



## **Air Quality in the District of Richmondshire**

# **Progress Report**

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## **Executive Summary**

This Progress Report was produced as a requirement of Part IV of the Environment Act 1995, which requires all Local Authorities to periodically review and assess the current and likely future air quality within their Districts. Areas which are unlikely to achieve the set air quality objectives must be designated Air Quality Management Areas (AQMA'S).

The first round of Review and Assessment was completed for the District of Richmondshire in 2000. No potential exceedences of the air quality objectives were identified and therefore no AQMA's were declared.

The second round of Review and Assessment began in 2003 with an Updating and Screening of Air Quality (USA) in the District of Richmondshire. This reported available monitoring data and identified pollutant sources. The USA would be repeated every three years, with Progress Reports being produced in the intervening years, unless a Detailed Assessment was required for any of the pollutants under investigation. The conclusions of the 2003 USA were that no further action was required for sources of carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide and PM<sub>10</sub>.

A Detailed Assessment was found to be necessary for sulphur dioxide emissions from domestic solid fuel burning in a small number of densely populated settlements that do not have mains gas supplies.

The conclusions of the Detailed Assessment were that sulphur dioxide emissions from domestic solid fuel burning do have an impact on atmospheric concentrations, but no likely exceedences of the objectives were identified. There was no requirement, therefore, to declare Quality Management Areas (AQMA) for sulphur dioxide at any location within the District. Due to technical problems during the monitoring exercise, the Detailed Assessment was not completed by the end of April 2004, but instead was submitted along with the 2005 Progress Report.

The conclusions of the 2005 Progress Report were that no further action was required for sources of carbon monoxide, 1,3-butadiene, lead, nitrogen dioxide and PM<sub>10</sub> and sulphur dioxide as there was no likelihood of the exceedence of any of the air quality objectives for the above-mentioned pollutants.

The third round of Review and Assessment began in 2006 with another Updating, Screening and Assessment. The 2006 USA concluded that no action was required for sources of any of the pollutants outlined in Table 1 as no likely exceedences of the air quality objectives were identified. No AQMA's have therefore had to be declared.

The 2007 Progress Report concurred with the 2006 USA findings. DEFRA, however, recommended that diffusion tubes be placed at strategic locations along the A66 for a period of 12 months to confirm that upgrading the road to

dual carriageway did not cause an exceedence of the nitrogen dioxide objective.

This, the 2008 Progress Report, highlights any changes within the District since the 2007 Progress Report which could potentially cause an exceedence of any of the air quality objectives set by the government. This includes an update on the diffusion tube monitoring taking place along the A66.

# **Air Quality Progress Report For the District of Richmondshire**

## **1. Introduction and Objectives**

This progress report has been produced as a requirement of Part IV of the Environment Act 1995. This places a duty on Local Authorities to periodically review and assess the current and likely future air quality in their area. The role of this process is to identify areas where it is unlikely that the air quality objectives will be achieved. If necessary, these areas will be designated as Air Quality Management Areas (AQMA's) and subject to active management.

Air quality changes in response to changes to emitting activities. Air quality objectives and Review and Assessment guidance change with advances in knowledge. Review and Assessment is a long-term, rolling process, structured in a series of rounds. The first round has been completed and concluded that no objective exceedences were likely, although domestic coal burning as a source of sulphur dioxide had not been considered<sup>i</sup>.

For round two, the Local Air Quality Management Technical Guidance (LAQM. TG(03))<sup>ii</sup> sets out a phased approach to review and assessment. The guidance prescribed an initial Updating and Screening Assessment (USA), which was completed in July 2003 on behalf of Richmondshire District Council by Air Quality Consultants, Bristol<sup>iii</sup>. The purpose of this was to identify any changes since the first round that could result in the exceedence of any of the air quality objectives.

The conclusions of the USA were that a Detailed Assessment for sulphur dioxide was required because of the emissions from domestic coal burning in some densely populated rural locations that do not have a mains gas supply. This took the form of a fuel use survey, completed in July 2003 on behalf of Richmondshire District Council by Air Quality Consultants, Bristol<sup>iv</sup>. This identified the town of Middleham, near Leyburn, as being most at risk of exceeding the sulphur dioxide objectives. The same consultancy arranged for monitoring of sulphur dioxide to take place in the winter of 2003/4, however, problems obtaining quality assured data from the monitor meant that the exercise had to be repeated the following year. The completed Detailed Assessment<sup>v</sup> by Air Quality Consultants was submitted with the 2005 Progress Report<sup>vi</sup> and concluded that sulphur dioxide emissions from domestic solid fuel burning do have an impact on atmospheric concentrations in Middleham, but no likely exceedences of the objectives were identified. There was no requirement therefore to declare an Air Quality Management Area (AQMA) in Middleham or - as Middleham was identified as the worst case scenario - any other location within the District.

The 2005 Progress Report concluded there was no likelihood of the exceedence of any of the other air quality objectives.

The third round of Review and Assessment began in 2006 with another Updating and Screening Assessment (USA).<sup>vii</sup> The 2006 USA concluded that there was no likelihood of exceedences of any of the air quality objectives.

The 2007 Progress Report<sup>viii</sup> concluded there was no likelihood of the exceedence of any of the air quality objectives. As a precaution diffusion tubes have been placed at strategic locations along the A66 within the District to see if upgrading the road to dual carriageway has caused an exceedence of the nitrogen dioxide objective. These tubes will be in place for 12 months.

The Government's Air Quality Strategy for England, Scotland, Wales and Northern Ireland<sup>ix</sup> and the addendum to it, published in February 2003<sup>x</sup> set out a framework for air quality improvements. It defines both standards and objectives for each of a range of pollutants. The standards are based on scientific and medical evidence and are set at levels below which risks to public health, even in sensitive groups, would be very slight. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of the costs, benefits, feasibility and practicality of achieving the standards. The objectives are prescribed within The Air Quality (England) Regulations 2000<sup>xi</sup> and The Air Quality (England) (Amendment) Regulations 2002<sup>xii</sup>. Table 1 summarises the objectives relevant to this report.

An Updating and Screening Assessment is required every 3 years, the last one being in 2006. The years between, unless a Detailed Assessment is being performed, require a Progress Report to be produced. This ensures continuity in the Local Air Quality Management process by reporting any potential changes in air quality that may occur between the Updating and Screening Assessments. A Progress Report was not produced by Richmondshire District Council in 2004 because of the Detailed Assessment for sulphur dioxide. The next Updating and Screening Assessment is due by the end of April 2009.

The next section outlines the current position within the District of Richmondshire regarding the 7 pollutants for which the Government have provided objectives.

**Table 1: Air Quality Objectives Relevant to This Report.**

<b>Pollutant</b>	<b>Time Period</b>	<b>Objective</b>	<b>To be achieved by<sup>1</sup></b>
Benzene	Running annual mean	16.25 µg/m <sup>3</sup>	2003
	Annual mean	5 µg/m <sup>3</sup>	2010
1,3-Butadiene	Running annual mean	2.25 µg/m <sup>3</sup>	2003
Carbon Monoxide	Maximum daily running 8-hour mean	10 mg/m <sup>3</sup>	2003
Lead	Annual mean	0.5 µg/m <sup>3</sup>	2004
	Annual mean	0.25 µg/m <sup>3</sup>	2008
Nitrogen Dioxide	1-hour mean	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	2005
	Annual mean	40 µg/m <sup>3</sup>	2005
Sulphur Dioxide	1-hour mean	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year	2004
	24-hour mean	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year	2004
	15-minutes mean	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	2005
Fine particles (PM <sub>10</sub> ) <sup>2</sup>	24-hour mean	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	2004
	Annual mean	40 µg/m <sup>3</sup>	2004
	24-hour mean <sup>3</sup>	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year	2010
	Annual mean <sup>3</sup>	20 µg/m <sup>3</sup>	2010

<sup>1</sup> The achievement dates are all by the end of the specified year.

<sup>2</sup> Measured by the gravimetric method.

<sup>3</sup> Provisional objectives not included in the Regulations.

## **2. Carbon Monoxide (CO)**

### **Introduction**

Carbon monoxide is a colourless, odourless, poisonous gas that is produced by the incomplete combustion of carbon-containing fuels, such as fossil fuels and other hydrocarbons.

Exposure to very high concentrations of CO may promote the formation of carboxyhaemoglobin in the blood, which reduces the capacity to carry oxygen. Effects are most pronounced in those suffering from an existing disease which affects the delivery of oxygen to the heart or brain.

### **CO Objectives**

To bring the objective in line with the second Air Quality Daughter Directive limit value, the UK Government and Devolved Administrations have set a maximum daily running 8-hour mean concentration of  $10\mu\text{g}/\text{m}^3$  for carbon monoxide, to be achieved by the end of 2003.

### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objective being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for carbon monoxide.

### **New Monitoring Data**

None required.

### **New Local Developments**

There have been no new developments that would have a significant effect on CO concentrations.

### **Conclusions for Carbon Monoxide**

No further action required for CO.



