2013 Air Quality Progress Report for Peterborough City Council

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

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Executive Summary

The air quality review and assessment process forms part of local air quality management (LAQM) carried out by Peterborough City Council. LAQM provides a means of achieving improvements in air quality to help secure national air quality objectives. National air quality objectives are set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

In order to complete this Progress Report, the prescribed pollutants which are monitored in Peterborough have been analysed to see if they require further assessment.

There is currently one AQMA in Peterborough for emission of SO_2 resulting in exceedence of the relevant 15-minute mean values. The source of these emissions is a brickworks located in the area administered by Fenland District Council (a neighbouring local authority). A detailed assessment for this exceedence has been carried out by Fenland District Council and Peterborough District Council. Currently, Peterborough City Council is liaising with Fenland District Council and the Environment Agency to complete and monitor the Air Quality Action plan for the AQMA which is currently in progress.

Peterborough's 2012 Updating and Screening Assessment did not identify that any further detailed assessments were necessary; similarly this Progress Report determines that this remains the case and no further detailed assessments are required at this time.

We will however, be altering the location of two tubes to new city centre locations (yet to be determined) as there is sufficient evidence to demonstrate that the area currently monitored by them is not likely to exceed any air quality monitoring objectives.

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1 Introduction

1.1 Description of Local Authority Area

Peterborough district covers an area of 343.44 km2 and is made up of a variety of landscapes. Although dominated by the city of Peterborough, the eastern part of the district is composed of rich arable farmland, with the population dispersed across the flat land in many scattered farmsteads. In contrast, the western area is more undulating, with a more mixed farming economy and a population concentrated within the area's many villages. Figure 1.1 shows Peterborough and surrounding districts.

From medieval times to the start of the Industrial Revolution, Peterborough was little more than a small market town on the edge of the Fens, though Henry VIII granted it city status in 1541. For many centuries the river was an important highway and the Customs House still stands today alongside the Town Bridge. Its real growth started in the mid-19th century, with the arrival of the railways. Peterborough soon became a major railway junction and attracted a number of heavy industrial companies.

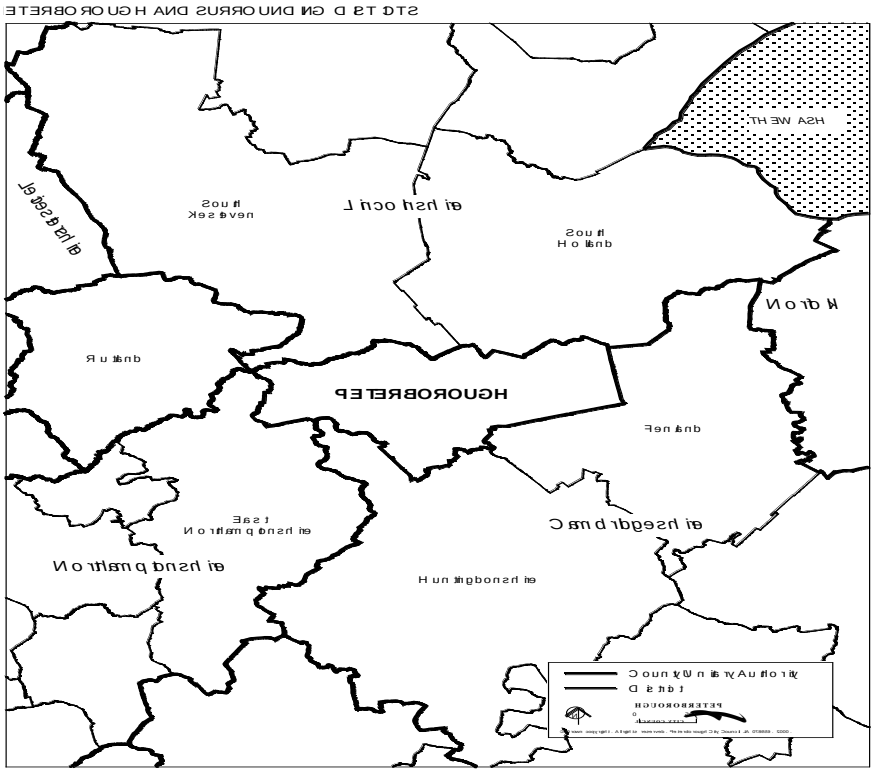
By the late 1960s, the New Towns programme had begun. Peterborough was designated a New Town in 1968, and the Peterborough Development Corporation was established to double the city's population in close partnership with the City Council. The Master Plan was to concentrate development in four new residential townships, each with a full range of social and economic facilities with the fourth township, Hampton, now being built to the south of the city. In April 1998 the City Council achieved Unitary Status and is now responsible for all local government services in the district. The City has an estimated population of 183,600 (2011 Census).

Peterborough is mid-way between the East Anglian coast and the Midlands and has excellent road and rail connections both north-south and east-west. The city is 78 miles from London, five miles from the A1(M), and less than 20 miles from the A14, which links the East Coast ports of Felixstowe and Harwich with the Midlands.

The city is on the East Coast main rail line, which links London with Leeds, York, Newcastle, Edinburgh and Glasgow while London itself is less than 50 minutes away by train. An east-west rail line links Peterborough with Norwich, Great Yarmouth, Leicester, Birmingham and beyond.

Traffic impacts, includes one of the major sources contributing to air quality in Peterborough. Prescribed Processes (A1), (A2) and (B) also release significant quantities of specified pollutants into the atmosphere which may have an impact on air quality.

Figure 1.1 – Peterborough and Surrounding Districts



1.2 Purpose of Progress Report

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

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

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

1.3 Air Quality Objectives

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

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

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

1.4 Summary of Previous Review and Assessments

Table 1.2 summarises Peterborough City Council's previous local air quality management reports, these are available to view at the following web address:
http://www.peterborough.gov.uk/environment/pollution/air_quality.aspx

Table 1.2 Summary of Local Air Quality Management Reports

Report	Date	Summary/Outcome
Review and Assessment	2000	The first round of review and assessment of air quality. Modelling and monitoring techniques identified four pollutants – carbon dioxide, nitrogen dioxide, particulate matter (PM_{10}) and sulphur dioxide – as potentially impacting upon local air quality. Further evaluation in accordance with technical guidance concluded that all objectives would be achieved by the relevant date.
Updating and Screening Assessment	2003	Second round of review and assessment. All objectives predicted to be achieved by the relevant date.
Progress Report	2004	Summary report of new monitoring data, new local developments and other air quality related information. NO_2 monitoring estimated the village of Thorney would fail 2005 and 2010 Government targets. A by-pass of Thorney was scheduled to start in 2004 to take traffic away from Thorney and consequently reduce the NO2 to below the statutory limits.
Progress Report	2005	Summary report of new monitoring data, new local developments and other air quality related information. Village of Thorney by-pass underway which should consequently reduce NO_2 levels below the objective, By-pass to be finished 2006. Possible exceedence of the 15 minute mean for SO_2 from a brick making process which has applied for an A1 PPC permit. Process located on Fenland District Council's boundary. Ambient air monitoring data being collected to validate the exceedence model to determine the extent of any pollution exceedence.
Updating and Screening Assessment	2006	Third round of review and assessment. All air quality objectives to be met by relevant deadlines with the exception of SO_2 which will be exceeded due to an industrial process located outside Peterborough in Fenland District Council. A detailed assessment necessary for the SO_2 15 minute mean value.
Detailed Assessment	2007	A Detailed Assessment of SO_2 concentration for a brick manufacturer in Whittlesey, within the borders of Fenland District Council, which lies southeast of Peterborough, concluded that an Air Quality Management Area (AQMA) should be declared.

