



2013 Air Quality Progress Report for Richmondshire District Council

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

May 2013

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Executive Summary

This report is the 2013 Progress Report on the current state of air quality in the Richmondshire District Council area. It has been prepared using the Technical Guidance LAQM.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.

No new developments have been identified since the 2012 Updating and Screening Assessment however significant new transport infrastructure is planned to start in the District in 2013 with the upgrade of the 2 lane section of the A1 to a 3 lane motorway A1(M) (between Leeming Bar which is south of the District and Barton in the north of the District).

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

The report concludes that there is no requirement to proceed to a Detailed Assessment for any of the named pollutants within the Richmondshire District area.

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1 Introduction

1.1 Description of Local Authority Area

The District of Richmondshire (Figure 1) is part of the County of North Yorkshire and covers a total of 509 square miles. The western part of the District is located within the Yorkshire Dales National Park. The Pennines run in a north/south direction through this area with two of the larger Dales, Wensleydale and Swaledale, dominating the area. The eastern part of the district is less hilly and lower lying.

The District is predominantly rural in nature with a population of approximately 53000 inhabitants. The main settlements are Richmond and Catterick Garrison (which includes the main Catterick Garrison military base). The rest of the population is distributed widely across the area including the small market towns of Leyburn and Hawes and several larger villages including Barton, Brompton On Swale and Catterick Village.

Industry is limited to quarry processes and light industrial activities. The main source of emissions to air is from road transport. The A1/ A1(M) and A66 trunk routes pass through the eastern part of the District.

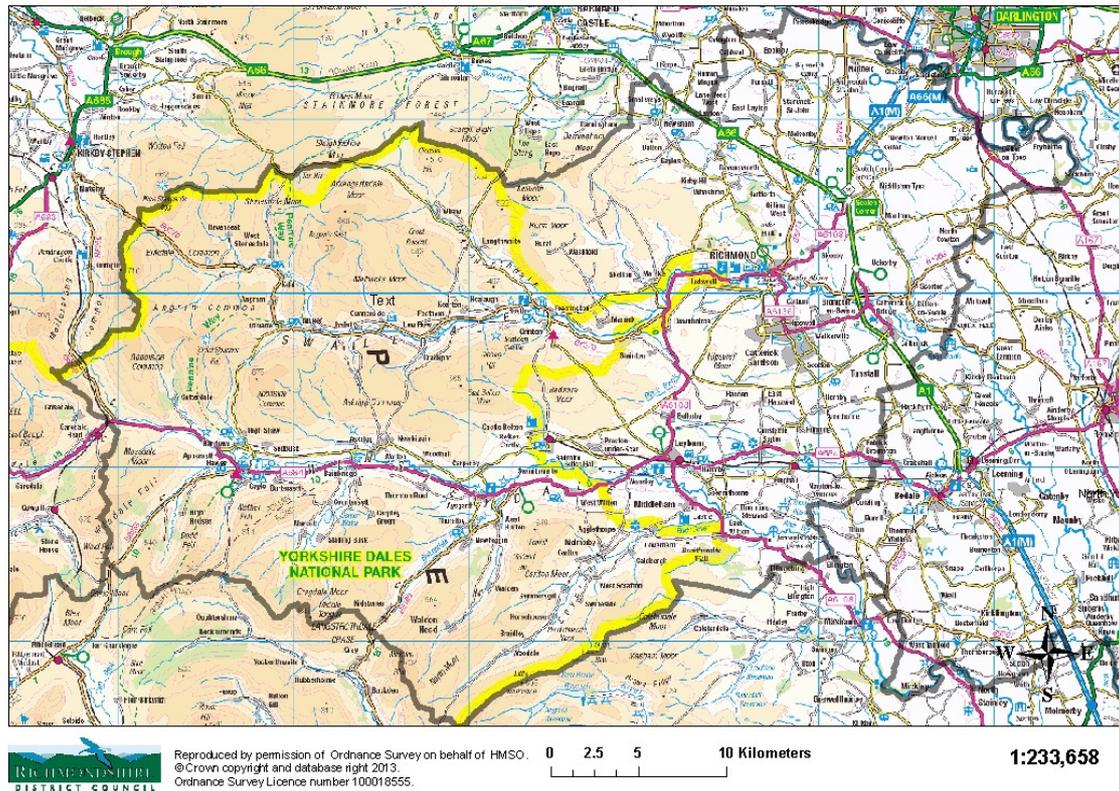


Figure 1 The District of Richmondshire

1.2 Purpose of Progress Report

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

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

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

1.3 Air Quality Objectives

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

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

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

1.4 Summary of Previous Review and Assessments

Round One

Stage 1 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 exceedances 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.

Round Two

The second round Updating and Screening Assessment (USA)³ 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.

Round Three

The third round of Review and Assessment was undertaken in 2006 commencing with a further Updating and Screening Assessment (USA) ⁶. This concluded that there was no likelihood of exceedances of any of the air quality objectives.