### **3. Benzene (C<sub>6</sub>H<sub>6</sub>)**

#### **Introduction**

Benzene is a volatile organic compound. It is a minor constituent of petrol and is released from petrol-engined vehicle exhausts and due to fugitive emissions from petrol refining and distribution. Small amounts are derived from diesel fuel.

Benzene is a genotoxic human carcinogen, related to excess risk of leukaemia.

#### **Benzene Objectives**

The UK Government and Devolved Administrations have adopted a running annual mean concentration of 16.25µg/m<sup>3</sup> as the air quality standard for benzene, with an objective for the standard to be achieved by the end of 2003. Following health advice from EPAQS and the Department of Health's Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC) to reduce concentrations of benzene in air to as low as possible, an annual mean objective of 5µg/m<sup>3</sup> has been set. This is to be achieved by the end of 2010.

The EU second Air Quality Daughter Directive includes an annual mean of 5µg/m<sup>3</sup> to be achieved by 1 January 2010.

#### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objective being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for benzene.

#### **New Monitoring Data**

None required.

#### **New Local Developments**

There have been no new developments that would have a significant effect on benzene concentrations.

#### **Conclusions for Benzene**

No further action required for benzene.

## **4. 1,3-Butadiene (C<sub>4</sub>H<sub>6</sub>)**

### **Introduction**

1,3-butadiene is a colourless, flammable gas at room temperature. It is used in industry for the production of rubber, but its main source is from the combustion of petrol and other automotive fuels.

1,3-butadiene is a genotoxic human carcinogen, linked to cancers of the lymphoid system and blood forming tissues, lymphomas and leukaemia.

### **1,3-Butadiene Objectives**

The UK Government and Devolved Administrations have adopted a maximum running annual mean concentration of 2.25µg/m<sup>3</sup> as the air quality standard for 1,3-butadiene. The objective is for the standard to be achieved by the end of 2003.

### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objective being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for 1,3-butadiene.

### **New Monitoring Data**

None required.

### **New Local Developments**

There have been no new developments that would have a significant effect on 1,3-butadiene concentrations.

### **Conclusions for 1,3-Butadiene**

No further action required for 1,3-butadiene.

## **5. Lead (Pb)**

### **Introduction**

Lead is a dense, dull grey, soft and malleable metallic element. It is extracted mainly from the ore galena (lead sulphide ) (PbS). Particulate lead in air results from activities such as fossil fuel combustion (including vehicles), metal processing industries and waste incineration. Its single largest industrial use world-wide is in the manufacture of batteries. As tetraethyl lead, it has been used for many years as an additive in petrol; however the sale of leaded petrol was banned in the UK on 1 January 2000.

Exposure to very high levels may result in toxic biochemical effects, causing problems in the synthesis of haemoglobin and the possible inhibition of intellectual development in infants as well as effects on the kidneys, gastrointestinal tract, joints and reproductive system, and acute or chronic damage to the nervous system.

### **Lead Objectives**

The UK Government and Devolved Administrations have adopted an annual mean concentration of  $0.5\mu\text{g}/\text{m}^3$  as the air quality standard for lead, with an objective for the standard to be achieved by the end of 2004. A lower air quality objective of  $0.25\mu\text{g}/\text{m}^3$  has also been set, to be achieved by the end of 2008.

### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objectives being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for lead.

### **New Monitoring Data**

None required.

### **New Local Developments**

There have been no new developments that would have a significant effect on lead concentrations.

### **Conclusions for Lead**

No further action required for lead.

## 6. Nitrogen Dioxide (NO<sub>2</sub>)

### Introduction

Oxides of nitrogen are produced by all combustion processes. These include nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>), which together are known as nitrogen oxides (NO<sub>x</sub>). The majority of NO<sub>x</sub> emissions are in the form of NO. NO then reacts with ozone (O<sub>3</sub>) in the atmosphere to produce NO<sub>2</sub> which can give rise to adverse health effects.

About half of the emissions of NO<sub>x</sub> in the UK come from road transport. Other significant contributors are combustible fuel power stations and industry. Road transport has the greatest effect upon low-level NO<sub>x</sub> concentrations. The highest levels are found within a narrow band a few meters wide running alongside the busiest roads.

Short-term exposure to high concentrations of NO<sub>2</sub> may cause inflammation of respiratory airways. Long-term exposure may affect lung function and enhance responses to allergens in sensitised individuals. Asthmatics are particularly vulnerable.

### NO<sub>2</sub> Objectives

The United Kingdom Government and the Devolved Administrations have adopted two Air Quality Objectives for nitrogen dioxide. The first is an annual mean of 40µg/m<sup>3</sup> and the second is a 1-hour mean concentration of 200µg/m<sup>3</sup> not to be exceeded more than 18 times a year. These objectives were to be achieved by the end of 2005. This stems from the European Union First Daughter Directive which includes a 1-hour limit value of 200µg/m<sup>3</sup> not to be exceeded more than 18 times a year and an annual mean limit value of 40µg/m<sup>3</sup>. These values do not have to be achieved until 1 January 2010. Only the annual mean is calculated in Richmondshire, as concentrations of nitrogen dioxide have so far been well below the objective.

### Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire

No further action was required for nitrogen dioxide other than to continue the monitoring outlined below.

### New Monitoring Data

Nitrogen Dioxide has been measured using diffusion tubes at four locations in Richmond, formerly as part of the now defunct National Diffusion Tube Network. They now provide valuable information regarding NO<sub>2</sub> levels and assist with the process of local air quality management.

The tubes are supplied by Harwell Scientifics. Jesmond Dene Laboratory In Newcastle upon Tyne which is part of the WASP laboratory intercomparison 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 dictated by NETCEN. The above arrangements remain the same as those described in the 2003 and 2006 Updating and Screening Assessments of Air Quality in the District of Richmondshire.

The locations of the diffusion tubes are outlined in table 2 below and illustrated in map 1.

**Table 2: Diffusion Tube Locations**

<b>Richmondshire Site Reference</b>	<b>NO<sub>2</sub> Network Site Reference</b>	<b>Location</b>	<b>Easting</b>	<b>Northing</b>
R1	7N (Code 83536) Roadside	38 Victoria Road Richmond North Yorkshire DL10 4UA	416,688	501,097
R2	2N (Code 81750) Roadside	5 Queens Road Richmond North Yorkshire DL10 4AJ	417,180	501,125
R3	8N (Code 83537) Roadside	Nursery 47 Darlington Road Richmond North Yorkshire DL10 7BG	418,066	501,490
R4	6N (Code 82723) Background	1 White Rose Crescent Richmond North Yorkshire DL10 7DW	418,504	501,455

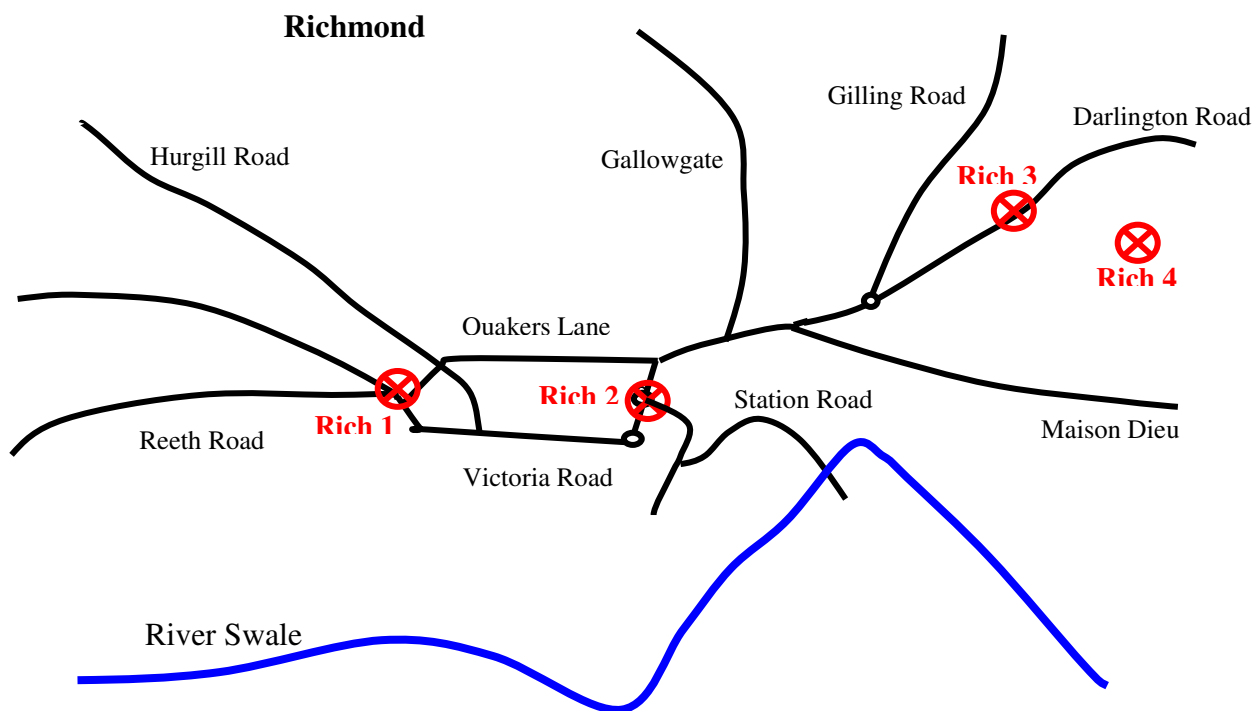
Table 3 details the supply, analysis and QA/QC (quality assurance and quality control) methods for the diffusion tubes.