Progress Report	2008	Summary report of new monitoring data, new local developments and other air quality related information. Thorney by-pass completed resulting in successful reduction of NO_2 levels to below the objective levels. AQMA declared 2007 action plan being developed with Fenland District Council, A1 process operator and the Environment Agency.
Updating and Screening Assessment	2009	Fourth round of review and assessment. All air quality objectives will be met in relevant guidelines, with the exception of SO_2 in area declared previously. Detailed assessment being carried out by Fenland since the process causing the exceedences is in their area.
Progress Report	2010	Summary report of new monitoring data, new local developments and other air quality related information. No exceedences other than already declared AQMA. Continued liaison with Fenland District Council and Environment Agency to develop action plan for the AQMA.
Progress Report	2011	Summary report of new monitoring data, new local developments and other air quality related information. No exceedences other than already declared AQMA. Continued liaison with Fenland District Council and Environment Agency to complete and monitor the action plan for the AQMA.
Updating and Screening Assessment	2012	Fifth round of review and assessment. All air quality objectives will be met in relevant guidelines, with the exception of SO_2 in area declared previously. Action Plan currently in draft stage as a partnership effort between Peterborough City Council, Fenland District Council and the Environment Agency.

This Progress Report was carried out according to Local Air Quality Management Technical Guidance LAQM. TG (09) released in February 2009. It has indicated that all the air quality objectives listed in Table 1.1 were met by the relevant deadlines, with the exception of SO_2 15 minute mean value of 266 $\mu g/m^3$. This exceedence is from an industrial source located in Fenland District Council.

Air Quality Management Areas (AQMAs) are only required in areas where air quality objectives will not be achieved. In September 2006 Fenland District Council's Detailed Assessment declared an Air Quality Management Area based on modelling carried out by Hanson Brick Products in their Air Quality Management Plan (Hanson, 2004). This modelling indicated that the 15-minute sulphur dioxide objective was also being exceeded at relevant locations within Peterborough. Following consideration of the information supplied by Fenland District Council, Peterborough City Council

determined an Air Quality Management Area to the north west of the works in April 2007; figure 1.2 shows a map of the AQMA boundaries. The AQMA was in relation to emissions of sulphur dioxide from a point source industrial premise, exceeding the 15 minute mean objective level of 266 µg/m^3 not to be exceeded more than 35 times a year. The Air Quality Action Plan is currently with Fenland District Council for finalisation following liaison with the Environment Agency; Peterborough City Council continues to work with both agencies on this.

It is important to note that this exceedence is modelled, not measured. To date there has been no measured exceedence of SO_2 in the area administered by Peterborough City Council.

Figure 1.2 Map of AQMA Boundaries

* Location marked in red, the exceedance is from a brick works in Whittlesey who manufacturer Fletton bricks, the installation consists of two works closely located – hence two locations.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

No automatic monitoring was carried out by Peterborough City Council in the year covered by this report.

2.1.2 Non-Automatic Monitoring Sites

Peterborough City Council currently monitors Nitrogen Dioxide (NO_2) at 14 sites within the Local Authority Area. Two of these sites have co-located tubes to give a total of 16 results (tubes are numbered 1 through 16 in the results provided below).

Other sites have been monitored around Peterborough in previous years, however monitoring at these sites ceased following the completion of planned monitoring programmes for these locations. Only the current locations have been considered for this report. These sites are a mixture of urban background, roadside and kerbside. Table 2.1 shows the different site types and a brief description of the sites that were monitored in 2012.

The samples are analysed in accordance with Environmental Scientifics Group standard operating procedure HS/WI/1015 issue 15. This method meets the guidelines set out in DEFRA's Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance.

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection.

In the WASP intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, Environmental Scientifics Group is currently ranked as a **Category Good** laboratory. Further information can be found in Appendix A.

The bias adjustment factor being applied to the annual means from the diffusion tubes is **0.79**. This came from the Review and Assessment website. http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html. Further detail is provided in Appendix A.

Figure 2.1 Map(s) of Non-Automatic Monitoring Sites (if applicable)

Table 2.1 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)**	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
1	Bourges Boulevard	Roadside	(5)19123	(2)98369	2	NO_2	N	N	N	1m	Y
2	Thorney	Kerbside	(5)28173	(3)04296	2	NO_2	N	N	Y (1m)	1m	Y
3	Copeland	Urban Background	(5)15782	(2)99220	2	NO_2	N	N	Y (5m)	N/A	Y
4	Lythmere	Urban Background	(5)17188	(2)95966	2	NO_2	N	N	Y (1m)	N/A	Y
5	Wittering	Roadside	(5)05698	(3)02775	2	NO_2	N	N	Y (5m)	3m	Y
6+7	Lincoln Rd	Roadside	(5)17717	(3)01621	2	NO_2	N	N	Y (5m)	3m	Y
8	Walton	Roadside	(5)17533	(3)01807	2	NO_2	N	N	Y	1m	Y
9	Stanground	Urban Background	(5)20293	(2)96393	2	NO_2	N	N	Y (5m)	N/A	Y
10	Hampton	Roadside	(5)17574	(2)93934	2	NO_2	N	N	Y (5m)	1m	Y
11	Fletton	Roadside	(5)19356	(2)97292	2	NO_2	N	N	Y (5m)	1m	Y
12	London Rd	Roadside	(5)19145	(2)97577	2	NO_2	N	N	Y (5m)	1m	Y
13	Thorney By-Pass	Roadside	(5)28102	(3) 04876	2	NO_2	N	N	Y	5m	Y
14	Oundle Road	Roadside	(5)18637	(2)97842	2	NO_2	N	N	Y (5m)	1m	Y
15+16	Parkway	Roadside	(5)19932	(2)96056	2	NO_2	N	N	Y	0.5m *	Y

* Tubes 0.5m from parkway (A1139) slip-road (residential properties 12m from parkway).
** Site heights not currently measured (all approximately 2m).

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

Diffusion Tube Monitoring Data

Table 2.2 demonstrates the 2012 annual mean concentrations for each of the sites monitored. Table 3.3 provides the previous 4 years data are also shown for comparison.

The 2012 figures show that the measured annual mean concentration was less than the national air quality objective of 40 μg/m3 to be achieved by 31st December 2005, as outlined in table 1.1, for all of the sites monitored.

Data capture was generally good with all locations having at least 75%. The results recorded in January for the first 10 locations monitored appear anomalous as they are inconsistent with results gained at those sites in other months. While the reason for these anomalies is unclear, it is considered that there is minimal impact on the overall annual figures that have ultimately been calculated.

Figure 2.1 illustrates the trend in results over the last 5 years (the hard data used to create this graph is provided in table 2.3). This information demonstrates that there has been a marked reduction in Nitrogen Dioxide levels at the sites monitored by the tubes. Previous reports have attested that, where exceedences have been measured in recent years, this has been due to road maintenance and associated traffic diversions. The results from 2012 and the clear reduction across all sites would seem to support this suggestion although changes to atmospheric conditions cannot be discounted.

