Air Quality Action Plan Progress Report for Ryedale District Council 2013

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

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Executive Summary

This report summarises the results of recent air quality monitoring in the Ryedale district and includes the first progress report on the implementation of measures identified in the Malton Air Quality Action Plan (AQAP) since its adoption in 2012. The report contains up to date information on the results of air quality monitoring undertaken since the period covered by an Updating and Screening Assessment (USA) Report published in 2012.

The Progress Report has regard to the objectives set by the Air Quality Regulations 2000, the Air Quality (Amendment) Regulations 2002 and detailed technical guidance contained in LAQM.TG (09).

Analysis of nitrogen dioxide (NO_2) data shows that in 2012 annual mean concentrations (measured using diffusion tubes) continued to exceed the air quality objective (AQO) at certain relevant receptor locations within the Malton Air Quality Management Area (AQMA) thereby justifying the continuation of the AQMA established by order in 2009. No breaches of this AQO were found outside the AQMA.

The results also show increases in NO_2 levels at several sites within the AQMA. These are attributable to the impact of higher traffic levels and increased congestion in Malton caused by the closure of the A64 Brambling Fields junction for the duration of construction works to upgrade the junction.

The latest results have not identified any requirement to modify the AQMA boundary or to proceed to any further Detailed Assessment of air quality.

Monitoring for benzene did not indicate that any air quality objectives for this pollutant were breached.

There has been significant progress with implementation of the Malton AQAP, including in particular the construction of the Brambling Fields Grade Separated Junction improvement, which opened in September 2012. This has now provided an alternative access to Norton for traffic travelling eastbound on the A64, thus avoiding the need for travel through the AQMA. The junction improvement also provides an alternative route for local traffic to travel between Malton and Norton that avoids a heavily congested section of the B1248 between Butcher Corner and County Bridge within the AQMA.

There is at present insufficient data from air quality monitoring undertaken at relevant locations inside and just outside the Malton AQMA to determine the impact of the improved junction on levels of NO_2 in the AQMA.

Various other Action Plan measures have been implemented and the complementary measures associated with the Brambling Fields upgrade will be subject to further consideration when the impact of the upgrade is evaluated. As set out in the Action Plan this will start not less than 6 months after the opening of the junction. It is considered that a review date of 12 months after opening is appropriate for assessment of the impact of the junction on traffic levels and air quality.

Monitoring of NO_2 will continue throughout 2013 and beyond at all existing sites.

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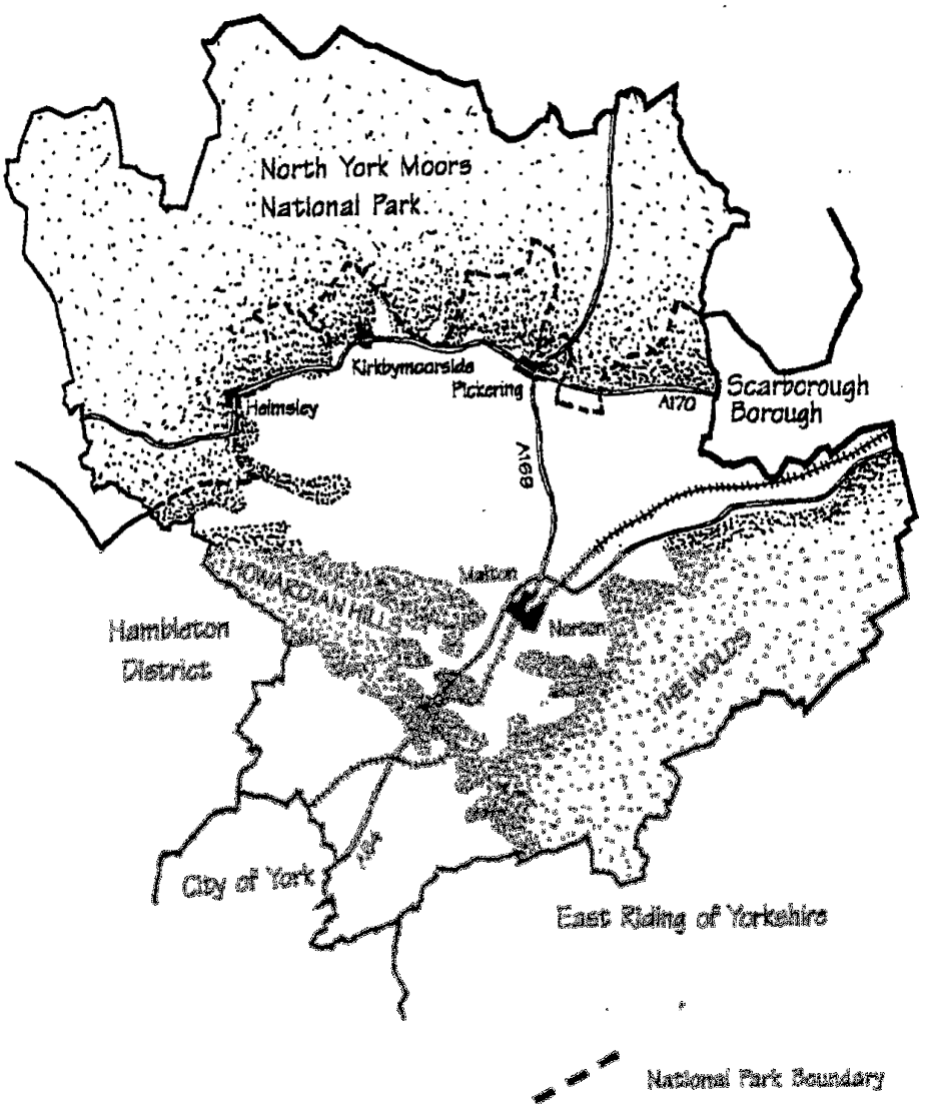
Introduction

1.1 Description of Local Authority Area

Ryedale is one of six districts in the County of North Yorkshire. It is located in the east of the region and is bounded by: Hambleton to the west; Scarborough to the north and east; Selby to the south; the unitary authority of East Riding of Yorkshire to the south east; and the City of York unitary authority to the west. Ryedale, with an area of 575 square miles (150,659 hectares), is the largest district in the County of North Yorkshire.

Figure 1.1 shows a plan of the district detailing its boundaries, broad topographical features, major towns, trunk roads and railways.

Figure 1.1 - Plan of Ryedale District



Ninety per cent of the districts land area is used for agricultural purposes and more than 10% of the workforce is employed in this sector. Agriculture and forestry together employ 15% of the workforce compared with less than 2% nationally.

The main sources of air pollution in the borough include transportation, emissions from the commercial and domestic sector and local industry

Mineral extraction is undertaken at more than ten sites around the district. The Vale of Pickering is the site of a land based natural gas extraction field. Gas is piped from several well sites to a 50 MW electricity generating station at Knapton near Malton.

Ryedale has a diverse range of industries and a high proportion of small firms employing less than 25 people. The economy is characterised by a mixed manufacturing sector with emphasis on hi-tech research and development, and manufacturing for national and international markets. There are however some large firms, each employing several hundred people, these include a number of food processing operations and construction materials manufacturers.

Industrial activity is largely concentrated at sites in or adjacent to the four market towns. These include three small/medium-sized industrial estates at Malton/Norton, two at Pickering, and one each at Helmsley and Kirkbymoorside. Significant industrial sites also exist elsewhere, notably at Sherburn and Knapton.

There are currently over 70 industrial processes operating within Ryedale that are regulated under the Environmental Permitting Regulations. These include:

A total of 39 Part A industrial installations and waste operations regulated by the Environment Agency; and

37 Part B installations and mobile plant regulated by Ryedale DC.

The major road network consists of the A64 (Leeds to Scarborough), A170 and A169 shown in Figure 1.1. Malton, where Ryedale District Council's headquarters are located, is in the centre of Ryedale's road network. The A64 York-Malton-Scarborough road follows the Derwent Valley and the northern edge of the Wolds. The A170 Thirsk - Pickering - Scarborough Road climbs the steep escarpment at Sutton Bank at the western edge of the district and connects the market towns along the southern boundary of the North York Moors. The A169 connects Malton and Pickering whilst the B1248 provides an important route via the Wolds to Beverley and Hull.

1.2 Purpose of Progress Report

In January 2012 Ryedale District Council adopted the Malton Air Quality Action Plan setting out various measures and timescales for their implementation in order to improve air quality in the Malton AQMA. The Council is required to review and assess the implementation and effectiveness of the Action Plan measures and is required to report annually with an evaluation of the progress made.

Alongside it's obligation to monitor progress of the action plan measures, the Council must continue with the review and assessment of air quality in Ryedale by producing

three-yearly local air quality Updating and Screening Assessment (USA) reports and annual progress reports in the intervening two years. The Council produced its latest USA report in April 2012. The air quality progress report required for 2013 has been incorporated within this action plan progress report and includes details of the latest results of air pollution monitoring within and in proximity to the Malton AQMA.

1.3 Air Quality Objectives

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

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

Pollutant	Concentration	Measured As	Date to be achieved by
Benzene	16.25 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	10.0 mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 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
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Table 1.2 - Summary of Ryedale District Councils Previous Review & Assessments.