**Table 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
Method accreditation	No accreditation for laboratory

## Nitrogen Dioxide Diffusion Tube Monitoring Locations in Richmondshire

 Diffusion Tube Monitoring Locations



Map 1: Diffusion Tube Locations in Richmond, North Yorkshire

**Table 4: 2007 Diffusion Tube Bias and Bias Adjustment Factor Calculated From Diffusion Tube (50% v/v TEA in acetone) / Automatic Chemiluminescence Monitor Co-location Studies<sup>xiii</sup>**

Year	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ( $\mu\text{g}/\text{m}^3$ )	Automatic Monitor Mean Conc. (Cm) ( $\mu\text{g}/\text{m}^3$ )	Bias (B) (Dm-Cm)/Cm	Bias Adjustment Factor (A) (Cm / Dm)
2007	Gateshead Council	12	45	35	28.6%	0.78
	Gateshead Council	11	47	33	40.9%	0.71
	Gateshead Council	11	44	36	20.6%	0.83
	Gateshead Council	9	47	30	53.7%	0.65
	Newcastle upon Tyne C.C.	9	34	28	23.6%	0.81
	Newcastle upon Tyne C.C.	12	50	42	19.2%	0.84
	Newcastle upon Tyne C.C.	9	34	30	14.4%	0.87
	AEA Tech Intercomparison	12	118	103	15.0%	0.87
<b>8 studies - Overall Bias (B) use 27.00%; Overall Factor use 0.79</b>						

See Appendix 1 for UWE web page containing this data.

It is known that there are systematic differences in the performance of different laboratories and preparation methods of diffusion tubes. Table 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 results are for 2007 and contain data for the 12 months following those contained in the last Updating and Screening Assessment.

From these studies it can be seen that the overall bias (B) over this period is 27.00% (i.e. the diffusion tubes were over-reading by an average of 27.00%). A bias adjustment factor (A) of 0.79 has therefore to be applied (multiplied) to the diffusion tube results for this period. Table 5 shows the data obtained from the former national network diffusion tube sites before the application of the bias adjustment factor and Table 6 shows them after.

**Table 5: Annual Mean Measured Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) at the National Network Diffusion Tube Sites**

	Roadside			Background
	R1 (7N)	R2 (2N)	R3 (8N)	R4 (6N)
2007	27	34	24	15

**Table 6: Annual Mean Measured Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) at the National Network Diffusion Tube Sites After Application of Bias Adjustment Factor (0.79)**

	Roadside			Background
	R1 (7N)	R2 (2N)	R3 (8N)	R4 (6N)
2007	21	27	19	12



The 2005 objectives for NO<sub>2</sub> were achieved within Richmondshire. Correction factors are used to predict future NO<sub>2</sub> concentrations in years where data is unavailable. The correction factors used are outlined in table 7 and are obtained from Local Air Quality Management Technical Guidance (LAQM. TG(03))<sup>ii</sup>.

**Table 7: Correction Factors to Estimate Annual Average NO<sub>2</sub> Concentrations in Future Years from Measured Data at Roadside Sites**

Year	Correction Factor	Year	Correction Factor
1999	1.075	2005	0.892
2000	1.033	2006	0.863
2001	1.000	2007	0.832
2002	0.969	2008	0.799
2003	0.941	2009	0.765
2004	0.915	2010	0.734

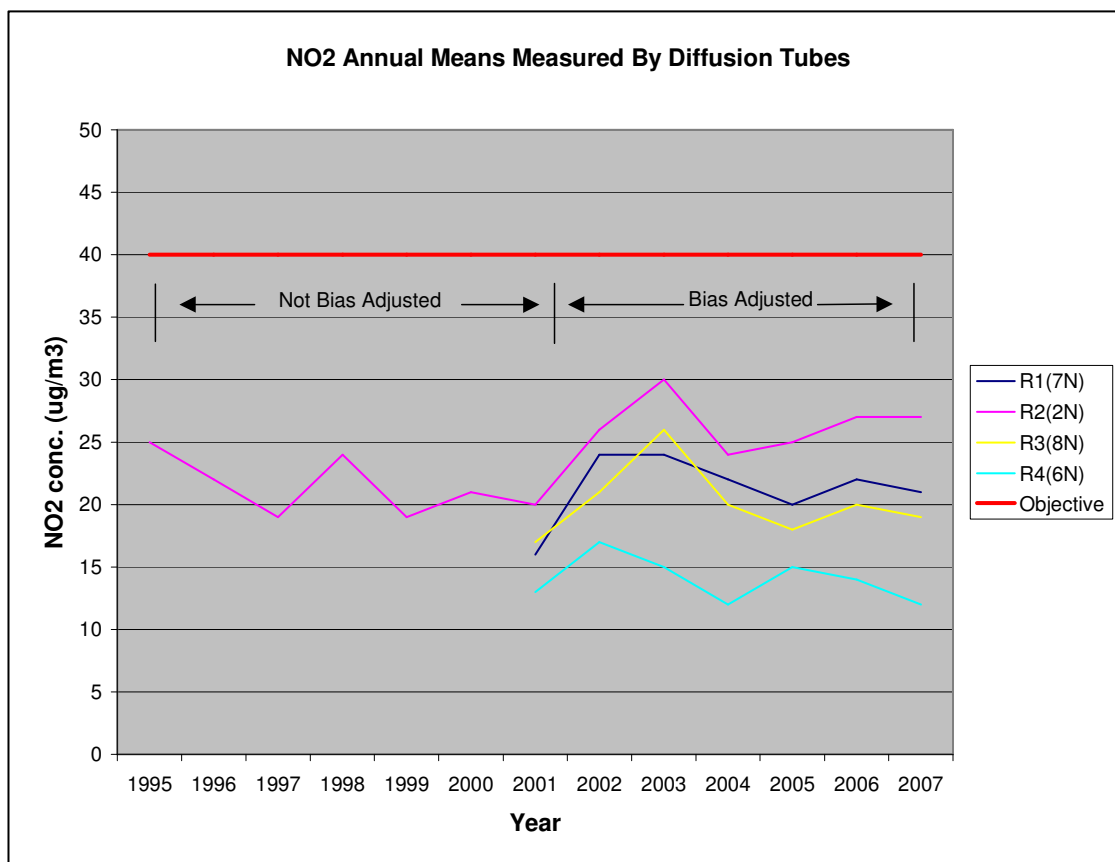
Table 8 shows the future projections for 2008 based on the annual average values from 2007. None of the values obtained exceed, or are likely to exceed the annual mean objective of 40µg/m<sup>3</sup> in 2008. This is illustrated in Figure 1. The data from site R2 (2N) is not bias adjusted before 2001.

**Table 8: Future Projections of Bias Adjusted Annual Mean Measured Nitrogen Dioxide Concentrations (µg/m<sup>3</sup>) at the National Network Diffusion Tube Sites**

	Roadside			Background
<b>Objective = 40µg/m<sup>3</sup> in 2005</b>				
	R1 (7N)	R2 (2N)	R3 (8N)	R4 (6N)
2007	21	27	19	12
2008	21x(0.799/0.832) <b>=20</b>	27x(0.799/0.832) <b>=26</b>	19x(0.799/0.832) <b>=18</b>	12x(0.799/0.832) <b>=12</b>
2010	21x(0.734/0.832) <b>=19</b>	27x(0.734/0.832) <b>=24</b>	19x(0.734/0.832) <b>=17</b>	12x(0.734/0.832) <b>=11</b>

Future Projections Based on Factors in Review and Assessment Technical Guidance LAQM.TQ(03), Defra 2003

**Figure 1 Nitrogen Dioxide Annual Means Measured By Diffusion Tubes**



### New Local Developments

During 2006 and 2007, The Highways Agency upgraded the A66 to dual carriageway on sections between Greta Bridge and Stephen Bank and Carkin Moor and Scotch Corner. The majority of the development lies within Richmondshire except for the first 1800 meters from Greta Bridge. The reason for the conversion was to avoid accidents caused by frustrated drivers overtaking slow-moving traffic. No increase in traffic was expected as a result.

An Environmental Statement for the development was produced on behalf of the Highways Agency by Mouchel Parkman of Northallerton, North Yorkshire<sup>xiv</sup>. In this statement several locations were predicted as exceeding the annual mean air quality objective for nitrogen dioxide. The predictions are summarised in Table 9. The predictions contradict the findings of the 2003 and 2006 Updating and Screening Assessments produced by Richmondshire District Council which concluded no exceedences would occur.