The 2007 Progress Report⁷ similarly concluded that there was no likelihood of the exceedance 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 exceedance 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 exceedance of the annual mean nitrogen dioxide.

The 2008 Progress Report⁸ also confirmed that there was no likelihood of an exceedance 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.

Round Four

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 exceedances of any of the national Air Quality Strategy pollutant objectives but that the ongoing nitrogen dioxide diffusion tube monitoring should continue.

The 2010 Progress Report¹⁰ concluded that no action was required for any of the National Air Quality Strategy pollutants listed in table 1.1 above.

The 2011 Progress Report¹¹ concluded that *'Nitrogen dioxide monitoring in Richmond town centre and along the A66 trunk road has confirmed that there are no exceedances of the Air Quality Objectives for this pollutant.'*

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

Round Five

The fifth round Updating and Screening Assessment (2012)¹² included details of a biomass combustion process which had been reported on in the previous USA(2009)⁹. The process had previously gone through a screening assessment and it had been concluded that it was unnecessary to proceed to a Detailed Assessment for this process.

The overall conclusion of the USA (2012) was that as there had been no exceedances of the current annual mean objective (and there did not appear to be any likelihood of future exceedances from the assessment of new sources and

changes to existing sources), there was no need to proceed to a Detailed Assessment in any area and that no further action was required other than to continue monitoring for the purposes of Review and Assessment.

A summary of the fifth round Review and Assessment undertaken to date is presented in Table 1.4.5.

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 exceedances 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 exceedances 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 exceedances of the annual objective.
Appraisal Summary	Conclusions accepted for all pollutants.

Progress Report	April 2008
All pollutants	No exceedances 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 exceedances of Air Quality Objectives expected. No further action required for all pollutants.
Appraisal Summary	Conclusions accepted for all pollutants.

Progress Report	April 2010
All pollutants	No exceedances 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.

Progress Report	April 2011
All pollutants	No exceedances 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 1.4.5 Summary of the Fifth Round of Review and Assessment

USA	April 2012
All pollutants	<i>'As there have been no exceedances of the current annual mean objective and there does not appear to be any likelihood of future exceedances, no further action is required other than to continue monitoring for the purposes of Review and Assessment.'</i> USA(2012) ¹²
Appraisal Summary	Conclusions accepted for all sources and 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 Sites

In Richmondshire 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. They are examined separately below:

Richmond Town Centre

Nitrogen dioxide (NO₂) 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. The location of these tubes is shown on the map at Figure 2.1. Table 2.1 below summarises the location and exposure for the tubes in Richmond town centre.