ROUND	STAGE	DATE COMPLETED	OUTCOME
1	1	1999	2nd Stage Assessment Required for Sulphur dioxide; Nitrogen dioxide; and PM_{10}
1	2	2000	No further Action Required
2	Updating & Screening Assessment	2003	Detailed Assessment Required for Nitrogen dioxide; and PM_{10}
2	Detailed Assessment	2004	No further Action Required
2	Progress Report	2005	No further Action Required
3	Updating & Screening Assessment	2006	No further Action Required
3	Progress Report	2007	Detailed Assessment Required for Nitrogen dioxide
3	Detailed Assessment	2009	Air Quality Management Area Designation (Malton AQMA 14 December 2009)
4	Updating & Screening Assessment	2009	No further Action Required
4	Progress Report	2010	No further Action Required
Further Assessment		2011	Requirement for AQMA confirmed, source apportionment undertaken and required reduction in NO2 from local road traffic identified.
4	Progress Report	2011	No further Action Required
5	Updating & Screening Assessment	2012	No further Action Required

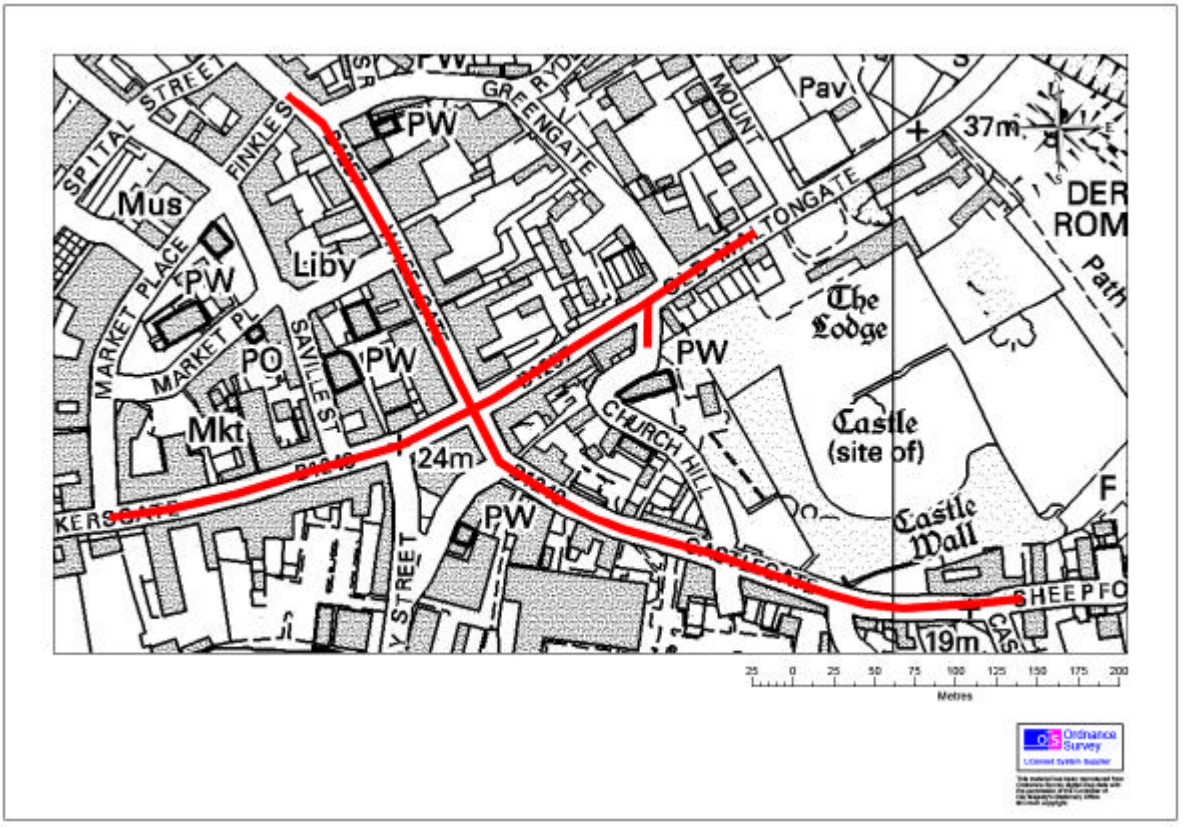
Malton Air Quality Management Area

The Malton Air Quality Management Area Order was made by the Council on 14 December 2009 (Ryedale DC, 2009). The Order relates to current and projected levels of nitrogen dioxide that breach, or are likely to breach, the nitrogen dioxide (annual mean) air quality objective of 40 µg/m^3, as prescribed by the Air Quality (England) Regulations 2000 (as amended). A map of the AQMA is shown below in Figure 1.2.

The Order identifies the area designated as an AQMA, which is described as the roads or stretches of roads listed in the Order and shown marked on the map. It includes all the properties, whether residential or commercial, with facades on these roads. The designated area includes the whole of these properties, i.e. buildings and associated open space within the same curtilage.

Although the Detailed Assessment indicated that the annual mean objective was not breached throughout the AQMA, it was decided that declaring a single area encompassing all the required locations was preferable to declaring multiple smaller AQMA's. As well as being more complex administratively, the designation of multiple smaller AQMA's would have increased the risk of missing out areas of exceedence.

Figure 1.2 - Map of Malton Air Quality Management Area



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

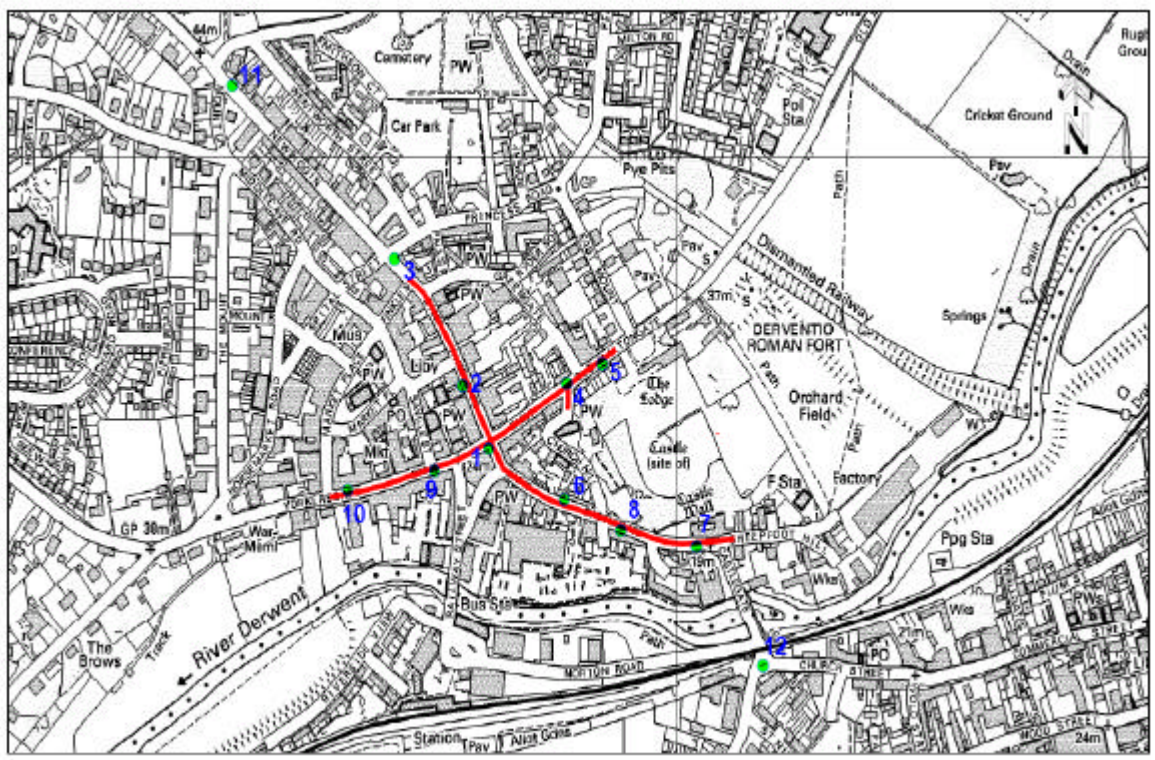
Automatic Monitoring Sites

No automatic monitoring was undertaken in the period covered by this report

Non-Automatic Monitoring Sites

Ryedale District Council operates a network of nitrogen dioxide diffusion tubes at sites in Malton as well as several other sites elsewhere in the district. The locations of the Malton sites are shown in Figure 2.1. The other site locations are shown in figures 2.2 to 2.6 and details of all the sites are set out in Table 2.1.