**Table 9: Environmental Statement Predicted Nitrogen Dioxide Levels at Locations Along the A66 Comparing the “With Scheme” to the “Do Minimum” Situation in the Year 2006**

Location	2006 Annual Mean NO <sub>2</sub> (µg/m <sup>3</sup> ) Objective = 40 µg/m <sup>3</sup>	
	Do Minimum	With Scheme
Grove House	41	36
The Lodge (Hargill)	46	39
Granary Cottage	50	43
Gatherley Moor Farm	50	43
The Lodge (Sedbury)	49	45
Lay-by Cafe	41	33
Vintage Motel	46	39
Scotch Corner Hotel	57	56

To monitor nitrogen dioxide levels by the A66 Richmondshire District Council placed a diffusion tube at Gatherley Moor Farm for 7 months between January and August 2004. This tube was not part of the National Diffusion Tube Network however, following the Technical Guidance,<sup>ii</sup> the results obtained were extrapolated in the 2007 Progress Report<sup>viii</sup> to show there was no risk of an exceedence of the nitrogen dioxide objective. Feedback on the report by DEFRA suggested further diffusion tube monitoring should take place at strategic locations along the A66 within Richmondshire.

Diffusion tubes have therefore been sited on the buildings at locations listed in Table 10 and illustrated on Map 2 along with other potentially vulnerable properties mentioned in the Highways Agency Environmental Statement.

**Table 10: Location of Diffusion Tubes Along A66**

Location	Distance From A66 (meters)	Grid Reference		Site Ref.
		Easting	Northing	
Grove House	9	410,902	511,462	R5
Gatherley Moor Farm	8	419,207	506,509	R6
Scotch Corner Hotel	22	421,366	505,261	R7

Monitoring along the A66 using diffusion tubes began in November 2007. It will last for 12 months to take account of any seasonal variation. Table 11 shows the results to date and Table 12 shows the results adjusted with the 2007 bias adjustment factor of 0.79. The results so far show there have been no exceedences of the nitrogen dioxide objective, although the monitoring exercise will not be completed until October 2008. The results and recommendations of the completed exercise will be reported in the 2009 Updating and Screening Assessment.

**Table 11: Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) At Locations Along The A66 Measured By Diffusion Tubes.**

Date	Location		
	R5	R6	R7
November 2007	37	23	27
December 2007	37	28	33
January 2008	32	22	20
February 2008	42	26	35
March 2008	27	15	18

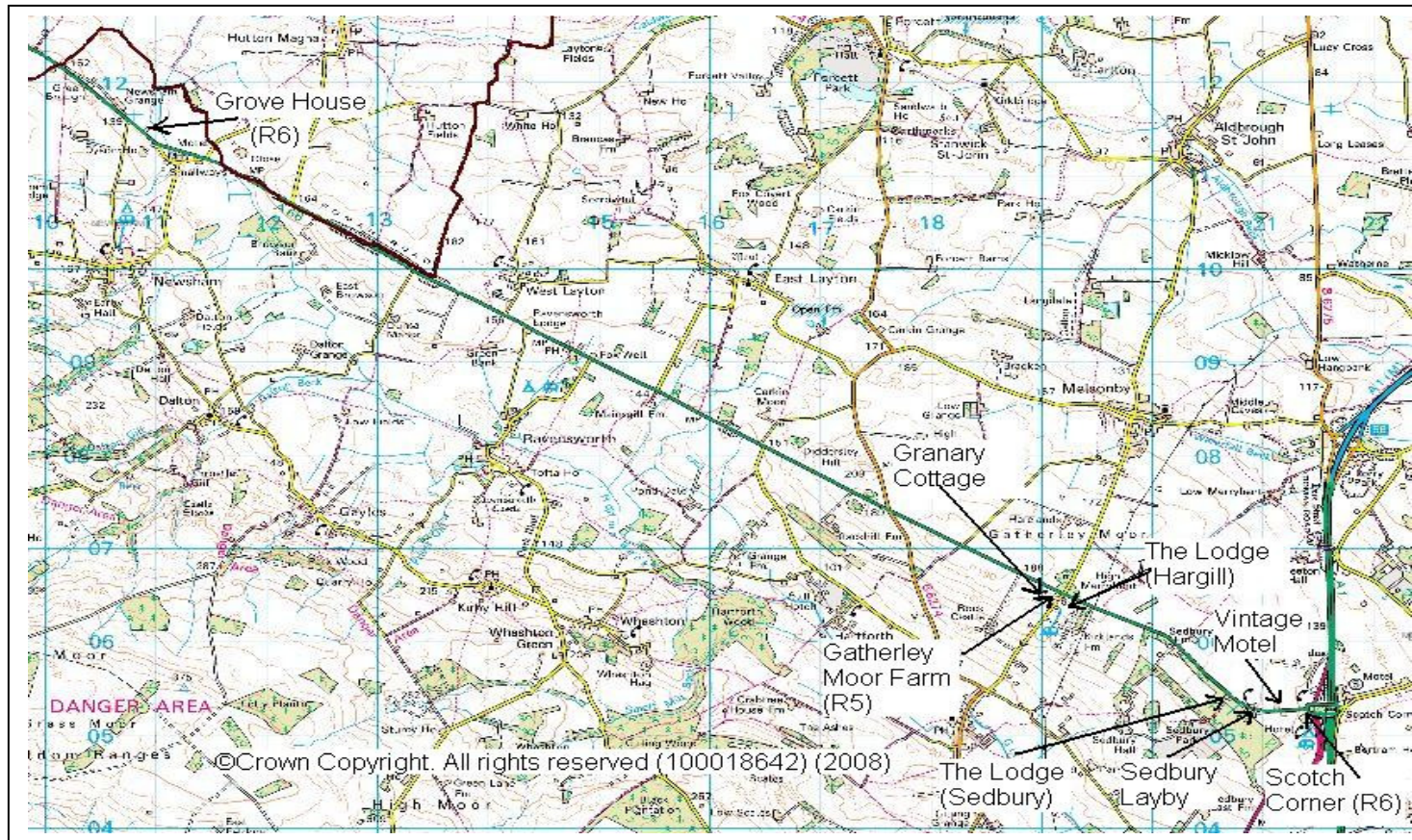
**Table 12: Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) At Locations Along The A66 Measured By Diffusion Tubes After Application of Bias Adjustment Factor (0.79)**

Date	Location		
	R5	R6	R7
November 2007	29	18	21
December 2007	29	22	26
January 2008	25	17	16
February 2008	33	21	28
March 2008	21	12	14

### **Conclusions for Nitrogen Dioxide**

No further action required for nitrogen dioxide.

Map 2. Location of Diffusion Tubes Along A66 and Properties Included in Table 9



## **7. Sulphur Dioxide (SO<sub>2</sub>)**

### **Introduction**

Sulphur Dioxide is an acidic gas found naturally in releases from volcanoes, oceans, biological decay and forest fires. Man-made sources are the combustion of fossil fuels, smelting, manufacture of sulphuric acid, conversion of wood pulp to paper, incineration of refuse and production of elemental sulphur.

The principal source of this gas in the UK is power stations burning fossil fuels which contain sulphur. The last 40 years have seen a decline in coal burning (domestic, industrial and in power generation) As a result, ambient concentrations of this pollutant in the UK have decreased steadily over this period.

Very high concentrations of SO<sub>2</sub> may constrict respiratory airways by stimulating nerves in the lining of the nose, throat and lung. Asthmatics and those with chronic lung disease will be particularly at risk.

### **SO<sub>2</sub> Objectives**

The UK Government and Devolved Administrations have adopted a 15-minute mean of 266µg/m<sup>3</sup> as an air quality standard for SO<sub>2</sub>, with an objective for the standard not to be exceeded more than 35 times in a year by the end of 2005. Objectives have also been set equivalent to EU limit values specified in the First Air Quality Daughter Directive. These are, a one hour mean objective of 350µg/m<sup>3</sup> to be exceeded no more than 24 times per year and a 24-hour objective of 125µg/m<sup>3</sup> to be exceeded no more than 3 times per year, to be achieved by the end of 2004.

### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objectives being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for sulphur dioxide.

### **New Monitoring Data**

None required.

### **New Local Developments**

There have been no new developments that would have a significant effect on SO<sub>2</sub> concentrations.

### **Conclusions for Sulphur Dioxide**

No further action required for sulphur dioxide.

## 8. Particulate Matter Less Than 10µm In Diameter (PM<sub>10</sub>)

### Introduction

PM<sub>10</sub> is a complex mixture of organic and inorganic substances present in the atmosphere both as liquids and solids. It can be divided into 3 main groups:

Primary Particulates (fine particles)

- Formed by combustion processes;
- Emitted directly to atmosphere;
- <2.5µm diameter.

Secondary Particulates (fine particles)

- Formed in atmosphere from reaction between NO<sub>x</sub> and SO<sub>2</sub>;
- <2.5µm depending on humidity.

Tertiary Particulates (course particles)

- Formed by non-combustion processes;
- Contain crustal materials from road transport, the construction industry, mineral extraction processes, wind-blown dusts and soils, sea salt and biological particles.
- >2.5µm.