The exceedence at site 8 (Walton) from 2011 was at a different tube location that was subsequently deemed not to be a relevant location. 2012 provides the first result for a full year at the new location and demonstrates that there is no exceedence affecting residents in this area.

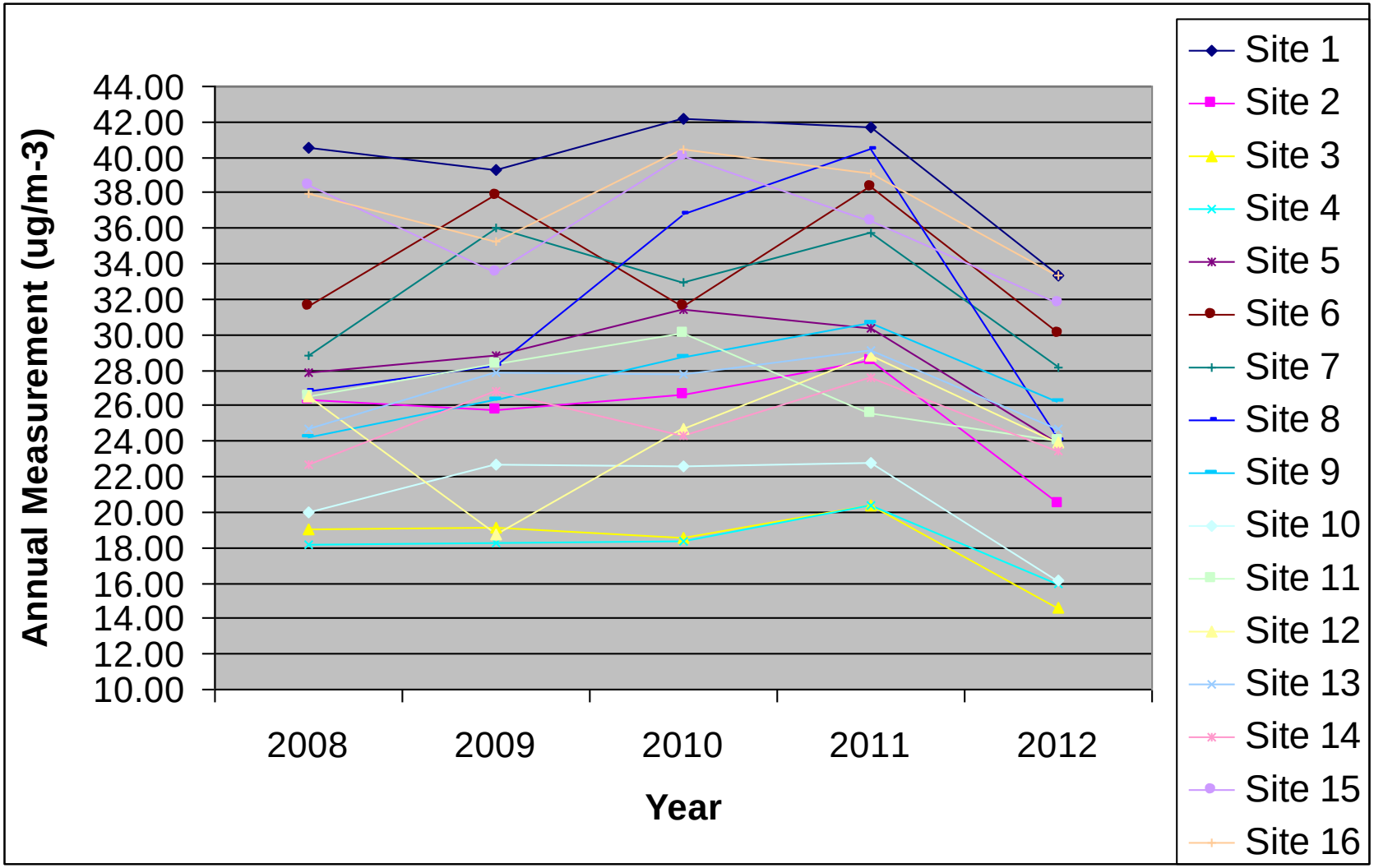
Table 2.2 Results of NO_2 Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (%)	2012 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.79 [b]
1	Bourges Boulevard	Roadside	N	N	100	33.35
2	Thorney	Kerbside	N	N	100	20.47
3	Copeland	Urban Background	N	N	100	14.59
4	Lythmere	Urban Background	N	N	100	15.92
5	Wittering	Roadside	N	N	100	23.92
6	Lincoln Rd	Roadside	N	Co-located with 7	83	30.03
7	Lincoln Rd	Roadside	N	Co-located with 6	83	28.19
8	Walton	Roadside	N	N	100	24.02
9	Stanground	Urban Background	N	N	92	26.20
10	Hampton	Roadside	N	N	83	16.19
11	Fletton	Roadside	N	N	100	24.00
12	London Rd	Roadside	N	N	100	23.93
13	Thorney By-Pass	Roadside	N	N	100	24.65
14	Oundle Road	Roadside	N	N	92	23.43
15	Parkway	Roadside	N	Co-located with 16	100	31.79
16	Parkway	Roadside	N	Co-located with 15	100	33.32

Table 2.3 Results of NO_2 Diffusion Tubes (2008 to 2012)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias				
			2008 (Bias Adjustment Factor = 0.78)	2009 (Bias Adjustment Factor = 0.82)	2010 (Bias Adjustment Factor = 0.83)	2011 (Bias Adjustment Factor = 0.83)	2012 (Bias Adjustment Factor = 0.79)
1	Bourges Boulevard	Roadside	40.51	39.26	42.13	41.73	33.35
2	Thorney	Kerbside	26.32	25.76	26.61	28.52	20.47
3	Copeland	Urban Background	19.02	19.09	18.57	20.36	14.59
4	Lythmere	Urban Background	18.16	18.29	18.36	20.33	15.92
5	Wittering	Roadside	27.87	28.80	31.43	30.38	23.92
6	Lincoln Rd	Roadside	31.58	37.89	31.61	38.35	30.03
7	Lincoln Rd	Roadside	28.87	36.01	32.91	35.73	28.19
8	Walton	Roadside	26.77	28.21	36.82	40.40	24.02
9	Stanground	Urban Background	24.21	26.36	28.73	30.68	26.20
10	Hampton	Roadside	19.98	22.64	22.57	22.79	16.19
11	Fletton	Roadside	26.49	28.36	30.10	25.57	24.00
12	London Rd	Roadside	26.49	18.76	24.70	28.80	23.93
13	Thorney By-Pass	Roadside	24.73	27.86	27.81	29.13	24.65
14	Oundle Road	Roadside	22.66	26.80	24.33	27.55	23.43
15	Parkway	Roadside	38.42	33.49	40.06	36.45	31.79
16	Parkway	Roadside	37.98	35.30	40.44	39.09	33.32

Figure 2.2 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites over the last 5 years



2.2.2 Particulate Matter (PM_{10})

PM_{10} is not currently monitored at any location within the district of Peterborough City Council.

2.2.3 Sulphur Dioxide (SO_2)

Sulphur Dioxide is not monitored at any location by Peterborough City Council, however, Hanson Building Products Limited carry out monitoring of their Whittlesey brickworks in relation to the AQMA. The results of this monitoring for 2012 are included as Appendix D. The figures show that there have not been any exceedences of the air quality objectives. The works are the subject of an Air Quality Management Action Plan covered later in this report.