Figure 2.1- Map of NO_2 Diffusion Tube Monitoring Sites within and in proximity to the Malton AQMA



Ordnance Survey Licensed System Supplier

Figure 2.2- Location of Helmsley NO_2 and BTEX Diffusion Tube Monitoring Site

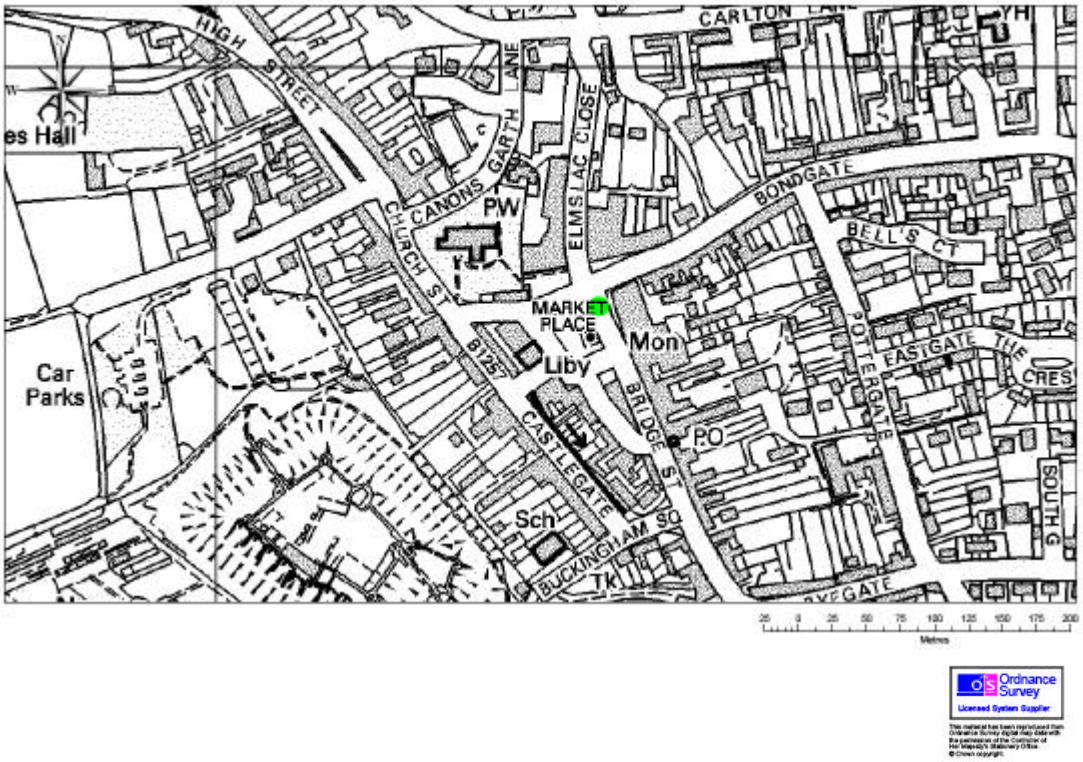


Figure 2.3- Location of Pickering NO_2 and BTEX Diffusion Tube Monitoring Site

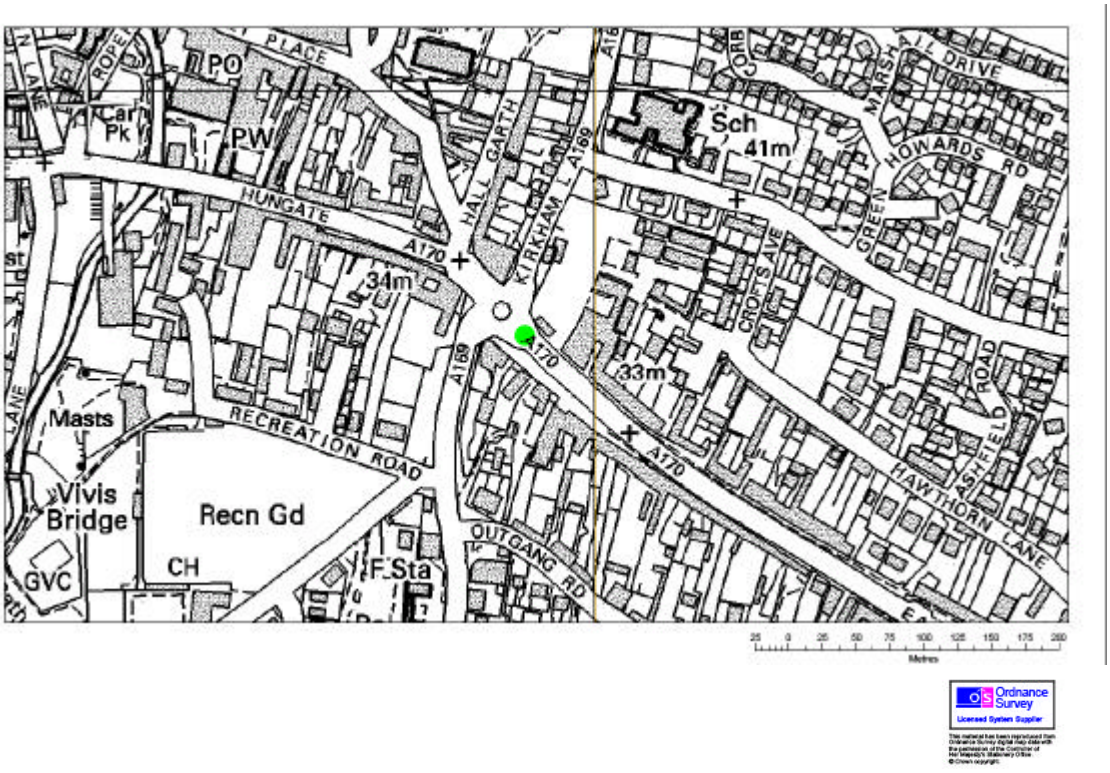


Figure 2.4- Location of Sherburn NO_2 Diffusion Tube Monitoring Site

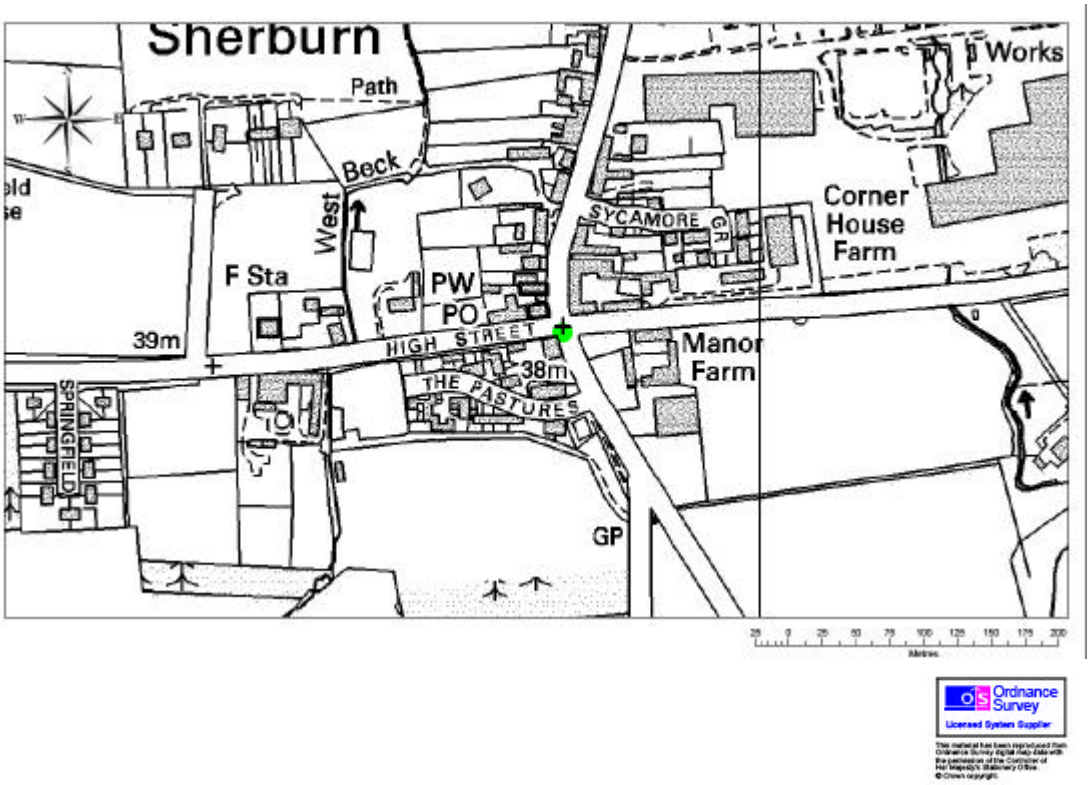


Figure 2.5- Location of Rillington NO_2 Diffusion Tube Monitoring Site

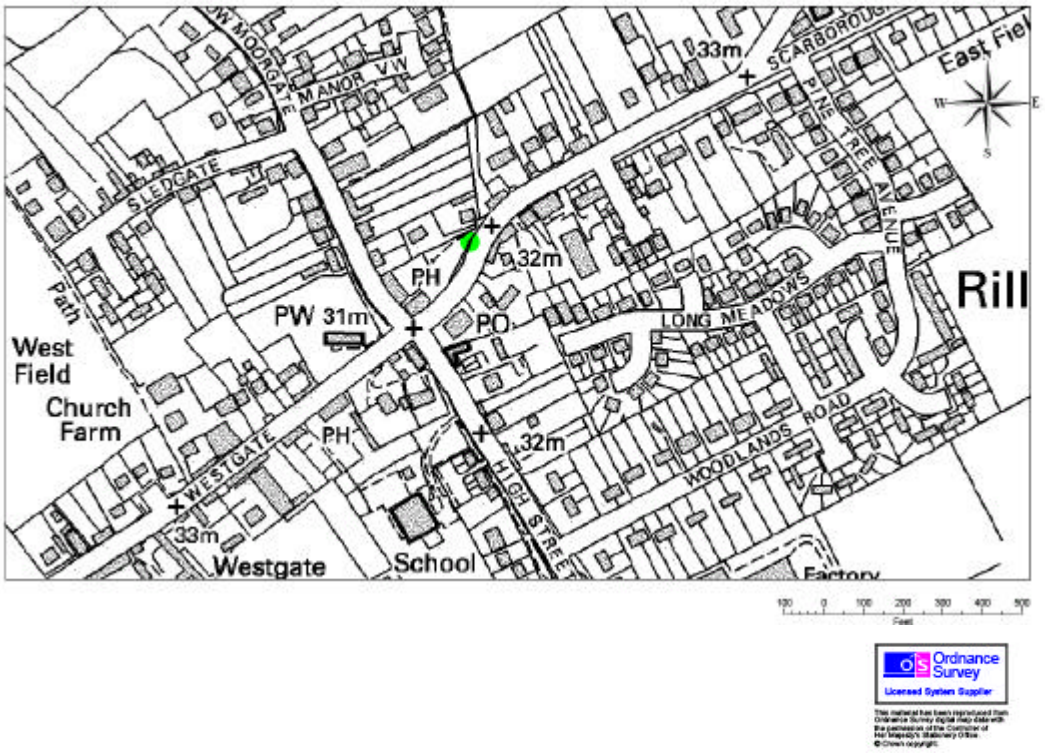


Figure 2.6- Location of Norton NO_2 Diffusion Tube Monitoring Site

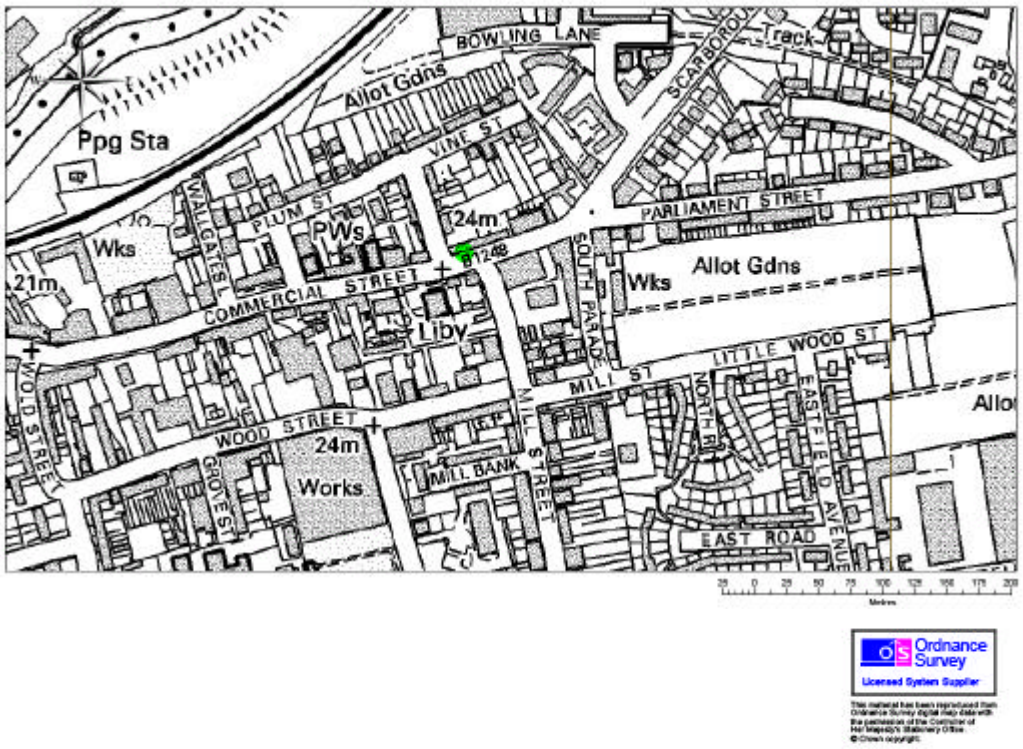


Table 2.1 - Details of Non- Automatic NO_2 Monitoring Sites

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road	Is monitoring collocated with a Continuous Analyser (Y/N)	Does this location represent worst-case exposure?
1 - Yorkersgate – Castlegate, Butcher Corner, Malton	Roadside	X 478739 Y 471654	Y	Y(5m)	3m	N	Y
2 – Wheelgate (1), Malton	Roadside	X 478703 Y 471729	Y	Y (1m)	2m	N	Y
3 – Wheelgate (2), Malton	Roadside	X 478609 Y 471880	N	Y (m)	2m	N	N
4 - Old Malton Gate (1), Malton	Kerbside	X 478847 Y 471732	Y	Y (1m)	1m	N	Y
5 - Old Malton Gate (2), Malton	Roadside	X 478896 Y 471755	Y	Y (1m)	3m	N	Y
6 – Castlegate (1), Malton	Roadside	X 478844 Y 471594	Y	Y (2m)	2m	N	N
7 – Castlegate (2), Malton	Roadside	X 479027 Y 471538	Y	Y (1m)	2m	N	Y
8 – Castlegate (3), Malton	Roadside	X 478922 Y 471557	Y	Y (1m)	3m	N	Y
9 – Yorkersgate (1), Malton	Kerbside	X 478664 Y 471628	Y	Y (1m)	1m	N	Y
10 – Yorkersgate (2), Malton	Roadside	X 478544 Y 471605	Y	Y (1m)	2m	N	N
11 – Newbiggin, Malton	Roadside	X 478521 Y 472150	N	Y (3m)	3m	N	N

Site Name	Site Type	OS Grid Ref	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road	Is monitoring collocated with a Continuous Analyser (Y/N)	Does this location represent worst-case exposure?
12 – Church Street, Norton	Kerbside	X 479116 Y 471394	N	Y (10m)	1m	N	N
13 –Scarborough Road, Norton	Roadside	X 479751 Y 471532	N	Y (1m)	2m	N	Y
14 - Pickering	Roadside	X 479943 Y 483823	N	Y (25m)	2m	N	Y
15 - Sherburn	Roadside	X 495853 Y 476755	N	Y (2m)	3m	N	Y
16 - Helmsley	Kerbside	X 461280 Y 483829	N	Y (25 m)	1m	N	Y
17 - Rillington	Roadside	X 485365 Y 474583	N	Y (12 m)	3m	N	N

Diffusion Tube Bias Adjustment and Ratification of Monitoring Data

Diffusion tubes do not provide the same level of precision and accuracy as automatic analysers but they have certain advantages that make them very useful. They are inexpensive and easy to use, which means that monitoring can be carried out at a relatively large number of sites.

Nitrogen dioxide diffusion tubes are supplied by Environmental Scientifics Group (ESG), (formerly known as Harwell Scientifics). Exposed tubes are analysed in accordance with ESG standard operating procedure HS/W1/1015 Issue 15. The tubes are prepared by spiking acetone-triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes are desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection. The laboratory is UKAS accredited for the preparation and testing of NO_2 diffusion tubes.

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical proficiency testing (PT) scheme, operated by the Health and Safety Laboratory (HSL). WASP offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in workplace and ambient air. One such sample is the WASP NO2 test sample type.