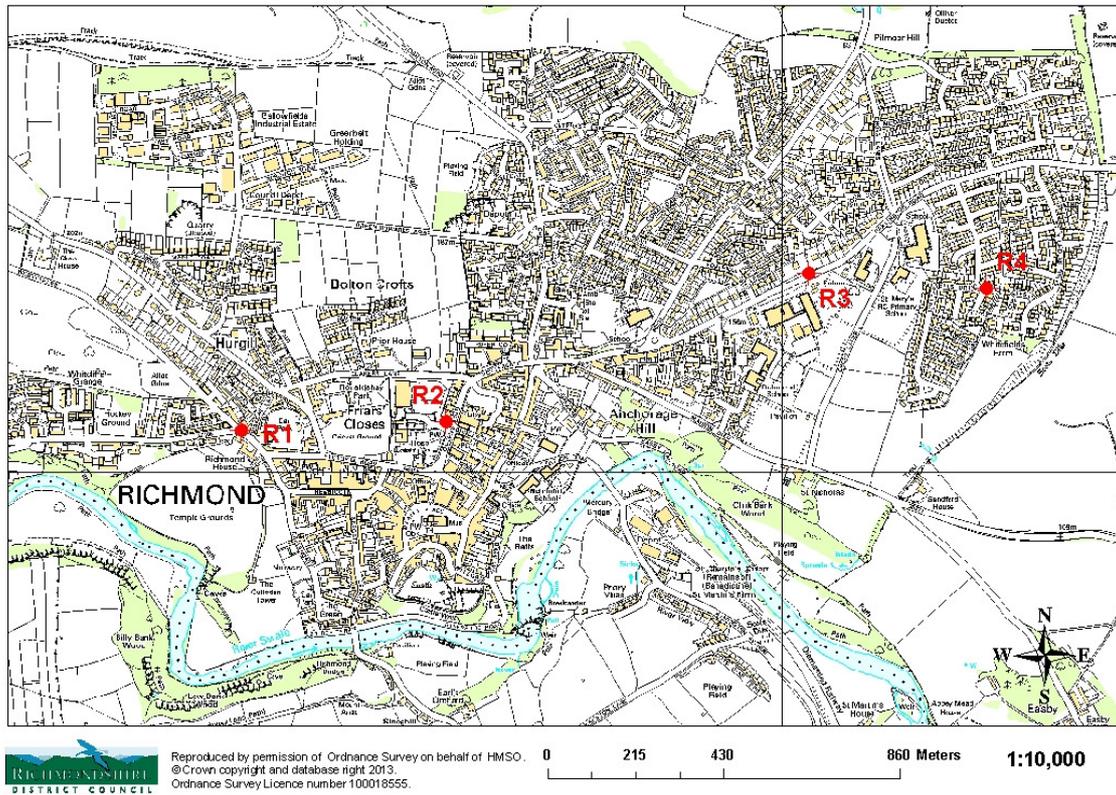


Figure 2.1 Map of Non-Automatic Monitoring Sites in Richmond Town Centre

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

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (approx m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
R1	Victoria Road	Roadside	416688	501097	3	NO ₂	N	N	Y (0.5m)	2m	Y
R2	Queens Road	Roadside	417180	501125	3	NO ₂	N	N	Y (8m)	2m	Y
R3	Darlington Road	Roadside	418066	501490	3	NO ₂	N	N	Y (22m)	1m	Y
R4	White Rose Crescent	Urban Background	418504	501455	3	NO ₂	N	N	Y (25m)	2m	Y

A66 Trunk Road

The purpose of the nitrogen dioxide diffusion tube monitoring along the A66 Trunk Road is to 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. A map of these locations is shown in Figure 2.2. 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 then continued from 30 September 2009 to date.

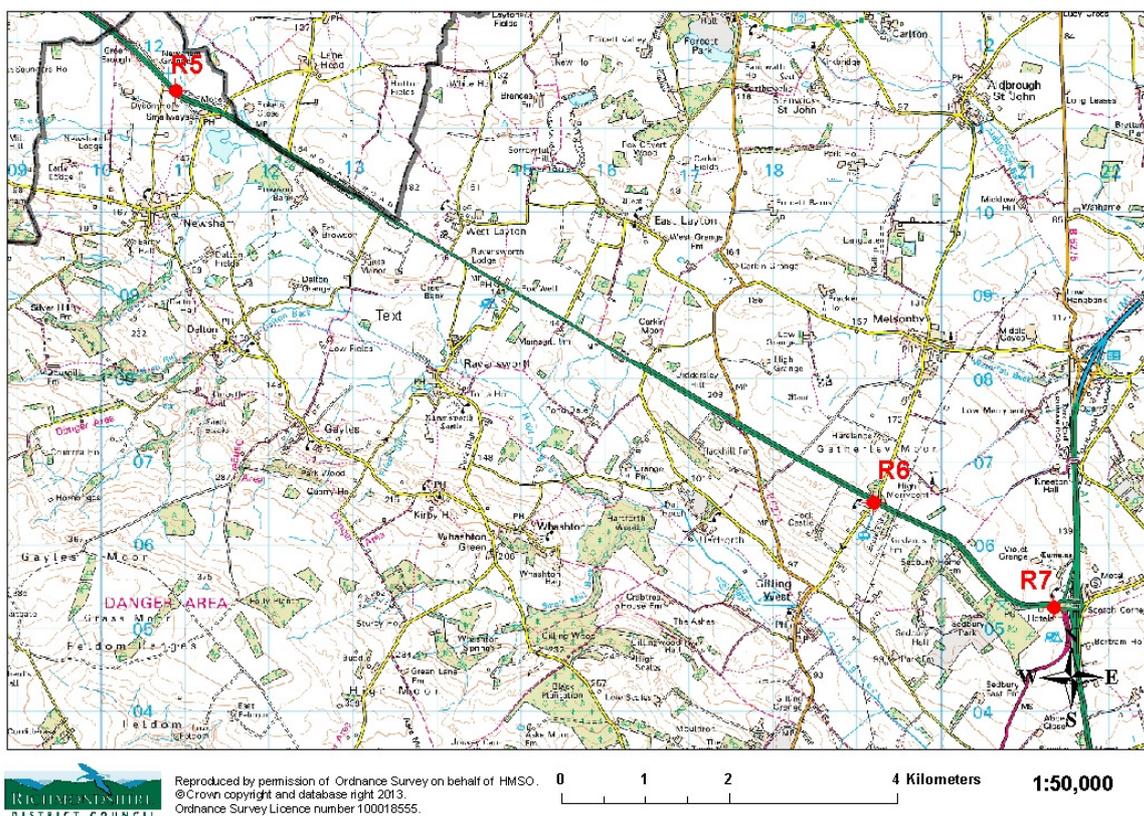


Figure 2.2 Location of Diffusion Tubes along the A66 Trunk Road

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

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (approx m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
R5	Grove House	Roadside	410902	511462	2	NO ₂	N	N	Y (0m)	9m	Y
R6	Gatherley Moor Farm	Roadside	419207	506509	2	NO ₂	N	N	Y (0m)	8m	Y
R7	Scotch Corner Hotel	Roadside	421366	505261	3	NO ₂	N	N	Y (0m)	22m	Y