2.2.4 Benzene

Benzene is not currently monitored at any location within the district of Peterborough City Council.

2.2.5 Other Pollutants Monitored

No other pollutants are currently monitored at any location within the district of Peterborough City Council.

2.2.6 Summary of Compliance with AQS Objectives

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

3 New Local Developments

3.1 Road Traffic Sources

After consideration of the location of the tubes that make up our NO_x tube network, Peterborough City Council plans during the next year to relocate some tubes to locations within the central city area.

The tubes can be relocated from locations in Thorney (sites 2 and 13) as it is considered that there is sufficient data to demonstrate that the areas currently monitored by them are significantly secure from any exceedence of air quality monitoring objectives.

Potential sites will be screened to determine the most at risk locations for potential exceedence of air quality standards.

Peterborough City Council confirms that, excepting the above, there are no new or newly identified road traffic sources which may have an impact on air quality within the Local Authority area.

Peterborough City Council confirms that all the following have been considered:

- Narrow congested streets with residential properties close to the kerb
- Busy streets where people may spend one hour or more close to traffic
- Roads with a high flow of buses and/or HGVs
- Junctions
- New roads constructed or proposed since the last Updating and Screening Assessment
- Roads with significantly changed traffic flows
- Bus or coach stations

3.2 Other Transport Sources

Peterborough City Council confirms that there are no new or newly identified local transport sources, other than those which are road traffic related, which may have an impact on air quality within the Local Authority area.

Peterborough City Council confirms that all the following have been considered:

- Airports
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m
- Ports for shipping

3.3 Industrial Sources

Peterborough City Council confirms that there are no new or newly identified local industrial sources which may have an impact on air quality within the Local Authority area.

Peterborough City Council confirms that all the following have been considered:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment
- Major fuel storage depots storing petrol
- Petrol stations
- Poultry farms

3.4 Commercial and Domestic Sources

There have been three applications for biomass combustion plant within Peterborough City Council's area within the last year. These have been assessed for air quality impact and the need for approval under the Clean Air Act 2003.

Peterborough City Council confirms that all of the following sources which may have an impact on air quality within the Local Authority area:

- Biomass combustion plant – individual installations
- Areas where the combined impact of several biomass combustion sources may be relevant
- Areas where domestic solid fuel burning may be relevant

Have been assessed and it is determined that none are likely to result in the exceedence of any air quality objectives.

3.5 New Developments with Fugitive or Uncontrolled Sources

Peterborough City Council confirms that there are no new or newly identified potential sources of fugitive or uncontrolled particulate matter which may have an impact on air quality within the Local Authority area.

Peterborough City Council confirms that all the following have been considered:

- Landfill sites
- Quarries
- Unmade haulage roads on industrial sites
- Waste transfer stations, etc
- Other potential sources of fugitive particulate emissions

3.6 Summary

Peterborough City 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.

Peterborough City 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 Local / Regional Air Quality Strategy

Peterborough Air Quality Strategy was issued in the summer of 2004 a copy is available upon request from Peterborough City Council.

The Air Quality Strategy forms an integral part of Peterborough's air quality management. The Air Quality Strategy provides a means of prevention and reduction of any potential air pollution exceedences in Peterborough. National air quality objectives are set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland published in January 2000.

The air quality strategy aims to integrate different Council departments to produce a multi-disciplinary forum for the routine consideration of current and potential air quality issues.

The air quality strategy is designed to be a living working document which will be regularly updated. Any changes such as legislation or any air pollution exceedences will result in the air quality strategy being reviewed. Since the inception of the strategy in 2004 there have been no major exceedences of the relevant targets requiring amendment to the overall strategy.

5 Planning Applications

Residential development continues in Peterborough City Council's fourth (and newest) township; Hampton. Modelling suggested that there would be minimal impact on air quality; however Peterborough City Council continues to monitor this through the diffusion tube network.

Additionally, a major development referred to as 'Great Haddon', located to the West of Hampton and the East of the A1 is currently progressing through the Planning Mechanism. Modelling as part of the Environmental Statement for this development also suggests there will be minimal impact on air quality; Peterborough City Council will consider tube locations to monitor the impact of this development once the plans are finalised.

6 Air Quality Planning Policies

Peterborough City Council does not currently maintain an Air Quality Planning Policy. It is expected that the proposed city-wide Environment Strategy will incorporate elements of the previous policy document and bring this in line with current requirements.

7 Local Transport Plans and Strategies

Peterborough City Council has recently produced the city's third transport plan; LTP3. Implemented from April 2011, LTP3 contains the transport high level strategy up to 2026 and the more detailed plan covering the period up to 2016. It sets out the challenges and issues for our existing and future transport systems and how we will seek to address them. A copy is available from Peterborough City Council on request.

The report also provides information on major schemes that are either planned or have been completed, to improve the transport network in the Council's district. Major schemes are usually defined as projects that cost more than £5 million:

The major schemes which the city council would like to undertake between 2011 and 2016 are outlined in Section 10 of the document, these are:

- South Bank regeneration area access
- City centre and Bourges Boulevard improvements
- Lincoln Road bus priority corridor
- Park and Ride
- River Nene transport corridor
- Public transport and infrastructure development plan
- A1 Wittering junction improvement (Highways Agency scheme)
- Embankment access
- Junction 20
- Junction 1 to 2 improvements

The city council has proven its ability to deliver major projects. During the period covered by the second LTP 2006 to 2011 (LTP2) the following large schemes were delivered:

- Junction 21 to junction 22 – dualling of Paston Parkway
- Junction 2 to junction 3 – widening of Fletton Parkway (including footbridge)
- Junction 8 improvements
- A15 London Road Town Bridge improvements
- Public realm improvements including Cathedral Square and St John's Square
- Major bridge schemes on the Primary Route Network

8 Climate Change Strategies

Peterborough City Council's Climate Change Strategy was implemented in 2007 and remains unchanged at the time of writing.

However, a recent development has seen the introduction of a Carbon Management Action Plan which will link closely with the Transport Plan for Peterborough.

It is also intended that the Climate Change Strategy will ultimately be replaced by a City-wide Environmental Strategy that is currently being drafted for consideration by elected representatives.

9 Implementation of Action Plans

Hanson Building Products Ltd operates a brick making factory within the area administered by Fenland District Council, a neighbouring authority. The factory is located close to the boundary of Peterborough City Council's administrative area and emissions from it therefore have an effect on air quality within that area.

As part of their PPC permit application the company undertook a study on any impact emissions from the site may have on air quality. The results of this study led both Fenland District Council and Peterborough City Council to write detailed assessments, both of which showed small areas where the sulphur dioxide 15 minute mean value objective was currently being exceeded. As a result Peterborough City Council declared an Air Quality Management Area (AQMA) in May 2007, the geographical area covered is shown at Figure 2.1. Fenland District Council also declared a related AQMA, larger in size at that time.

The Environment Agency, as the regulatory authority responsible for the site, met with Hanson Brick Plc, the operator, in February 2008 to discuss improvements to their site and obtain an update on emissions monitoring and modelling.

Peterborough City Council and Fenland District Council have worked in partnership to prepare an Air Quality Action Plan (AQAP). At present, the action plan is awaiting ratification by Fenland District Council following final consultation with the Environment Agency.