WASP NO2 PT forms an integral part of the UK NO2 Network's QA/QC, and is a useful tool in assessing the analytical performance of laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). HSL provides summary proficiency testing data to the LAQM Helpdesk for hosting on the web-pages at http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html.

The performance summary available via the link covering the period from January 2011 to December 2012 states that 100% of results submitted by ESG for assessment under the WASP NO2 PT scheme during this entire period were determined to be satisfactory. This is the highest result achievable (HSL 2012). http://laqm.defra.gov.uk/documents/LAQM-WASP-Rounds-112-119-%28January-2011--December-2012%29-NO2-report.pdf.

The accuracy of measurements obtained using diffusion tubes is expressed as percentage bias relative to the measurements made using a chemiluminescence analyser (the European reference method for measuring nitrogen dioxide concentrations). Bias arises because of:

• the interference of sunlight, wind, temperature and moisture during tube exposure; and
• variations in results arising from laboratory analysis.

Generally diffusion tubes tend to overestimate nitrogen dioxide levels. In order to compensate for this the results obtained using diffusion tubes must be corrected by applying a bias adjustment factor. Bias adjustment factors are determined by means of co-location studies. This involves exposing diffusion tubes alongside an automatic analyser. A bias adjustment factor can then be determined by dividing the annual mean concentration measured by the automatic analyser by the annual mean concentration as measured using co-located diffusion tubes.

Triplicate diffusion tubes are exposed at one of the sites in the Malton AQMA (Site 1) to allow an indication of the precision of the diffusion tubes to be determined. This is done using a spreadsheet provided by The Defra Local Authority Air Quality Support website at http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html. Results for tubes exposed in triplicate in 2012 were found to have good precision overall. Precision is an indication of the reproducibility of results, and tubes are said to have good precision when the coefficient of variation between the triplicate tubes for at least months (during a twelve month period) is less than 20%, and the average coefficient of variation for all periods is less than 10%.

Selection of Bias Adjustment Factor

Local authorities must decide whether to use the result of a local co-location study (if available) or the overall result of relevant studies detailed in the LAQM Support Tool. In making a choice of which bias adjustment factor to use, local authorities must consider a number of points. These are set out in the Technical Guidance LAQM. TG (09) – Box 3.3.

Defras website includes Local Air Quality Support pages at http://laqm.defra.gov.uk/. including the latest version of a *'Nitrogen Dioxide Diffusion Tube Bias Adjustment'* tool at: http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.htm.l

This tool consists of a spreadsheet containing details of local authority co-location study results from around the UK. The spreadsheet shows annual bias factors for each study and each laboratory, together with a combined annual 'national' bias adjustment factor for each particular laboratory.