The principal source of PM<sub>10</sub> in the UK used to be as a result of domestic coal burning for heating. However, with the introduction of smokeless zones and alternative fuels, the main source of PM<sub>10</sub> is now from diesel engines.

Due to its size, PM<sub>10</sub> penetrates deep into the lungs. Long-term exposure to PM<sub>10</sub> is associated with a marked reduction in life expectancy, primarily due to increased heart and lung disease and lung cancer mortality. Impaired lung function in both children and adults has also been identified. Short-term exposure is associated with increased mortality in susceptible individuals, such as those with asthma and COPD (chronic, obstructive, pulmonary disorder).

### PM<sub>10</sub> Objectives

The UK Government and Devolved Administrations have adopted two Air Quality Objectives for PM<sub>10</sub>, which are equivalent to the EU Stage 1 limit values in the First Air Quality Daughter Directive. The objectives are 40µg/m<sup>3</sup> as the annual mean, and 50µg/m<sup>3</sup> as the fixed 24-hour mean to be exceeded on no more than 35 days per year, to be achieved by the end of 2004. The objectives are based upon measurements carried out using the European gravimetric transfer reference sampler or equivalent.

The EU has set indicative limit values for PM<sub>10</sub>, which are to be achieved by 1 January 2010. These Stage 2 values are 20µg/m<sup>3</sup> as the annual mean and 50µg/m<sup>3</sup> as the 24-hour mean to be exceeded on no more than 7 days per

year. The UK government has introduced provisional objectives to be achieved by the end of 2010 that are in line with the Stage 2 limit values. They are a 24-hour mean of 50µg/m<sup>3</sup> not to be exceeded more than 7 days per year and an annual mean of 20µg/m<sup>3</sup> to be achieved by the end of 2010.

### **Findings of 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report**

The 2006 Updating and Screening Assessment of Air Quality in the District of Richmondshire and 2007 Progress Report found there was no risk of the above objectives being exceeded and therefore no further monitoring was required. There was also no need to progress to a detailed assessment for PM<sub>10</sub>.

### **New Monitoring Data**

None required.

### **New Local Developments**

There have been 3 Permits issued for the use of bulk cement during 2007:

1. Scorton Quarry, Richmond (Date issued 03/01/07): This is an established sand and gravel quarry that does not need a Permit as the materials quarried are wet and do not produce dust. It has also been operating a bulk cement process since 1993. It recently closed down and moved its process to Pallet Hill Quarry (see below). Tarmac have now taken over the quarry and have set up a bulk cement process there. It is about 500m away from the nearest property and no dust complaints have been received about the plant.
2. Pallet Hill Quarry, Catterick Village (Date issued 23/07/07): Operated by CEMEX UK Materials Ltd. This is also an established sand and gravel quarry that has recently established a bulk cement process. The quarry is located adjacent to a residential area but has not generated any dust complaints.
3. Chas. Long and Son (Aggregates) Ltd, Brompton on Swale (Date issued 25/10/07): Operated by Chas. Long and Son (Aggregates) Ltd. This is an established sand bagging plant that has installed a cement process. It is located on an industrial estate and is therefore adjacent to other businesses. No complaints have been received regarding the cement process.

A list of Permits issued by Richmondshire District Council under the Pollution Prevention and Control Act 1999, Pollution Prevention and Control (England and Wales) Regulations 2000 (As Amended) are included in Appendix 2.



## **Dust Complaints**

Dust complaints have been received regarding the following properties:

1. Barton Quarry, Barton (See Appendix 2 for Permit details). Two complaints were received on 13<sup>th</sup> March 2007. These were investigated on the same day and found small amounts of dust on nearby properties due mainly to dry, windy conditions that day. A full inspection took place on 29<sup>th</sup> March 2007 and no compliance issues were noted.
2. Black Quarry, Leyburn (See Appendix 2 for Permit details). Complaint received on 11<sup>th</sup> July 2007. The quarry was undergoing an inspection by an officer at the time. She did not notice any dust coming from the quarry. Weather conditions did create a thermal inversion that day and could have contributed to smoke and dust being trapped above the town.
3. Chas. Long and Son (Aggregates) Ltd, Brompton on Swale (See Appendix 2 for Permit details). Ongoing complaint regarding dust from sand bagging operation. Hopefully this has now been resolved by the use of water suppression on stockpiles and the use of a road sweeper to prevent dust blowing onto a neighbouring premises from the shared access road. No further complaints have been received since the introduction of these measures.

## **Conclusions for PM<sub>10</sub>**

No further action required for PM<sub>10</sub>.

## 9. Planning and Policies

### Richmondshire District Council Staff and Member Green Travel Plan

In March 2008 the Richmondshire District Council Staff and Member Green Travel Plan<sup>xv</sup> 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 PM<sub>10</sub>. 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 findings of any reviews undertaken will be included in the 2009 Updating and Screening Assessment.

### Local Development Framework Core Strategy

This is the successor to the Local Plan where, from 28th September 2007, some policies in some development plans have expired. The Local Development Framework Core Strategy is currently in draft form only until it is examined and approved by the Planning Inspector in July 2008. If it is approved the following sections will be relevant to maintaining and improving air quality within Richmondshire:

#### ***5. Sustainability and Climate Change***

*Draft Core Strategy Policy 2 (CSP2) – Sustainability and Climate Change*

*The Council's Preferred Option in addressing locally the impacts of climate change and delivering a sustainable approach to development is to:*

- 1. Protect and enhance the District's environmental and heritage assets and ensure that new development responds positively to any features of natural, historic, biodiversity or local interest*
- 2. Ensure new development is directed towards the most sustainable locations and makes the best use of existing infrastructure and transport networks. New development should be situated in accessible areas with good access to local services/facilities and to frequent and reliable public transport networks.*

3. Seek to ensure new development (including conversions) makes a positive contribution to the reduction of greenhouse gas emissions:

- through the use of energy efficient designs and materials
- incorporating waste minimisation and recycling measures
- maximising solar gain through siting and orientation

New housing development should aim to meet Code Level 3 (Code for Sustainable Homes) by 2010 and Code Level 5 by 2015 with the aspiration that by 2016, houses under construction will be built to Code Level 6. Other development should aim to meet the Breeam 'very good' or 'excellent' rating

4. Support proposals that contribute towards meeting the grid-connected renewable energy indicative targets of 18 MW by 2010 and 39 MW by 2021 (as set in the draft Regional Spatial Strategy Policy ENV5 and Table 15.12), subject to proposals having regard to the requirements of 1 above

5. Require new development to incorporate (including conversions) on site renewable energy generation. This should seek to deliver as a minimum

- in the period to 2010, 10% of the predicted energy requirement
- from 2011 to 2015, 15% of the predicted energy requirement
- from 2016 to 2020, 20% of the predicted energy requirement
- from 2021 to 2025, 25% of the predicted energy requirement

These requirements should be met except where such works or installations would adversely affect the character, appearance or setting of Listed Buildings, conservation areas and nature conservation sites/designations (in particular Natura 2000 sites) and alternative options are not feasible. In such cases development proposals will still be expected to incorporate energy efficiency measures (3 above)

## **8. Infrastructure**

*Draft Core Strategy Policy 5 (CSP5) – Infrastructure* The Council's Preferred Option is to work with partners and stakeholders to provide for safe and sustainable communities and the infrastructure to support future growth by:

- ensuring a sustainable pattern of growth is matched by infrastructure development and improvement, including services, school and educational provision, recreational needs and healthcare
- supporting in principle the upgrade of trunk roads within the District to improve connectivity for residents, visitors and businesses
- supporting in principle measures to improve road safety, assist regeneration, secure environmental improvement and better utilise existing road capacity including travel by means other than private car

- *minimising travel and reducing car dependency by locating major growth in accessible and sustainable communities*
- *supporting the development of Catterick Garrison town centre This will be achieved by:*

*(i) detailed provision and improvement identified through the Richmond and Catterick Garrison Area Action Plan*

*(ii) exploring opportunities to deliver community facilities through partnerships*

*(iii) focusing growth in those locations best served by public transport*

*(iv) improving provision of and access to foot and cycle networks*

*(v) supporting public transport and non-car based travel*

*(vi) supporting improvement through the Local Transport Plan (North Yorkshire County Council)*

## **10. Overall Conclusions For 2008 Progress Report**

The conclusions of the 2008 Progress Report are that no further action is required for sources of carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide, PM<sub>10</sub> and sulphur dioxide as there is no likelihood of the exceedence of any of the air quality objectives for the above-mentioned pollutants. No Air Quality Management Areas have been declared and therefore no Air Quality Action Plan has been produced.

The monitoring of nitrogen dioxide along the A66 will continue until 12 months data has been collected. The results and conclusions will be presented in the 2009 Updating and Screening Assessment of Air Quality in the District of Richmondshire.