Peterborough City Council meets twice a year with Fenland District Council, the Environment Agency (the regulator) and Hanson Brick Plc (the operator) and any other interested parties to discuss various issues regarding the site and its emissions.

It is important to note that this AQMA was declared following modelling of likely pollution caused by the plant and to date no exceedence of any objective has been measured. Please see Appendix D for this year's data.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

The 2012 figures show that the measured annual mean concentration for all sites was less than 40μg/m^3.

Consequently Peterborough City Council conclude that there are no identified exceedences of the Local Air Quality management annual mean objectives at relevant locations and therefore a detailed assessment is not relevant for any of the monitored sites.

The one current AQMA in Peterborough City Council which relates to an industrial source in Fenland District remains. The Action Plan for this area is currently awaiting finalisation.

10.2 Conclusions relating to New Local Developments

There are no recent local developments that are to require more detailed consideration or require a Detailed Assessment.

10.3 Proposed Actions

This Progress Report has not identified the need to proceed to a Detailed Assessment for any pollutant.

It is planned during the next year to relocate some tubes to locations within the central city area. Prospective sites will be screened to determine the most at risk locations for potential exceedence of air quality standards.

Peterborough City Council will continue to liaise with Fenland and the Environment Agency in relation to completion of their Air Quality Action Plan for the AQMA and will continue to administer the NO_x tube network.

A Progress Report will be submitted to DEFRA in April 2014 which will cover data gathered between 1st January 2013 and 31st December 2013.

11 References

AEA Energy & Environment (2008) Report to Defra and the Devolved Administrations, Diffusion Tubes For Ambient NO2 Monitoring: Practical Guidance for Laboratories and Users

DEFRA (2007) 'The Air Quality Strategy for England, Wales and Northern Ireland'

DEFRA (2009a) 'Local Air Quality Management' Technical Guidance (09)

DEFRA (2009b) 'Local Air Quality Management' Policy Guidance (09)

Peterborough City Council (2007) 'A Climate Change Strategy for Peterborough'

Peterborough City Council (2008) 'Air Quality Progress Report'

Peterborough City Council (2004) 'Peterborough Air Quality Strategy'

Peterborough City Council (2011) '3rd LTP 2011-2016'

Peterborough City Council (2009) 'Air Quality Updating and Screening Assessment'

The Air Quality (England) Regulations 2000 No 928

The Air Quality (England) (Amendment) Regulations 2002 No. 3043

The Environment Act 1995 c.25

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The Bias Adjustment factor that has been used in this report is 0.79; this has been taken from the Review and Assessment helpdesk database, spreadsheet version number 03/13:
http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_13-Final.xls
with ESG Didcot as the analyzing laboratory.

Discussion of Choice of Factor to Use

Peterborough City Council does not have a local co-location study therefore the National Bias Adjustment Factor has been utilised.

PM Monitoring Adjustment

Peterborough City Council has no Particulate Monitoring sites within the area.

Short-term to Long-term Data Adjustment

All NO_2 diffusion tube monitoring carried out by Peterborough City Council achieved 9 months or more capture rate, therefore no adjustments were required.

QA/QC of diffusion tube monitoring

Diffusion Tube Analysis

Tube Supplier and Analyst: Environmental Scientifics Groups
The samples have been analysed in accordance with ESG's standard operating procedure HS/WI/1015 issue 15. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO2 Monitoring: Practical Guidance.'

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection.

All samples were received in good condition, unless otherwise stated in the comments field of results table. Please note:

(i) As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of

11ºC, the reported values **have** been adjusted to 20ºC to allow for direct comparison with EU limits.

(ii) The reported results have not been bias adjusted.

This analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is within the scope of our UKAS schedule. Any further calculations and assessments requiring exposure details and conditions fall outside the scope of our accreditation. In the WASP intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, Scientifics is currently ranked as a **Category Good** laboratory.

Appendix B: Road Traffic Data

A road with more that 30,000 vehicles per day.	**Flow in 1000s (% of HGVs)** **AADT (24hr average annual daily traffic flow)**
A15 Lincoln Road	37 (2%)
A47 between junction 15-20	44.3 (6%)
Rivergate Gyratory	32.2 (4%)
A1139 Frank Perkins Parkway	51 (12%)
A1139 Fletton Parkway	64.7 (8%)
A1 north of the junction with the A1139 Fletton parkway	42.1 (13%)
A1260	50.6 (4%)
Bourges Boulevard	44.1 (3%)
A busy junction can be taken to be one with more than 10000 vehicles per day	
All junctions on the parkway network: Paston Jcns 20 - 22 Fletton/Frank Perkins Jcns 1 – 8 Longthorpe Jcns 33 – 34 Soke Jcns 15 – 20 Werrington Jcns 47 – 46 Jcn of A1073(Eye Green) /A47 Jcn's 43,42,41,40,36 Bourges Boulevard Rivergate Gyratory London Road / Oundle Road	
A proportion of heavy duty vehicles which exceed 25% of the daily vehicles per day	
None	
New roads constructed/planned since April 04	
A1073 new alignment, opened 2011, AADT approx 11,500 Stanground bypass now open, AADT approx 7,500	

NB. It is considered, following advice from colleagues in the Highways department, that the figures from the last 12 months will not have substantially altered from those provided in last year's report.

Appendix C: Nitrogen Dioxide diffusion tube full dataset (monthly mean values)