Quality Assurance/Quality Control (QA/QC) Details of the Nitrogen Dioxide Diffusion Tube Survey

The diffusion tubes are supplied and analysed by Environmental Scientifics Group (ESG) (formerly Harwell Scientifics), Didcot, Oxfordshire, which is part of the WASP laboratory inter-comparison scheme. 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 AEA. Until the 31 March 2010 the diffusion tubes, although supplied by Harwell Scientifics, were analysed by Jesmond Dene Laboratory in Newcastle upon Tyne. The Jesmond Dene QA/QC arrangements are detailed in the 2010 Progress Report.¹⁰

A summary of the current 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	Environmental Scientifics Group (formerly Harwell Scientifics)
Analysis	Environmental Scientifics Group (formerly Harwell Scientifics)
Preparation Method	50% v/v TEA in acetone
Type of tube	Palmes tube
Type of absorbent	Doped triethanolamine mesh
Membership of inter-laboratory comparison scheme	WASP
Current Rating	Satisfactory
Method accreditation	UKAS
Conforms to Harmonisation Practical Guidance	Yes

The ESG laboratory conforms to the recent Harmonisation Practical Guidance “Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users” AEA Energy and Environment (Feb 2008). The laboratory is rated the top rating

Richmondshire District Council

of “Satisfactory” under the Workplace Analysis Scheme for Proficiency (WASP) performance criteria set by the Health and Safety Laboratory¹³.

It is known that there are systematic differences in the performance of different laboratories and preparation methods of diffusion tubes. A Spreadsheet provided by the LAQM Helpdesk (Spreadsheet Version Number 03/13 <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>) shows the studies that have been used to compare results from diffusion tubes (analysed by the same laboratory as used by Richmondshire District Council and submitted by Hambleton District Council) to results of co-located automatic chemiluminescence monitors, where data has been collected for 9 months or more.

From the ESG co-location studies (26 studies) for a particular tube type (ie the same type as used in Richmondshire) the overall bias adjustment factor of 0.79 was reported.

There is a Service Level Agreement for Environmental Services for Richmondshire and Hambleton District Councils. All of the Richmondshire and Hambleton diffusion tubes are collected and processed together. The tubes in Hambleton are co-located with an Automatic Monitoring Site situated in Northallerton. The bias adjustment factor for Hambleton tubes is 0.75 (See Appendix A).

As the figure applied to the Hambleton tubes of 0.75 and is similar to the overall bias adjustment factor of 0.79 (as detailed above) then it has been deemed appropriate to use the bias adjustment factor produced by the Hambleton dataset. Additionally the use of this figure does not significantly affect the end results as they still fall well under the annual mean objective for nitrogen dioxide ($40 \mu\text{g}/\text{m}^3$).

This figure of **0.75** has therefore been applied (multiplied) to the 2012 diffusion tube results for Richmondshire

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO₂)

Diffusion Tube Monitoring Data

The monitoring data for the seven nitrogen dioxide diffusion tubes for Richmondshire in 2012 is shown in Table 2.4.

The full set of data for the tubes for 2012 is included in Appendix B.

The monitoring data for the seven nitrogen dioxide diffusion tubes for Richmondshire from 2006 is shown in Table 2.5, and this illustrated in a graph in Figure 2.3.

Table 2.4 Results of NO₂ Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months)	2012 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.75
R1	Victoria Road	Roadside	N	N	11	18.3
R2	Queens Road	Roadside	N	N	12	26.3
R3	Darlington Road	Roadside	N	N	12	17.2
R4	White Rose Crescent	Urban Background	N	N	12	9.4
R5	Grove House	Roadside	N	N	12	20.5
R6	Gatherley Moor Farm	Roadside	N	N	12	18.3
R7	Scotch Corner Hotel	Roadside	N	N	12	19.1

Table 2.5 Results of NO₂ Diffusion Tubes (2006 to 2012)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias						
			2006 (Bias Adjustment Factor = 0.86)	2007 (Bias Adjustment Factor = 0.79)	2008 (Bias Adjustment Factor = 0.76)	2009 (Bias Adjustment Factor = 0.76)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.75)
R1	Roadside	N	22	21	20	19.0	21.7	19	18.3
R2	Roadside	N	27	27	23	24.6	28.3	25	26.3
R3	Roadside	N	20	19	16	16.4	24.7	19	17.2
R4	Urban Background	N	14	12	9	10.9	10.7	9	9.4
R5	Roadside	N	No Data	No Data	24	18.3 [†]	28.7	24	20.5
R6	Roadside	N	No Data	No Data	17	15.7 [†]	16.6	14	18.3
R7	Roadside	N	No Data	No Data	21	21.4 [†]	21.8	19	19.1