Table 2.2 Diffusion Tube Bias Adjustment Factor

Source of Factor	*Bias Adjustment Factor*
Defra LAQM National Diffusion Tube Bias Adjustment Factor Spreadsheet V.03/13	0.79

Benzene

In Ryedale Benzene monitoring is undertaken at four roadside sites using Tenax ATD tubes (passive diffusion tubes), which are exposed for successive periods of one month. These tubes also allow determination of ambient concentrations of other hydrocarbon pollutants, namely Toluene, Ethyl-benzene, m,p-xylene and o-xylene. The monitoring sites are roadside sites chosen because of their relatively high road traffic volumes and close proximity to relevant exposure locations. Details of site locations are shown in Table 2.3. The location of the Malton site is the same as NO_2 Site 1 and is therefore shown in Figure 2.1. The Norton site is at the same location as NO_2 Site 12 and is also shown in Figure 2.1. The Helmsley and Pickering NO_2 exposure sites are also used for monitoring Benzene and are shown in Figures 2.2 and 2.3 respectively.

Tenax tubes used by Ryedale District Council are supplied and analysed by ESG Ltd. Standard preparation and sample measurement is carried out according to in house method HS/WI/3015.

The samples are analysed by thermal desorption-gas chromatography-mass spectrometry on a Markes ATD and an Agilent GC -MS.

A Quality Control tube purchased from an external standard source, with known analyte loading, is run with each sequence of samples and we are advised that QC results were all within the action limits.

Table 2.3 - Details of Non-automatic Benzene Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Yorkersgate – Castlegate, Butcher Corner, Malton	Roadside	X 478739 Y 471654	Benzene	N	Y(5m)	3m	Y
Norton - Church St /Welham Rd Junction	Kerbside	X 479116 Y 471394	Benzene	N	Y(17m)	1m	Y
Pickering - Eastgate A170/A169 Junction	Roadside	X 479943 Y 483823	Benzene	N	Y(25m)	2m	Y
Helmsley - Marketplace	Kerbside	X 461280 Y 483829	Benzene	N	Y(25m)	1m	Y

2.2 Monitoring Results and Comparison with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Bias adjusted 2012 annual mean NO_2 concentrations are detailed in Table 2.4. Exceedences of the annual mean objective level (40 µg/m^3) are shown in emboldened text.

Comparison of Monitoring Results with Air Quality Objectives

Sites where AQO Exceeded

The results show that in 2012 the annual mean AQO was exceeded at seven monitoring sites (Sites 1, 2, 4, 5, 7, 8 & 9), each of which lies within the Malton AQMA. All these sites are representative of public exposure.

Sites where AQO not exceeded

The AQO was not exceeded at any sites outside the AQMA. Levels at two sites (sites 6 & 10) within the AQMA were also below the AQO.

Site 6 is a long term site within the AQMA, in a relatively open and exposed location. No annual mean concentration measured at the site has exceeded the AQO over the 12 years during which the site has been in use. Site 10 is situated within but close to the boundary of the AQMA and is one of several sites selected to provide an indication of whether the boundaries extend far enough so as to ensure that all areas of likely exceedence have been included within the AQMA.

Although the level at Site 5, which is within the` AQMA but close to the boundary exceeded the AQO, this does not indicate that there is a need to consider extending the AQMA any further along Old Maltongate. This is because beyond the current boundary there are no relevant receptor locations (building facades) in close proximity to the roadside.

The level at Site 3, which is just outside the AQMA, is well below the AQO and this result also provides reassurance that the AQMA boundary is appropriate.

All these sites are shown in relation to the AQMA in Figure 2.1.

Exceedences of the 1-hour objective may occur at roadside sites if the annual mean exceeds 60 µg/m^3. There were no sites where the annual mean exceeded or approached this level.

Trends

Table 2.5 shows bias adjusted annual mean NO_2 levels at various sites for the five years from 2008 to 2012. The measured concentrations have been adjusted using the overall bias factor for each particular year in question, as published in the latest version of the national database.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes in 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Data Capture 2012	Data with less than 12 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.79) 2012 (μg/m^3)*
1	Yorkersgate – Castlegate, Butcher Corner, Malton	Roadside	Y	Triplicate	12 months	N/A	N	**41**
2	Wheelgate (1), Malton	Roadside	Y	N	12 months	N/A	N	**42**
3	Wheelgate (2), Malton	Roadside	N	N	12 months	N/A	N	30
4	Old Malton Gate (1): Malton	Kerbside	Y	N	11 months	Y	N	**41**
5	Old Malton Gate (2): Malton	Roadside	Y	N	12 months	N/A	N	**41**
6	Castlegate (1): Malton	Roadside	Y	N	12 months	N/A	N	35
7	Castlegate (2): Malton	Roadside	Y	N	12 months	N/A	N	**48**
8	Castlegate (3): Malton	Roadside	Y	N	12 months	N/A	N	**47**
9	Yorkersgate (1): Malton	Kerbside	Y	N	11 months	Y	N	**46**
10	Yorkersgate (2): Malton	Roadside	Y	N	12 months	N/A	N	34

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Data Capture 2012	Data with less than 12 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.79) 2012 (µg/m^3)*
11	Newbiggin (Malton)	Roadside	N	N	12 months	N/A*	N	24
12	Church St (Norton)	Kerbside	N	N	12 months	N/A*	N	23
13	Scarborough Rd Norton	Roadside	N	N	12 months	N/A	N	26
14	Pickering	Roadside	N	N	12 months	N/A	N	27
15	Sherburn	Roadside	N	N	12 months	N/A	N	31
16	Helmsley	Kerbside	N	N	11 months	Y	N	22
17	Rillington	Roadside	N	N	12 months	N/A	N	23

Means "annualised" in accordance with technique detailed in Box 3.2 of TG(09), if monitoring not carried out for the full year.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2012)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3				
			2008* (Bias Adjustment Factor =0.78)	2009 (Bias Adjustment Factor = 0.82)	2010 (Bias Adjustment Factor = 0.86)	2011 (Bias Adjustment Factor = 0.83)	2012 (Bias Adjustment Factor =0.79) *Figure in brackets shows change from 2011 annual mean value*
1	Yorkersgate – Castlegate, Butcher Corner, Malton	Y	**41**	**40**	**45**	**42**	**41(-1)**
2	Wheelgate (1), Malton	Y	**45**	**42**	**45**	**44**	**42(-2)**
3	Wheelgate (2), Malton	N	-	27	33	28	30(+2)
4	Old Malton Gate (1): Malton	Y	37	37	39	38	**41(+3)**
5	Old Malton Gate (2): Malton	Y	-	37	39	**41**	**41(=)**
6	Castlegate (1): Malton	Y	31	31	35	35	35(=)
7	Castlegate (2): Malton	Y	**43**	**42**	**47**	**49**	**48(-1)**
8	Castlegate (3): Malton	Y	**-**	**41**	**44**	**41**	**47(+6)**
9	Yorkersgate (1): Malton	Y	**43**	**42**	**45**	**46**	**46(=)**
10	Yorkersgate (2): Malton	Y	-	29	36	31	34(+3)
11	Newbiggin Malton	N	-	-	-	24	24(=)
12	Church St Norton	N	-	-	-	24	23(-1)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3				
			2008* (Bias Adjustment Factor =0.78)	2009 (Bias Adjustment Factor = 0.82)	2010 (Bias Adjustment Factor = 0.86)	2011 (Bias Adjustment Factor = 0.83)	2012 (Bias Adjustment Factor =0.79) *Figure in brackets shows change from 2011 annual mean value*
13	Scarborough Rd Norton	N	28	26	29	25	26(+1)
14	Pickering	N	30	29	32	27	27(=)
15	Sherburn	N	-	30	35	30	31(+1)
16	Helmsley	N	22	22	23	22	22(=)
17	Rillington	N	25	25	25	22	23(+1))

The results in the table show that in 2012, annual mean levels increased at three of the nine sites within the AQMA in comparison with the previous year. The increases ranged from 1 to 6 μg/m^3. The annual mean levels fell at three sites (by 1 or 2 μg/m^3) and were unchanged at the other three sites. At Site 3, Wheelgate 2, just outside the AQMA there was an increase of 2 μg/m3.

Elsewhere at sites away from the AQMA the results show that annual mean concentrations were the same or within +/- 1 μg/m^3 of levels determined for the previous year.

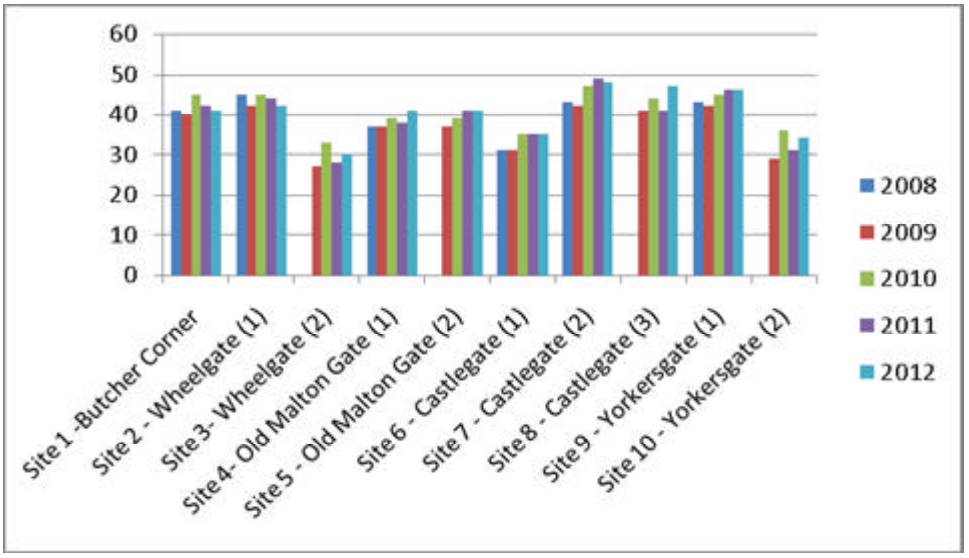
During construction of the A64 Brambling Fields junction improvements the junction was completely closed to traffic throughout the period from the beginning of January 2012 until 18 September 2012. This meant that east and west bound traffic leaving Norton, as well as traffic from the east traveling to Norton, was forced to divert through Malton throughout this period, thus substantially increasing volumes of traffic and congestion in the AQMA, particularly on Castlegate between County Bridge and Butcher Corner and Old Maltongate.