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA9S1	BORG	05/12/2011 14:15	13/01/2012 14:45	936.50	2.77	42.4	22.1	
PETE/11A/NA9S2	THORNGY	05/12/2011 10:30	13/01/2012 18:00	943.50	1.86	28.2	14.7	
PETE/11A/NA9S3	COPE	05/12/2011 17:00	13/01/2012 11:15	930.25	1.51	23.3	12.1	
PETE/11A/NA9S4	LYTH	05/12/2011 17:00	13/01/2012 12:30	931.50	1.39	21.3	11.1	
PETE/11A/NA9S5	WITTERING	06/12/2011 18:00	13/01/2012 10:45	904.75	1.45	23	12	
PETE/11A/NA9S6	LINCOLN	05/12/2011 11:30	13/01/2012 15:45	940.25	3.1	47.2	24.5	
PETE/11A/NA9S7	LINCOLN	05/12/2011 11:30	13/01/2012 15:45	940.25	2.84	43.4	22.5	
PETE/11A/NA9S8	WALTON	05/12/2011 11:15	13/01/2012 15:45	940.50	1.98	30.2	15.7	
PETE/11A/NA9S9	STAN	05/12/2011 12:45	13/01/2012 14:15	937.50	1.84	28.2	14.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA9S10	HAMPTON	05/12/2011 13:30	13/01/2012 12:45	935.25	1.37	21.1	10.9	
PETE/11A/NA9S11	LONDON	05/12/2011 11:45	13/01/2012 13:00	937.25	2.02	30.9	16.1	
PETE/11A/NA9S12	FLETTON	05/12/2011 14:00	13/01/2012 14:30	936.50	1.61	24.7	12.8	
PETE/11A/NA9S13	THORNEY BYPASS	05/12/2011 10:30	13/01/2012 18:00	943.50	1.87	28.5	14.8	
PETE/11A/NA9S14	OUNDLE RD	05/12/2011 16:45	13/01/2012 13:00	932.25	1.49	22.9	11.9	
PETE/11A/NA9S15	PARKWAY	05/12/2011 12:30	13/01/2012 14:15	937.75	2.4	36.7	19.1	
PETE/11A/NA9S16	PARKWAY	05/12/2011 12:30	13/01/2012 14:15	937.75	2.9	44.4	23.1	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA10S1	BORG	13/01/2012 14:45	03/02/2012 13:30	502.75	0.56	15.8	8.2	
PETE/11A/NA10S2	THORNGY	13/01/2012 18:00	03/02/2012 11:00	497.00	0.07	2.1	1.1	
PETE/11A/NA10S3	COPE	13/01/2012 11:15	03/02/2012 15:00	507.75	0.12	3.5	1.8	
PETE/11A/NA10S4	LYTH	13/01/2012 12:30	03/02/2012 12:45	504.25	0.06	1.6	0.8	
PETE/11A/NA10S5	WITTERING	13/01/2012 10:45	03/02/2012 09:30	502.75	0.1	2.7	1.4	
PETE/11A/NA10S6	LINCOLN	13/01/2012 15:45	03/02/2012 10:30	498.75	0.17	4.8	2.5	
PETE/11A/NA10S7	LINCOLN	13/01/2012 15:45	03/02/2012 10:30	498.75	0.13	3.7	1.9	
PETE/11A/NA10S8	WALTON	13/01/2012 15:45	03/02/2012 10:30	498.75	0.16	4.5	2.3	
PETE/11A/NA10S9	STAN	13/01/2012 14:45	03/02/2012 12:00	501.25	<0.03	<0.9	<0.4	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA10S10	HAMPTON	13/01/2012 12:45	03/02/2012 12:30	503.75	0.08	2.4	1.2	
PETE/11A/NA10S11	LONDON	13/01/2012 13:00	03/02/2012 14:30	505.50	1.55	44	22.9	
PETE/11A/NA10S12	FLETTON	13/01/2012 14:30	03/02/2012 11:30	501.00	1.52	43.4	22.6	
PETE/11A/NA10S13	THORNEY BYPASS	13/01/2012 18:00	03/02/2012 11:00	497.00	1.42	41.1	21.4	Turned Sideways
PETE/11A/NA10S14	OUNDLE RD	13/01/2012 13:00	03/02/2012 14:00	505.00	1.51	42.9	22.3	
PETE/11A/NA10S15	PARKWAY	13/01/2012 14:15	03/02/2012 12:00	501.75	1.73	49.3	25.6	
PETE/11A/NA10S16	PARKWAY	13/01/2012 14:15	03/02/2012 12:00	501.75	2.13	60.9	31.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA11S1	BORG	03/02/2012 13:30	29/02/2012 15:45	626.25	2.36	54	28.1	
PETE/11A/NA11S2	THORNGY	03/02/2012 11:00	29/02/2012 10:30	623.50	1.54	35.4	18.4	
PETE/11A/NA11S3	COPE	03/02/2012 15:00	29/02/2012 11:15	620.25	1.26	29.2	15.2	
PETE/11A/NA11S4	LYTH	03/02/2012 12:45	29/02/2012 12:00	623.25	1.29	29.6	15.4	
PETE/11A/NA11S5	WITTERING	06/02/2012 09:30	29/02/2012 10:00	552.50	1.6	41.6	21.6	
PETE/11A/NA11S6	LINCOLN	03/02/2012 10:30	29/02/2012 11:00	624.50	2.46	56.6	29.4	
PETE/11A/NA11S7	LINCOLN	03/02/2012 10:30	29/02/2012 11:00	624.50	2.45	56.3	29.3	
PETE/11A/NA11S8	WALTON	03/02/2012 10:30	29/02/2012 11:00	624.50	1.89	43.5	22.6	
PETE/11A/NA11S9	STAN	03/02/2012 12:00	29/02/2012 13:00	625.00	2.03	46.6	24.2	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA11S10	HAMPTON	03/02/2012 12:30	29/02/2012 12:15	623.75	1.51	34.8	18.1	
PETE/11A/NA11S11	LONDON	03/02/2012 14:30	29/02/2012 12:30	622.00	1.51	34.9	18.1	
PETE/11A/NA11S12	FLETTON	03/02/2012 11:30	29/02/2012 13:00	625.50	1.66	38.1	19.8	
PETE/11A/NA11S13	THORNEY BYPASS	03/02/2012 11:00	29/02/2012 10:45	623.75	1.78	40.8	21.2	
PETE/11A/NA11S14	OUNDLE RD	03/02/2012 14:00	29/02/2012 13:00	623.00	1.81	41.6	21.6	
PETE/11A/NA11S15	PARKWAY	03/02/2012 12:00	29/02/2012 12:45	624.75	2.06	47.2	24.6	
PETE/11A/NA11S16	PARKWAY	03/02/2012 12:00	29/02/2012 12:45	624.75	2	46	23.9	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA12S1	BORG	29/02/2012 15:45	29/03/2012 13:30	693.75	3.08	63.7	33.1	
PETE/11A/NA12S2	THORNGY	29/02/2012 10:30	28/03/2012 18:15	679.75	1.71	36	18.7	
PETE/11A/NA12S3	COPE	29/02/2012 11:15	29/03/2012 14:30	699.25	1.16	23.7	12.3	
PETE/11A/NA12S4	LYTH	29/02/2012 12:00	29/03/2012 15:15	699.25	1.31	27	14	
PETE/11A/NA12S5	WITTERING	29/02/2012 10:00	29/03/2012 14:45	700.75	1.98	40.5	21.1	
PETE/11A/NA12S6	LINCOLN	29/02/2012 11:00	29/03/2012 14:00	699.00	2.46	50.5	26.3	
PETE/11A/NA12S7	LINCOLN	29/02/2012 11:00	29/03/2012 14:00	699.00	1.96	40.1	20.9	
PETE/11A/NA12S8	WALTON	29/02/2012 11:00	29/03/2012 14:00	699.00	2.52	51.7	26.9	