# APPENDIX I. 2007 Diffusion Tube Bias and Bias Adjustment Factor Calculated From Diffusion Tube (50% v/v TEA in acetone) / Automatic Chemiluminescence Monitor Co-location Studies<sup>xiii</sup>

http://www.uwe.ac.uk/aqm/review/diffusiontube230408.xls - Microsoft Internet Explorer provided by RDC (User Settings)

File Edit View Insert Format Tools Data Go To Favorites Help

Address http://www.uwe.ac.uk/aqm/review/diffusiontube230408.xls

B1

**Spreadsheet Version Number: 04/08**

Follow the steps below **in the correct order** to show the results of **relevant** collocation studies

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

**Whenever presenting adjusted data, you should state the adjustment factor used**

This spreadsheet will be updated in late September 2008 on the [R&A website](#)

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 Executive and the Department of the Environment Northern Ireland

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

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

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

**Step 4:** Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor<sup>3</sup> 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 collocation study then see footnote<sup>4</sup>. If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.

Analysed By <sup>1</sup>	Method <sup>2</sup>	Year <sup>3</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>4</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Jesmond Dene Laboratory	50% TEA in Acetone	2007	UC	Newcastle upon Tyne CC	9	34	28	23.6%	G	<b>0.81</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	K	Gateshead Council	12	45	35	28.6%	P	<b>0.78</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	K	Gateshead Council	11	47	33	40.9%	P	<b>0.71</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	K	Gateshead Council	11	44	36	20.6%	P	<b>0.83</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	R	Gateshead Council	9	47	30	53.7%	P	<b>0.65</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	K	AEA Tech Intercomparison	12	118	103	15.0%	G	<b>0.87</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	R	Newcastle upon Tyne CC	12	50	42	19.2%	G	<b>0.84</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007	UC	Newcastle upon Tyne CC	9	34	30	14.4%	G	<b>0.87</b>
Jesmond Dene Laboratory	50% TEA in Acetone	2007			<b>Overall Factor<sup>3</sup> (8 studies)</b>			<b>Use</b>		<b>0.79</b>

<sup>1</sup> For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone; for Bureau Veritas Labs and Eurofins use Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins; for Staffordshire County Analyst use Staffordshire CC SS

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

<sup>3</sup> 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.

<sup>4</sup> If you have your own collocation 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

**APPENDIX II. Permits Issued By Richmondshire District Council Under the Pollution Prevention and Control Act 1999, Pollution Prevention and Control (England and Wales) Regulations 2000 (As Amended)**

**A1 Processes** (Regulated by the Environment Agency) – None

**A2 Processes** - None

**Part B processes**

Richmondshire has 33 low risk premises, 5 medium risk processes and 1 high risk process. There are also 15 processes which do not require a risk rating (service stations, waste oil burners and dry cleaners).

This gives a requirement of 54 full inspections, 5 check inspections and extra inspections as necessary over the course of the financial year.

(This figure may be subject to change if there are any new applications, any surrendered permits or any changes in risk rating between now and the start of the contract).

The breakdown of process types is as follows:

<b>Process</b>	<b>Total permits</b>
coating	2
other mineral (including 22 mobile crushers)	28
bulk cement	5
di-isocyanate	3
combustion	1
timber	1
service station	9
WOB	4
dry cleaning	1
<b>TOTAL</b>	<b>54</b>

**Public Register  
Pollution Prevention and Control Summary of Permits**

<b>1. Operator</b>	<b>ABRO</b> Leyburn Road Catterick Garrison North Yorkshire DL9 3LL	<b>Process</b> <b>Section</b> <b>PG note</b>	Vehicle re-spraying SI 1973 Section 6.4 Coating Activities, Printing and Textile Treatments Part B 6/34(04)
<b>Contact</b>	Mark Layfield 01748 872 121	<b>Risk rating</b>	Low
<b>Correspondence address</b>	As above	<b>Permit</b>	24/2006P
		<b>Permit varied</b>	Issued 30 March 2005, Varied 8 June 2006
<b>2. Operator</b>	<b>Banner Contracts (Halnaby) Ltd</b> The Coach House Halnaby Hall Croft on Tees Darlington County Durham DL2 2TJ	<b>Process</b> <b>Section</b> <b>PG note</b>	Mobile crushing and screening SI 1973 s 3.5 Other Mineral Activities (a) PG 3/16(04)
<b>Contact</b>	Jo Banner 01325 377 593	<b>Risk rating</b>	All low
<b>Correspondence address</b>	As above		21 permits covering 28 crushers

<b>Banner Contracts (Halnaby) Ltd continued</b>			
<b>No</b>	<b>Permit ref</b>	<b>Crusher type</b>	<b>Existing permit Varied</b>
1	19E/2006P	Kobelco cone	31 Jan 06
2	19F/2007P	Metso jaw	23 Jan 07
3	19G/2006P	Metso jaw	20 Nov 06
4	19H/2006P	Extec C12 jaw	31 Jan 06
5	19J/2006P	Kobelco cone	31 Jan 06
6	19K/2006P	Extec C12 jaw, metso/nordberg	31 Jan 06
7	19L/2007P	Extec impact, Extec jaw, Metso cone	23 Jan 07
8	19M/2006P	Extec C12 jaw	19 Jan 06
9	19N/2006P	Svedala cone	31 Jan 06
10	19P/2006P	Pegson Maxtrak Cone	31 Jan 06
11	19Q/2006P	Extec C12 jaw	31 Jan 06
12	19R/2007P	Extec HP200 cone	26 Nov 07
13	19S/2006P	Kobelco cone, Parker Cone	31 Jan 06
14	19T/2005P	Nordberg Cone	14/12/05
15	19U/2006P	Metso cone	19 Jan 06
16	19V/2006P	Metso cone	26 Nov 07
17	19W/2006P	Kobelco cone	31 Jan 06
18	19X/2006P	Extec C12 jaw , 2° crusher	31 Jan 06
19	19Y/2006P	Extec C12 jaw , 2° crusher	31 Jan 06
20	19Z/2007P	Extec C12 jaw, 2° crusher	23 Jan 07
21	19A/2007P	Extec C12+ jaw	26 Nov 07

<b>3. Operator name</b>	<b>Barton Park</b>	<b>Process</b>	Unloading of petrol into storage at Service Stations
<b>Site address</b>	Barton Near Richmond North Yorkshire DL10 6NA	<b>Legislation</b>	SI 1973 Schedule 1 Part 1 Part B(d)
<b>Permit reference</b>	30/2006P	<b>Original issue date</b>	1998



<b>4. Operator</b>	<b>Sherburn Stone Ltd</b>	<b>Process</b>	Quarry process Roadstone Coating
	Barton Quarry	<b>Section</b>	Environment Agency Landfill Application SI 1973 Section 3.5 Other Mineral Activities Part B (a) SI 1973 s 3.5 Other Mineral Activites (e)
	Barton	<b>PG note</b>	3/08(04) 3/15a(04)
<b>Contact</b>	Mr Ascough 0191 3720 636	<b>Risk rating</b>	High medium
<b>Correspondence address</b>	15 Front Street Sherburn Hill Co. Durham DH6 1PA	<b>Permit</b>	15/2006P 49/2006P
		<b>Permit varied</b>	8 March 06
		<b>Appl made</b>	8 July 05

<b>5. Operator</b>	<b>CEMEX UK Materials Ltd</b>	<b>Process</b>	Bulk cement	Roadstone Coating and crushing
		<b>Section</b>	SI 1973 s 3.1 Production of Cement and Lime Part B	SI 1973 s 3.5 Other Mineral Activites (e)
	Black Quarry Leyburn Richmond North Yorkshire DL8 5LA Simon Hird	<b>PG note</b>	3/1(04)	3/8 and 3/15a
<b>Contact</b>		<b>Risk rating</b>	Low	Medium
<b>Correspondence address</b>	CEMEX House Coldharbour Lane Thorpe Egham Surrey TW20 8TD	<b>Permit</b>	7/2006P	14/2004P
		<b>Permit varied</b>	2 March 2006 (original 1993)	24 March 2004

<b>6. Operator</b>	<b>Bruce Cook Road Planing Ltd</b> Gatherley Road Industrial Estate Brompton-on-Swale Richmond North Yorkshire DL10 7LQ	<b>Process</b> <b>Section</b> <b>PG note</b>	Waste oil burner, less than 0.4 MW SI 1973 s1.1 Combustion Activities Part B 1/1(04)
<b>Contact</b>	Bill Renton 811 949	<b>Risk rating</b>	low
<b>Correspondence address</b>	As above	<b>Permit</b> <b>Permit varied</b>	4/2004P Issued 24 March 2004 Permit surrendered

<b>7. Operator</b>	<b>Chas Long</b> The Gravel Works Station Road Brompton-on-Swale Richmond North Yorkshire DL10 7HN	<b>Process</b> <b>Section</b> <b>PG note</b>	Storage of bulk cement SI 1973 s3.1(04) 3/1(04)
<b>Contact</b>	Mark Long 811 359	<b>Risk rating</b>	
<b>Correspondence address</b>	Woodside Brompton on Swale Richmond North Yorkshire DL10 7JL	<b>Permit</b> <b>Permit Issued</b>	53/2007P 25 Oct 07