[†] Annualised Means – see 2010 Progress Report.¹⁰

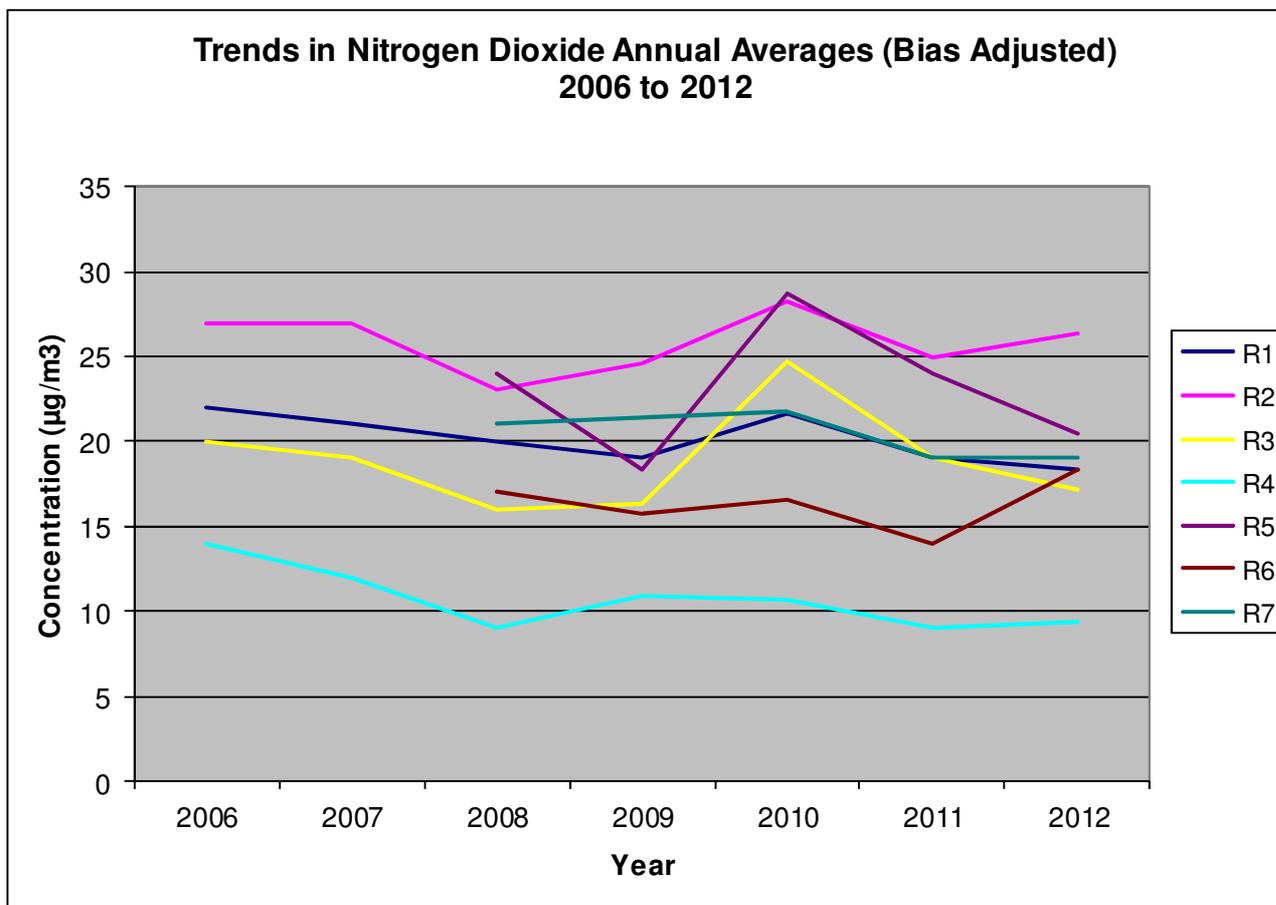


Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites in Richmondshire

Table 2.5 / Figure 2.3 indicate that:

- The general trend of nitrogen dioxide concentrations within Richmond (R1-4) was for the levels detected to generally fall over the time period 2006 to 2012. In 2010 the figures showed an apparent slight rise #.
- There was no obvious consistent trend of nitrogen dioxide concentrations for the sites located along the A66 (R5-7). In 2010 the figures showed an apparent slight rise #. Additional data gathered over the coming years for these sites may mean that an overall trend becomes more apparent.

This rise could potentially be explained by the change in analytical laboratory from April 2010 and the lack of a bias adjustment factor for the data provided by the Jesmond Dene laboratory up to the end of March 2010.

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

Research referred to in the technical guidance TG(09), issued by Defra, has shown that where the Annual Mean nitrogen dioxide concentration is less than $60\mu\text{g}/\text{m}^3$ an exceedance 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 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 2012 Updating and Screening Assessment.

3.1 Road Traffic Sources

There have been no significant new local road traffic sources in the District since the publication of the 2012 Updating and Screening Assessment. However the following proposed scheme should be noted:

- In the USA for 2012¹² it was reported that the proposed upgrading of the A1 from a 2 lane to a 3-lane motorway A1(M) between Leeming Bar which is south of the District and Barton in the north of the District (see also 2009 USA⁹) had been cancelled due to central Government spending cutbacks.