The increases in the annual mean concentration at Site 4 (Old Maltongate 1), Site 8 (Castlegate 3) and Site 10 (Yorkersgate 2) of ~8%, ~15% and ~10% respectively may be accounted for by this. However, levels did not increase at the other sites (on Castlegate and Yorkersgate) in the affected area. Elsewhere in the district levels showed little or no change from the previous year.

There is insufficient data to draw any conclusions on the impact of the improved junction because it was not opened until mid September. It should also be noted that throughout December diesel powered pumps were installed and operated continuously at several locations in Malton and Norton for flood defence purposes. One of these pumps was located within a few metres of Site 7, Castlegate 2, and probably accounts for the unusually high monthly mean NO_2 level of 68 ug/m3 measured at this site in December 2012.

Figure 2.7 shows an annual mean trend chart for the sites in or close to the Malton AQMA from 2008 to 2012. The chart highlights the increase in levels measured in 2012.

Figure 2.7 - NO_2 Trend Chart 2008 – 2012



2.2.2 Benzene

Table 2.6: Annual Mean Benzene Levels 2012

Site	2012 Annual Mean Concentration µg/m^3	Air Quality Objectives	
		31/12/2003 running annual mean µg/m^3	31/12/2010 annual mean µg/m^3
Malton (Roadside)	2.1	16.25	5
Norton (Roadside)	1.8	16.25	5
Pickering (Roadside)	2.0	16.25	5
Helmsley (Kerbside)	1.9	16.25	5

The results in Table 2.6 show that measured concentrations, which are considered to be representative of public exposure, are all significantly less than the 2003 and 2010 objectives at all four sites.

Trend analysis of data for the period 2008 to 2012 in Table 2.7 shows that levels were consistently well below the AQO's at all four sites, with relatively minor year to year fluctuations over the five year period.

The results show that there is no need to proceed to a detailed assessment.

Table 2.7 - Results of Benzene monitoring 2008 - 2012
2

Location	2012 Annual Mean Concentration (ug/m^3)	2011 Annual Mean Concentration (ug/m^3)	2010 Annual Mean Concentration (ug/m^3)	2009 Annual Mean Concentration (ug/m^3)	2008 Annual Mean Concentration (ug/m^3)
Malton (Roadside)	2.1	1.6	1.2	2.0	1.7
Norton (Roadside)	1.8	0.6	0.7	1.5	1.4
Pickering (Roadside)	2.0	0.4	0.8	1.5	1.5
Helmsley (Kerbside)	1.9	1.0	0.7	0.7	1.5

2.2.3 Summary of Compliance with AQS Objectives

Ryedale District Council has examined the results from monitoring in the district.

Concentrations within the AQMA still exceed the annual mean objective for nitrogen dioxide at relevant receptor locations and the AQMA should remain.

Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

Ryedale 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.

Ryedale District Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Planning Applications

Table 4.1 Planning Applications, which it was considered, could have an impact upon air quality and which have not yet been determined

Application Number	Applicant	Details	Comments - Air Quality Impact
NY/2012/0340/FUL	W Clifford Watts Ltd	Asphalt production plant and creation of aggregate storage bins (5 No.) at existing quarry and concrete batching plant installation, Whitewall Quarry, Welham Rd, Norton	This application is being determined by the Mineral Planning and Waste authority – North Yorkshire County Council. Representations have been made regarding the possibility of ensuring (e.g. through a S106 agreement) that heavy duty vehicle movements associated with the proposed development utilise the improved Brambling Fields road junction so as to avoid or minimise any impact on the Malton AQMA.
11/00927/MOUT	GMI Holbeck Land (Malton) Ltd	Erection of retail units, offices, petrol filling station, car park and associated landscaping at Wentorth Street Car Park, Malton	The application was submitted on 31/08/11. The proposed development is ~150m to the north of the Malton AQMA. A traffic assessment and framework Travel Plan have been produced by Pell Frischmann on behalf of the applicant. The local highways authority has made an assessment of the proposed development and has recommended that a developer contribution be required to help fund strategic transport improvements at Malton and Norton and to mitigate the impact of the proposed development – to be secured through a S106 Agreement.
13/00029/MFUL	Pickering Showground	Two biomass boilers & pellet store forms part of proposal for erection of holiday lodges, restaurant building, site shops with storage and toilets, lodge reception building.	Application submitted on 9/01/2013. The applicant has been asked to complete a biomass boiler information form based on the form developed by EPUK.

5 Air Quality Planning Policies

Ryedale District Council is preparing a suite of planning policy documents to replace the 2002 Ryedale Local Plan. Know collectively as 'The Ryedale Plan' they will form the statutory Development Plan for Ryedale for the consideration of planning applications. It will make provision for new housing, employment and retail development for the next 15 years. It will also guide other forms of development as well as protecting key environmental and historic assets. The two main documents of the Ryedale Plan will be the Local Plan Strategy (formally known as the Core Strategy), setting out broad planning policy, and the Local Plan Sites Document, which will set out allocations for different types of development.

The Local Plan Strategy sets out a long-term vision, objectives and strategy to guide public and private sector investment in the District. In particular it will outline the:

- expected levels of development that will take place in the District up to 2026;
- specific types of new development required to meet the needs of Ryedale;
- sorts of changes that will happen in different locations;
- types of projects and investment needed to successfully deliver the strategy.

The Local Plan Strategy was published for consultation in mid January 2012. It was then subject to six weeks of consultation. On the 27 March 2012 the National Planning Policy Framework (NPPF) was published, and in response to this, a further six week consultation was undertaken. On the 21 May 2012 the Local Plan Strategy was submitted to the Planning Inspectorate for Examination. At the time of writing, the Local Plan Strategy has been through a number of hearing sessions, the Inspector has prepared an interim report, which is available on the link below, and the Council has just finished a further six week consultation on the proposed Main Modifications of the Plan.

http://extranet.ryedale.gov.uk/PDF/DDH108_Inspectors_interim_conclusions.pdf

The amount of 'weight' that can be given to in-production planning policy depends on the stage of production and the amount of objections which have been received. The Local Plan Strategy is at a relatively advanced stage of production; it has been subject to extensive consultation and is currently some way through the external examination process. The Plan can therefore be given increasing weight in the development management process. Whilst other policies within the Plan received objections, which does limit the weight that can be attached to them, there were no objections concerning this element of the Policy SP17, which refers to the protection and improvement of air quality. Within the Inspector's interim conclusions he states:

"The policies seem to provide an appropriate, effective and soundly-based framework for protecting and enhancing the natural, built and historic environment in Ryedale, including heritage assets and landscapes, biodiversity and green infrastructure networks, high quality design, natural resources, pollution and climate change, which is justified and consistent with national policy."

An Interim Supplementary Planning Document (SPD) (Ryedale DC, 2007) 'Developer Contributions towards Strategic Transport Improvements at Malton and Norton (2007)' identifies the need for developer contributions to help fund key highway improvements to accommodate significant development in Malton and Norton during the LDF period. The SPD identifies a level of £7,500 per passenger car unit (PCU) through Butcher corner generated by a development.

The Local Plan Sites Document will principally identify and allocate land for new housing, employment and potentially retail development in accordance with the Local Plan Strategy. It will also set out Development Limits, town centre commercial limits, as well as numerous other site-specific designations. Work on the Local Plan Sites Document is now being undertaken in earnest through the application of the Site Selection Methodology. As part of the site selection process through the Local Plan Sites Document, traffic modeling will be undertaken of potential sites in Malton and Norton. All development proposals within or near to the Air Quality Management Area which are likely to impact upon air quality; which are sensitive to poor air quality or which would conflict with any Air Quality Action Plan will be accompanied by an Air Quality Assessment

6 Local Transport Plans and Strategies

The Local Transport Plan (LTP) is a set of documents that the Government requires all local transport authorities to produce. The LTP sets out our plans and strategies for maintaining and improving all aspects of the local transport system over the next five years.

North Yorkshire County Council's current Local Transport Plan (LTP3) came into effect on 1 April 2011 and covers the 5 year period from 2011-2016. It sets out the County Councils plans and strategies for maintaining and improving all aspects of the local transport system over the next five years.

The close relationship between air quality issues and emissions from the road transport sector, and the fact that measures to improve air quality on a local scale are closely related to the LTP, is recognised by the County Council. LTP3 states that the Malton AQMA is primarily due to traffic levels and congestion. Both authorities are committed to continuing to work together to ensure that LTP3 and Ryedale District Council's Air Quality Action Plan are integrated in order to reduce the polluting effects of road vehicles and secure the necessary improvements in air quality. This is evident in the preparation of the Action Plan and implementation of the measures identified in it, as detailed elsewhere in this report. In particular the Brambling Fields upgrade, which has been completed, and in looking ahead a series of complementary action plan measures.