<b>8. Operator</b>	<b>Coates Garage</b> Scorton Richmond North Yorkshire DL10 6AF	<b>Process</b> <b>Section</b> <b>PG note</b>	Waste oil burner, less than 0.4 MW SI 1973 s1.1 Combustion Activities Part B 1/1(04)
<b>Contact</b>	811 349	<b>Risk rating</b>	Low
<b>Correspondence address</b>	As above	<b>Permit</b> <b>Permit varied</b>	1/2004P 24 March 2004 (original issued 1992)

<b>9. Operator</b>	<b>The Contracting Services Unit, Richmondshire District Council</b> The Depot Borough Road Gallowfields Trading Estate Richmond North Yorkshire DL10 4SY	<b>Process</b>  <b>Section</b> <b>PG note</b>  <b>Risk rating</b>  <b>Permit</b>	Waste oil burner, less than 0.4 MW  SI 1973 s1.1 Combustion Activities Part B 1/1(04)  low  37/2004P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	Issued 24 March 2004
<b>10. Operator</b>	<b>Copley Décor Ltd</b> Unit 1 Leyburn Industrial Estate Leyburn North Yorkshire DL8 5QA	<b>Process</b> <b>Section</b> <b>PG note</b>  <b>Risk rating</b>  <b>Permit</b>  <b>Permit varied</b>	Di-isocyanate Process SI 1973 Section 4.1 Organic Chemicals Part B 6/29(04)  Low  20/2006P  10 March 2006 (original 1992)
<b>Contact</b>	Mr Storr 01969 623 410		
<b>Correspondence address</b>	As above		
<b>11. Operator</b>	<b>Dale Head Garage</b> Town Head Hawes North Yorkshire DL8 3RG	<b>Process</b> <b>Section</b> <b>PG note</b>  <b>Risk rating</b>  <b>Permit</b>  <b>Permit varied</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)  Low  39/2006P  1 March 2006 (original issued 2001)
<b>Contact</b>	Mr Brayshaw 01969 667 483		
<b>Correspondence address</b>	Millbeck Hawes 8 Gayle Lane Hawes North Yorkshire DL8 3RS		

<b>12. Operator</b>	<b>Darlington Road Garage</b> Darlington Road Richmond North Yorkshire DL10 7AW	<b>Process Section</b> <b>PG note</b>  <b>Risk rating</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)  low
<b>Contact</b>	Peter Marwood 01748 824 203	<b>Permit</b>	40/2006P
<b>Correspondence address</b>	Greywalls Quaker Lane Richmond North Yorkshire DL10 4AX	<b>Permit varied</b>	1 March 2006  Original authorisation issued 2001
<b>13. Operator</b>	<b>Fast fit (S G Petch)</b> Green Howard's Road Gallowfields Industrial Estate Richmond North Yorkshire DL10 4SY	<b>Process Section</b> <b>PG note</b>  <b>Risk rating</b>  <b>Permit</b>  <b>Permit varied</b>	Waste oil burner, less than 0.4 MW SI 1973 s1.1 Combustion Activities Part B 1/1(04)  Low  44/2004P
<b>Contact</b>	Barry Hodgeson		
<b>Correspondence address</b>	S.G. Petch Ltd McMullen Road Darlington DL1 1XZ		
<b>14. Operator</b>	<b>Hanson Aggregates</b>  Forcett Quarry East Layton Richmond North Yorkshire DL11 7PH	<b>Process Section</b>  <b>PG notes</b>  <b>Risk rating</b>	Quarry process & mineral drying and roadstone coating SI 1973 Section 3.5 Other Mineral Activities Part B (a) SI 1973 s 3.5 Other Mineral Activities Part B (e) 3/8(04) 3/15a(04)  Medium
<b>Contact</b>	Dominic Doyle 01325 718 291	<b>Permit</b>	18/2006P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	21 April 2006 (original permit 1993)

<b>15. Operator</b>	<b>International Pipeline Products Ltd</b> Walkerville Industrial Estate Catterick Garrison North Yorkshire DL9 4RR	<b>Process</b>  <b>Section</b> <b>PG note</b>  <b>Risk rating</b>	Di-isocynate Process  SI 1973 Section 4.1 Organic Chemicals Part B 6/29(04)  Medium
<b>Contact</b>	Peter Mahoney 01748 834 121	<b>Permit</b>	23/2006P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	22 March 2006 (original 1994)

<b>16. Operator</b>	<b>Johnson Cleaners UK Ltd</b> Johnson Cleaners 2/3 Trinity Church Square Richmond North Yorkshire DL10 4HY	<b>Process</b>  <b>Section</b> <b>PG note</b>  <b>Risk rating</b>	Dry cleaning  SI 1973 Schedule 1 Section 7 6/46(04)  Low
<b>Contact</b>	Linda Oakes (regional manager) 0777 616 3447 Shop 01748 850 980 Head office 0151 933 6161	<b>Permit</b>	51/2007P
<b>Correspondence address</b>	Mildmay Road Bootle Merseyside L20 5EW	<b>Permit issued</b>	27 Feb 2007 (conditions came into effect 31 Oct 2007)

<b>17. Operator</b>	<b>Kenworth Ltd</b> Beacon Garage Catterick Road Catterick Garrison North Yorkshire DL9 4RZ	<b>Process</b> <b>Section</b> <b>PG note</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Fiona Robson/Barbara Lee 01748 833 769	<b>Permit</b>	29/2006P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	1 March 2006 (original issued 1998)
<b>18. Operator</b>	<b>Leyburn Self Service</b> Middleham Road Leyburn North Yorkshire DL8 5EV	<b>Process</b> <b>Section</b> <b>PG note</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Nigel Walton 01969 624 019	<b>Permit</b>	26/2006P
<b>Correspondence address</b>	NIAD Ltd Springfield Garage Oakworth Road, Keighley West Yorkshire, BD21 1QQ	<b>Permit varied</b>	1 March 2006  Original authorisation issued 1998
<b>19. Operator</b>	<b>Low Grange Quarry Ltd</b>  Low Grange farm Melsonby Richmond DL10 5PN	<b>Process</b>  <b>Section</b> <b>PG note</b>	Storage of bulk cement  SI 1973 s 3.1 Production of Cement and Lime Part B 3/1(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Austin Richardson 01325 718 498	<b>Permit</b>	45/2006P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	2 March 2006 (original 2004)

<b>20. Operator</b>	<b>Oakdale (Contracts) Ltd</b> Walkerville Industrial Park Colburn Catterick Garrison North Yorkshire DL9 4SA	<b>Process Section PG note</b>	Blending, packing, loading and use of bulk cement. SI 1973 s 3.1 Production of Cement and Lime Part B 3/1(04)
<b>Contact</b>	Nick Tutty 01748 834 184	<b>Risk rating</b>	Low
<b>Correspondence address</b>	As above	<b>Permit</b>	13/2006P
		<b>Permit varied</b>	8 February 2006 (original 1993)

<b>21. Operator</b>	<b>CEMEX Uk Materials Ltd</b> Catterick Concrete Plant Pallett Hill Quarry Catterick Village North Yorkshire DL10 7JX	<b>Process Section PG note</b>	Blending, packing, loading and use of bulk cement SI 1973 Section 3.1 Production of Cement and Lime Part B 3/1(04)
<b>Contact</b>	Philip Ferguson 07789 943 511	<b>Risk rating</b>	Low
<b>Correspondence address</b>	CEMEX House Sustainability Department Eveux Way Rugby Warwickshire CV21 2DT	<b>Permit</b>	52/2007P
		<b>Permit issued</b>	23 July 07

<b>22. Operator</b>	<b>Pipeline Engineering and Supply Company Ltd</b> Gatherley Road Industrial Estate Brompton-on-Swale Richmond North Yorkshire DL10 7JG	<b>Process</b>	Di-isocyanate process
		<b>Section</b>	SI 1973 Section 4.1 Organic Chemicals Part B
		<b>PG note</b>	6/29(04)
		<b>Risk rating</b>	N/a
<b>Contact</b>	Jonathon Gallagher 01748 818 341	<b>Permit</b>	50/2007P
		<b>Permit issued</b>	26 March 2007
<b>Correspondence address</b>	As above		
<b>23. Operator</b>	<b>Ravensworth Nurseries</b>  Ravensworth Richmond North Yorkshire DL11 7HA	<b>Process</b>	Combustion of fuel manufactured from or comprised of solid waste in appliances between 0.4 and 3MW rated thermal input.
		<b>Section</b>	SI 1973 s 1.1 Combustion Activities Part B
		<b>PG note</b>	1/12(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Brian Bradbrook 01748 718 370	<b>Permit</b>	47/2005P
		<b>App received</b>	16/5/05
<b>Correspondence address</b>	As above	<b>App duly made</b>	24/5/05
		<b>Permit issued</b>	1 November 2005
<b>24. Operator</b>	<b>Roadstone Recycling</b>  Gatherley Road Industrial Estate Brompton on Swale Richmond North Yorkshire DL10 7JQ	<b>Processes (2 permits)</b>	1X Roadstone coating/mobile crushing/use of bulk cement
		<b>Section</b>	SI 1973 s 3.5 Other Mineral Activities (e) & SI 1973 s 3.1 Production of Cement and Lime Part B
		<b>PG note</b>	3/1(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Brian Ross 01748 811 232	<b>Permit</b>	41/2007P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	23 Feb 07 (original 1999)



