updating and Screening Assessment of Air Quality in the District of Richmondshire.
- 7 Richmondshire District Council (2007) Air Quality in the District of Richmondshire – Progress Report.
- 8 Richmondshire District Council (2008) Air Quality in the District of Richmondshire – Progress Report.
- 9 Richmondshire District Council (2009) 2009 Updating and Screening Assessment of Air Quality for Richmondshire District Council
- 10 AEA (February 2009) WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality

Appendices

Appendix 1

Calculation of Annualised nitrogen dioxide concentrations for the diffusion Tubes along the A66.

	Tube no						
	R1	R2	R3	R4	R5	R6	R7
	28.652	31.996	25.46	21.66			
	21.28	24.472	19.532	12.16			
	16.34	17.936	17.1	8.512			
	24.244	18.772	15.808	12.388			
	16.796	19.608	12.54	7.98			
	19.912	30.324	11.78	4.788			
	9.5	22.116	9.88	4.864			
	8.968	15.428	10.108	5.092			
	11.172	20.824	12.464	5.776			
	17.252	0.38	18.62	9.88	22.724	12.996	27.208
	30.248	60.42	30.476	17.176	18.468	25.46	31.54
	24.472	30.02	21.28	14.744	31.236	23.636	26.144
AM	19.1	24.4	17.1	10.4	24.1	20.7	28.3
	Calc of Annualised Data for Tubes R5, R6 and R7						
PM	mean 30 Sep to 8 Jan	24.0	23.5	13.9			
	ratio Am/Pm	0.8	0.7	0.7			
	Mean of Ratios	0.8					
	Annualised Conc				18.3	15.7	21.4
	Data corrected for lab bias						

NB The Period data for Tube R2 was excluded due to two suspect readings but it does not alter the annualised data whether it is included or excluded

Appendix 2

List of Processes Regulated by an Environmental Permit

Part A1 Processes (Regulated by the Environment Agency)

None

Part A2 Processes (Regulated by the local authority)

None

Part B Processes (Regulated by the local authority for emissions to air)

As at 31st December 2009 there were 53 Part B processes regulated for emissions to air under the Environmental Permitting (England and Wales) Regulations 2007 comprising of 16 full Part B Permits (4 MEDIUM risk; 12 LOW risk) and 37 reduced fee processes, all of which were LOW risk.

The breakdown of processes by sector is as follows:

Process	Total permits
other mineral (including 22 mobile crushers)	27
bulk cement	7
di-isocyanate	2
Combustion	1
Timber	1
service station	9
WOB	4
dry cleaning	1
Vehicle refinishing	1
TOTAL	53

A summary of the Permitted Processes is shown below

Operator	Process	Permit Ref	Risk Rating
DSG Catterick	Vehicle refinishing	24/2006P	LOW
Banner Contracts (Halnaby) Ltd	21 No Mobile Crushers	Various	LOW
Barton Park	Petrol	30/2006P	LOW
Cemex UK Materials Ltd	Bulk Cement	7/2006P	LOW
Cemex UK Materials Ltd	Roadstone Coating/ Quarry	14/2004P	LOW
Cemex UK Materials Ltd	Bulk Cement	52/2007P	LOW
Chas Long	Bulk Cement	53/2007P	LOW
Dale Head Garage	Petrol	39/2006P	LOW
Darlington rd Garage	Petrol	40/2006P	LOW
Moto Services Scotch Corner	Petrol	31/2006P	LOW
Fast Fit (SG Petch)	WOB	44/2004P	LOW
Hansons Aggregates	Roadstone Coating/ Quarry	18/2006P	LOW
International Pipeline Products Ltd	Di-isocyanate	23/2006P	MED
Johnsons Cleaners Ltd	Dry Cleaning	51/2007P	LOW
Kenworth Ltd	Petrol	29/2006P	LOW
Leyburn Self Service	Petrol	26/2006P	LOW
Low Grange Quarry Ltd	Bulk Cement	45/2006P	LOW
Oakdale Contracts	Bulk Cement	13/2006P	MED
Pipeline Engineering Ltd	Di-isocyanate	50/2007P	LOW
Ravensworth Nurseries	Comb Solid Waste	47/2005P	MED
RDC Contracting Services	WOB	27/2004/P	LOW
Roadstone Ltd	Mobile crusher	41/2007P	MED
SG Petch Ltd	WOB	25/2006P	LOW
SG Petch Ltd	Petrol	27/2006P	LOW
Shell UK Ltd	Petrol	32/2006P	LOW
Sherburn Stone Ltd	Roadstone Coating	15/2006P	LOW
Sherburn Stone Ltd	Quarry (Mineral)	49/2006P	LOW
Tarmac	Quarry (Mineral)	16/2006P	LOW
Tarmac	Bulk Cement	54/2007P	LOW
Tesco Filling Station	Petrol	35/2010P	LOW
Thomas Armstrong Concrete Blocks Ltd	Bulk Cement	41/2009P	LOW
Weatherald Wood Components Ltd	Timber	6/2006P	LOW
Coates Garage	WOB	1/2004P	LOW