7 Climate Change Strategies

The Councils Climate Change Strategy and Action Plan 2005-2010 (Ryedale DC, 2006) sets out the Councils position on Climate Change and provides a framework for the Council, its local strategic partners, residents and businesses to take action to reduce emissions of greenhouse gases. The five basic strategic objectives are:

- Reduce emissions from delivery of services
- Climate change issues will be taken into account in the development and review of all relevant policies
- The Council will ensure its commitments under the Nottingham Declaration are met as soon as possible
- Ensure that future development is sustainable and as far as possible does not increase greenhouse gas emissions within Ryedale District Council The Council and the Local Strategic Partnership will encourage other organisations and the wider community to reduce greenhouse gas emissions

One of the key aims of the current 'Council Plan 2009 – 2013' is The Councils Climate Change Strategy and Action Plan 2005-2010 (Ryedale DC, 2006) sets out the Councils position on Climate Change and provides a framework for the Council, its local strategic partners, residents and businesses to take action to reduce emissions of greenhouse gases. The five basic strategic objectives are:

- Reduce emissions from delivery of services
- Climate change issues will be taken into account in the development and review of all relevant policies
- The Council will ensure its commitments under the Nottingham Declaration are met as soon as possible
- Ensure that future development is sustainable and as far as possible does not increase greenhouse gas emissions within Ryedale District Council The Council and the Local Strategic Partnership will encourage other organisations and the wider community to reduce greenhouse gas emissions

One of the key aims of the current 'Council Plan 2009 – 2013' is Corporate Plan is to have a 'High Quality, Clean and Sustainable Environment' and a key objective is to reduce CO2 emissions and planning to adapt to climate change (in 2011 a Climate Change Comprehensive Risk Assessment for the Council was produced).

Ryedale District Council is part of the North Yorkshire Procurement Partnership. Amongst matters considered when making procurement decisions are:

- Energy & resource usage;
- Transport method and distance travelled; and
- Carbon footprint of commodity/service.

8 Implementation of Action Plan Measures

This is the first progress report on the implementation of measures identified in the Malton AQAP of 2012. A summary of the progress made is provided in Table 8.1.

Table 8.1: Action Plan Implementation - Progress Summary

Summary From Action Plan 2012					Progress Update 2013		Overall Targets
Action	**Details**	**Organisation**	**Indicators**	**Target**	**Progress made**	**Expected Date for Completion**	
AP1	Brambling Fields Interchange Junction Improvement	Highways Agency, NYCC and RDC	Completion Date	August 2012	Junction fully opened on 18 September 2012	Completed	**Reduction of annual mean NO_2 level at all monitoring locations in the Malton AQMA in 2013**
			Change in Traffic Flow through Butcher Corner	Reduction in daily traffic flow of 25% by December 2012	Traffic Count undertaken in November 2012. Indicated a reduction of ~ 10% (all vehicles) and ~20%* (HDV's) compared to 2003 count. Further counts to be done in April 2013 and November 2013.	Ongoing	
AP2a	Heavy Duty Vehicle Restrictions	NYCC	Implementation	July 2013	Following examination of traffic data consultation to commence in September 2013 prior to further consideration by NYCC Ryedale Area Committee In winter 2013/14.	July 2014	**Achievement of NO_2 Annual mean objective at all monitoring locations in the Malton AQMA in 2014**
			Change in HDV movements through Butcher Corner	Reduction in daily HDV traffic flow of >30% by September 2013 (in comparison with 2011 figure)	As above		

Summary From Action Plan 2012					Progress Update 2013		Overall Targets
Action	**Details**	**Organisation**	**Indicators**	**Target**	**Progress made**	**Expected Date for Completion**	
AP2b	One-Way Restriction on Norton Road	NYCC	Implementation Change in Traffic Flow through Butcher Corner	January 2014 Further reduction in daily traffic flow of 5% by December 2014	Following examination of traffic data consultation to commence in September 2013 prior to further consideration by NYCC Ryedale Area Committee In winter 2013/14	July 2014	**Reduction of annual mean NO_2 level at all monitoring locations in the Malton AQMA in 2013** **Achievement of NO_2 Annual mean objective at all monitoring locations in the Malton AQMA in 2014**
AP2c	Extra Pedestrian Phase at Butcher Corner Traffic Lights	NYCC	Implementation	July 2013	Following examination of traffic data consultation to commence in September 2013 prior to further consideration by NYCC Ryedale Area Committee In winter 2013/14	July 2014	
AP3	Town Centre Speed Restriction Zone	NYCC	Implementation	July 2013	Not yet implemented	July 2013	
AP4	Travel Plans - Smarter Choices	NYCC and RDC	Number of new travel plans in Malton & Norton	N/A	Production of Travel plans required as condition of Planning Approvals granted for: Yorkshire Baker Factory, Norton Grove Ind. Est, Norton; and	Ongoing	

Summary From Action Plan 2012					Progress Update 2013		Overall Targets
Action	**Details**	**Organisation**	**Indicators**	**Target**	**Progress made**	**Expected Date for Completion**	
					Redevelopment of Malton Cattle Market		
AP5	School Travel	NYCC	Number of STP's reviewed in Malton & Norton	Target 100% by December 2013	Ongoing - All schools in Malton & Norton have a travel plan. NYCC Road Safety & Travel Awareness Team is able to provide guidance to those schools that wish to carry out a review.	December 2013	**Reduction of annual mean NO_2 level at all monitoring locations in the Malton AQMA in 2013**
AP6	Public Transport	NYCC	Bus and train service levels to/from Malton & Norton	Maintain existing service (2011) levels Improve existing (2011) service levels	No significant change in NYCC contracted bus services . No change in train service level Possible increase in Sunday train service level within next few years	Ongoing	**Achievement of NO_2 Annual mean objective at all monitoring locations in the Malton AQMA in 2014**
AP7	Air Quality Information	RDC/NYCC	Provide Action Plan information Council Website	February 2012	Action Plan available on RDC Web site at http://www.ryedale.gov.uk/environment_and_planning/pollution/pollution_control_ai	Completed	

Summary From Action Plan 2012					Progress Update 2013		Overall Targets
Action	**Details**	**Organisation**	**Indicators**	**Target**	**Progress made**	**Expected Date for Completion**	
AP7	Air Quality Information		Provide Smarter Driving and Smarter Travel Choices Information on Council Website	June 2012	r_quality.aspx#Plan and via NYCC web site link http://www.northyorks.gov.uk/index.aspx?articleid=15154 Smarter driving information available from Energy Saving Trust web site via link on RDC web site	Completed	**Reduction of annual mean NO_2 level at all monitoring locations in the Malton AQMA in 2013**
AP8	Planning Policy	NYCC/RDC	Number of Air Quality Impact Assessments related to Malton AQMA	100% in relation to development with potential to impact on air quality	Air quality policy incorporated in local plan core strategy. – No new development proposals in 2012 where requirement for AQIA identified	Ongoing	**Achievement of NO_2 Annual mean objective at all monitoring locations in the Malton AQMA in 2014**
AP9	Idling/Cut Engine Signage	NYCC/RDC	Completion	June 2012	Signs installed in on roads approaching/leaving Butcher Corner. Signs to remain in place as permanent feature	February 2012	
AP10	Reduce emissions from RDC vehicle fleet	RDC	Full introduction of EDA	Ongoing	Trials did not result in significant gains. New Fleetmatics tracking GPS (see below) is likely to achieve the same ends	(see previous column)	

Summary From Action Plan 2012					Progress Update 2013		Overall Targets
Action	**Details**	**Organisation**	**Indicators**	**Target**	**Progress made**	**Expected Date for Completion**	
AP10	Reduce emissions from RDC vehicle fleet		Full introduction of Master Naut	August 2012	Equipping of Fleetmatics GPS vehicle tracking (preferred to Masternaut) fitted in entire RDC Vehicle fleet and fully operational from February 2013	Complete	**Reduction of annual mean NO_2 level at all monitoring locations in the Malton AQMA in 2013**
			Utilise Web Aspx route optimisation software to minimize journeys through AQMA	August 2012	Significant progress made but project not completed	August 2013	**Achievement of NO_2 Annual mean objective at all monitoring locations in the Malton AQMA in 2014**

The summary in Table 8.1 highlights the opening in September 2012 of the improved A64 Brambling Fields junction (AP1). Completion of the construction works, which began in January 2012, was delayed by several months due to exceptionally wet weather conditions.

As a result of this measure the junction now incorporates an eastbound exit slip road that allows traffic travelling on the A64 from the west to gain access to Norton and destinations to the south of Malton and Norton without having to travel through the Malton AQMA. The junction also now provides an alternative route for local traffic to travel between Malton and Norton, allowing avoidance of the heavily congested Butcher Corner signalised junction in the AQMA and railway level crossing between Malton and Norton.

On 21 November 2012 a 12hr hour (0700-1900 hours) Traffic Turning Count Survey was undertaken at the Butcher Corner B1257/B1248 junction crossroads. Comparison of the data obtained with the previous equivalent count at this location, which was undertaken in March 2003, indicates an overall reduction of ~10% in total vehicle movements and a reduction of ~20% in HGV movements. These results should be viewed with caution and are not considered to be a robust measure of the long term impact of the junction. The reasons for this include that driver awareness of the new access to Norton would not have been widespread because Brambling Fields was only reopened 9 weeks before the count and signage on the eastbound A64 had not been updated. Furthermore the 2003 data has not been adjusted using traffic growth factors to generate equivalent vehicle movement figures in 2011 prior to the junction upgrade.

Over the coming months members of the Transport Planning team at NYCC will be undertaking a detailed analysis of traffic count data. This will include consideration of data from long term permanent counters on the main roads leading into Malton and Norton as well as further turning movement counts at Butcher Corner.