<b>25. Operator</b>	<b>Joggar Plant Hire Ltd</b>	<b>Processes (2 permits)</b>	1X Mobile crushing
	Gatherley Road Industrial Estate Brompton on Swale Richmond North Yorkshire DL10 7JQ	<b>Section</b>	SI 1973 s 3.5 Other Mineral Activities (a)
		<b>PG note</b>	3/16(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Brian Ross 01748 811 232	<b>Permit</b>	43/2007P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	9 March 2006 (original 2003)
<b>26. Operator</b>	<b>S G Petch Ltd</b>	<b>Process</b>	Waste oil burner, less than 0.4 MW
	<b>Greenhowards Road</b>	<b>Section</b>	SI 1973 s1.1 Combustion Activities Part B
	Gallowfields Trading Estate Richmond North Yorkshire DL10 4SY	<b>PG notes</b>	1/1(04)
		<b>Risk rating</b>	Low
<b>Contact</b>	Mr Mark Hillary 01748 826 912	<b>Permit</b>	25/2006P
<b>Correspondence address</b>	S.G. Petch Ltd McMullen Road Darlington DL1 1XZ	<b>Permit varied</b>	1 December 2006 (Original authorisation 1998)

<b>27. Operator</b>	<b>S G Petch Ltd</b> 21/23 <b>Victoria Road</b> Richmond North Yorkshire DL10 4AS	<b>Process</b> <b>Section</b> <b>PG notes</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)
<b>Contact</b>	Mr L.C. Rudd 01748 825 757	<b>Risk rating</b>	Low
<b>Correspondence address</b>	Mr Rees S.G. Petch Ltd McMullen Road Darlington DL1 1XZ	<b>Permit</b>  <b>Permit varied</b>	27/2006P  1 March 2006 (Original authorisation 1998)
<b>28. Operator</b>	<b>CEMEX UK Materials Ltd</b> <b>Scorton Quarry</b> Scorton Richmond North Yorkshire DL10 6NP	<b>Process</b> <b>Section</b> <b>PG note</b>	Blending, packing, loading and use of bulk cement. SI 1973 s 3.1 Production of Cement and Lime Part B 3/1(04)
<b>Contact</b>	John Morby 07803 078994	<b>Risk rating</b>	Low
<b>Correspondence address</b>	Elland Road Leeds West Yorkshire LS11 8BA	<b>Permit</b>  <b>Permit varied</b>	9/2006P  6 March 2006 (original issued 1993)

<b>29. Operator</b>	<b>Esso Petroleum</b>	<b>Process</b>	Unloading of petrol into storage at Service Stations
	<b>Scotch Corner Service Station</b>	<b>Section</b>	SI 1973 Schedule 1 Part 1 Part B(d)
	A1	<b>PG note</b>	1/14(04)
	Middleton Tyas	<b>Risk rating</b>	low
<b>Contact</b>	Debbi Smith	<b>Permit</b>	31/2006P
<b>Correspondence address</b>	Esso Petroleum Company Ltd	<b>Permit varied</b>	1 March 2006
	Esso House		Original authorisation issued 1998
	Ermyn Way		
	Leatherhead		
	Surrey		
	KT22 8UX		

<b>30. Operator</b>	<b>Shell UK Ltd</b>	<b>Process</b>	Unloading of petrol into storage at Service Stations
	<b>High Brough Moor</b>	<b>Section</b>	SI 1973 Schedule 1 Part 1 Part B(d)
	A1 Scotch Corner	<b>PG note</b>	1/14(04)
	Richmond	<b>Risk rating</b>	Low
	North Yorkshire	<b>Permit</b>	32/2006P
	DL10 6PB	<b>Permit varied</b>	1 March 2006
<b>Contact</b>	Mick Wrightson		Original issued 1998
<b>Correspondence address</b>	Shell UK Ltd		
	Shell Centre		
	York Road		
	London		
	SE1 7NA		

<b>31. Operator</b>	<b>Tesco Petrol Filling Station</b> Catterick Garrison Gough Road Richmond Walk Catterick Garrison North Yorkshire	<b>Process</b> <b>Section</b> <b>PG note</b>	Unloading of petrol into storage at Service Stations SI 1973 Schedule 1 Part 1 Part B(d) 1/14(04)
<b>Contact</b>	Linda McNally 01748 542 400	<b>Risk rating</b>	low
<b>Correspondence address</b>	Tesco Stores Ltd New Tesco House PO Box 18 Delamare Road Cheshunt Hertfordshire EN8 9SL	<b>Permit</b> <b>Permit varied</b>	35/2006P 1 March 2006  Original authorisation issued 1999

<b>32. Operator</b>	<b>Yorwaste Ltd</b>  Tancred Landfill Site  Environment Agency Permit application To be retained in our public register		
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<b>33. Operator</b>	<b>Thomas Armstrong (Concrete Blocks) Ltd</b> Bridge Road Brompton on Swale Richmond DL10 7HW	<b>Process</b> <b>Section</b> <b>PG note</b>	Blending, packing, loading and use of bulk cement. SI 1973 s 3.1 Production of Cement and Lime Part B 3/1(04)
<b>Contact</b>	Bill Nichols 01748 810 204	<b>Risk rating</b>	Low
<b>Correspondence address</b>	As above	<b>Permit</b> <b>Permit varied</b>	41/2005P  Subs change 23/11/05 (Original 2003)

<b>34. Operator</b>	<b>Thomas Weatherald Ltd</b>	<b>Process (2 processes and 2 permits)</b>	Manufacture of timber & wood based products. Wood coating.
	Abbey Works Askrigg Leyburn North Yorkshire DL8 3HY	<b>Section</b>	SI 1973 Section 6.6 Timber Activities SI 1973 Section 6.4 Coating Activities, Printing and Textile Treatments Part B
		<b>PG notes</b>	(t) 6/2(04) (c) 6/33(04)
		<b>Risk rating</b>	Low Low
<b>Contact</b>	Mr Williamson 01969 650 160	<b>Permit</b>	(t) 6/2006P (c) 22/2004P
<b>Correspondence address</b>	As above	<b>Permit varied</b>	(t) 30 March 2006 (original 1992) (c) 30 March 2004 (original 1994)

<b>35. Operator</b>	<b>Tarmac</b>	<b>Process</b>	Quarry process
	<b>Wensley Quarry</b> Redmire Leyburn North Yorkshire DL8 4HD	<b>Section PG note</b>	SI 1973 Section 3.5 Other Mineral Activities Part B (a) 3/8(04)
		<b>Risk rating</b>	Low
		<b>Permit</b>	16/2006P
<b>Contact</b>	Victoria Cooper 01969 622 342	<b>Permit varied</b>	22 March 2006 (original 1994)
<b>Correspondence address</b>	Tarmac Ltd Millfields Road Ettingshall Wolverhampton WV4 6JP (with copies to Victoria Cooper at Wensley Quarry)		

## References

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- <sup>i</sup> Richmondshire District Council (1999) Stage 1 Air Quality Review and Assessment.
- <sup>ii</sup> Defra, (February 2003), Local Air Quality Management, Technical Guidance LAQM.TG(03).
- <sup>iii</sup> Richmondshire District Council (2003) Updating and Screening Assessment of Air Quality in the District of Richmondshire.
- <sup>iv</sup> Richmondshire District Council (2003) Solid Fuel Use in the District of Richmondshire.
- <sup>v</sup> Richmondshire District Council (2005) Detailed Assessment of Sulphur Dioxide Emissions from Domestic Solid Fuel Sources.
- <sup>vi</sup> Richmondshire District Council (2005) Air Quality in the District of Richmondshire – Progress Report.
- <sup>vii</sup> Richmondshire District Council (2006) Updating and Screening Assessment of Air Quality in the District of Richmondshire.
- <sup>viii</sup> Richmondshire District Council (2007) Air Quality in the District of Richmondshire – Progress Report.
- <sup>ix</sup> DETR (January 2000), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
- <sup>x</sup> Defra, (February 2003), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum.
- <sup>xi</sup> The Air Quality (England) Regulations 2000, Statutory Instrument 928
- <sup>xii</sup> The Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043.
- <sup>xiii</sup> Spreadsheet of Diffusion Tube Bias Adjustment Factors <http://www.uwe.ac.uk/aqm/review/>
- <sup>xiv</sup> Mouchel Parkman (September 2002) Environmental Statement A66 Greta Bridge to Stephen Bank and Carkin Moor to Scotch Corner.
- <sup>xv</sup> Richmondshire District Council (March 2008), Richmondshire District Council Staff and Member Green Travel Plan.