We understand now that this upgrading will now go ahead with work starting in 2013 and due to be completed in 2017.

3.2 Other Transport Sources

There have been no significant new other transport sources in the District since the publication of the 2012 Updating and Screening Assessment.

3.3 Industrial Sources

There have been no significant new industrial sources in the District since the publication of the 2012 Updating and Screening Assessment.

3.4 Commercial and Domestic Sources

There have been no significant new commercial and domestic sources in the District since the publication of the 2012 Updating and Screening Assessment.

3.5 New Developments with Fugitive or Uncontrolled Sources

There have been no significant new fugitive or uncontrolled sources in the District since the publication of the 2012 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.

Richmondshire District Council confirms that in making this statement all of the following have been considered:

- **Other transport sources (those other than road traffic)**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

Richmondshire District Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area from the following source.

- **Road traffic sources**

Significant new transport infrastructure is planned to start in the District in 2013 with the upgrade of the remaining 2 lane section of the A1 to a 3 lane motorway A1(M) (between Leeming Bar which is south of the District and Barton in the north of the District).

This will be taken into consideration in the next Updating and Screening Assessment.

4 Local / Regional Air Quality Strategy

In the progress Report for 2011¹¹ it was reported that the Council had recently formed a formal partnership with Hambleton District Council for the delivery of its services and that possibly a new combined air quality strategy may emerge following this. This partnership is now largely reversed. Richmondshire District Council does not have a specific local air quality strategy at present. The published Local Plan Core Strategy^{15*} contains policies that address the impact of development on air quality. These will be detailed in the Development document, which will be drafted within the next two years.

* On the 28th of February 2013, Richmondshire District Council submitted the Richmondshire Local Plan: Core Strategy to the Secretary of State for formal examination by the Planning Inspectorate.

<http://www.richmondshire.gov.uk/planning/planningpolicy/corestrategy/corestrategyexamination.aspx>

The document proposes key policies for managing growth and change across the District to 2028. Once adopted it will form part of the Development Plan for the District which will: set out the amount of new housing, retail and employment development that will take place in different parts of the District; identify the type of development required to meet the needs of the local communities; outline the types of changes that will happen within the plan area; list some of the projects and investment that will support and deliver the strategy; and provide a framework to assist in the determination of planning applications.

The document covers the area of Richmondshire District outside of the Yorkshire Dales National Park.

5 Planning Applications

There have been no significant major planning applications approved in 2012, however, we are aware of plans to further develop Catterick Garrison over the coming years which could result in a significant increase in local traffic. This is being kept under review and will be considered in future Air Quality Updating and Screening Assessments/Progress Reports if this is deemed necessary.

6 Air Quality Planning Policies

In the Progress Report for 2011¹¹ it was reported that the Council had recently formed a formal partnership with Hambleton District Council for the delivery of its services including work to progress the Local Plan Core Strategy^{15*}. This partnership is now largely reversed, but the Local Plan Core Strategy has been submitted for examination. The published Local Plan Core Strategy^{15*} contains policies that address the impact of development on air quality. These will be detailed in the Development document, which will be drafted within the next two years.

7 Local Transport Plans and Strategies

The Progress Report for 2011¹¹ reported that in March 2008 the ‘Richmondshire District Council Staff and Member Green Travel Plan’ was produced. This plan is now redundant.

In the Progress Report for 2011¹¹ it was reported that the Council had recently formed a formal partnership with Hambleton District Council for the delivery of its services. This partnership is now largely reversed.

Other developments in planning are included in the Richmondshire Local Plan: Core Strategy^{15*}.

As a district council within a two-tier authority structure we do not have control over local transport policy, this is the responsibility of North Yorkshire County Council (NYCC). Richmondshire District Council does however currently provide air quality information to NYCC in the form of copies of the annual Review and Assessment reports. Therefore NYCC were able to use that information to inform the third North Yorkshire Local Transport Plan¹⁴ (LTP3) which includes our District.

The LTP3 sets out the aims and objectives for transport in North Yorkshire over the next ten to fifteen years and the strategies and policies to deliver them over the period 2011 to 2016.

It sets out a number of specific objectives of which Environment and Local Economies are most closely linked to air quality. These objectives are adopted in the Local Transport Plan and are shown below:

- Environment and Climate Change – Reducing the impact of transport on the natural and built environment and tackling climate change.
- Local Economies – Supporting flourishing local economies by delivering reliable and efficient transport networks and services. This can be achieved through reducing congestion issues in towns and improving connectivity between major settlements.

LTP3 promotes a hierarchal approach of manage, maintain and improve to deal with transport issues. This approach targets measures to make the best use of the existing network.

LTP3 outlines the County Council's commitment to work with District Councils to identify specific targets for measuring improvements in air quality, particularly in relation to traffic related Air Quality Management Areas (AQMAs). Targets for measuring air quality improvements are mandatory for AQMAs. No AQMAs are declared within the Richmondshire area.