The Action Plan includes a series of complementary measures (AP2a, AP2b & AP2c) related to the junction improvement. These were identified in the Malton & Norton Strategic Transport Assessment (STA) as supporting measures to encourage full utilisation of the improved junction, thereby increasing displacement of traffic from the congested AQMA. The Action Plan states that following the reopening of the improved junction changes in traffic flow in Malton and Norton will be monitored for a period of at least 6 months in order to gauge the impact of the junction on traffic levels in the AQMA.

It is considered that a full 12 month period is necessary in order to collect sufficient traffic and air quality data so as to be able to draw robust conclusions. Following this a further report on the proposed complementary measures will be considered by the Ryedale Area Committee prior to detailed consultation. This provides an opportunity to assess the impact of the improved junction on traffic flows, traffic composition and air quality without the recommended complementary measures and to test the STA conclusion that the complementary measures are necessary to ensure optimum utilisation of the junction.

Work has been undertaken and is ongoing to promote use of the junction and to assess its impact on freight traffic movements in particular. Officers from RDC and

NYCC have met with several key local businesses to pursue a partnership approach. The feedback from this initiative has been mainly very positive. Work is now in progress to produce a leaflet for wider dissemination of information to promote utilisation of the junction. This will also incorporate a questionnaire to obtain more feedback.

In relation to AP5 (the Review of School Travel Plans) the NYCC Road Safety & Travel Awareness Team has reported on the lack of funding to incentivise schools participation. However, they are able to provide guidance to those schools that wish to carry out a review.

In relation to AP10 vehicle tracking trials undertaken by Ryedale DC demonstrated that this influenced driver behaviour and provided a useful management tool. The trial resulted in a significant reduction in mileage and fuel consumption over the 6 month trial period.

The Fleetmatics vehicle tracking system is now fitted to all the vehicles in the fleet and the expected benefits:

- Enhanced management and assessment of driver behaviour
- Enhanced management and assessment of vehicle movements e.g. reduce idling time
- Improved performance management of resources (staff and vehicles)
- Effective implementation and management of optimised rounds
- Potential to allocate resources more effectively and reduce vehicle journeys
- Potential to reduce emissions and operate a greener fleet

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Ryedale District Council monitors NO_2 using diffusion tubes at various locations in the district. A total of 20 sites include 10 inside the Malton AQMA, or within 50 metres of it. The Council also monitors benzene using BTEX tubes at four sites.

Analysis of NO_2 results for 2012 has shown that there continued to be exceedence of the annual mean AQO for this pollutant in Malton at locations where there is relevant exposure. These exceedences occurred entirely within the Malton AQMA.

The results show little or no change in annual mean concentrations outside of the Malton AQMA. Within the AQMA levels increased at three sites by up to 6 ug/m^3 and fell slightly (1-2 ug/m^3) or were unchanged at the six other sites. It is considered likely that the increases within the Malton AQMA resulted from higher levels of road traffic and congestion caused by road closure and diversions in place throughout the Brambling Fields junction upgrade construction works.

Diffusion tube monitoring has not identified any actual or potential AQO exceedences at relevant locations outside the Malton AQMA.

The results demonstrate that the AQMA designation and the boundaries of the AQMA continue to be appropriate and there is no need to increase or decrease the extent of the AQMA.

The results of monitoring for benzene show that concentrations were significantly less than the 2003 and 2010 objectives at all four sites and there is no need to proceed to a detailed assessment.

9.2 Conclusions relating to New Local Developments

There have been no new developments that that are likely to lead to an exceedence of any AQO's for any pollutant and there is therefore no need for any detailed assessment.

9.3 Other Conclusions

The progress made with the Ryedale Plan and the Inspectors interim conclusions, as summarised in Section 5 of this report, means that significant weight can now be attached to the element of policy SP17 which concerns protection of the natural, built and historic environment from pollution.

This means that the Council now has greater authority to require submission of an air quality impact assessment in relation to development proposals which are; likely to impact on air quality; sensitive to poor air quality; or would conflict with an Air Quality Action Plan.

9.4 Proposed Actions

New monitoring data has not identified any need to proceed to a detailed assessment.

The data shows that the Malton AQMA should not be revoked and that the existing boundaries of the AQMA are appropriate and should not be changed.

The new monitoring data has not identified any need for additional monitoring, or changes to the existing monitoring programme.

Following completion of the Brambling Fields junction major upgrade in September 2012 the key priorities are now are to continue to monitor the impact of this scheme on traffic volumes and nitrogen dioxide levels. The evaluation of this data will inform further consideration of the various complementary action plan measures later in 2013.

The next Air Quality Progress Report will be produced in 12 months time and will include a further update on the implementation of the Air Quality Action Plan.

10 References

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Appendix A

Monthly NO2 Results

Table A.1: 2012 NO2 Diffusion Tube Results (not bias adjusted)

Site ID	Site	January	February	March	April	May	June	July	August	September	October	November	December
1	Yorkersgate –Castlegate, Butcher Corner			59.8	47.6	48.4	41	47	45.6	50.6	51.1	52.6	40.8
	(Triplicate Exposure)			59.6	43.5	48.3	42	47	47.6	79.1	44.8	41.6	55.9
		62.3	57.2	59.2	43.3	48.9	38	44	56.1	52.9	50.1	56.1	47.6
2	Wheelgate (1), Malton	59	60.4	61.5	46.3	45.7	41	42	47.9	56.6	58.0	59.6	55.6
3	Wheelgate (2), Malton	46.3	37.1	40.2	36.8	35.4	31	30	31.4	29.3	41.4	42.5	47.3
4	Old Malton Gate (1): Malton	66.2	52.9		57.8	58.4	39	45	48.6	50.5	52.0	46.9	35.7
5	Old Malton Gate (2): Malton	54.5	61.1	65	45.6	47.2	46	45	55.3	49.9	51.3	47.8	56.7
6	Castlegate (1): Malton	55.8	49	49.7	42.1	43.1	40	37	39	41.5	42.8	44.1	43.7
7	Castlegate (2):Malton	65	69.5	70.7	59.1	61	48	63	52.8	66.6	38.7	57.5	81.5
8	Castlegate (3): Malton	74.7	52.8	72.4	56.9	54.8	61	62	59.4	60.2	51.2	50.4	61.1
9	Yorkersgate (1): Malton	69.6	71.4	69.3	38.2	49.2	50		60	70.2	55.7	64.6	53.9
10	Yorkersgate (2): Malton	58	40.5	46	42.5	48.4	28	40	33.6	38	43.2	43.1	52.3
11	Newbiggin, Malton	46.4	35	34.5	29.4	29.5	12	20	21.7	24.7	30.5	33.6	39.8
12	Church Street, Norton	37.7	29.4	31.4	24.9	25.8	12	23	27.2	28.2	29.2	42.1	42.6
13	Scarborough Rd, Norton	43.8	31.8	34	31.8	33.2	23	26	27	30	39.0	39.6	41.4
14	Pickering	44.1	34.8	37.6	31.2	29	25	24	34.1	34.2	38.4	33.3	44.6
15	Sherburn	45.6	45.8	44.1	37.3	34.7	30	37	37.8	41.8	44.6	31.5	40
16	Helmsley	35.8	27.8		20	22.4	24	22	23.9	23.2	30.6	37.1	34
17	Rillington	37.2	21.5	26.6	27.7	20.4	33	20	25.1	40.1	36.0	35.3	31.2

Appendix B: Annualisation of Incomplete Data

Determination of Annualisation Factors where less than 12 months data obtained

Because at some sites monitoring data was not obtained for the entire 12 months of the year, the average monthly mean for these sites was been annualised in order to obtain the most appropriate estimate of the annual mean concentration at those sites. Appropriate adjustment factors to annualise the data were determined using the methodology set out in Box 3.2 of TG (09). This involves calculation of the ratio of the annual mean (AM) and period mean (PM) at between two and four nearby long-term sites. The period mean is the average monthly value at each comparator site for those months for which data is available at the site(s) with incomplete data. The comparator site data was obtained from Defras Online Air Pollution Data Archive at:
http://uk-air.defra.gov.uk/data/data_selector?q=70593#mid

For example a Site 4 (Old Maltongate 1) and Site 16 (Helmsley) no data was obtained for the month of March & December therefore the period mean at the comparator sites was the average of the January, February and April to December monthly concentrations at the sites. The adjustment factor applied to the incomplete data is the average value of the four AM:PM ratios calculated, as shown in Table B.1 below. Details of the calculations for adjustment factors at the other site, Site 9 (Yorkersgate 1), are shown in Table B.2.

Table B.1 Adjustment Factors for Incomplete Data, Site 4 – Old Maltongate 1 and Site 16 - Helmsley

Site	Site Type	Annual Mean µg/m^3	Period Mean µg/m^3	Ratio
Hull Freetown	Urban Background	27.2	26.9	1.01
Leeds Centre	Urban Background	36.2	35.5	1.02
Middlesbrough	Urban Background	18.4	17.8	1.03
Barnsley	Urban Background	21.3	20.8	1.02
			Average	**1.02**

Table B.2 Adjustment Factors for Incomplete Data, Site 9 – Yorkersgate 1

Site	Site Type	Annual Mean µg/m^3	Period Mean µg/m^3	Ratio
Hull Freetown	Urban Background	27.2	28.1	0.97
Leeds Centre	Urban Background	36.2	37.2	0.97
Middlesbrough	Urban Background	18.4	19.0	0.97
Barnsley	Urban Background	21.3	21.	1.01
			Average	**0.98**