PETE/11A/NA12S9	STAN	29/02/2012 13:00	29/03/2012 16:30	699.50	1.97	40.4	21	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/11A/NA12S10	HAMPTON	29/02/2012 12:15	29/03/2012 15:15	699.00	1.32	27	14	
PETE/11A/NA12S11	LONDON	29/02/2012 12:30	29/03/2012 16:00	699.50	1.94	39.8	20.7	
PETE/11A/NA12S12	FLETTON	29/02/2012 13:00	29/03/2012 16:00	699.00	1.62	33.2	17.2	
PETE/11A/NA12S13	THORNEY BYPASS	29/02/2012 10:45	28/03/2012 18:15	679.50	1.84	38.8	20.2	
PETE/11A/NA12S14	OUNDLE RD	29/02/2012 13:00	29/03/2012 16:00	699.00	1.29	26.4	13.7	
PETE/11A/NA12S15	PARKWAY	29/02/2012 12:45	29/03/2012 16:15	699.50	2.62	53.7	27.9	
PETE/11A/NA12S16	PARKWAY	29/02/2012 12:45	29/03/2012 16:15	699.50	2.59	53.2	27.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/12A/NA1S1	BORG	29/03/2012 13:30	01/05/2012 14:45	793.25	2.68	48.5	25.2	
PETE/12A/NA1S2	THORNGY	28/03/2012 18:15	01/05/2012 10:15	808.00	1.35	24	12.5	
PETE/12A/NA1S3	COPE	29/03/2012 14:30	01/05/2012 11:30	789.00	0.91	16.5	8.6	
PETE/12A/NA1S4	LYTH	29/03/2012 15:15	01/05/2012 11:45	788.50	1.03	18.7	9.7	
PETE/12A/NA1S5	WITTERING	29/03/2012 14:45	01/05/2012 09:45	787.00	1.68	30.5	15.9	
PETE/12A/NA1S6	LINCOLN	29/03/2012 14:00	01/05/2012 11:15	789.25	1.88	34.1	17.8	
PETE/12A/NA1S7	LINCOLN	29/03/2012 14:00	01/05/2012 11:15	789.25	1.72	31.2	16.2	
PETE/12A/NA1S8	WALTON	29/03/2012 14:00	01/05/2012 10:45	788.75	2.15	39	20.3	
PETE/12A/NA1S9	STAN	29/03/2012 16:30	01/05/2012 11:00	786.50	1.62	29.6	15.4	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total μg	μg m^{-3}	ppb	Comments
PETE/12A/NA1S10	HAMPTON	29/03/2012 15:15	01/05/2012 12:00	788.75	1.01	18.3	9.5	
PETE/12A/NA1S11	LONDON	29/03/2012 16:00	01/05/2012 12:45	788.75	1.29	23.5	12.2	
PETE/12A/NA1S12	FLETTON	29/03/2012 16:00	01/05/2012 11:00	787.00	1.3	23.6	12.3	
PETE/12A/NA1S13	THORNEY BYPASS	28/03/2012 18:15	01/05/2012 10:15	808.00	1.64	29.1	15.1	
PETE/12A/NA1S14	OUNDLE RD	29/03/2012 16:00	01/05/2012 12:45	788.75	1.26	22.9	11.9	
PETE/12A/NA1S15	PARKWAY	29/03/2012 16:15	01/05/2012 10:30	786.25	2.23	40.7	21.2	
PETE/12A/NA1S16	PARKWAY	29/03/2012 16:15	01/05/2012 10:30	786.25	2.39	43.5	22.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA2S1	BORG	01/05/2012 14:45	31/05/2012 16:00	721.25	2.1	41.7	21.7	
PETE/12A/NA2S2	THORNGY	01/05/2012 10:15	31/05/2012 10:15	720.00	1.2	24	12.5	
PETE/12A/NA2S3	COPE	01/05/2012 11:30	31/05/2012 16:30	725.00	0.64	12.8	6.6	
PETE/12A/NA2S4	LYTH	01/05/2012 11:45	31/05/2012 17:00	725.25	0.93	18.4	9.5	
PETE/12A/NA2S5	WITTERING	01/05/2012 09:45	31/05/2012 17:45	728.00	1.7	33.6	17.5	
PETE/12A/NA2S6	LINCOLN	01/05/2012 11:15	31/05/2012 16:15	725.00	1.34	26.6	13.8	
PETE/12A/NA2S7	LINCOLN	01/05/2012 11:15	31/05/2012 16:15	725.00	1.15	22.7	11.8	
PETE/12A/NA2S8	WALTON	01/05/2012 10:45	31/05/2012 16:15	725.50	1.54	30.5	15.9	
PETE/12A/NA2S9	STAN	01/05/2012 11:00	31/05/2012 13:00	722.00	1.57	31.3	16.3	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA2S10	HAMPTON	01/05/2012 12:00	31/05/2012 12:15	720.25	0.21	4.2	2.2	Tube upside down and full of water
PETE/12A/NA2S11	LONDON	01/05/2012 12:45	31/05/2012 11:15	718.50	1.3	25.9	13.5	
PETE/12A/NA2S12	FLETTON	01/05/2012 11:00	31/05/2012 13:15	722.25	1.21	23.9	12.4	
PETE/12A/NA2S13	THORNEY BYPASS	01/05/2012 10:15	31/05/2012 09:30	719.25	1.36	27.1	14.1	
PETE/12A/NA2S14	OUNDLE RD	01/05/2012 12:45	31/05/2012 16:45	724.00	1.05	20.8	10.8	
PETE/12A/NA2S15	PARKWAY	01/05/2012 10:30	31/05/2012 10:45	720.25	2.06	41.1	21.4	
PETE/12A/NA2S16	PARKWAY	01/05/2012 10:30	31/05/2012 10:45	720.25	1.7	33.9	17.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA3S1	BORG	31/05/2012 16:00	29/06/2012 09:15	689.25	1.46	30.3	15.7	
PETE/12A/NA3S2	THORNGY	31/05/2012 10:15	28/06/2012 15:00	676.75	1.05	22.2	11.6	
PETE/12A/NA3S3	COPE	31/05/2012 16:30	28/06/2012 15:45	671.25	0.49	10.5	5.4	
PETE/12A/NA3S4	LYTH	31/05/2012 17:00	28/06/2012 15:45	670.75	0.76	16.2	8.4	
PETE/12A/NA3S5	WITTERING	31/05/2012 17:45	28/06/2012 14:30	668.75	1.37	29.4	15.3	
PETE/12A/NA3S6	LINCOLN	31/05/2012 16:15	28/06/2012 15:30	671.25	1.25	26.7	13.9	
PETE/12A/NA3S7	LINCOLN	31/05/2012 16:15	28/06/2012 15:30	671.25	1.33	28.4	14.8	
PETE/12A/NA3S8	WALTON	31/05/2012 16:15	28/06/2012 15:30	671.25	1.04	22.2	11.6	
PETE/12A/NA3S9	STAN	31/05/2012 13:00	28/06/2012 15:15	674.25	0.96	20.3	10.6	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA3S10	HAMPTON	31/05/2012 12:15	28/06/2012 16:00	675.75	0.67	14.2	7.4	
PETE/12A/NA3S11	LONDON	31/05/2012 11:15	28/06/2012 16:15	677.00	0.84	17.8	9.2	
PETE/12A/NA3S12	FLETTON	31/05/2012 13:15	28/06/2012 14:45	673.50	0.99	21	10.9	
PETE/12A/NA3S13	THORNEY BYPASS	31/05/2012 09:30	28/06/2012 15:15	677.75	1.18	25	13	
PETE/12A/NA3S14	OUNDLE RD							Missing
PETE/12A/NA3S15	PARKWAY	31/05/2012 10:45	28/06/2012 15:00	676.25	1.2	25.5	13.2	
PETE/12A/NA3S16	PARKWAY	31/05/2012 10:45	28/06/2012 15:00	676.25	1.14	24.1	12.5	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA4S1	BORG	29/06/2012 09:15	31/07/2012 14:30	773.25	2	37.2	19.3	