8 Climate Change Strategies

In the Progress Report for 2011¹¹ it was reported that the Council had recently formed a formal partnership with Hambleton District Council for the delivery of its services. This partnership is now largely reversed.

The Progress Report for 2011¹¹ reported that in February 2010 Richmondshire District Council adopted a *Climate Change Action Plan 2009-2014*.

This plan has been effectively superseded following further developments in planning and in the creation of the Richmondshire Local Plan: Core Strategy^{15*}. Within this proposed strategy one of the Core Policies (CP1) is titled 'Responding to Climate Change'. The main areas that Richmondshire District Council has focused on for climate change are in reducing carbon emissions by looking at the areas of:

- Supporting renewable and low carbon energy generation
- Ensuring Carbon Savings
- Climate Change Adaptation

The NYCC Local Transport Plan¹⁴ (LTP3) (as referred to in Section 7 of this report) sets out, amongst others, the specific objective of 'Environment and Climate Change' (in Chapter 4 and in greater detail in Appendix 2).

There are three main purposes of this objective. They are to:

- Contribute towards addressing the problems of climate change.
- Reduce transport related air quality problems.
- Protect the natural and built environment from the impact of transport.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

As a consequence of nitrogen dioxide monitoring in Richmond town centre and along the A66 trunk road has been confirmed that there are no exceedances of the Air Quality Objectives for this pollutant.

9.2 Conclusions relating to New Local Developments

There have been no new local developments since the publication of the previous Updating and Screening assessment however significant new transport infrastructure is planned to start in the District in 2013 (and is due to be completed in 2017) with the upgrade of the 2 lane section of the A1 to a 3 lane motorway A1(M) (between Leeming Bar which is south of the District and Barton in the north of the District). This will be taken into consideration in the next Updating and Screening Assessment.

It is concluded that Detailed Assessment for any of the pollutants is not required.

9.3 Other Conclusions

Richmondshire District Council has recently submitted the Richmondshire Local Plan: Core Strategy¹⁵ to the Secretary of State for formal examination by the Planning Inspectorate. The document proposes key policies for managing growth and change across the District to 2028. Once adopted, it will form part of the Development Plan for the part of the District that is outside the National Park. This includes policies that relate to air quality (which will be detailed in further documentation due to be drafted in the next two years).

There are plans for the development of new housing at Catterick Garrison which would result in an increase in local traffic. This will be kept under review.

The NYCC Local Transport Plan¹⁴ (LTP3) covers 2011-2016 and sets objectives for the areas of environment and climate change and local economies and is the responsibility of the County rather than the District Council.

9.4 Proposed Actions

Given that there are no exceedances of the Air Quality Objectives for nitrogen dioxide across the district it has been concluded that there is no need to continue to a Detailed Assessment for any of the pollutants covered by this report. Therefore the next course of action for the Council in terms of air quality management will be to submit the 2014 Air Quality 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 Wilson P & Marnier Dr B, Air Quality Consultants Ltd in association with Richmondshire District Council (2003)
Updating and Screening Assessment of Air Quality in the District of Richmondshire 2003
- 4 Laxen Prof. D & Wilson P, Air Quality Consultants Ltd on behalf of Richmondshire District Council (2005)
Detailed Assessment of Sulphur Dioxide Emissions from Domestic Solid Fuel Sources 2005
- 5 Richmondshire District Council (2005)
Air Quality in the District of Richmondshire Progress Report 2005
- 6 Richmondshire District Council (2006)
Updating and Screening Assessment of Air Quality in the District of Richmondshire 2006.
- 7 Richmondshire District Council (2007)
Air Quality in the District of Richmondshire – Progress Report 2007
- 8 Richmondshire District Council (2008)
Air Quality in the District of Richmondshire – Progress Report 2008
- 9 Richmondshire District Council (2009)
2009 Air Quality Updating and Screening Assessment for Richmondshire District Council
- 10 Richmondshire District Council (2010)
2010 Air Quality Progress Report for Richmondshire District Council
- 11 Richmondshire District Council (2011)
2011 Air Quality Progress Report for Richmondshire District Council.
- 12 Richmondshire District Council (2012)
2012 Air Quality Updating and Screening Assessment for Richmondshire District Council
- 13 LAQM Helpdesk – September 2012
Summary of Laboratory Performance in WASP NO₂ Proficiency Testing Scheme for Rounds 111-118.
Reports are prepared by HSL for BV/NPL on behalf of Defra and the Devolved Administrations.
- 14 North Yorkshire County Council
North Yorkshire Local Transport Plan 2011-16
- 15 Richmondshire District Council (2013)
Richmondshire Local Plan: Core Strategy – various documents available on the Council website www.Richmondshire.gov.uk
- 16 Hambleton District Council (2013)
2013 Air Quality Progress Report for Hambleton District Council.

Appendices

Appendix A: Bias adjustment factor calculations - Hambleton

Source: 2013 Air Quality Progress Report for Hambleton District Council¹⁶

Factor from Local Co-location Studies

Hambleton determines its own bias correction factor by co-locating three identical diffusion tubes at the same site as a chemiluminescent analyser. All three tubes are changed on a monthly basis and the results compared to the same monitoring period recorded by the chemiluminescent analyser. The results that are compiled over the course of a year can then be used to determine an annual average concentration. These figures can then be used in a simple calculation to determine the bias correction factor. The calculation is shown below.

The average diffusion tube concentration, D_m , is $25.3 \mu\text{g}/\text{m}^3$ and the chemiluminescent average concentration, C_m , for the same period is $19.0 \mu\text{g}/\text{m}^3$. Using these results, the bias adjustment factor **A** can be calculated as follows:

If $A = C_m / D_m$ and $C_m = 19.0$ and $D_m = 25.3$

then $A = 19.0 / 25.3$

Therefore, the bias adjustment factor, A is **0.75**

This factor can then be applied to all the other diffusion tubes in the district and the results adjusted accordingly.

The diffusion tube bias B can also be calculated. This is simply the bias expressed as a percentage relative to the chemiluminescent analyser results.

If $B = (D_m - C_m) / C_m$ and $C_m = 19.0$ and $D_m = 25.3$

then $B = (25.3 - 19.0) / 19.0$

Therefore, the bias adjustment factor B is **33.1**

In other words, the diffusion tubes are over-reading by 33.1%.

QA/QC of Automatic Monitoring in Hambleton

Logging of Data

The recording of data is carried out by the Envidas data logger installed in the air quality laboratory every 15 minutes. The data logger also controls the operation of the daily auto-calibrations and monitoring the operational status of the analysers. The data is collected, average and stored in the logger and then transferred to the Envieu software over telephone networks. The data from the analyser is converted into voltages by the logger and converted back into data by the Envieu software.

Calibration of the analyser

NO_x

The calibration of the analyser is carried out daily, fortnightly and six monthly. The analyser carries out an automatic internal calibration on a daily basis. Gas of a known concentration is passed through the analyser, the analyser obtains a reading, registers any drift away from the known values and obtains a correction factor which can be applied to the data accordingly.

The gas consists of a span gas of a specified concentration, supplied by BOC. The zero air gas cylinder was replaced with a zero air generator in November 2010. The calibration checks carried out manually consist of a daily check of the data in the Envieu software and a fortnightly visit to the air quality unit where the analyser is checked to ensure correct functioning. All details of these visits are noted in a logbook. In both cases any significant problems are reported to Geoff Broughton /Envitech Europe Ltd.

The analyser is serviced every six months by Enviro Technology to ensure correct functioning of the instrument and to correct any drift away from the known values of the span gas and zero air generator. The analyser is also cleaned, leak checked and recalibrated.

Data

All data from the air quality unit is managed by Geoff Broughton/Envitech Europe Ltd via remote telemetry. Data and calibration records are checked twice a day assessing the real time data over the previous 24 – 48 hours and the daily calibration results. Then a daily check of the following data parameters is also carried out, pollution parameters, meteorological parameters, diagnostic parameters, daily calibration results and the calibration results for analyser stability and all correction for auto scaling data.

The data is released as validated scaled data every 3 months.

Appendix B: Full set of raw diffusion tube data for Richmondshire 2012 – non-bias adjusted.

Bias adjustments relate to average figures only.

Date	R1 Victoria Road Richmond	R2 Queens Road Richmond	R3 Darlington Road Richmond	R4 White Rose Crescent Richmond	R5 Grove House A66	R6 Gatherley Moor Farm A66	R7 Scotch Corner Hotel A66/A1
Jan-12	29.8	30.7	22.5	18.9	35.3	20.7	30.7
Feb-12	27.4	37.4	30.1	21.0	40.8	27.4	30.1
Mar-12	19.7	25.6	21.2	12.8	32.3	18.7	24.5
Apr-12	4.2*	40.4	19.4	9.4	41.4	18.6	32.6
May-12	21.0	34.2	20.0	8.9	36.4	13.2	24.7
Jun-12	24.1	32.7	19.3	8.1	31.8	13.9	25.6
Jul-12	18.8	32.7	17.8	8.7	13.4	22.0	19.9
Aug-12	22.7	36.7	21.2	8.6	19.2	25.9	23.1
Sep-12	17.6	30.9	21.6	8.8	15.9	28.0	19.3
Oct-12	26.1	36.7	25.5	13.3	21.4	32.9	23.9
Nov-12	24.1	36.8	24.5	14.0	18.0	29.7	24.0
Dec-12	36.8	45.5	31.7	17.7	22.3	41.5	27.3
Average	24.4	35.0	22.9	12.5	27.4	24.4	25.5
Bias adjusted 0.75	18.3	26.3	17.2	9.4	20.5	18.3	19.1

* Data not used