PETE/12A/NA4S2	THORNGY	28/06/2012 15:00	31/07/2012 15:15	792.25	1.07	19.4	10.1	
PETE/12A/NA4S3	COPE	28/06/2012 15:45	31/07/2012 18:00	794.25	0.66	11.9	6.2	
PETE/12A/NA4S4	LYTH	28/06/2012 15:45	31/07/2012 16:45	793.00	0.82	14.9	7.8	
PETE/12A/NA4S5	WITTERING	28/06/2012 14:30	31/07/2012 18:30	796.00	1.38	24.9	13	
PETE/12A/NA4S6	LINCOLN							Missing
PETE/12A/NA4S7	LINCOLN							Missing
PETE/12A/NA4S8	WALTON	28/06/2012 15:30	31/07/2012 14:45	791.25	1.24	22.5	11.7	
PETE/12A/NA4S9	STAN	27/06/2012 15:15	31/07/2012 16:00	816.75	1.65	28.9	15.1	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA4S10	HAMPTON							Missing
PETE/12A/NA4S11	LONDON	28/06/2012 16:15	31/07/2012 16:15	792.00	1.12	20.3	10.5	
PETE/12A/NA4S12	FLETTON	27/06/2012 14:45	31/07/2012 16:15	817.50	1.1	19.3	10	
PETE/12A/NA4S13	THORNEY BYPASS	28/06/2012 15:15	31/07/2012 15:15	792.00	1.04	18.9	9.8	
PETE/12A/NA4S14	OUNDLE RD	28/06/2012 16:15	31/07/2012 16:30	792.25	0.87	15.7	8.2	
PETE/12A/NA4S15	PARKWAY	27/06/2012 15:00	31/07/2012 16:00	817.00	1.55	27.2	14.1	
PETE/12A/NA4S16	PARKWAY	27/06/2012 15:00	31/07/2012 16:00	817.00	1.87	32.8	17.1	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA5S1	BORG	31/07/2012 14:30	29/08/2012 16:30	698.00	1.63	33.5	17.4	
PETE/12A/NA5S2	THORNGY	31/07/2012 15:15	29/08/2012 14:45	695.50	1.2	24.8	12.9	
PETE/12A/NA5S3	COPE	31/07/2012 18:00	29/08/2012 15:15	693.25	0.78	16.1	8.4	
PETE/12A/NA5S4	LYTH	31/07/2012 16:45	29/08/2012 15:30	694.75	0.93	19.1	9.9	
PETE/12A/NA5S5	WITTERING	31/07/2012 18:30	29/08/2012 14:00	691.50	1.24	25.8	13.4	
PETE/12A/NA5S6	LINCOLN	31/07/2012 14:45	29/08/2012 15:00	696.25	1.84	37.9	19.7	
PETE/12A/NA5S7	LINCOLN	31/07/2012 14:45	29/08/2012 15:00	696.25	1.77	36.4	19	
PETE/12A/NA5S8	WALTON	31/07/2012 14:45	29/08/2012 15:00	696.25	1.11	22.8	11.8	
PETE/12A/NA5S9	STAN	31/07/2012 16:00	29/08/2012 16:15	696.25	1.26	26	13.5	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA5S10	HAMPTON							
PETE/12A/NA5S11	LONDON	31/07/2012 16:15	29/08/2012 16:30	696.25	1.2	24.7	12.8	
PETE/12A/NA5S12	FLETTON	31/07/2012 16:15	29/08/2012 16:15	696.00	1.09	22.4	11.6	
PETE/12A/NA5S13	THORNEY BYPASS	31/07/2012 15:15	29/08/2012 14:45	695.50	1.18	24.2	12.6	
PETE/12A/NA5S14	OUNDLE RD	31/07/2012 16:30	29/08/2012 13:45	693.25	1.0	20.7	10.7	
PETE/12A/NA5S15	PARKWAY	31/07/2012 16:00	29/08/2012 16:00	696.00	1.41	29.1	15.1	
PETE/12A/NA5S16	PARKWAY	31/07/2012 16:00	29/08/2012 16:00	696.00	1.49	30.7	16	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA6S1	BORG	29/08/2012 16:30	26/09/2012 12:57	668.45	1.72	36.9	19.2	
PETE/12A/NA6S2	THORNGY	29/08/2012 14:15	26/09/2012 12:24	670.15	1.18	25.2	13.1	
PETE/12A/NA6S3	COPE	29/08/2012 15:15	26/09/2012 11:05	667.83	0.71	15.2	7.9	
PETE/12A/NA6S4	LYTH	29/08/2012 15:30	26/09/2012 11:00	667.50	0.86	18.5	9.6	
PETE/12A/NA6S5	WITTERING	29/08/2012 14:00	26/09/2012 11:27	669.45	1.23	26.4	13.7	
PETE/12A/NA6S6	LINCOLN							Missing
PETE/12A/NA6S7	LINCOLN							Missing
PETE/12A/NA6S8	WALTON	29/08/2012 15:00	26/09/2012 11:50	668.83	0.9	19.3	10	
PETE/12A/NA6S9	STAN	29/08/2012 16:15	26/09/2012 09:06	664.85	1.15	24.9	12.9	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA6S10	HAMPTON	29/08/2012 15:30	26/09/2012 17:25	673.92	0.69	14.6	7.6	
PETE/12A/NA6S11	LONDON	29/08/2012 16:30	26/09/2012 09:27	664.95	1.16	25	13	
PETE/12A/NA6S12	FLETTON	29/08/2012 16:15	26/09/2012 09:30	665.25	1.09	23.6	12.3	
PETE/12A/NA6S13	THORNEY BYPASS	29/08/2012 14:45	26/09/2012 12:31	669.77	1.31	28	14.5	
PETE/12A/NA6S14	OUNDLE RD	29/08/2012 13:45	26/09/2012 09:45	668.00	1.1	23.5	12.2	
PETE/12A/NA6S15	PARKWAY	29/08/2012 16:00	26/09/2012 09:21	665.35	1.5	32.3	16.8	
PETE/12A/NA6S16	PARKWAY	29/08/2012 16:00	26/09/2012 09:21	665.35	1.83	39.5	20.5	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA7S1	BORG	26/09/2012 12:57	06/11/2012 17:00	988.05	2.37	34.4	17.9	
PETE/12A/NA7S2	THORNGY	26/09/2012 12:24	06/11/2012 16:15	987.85	2.13	30.9	16	
PETE/12A/NA7S3	COPE	26/09/2012 11:05	06/11/2012 08:35	981.50	1.31	19.1	9.9	
PETE/12A/NA7S4	LYTH	26/09/2012 11:00	06/11/2012 08:24	981.40	1.6	23.3	12.1	
PETE/12A/NA7S5	WITTERING	26/09/2012 11:27	06/11/2012 09:00	981.55	2.1	30.6	15.9	
PETE/12A/NA7S6	LINCOLN	26/09/2012 12:05	06/11/2012 16:45	988.67	2.68	38.9	20.2	Spider In Tube
PETE/12A/NA7S7	LINCOLN	26/09/2012 12:05	06/11/2012 16:45	988.67	2.49	36.1	18.8	
PETE/12A/NA7S8	WALTON	26/09/2012 11:50	06/11/2012 16:34	988.73	2.17	31.5	16.4	
PETE/12A/NA7S9	STAN	26/09/2012 09:06	06/11/2012 07:34	982.47	2.08	30.4	15.8	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA7S10	HAMPTON	26/09/2012 17:25	06/11/2012 08:03	974.63	1.59	23.4	12.2	
PETE/12A/NA7S11	LONDON	26/09/2012 09:27	06/11/2012 17:20	991.88	2.02	29.2	15.2	
PETE/12A/NA7S12	FLETTON	26/09/2012 09:30	06/11/2012 07:57	982.45	2.06	30.1	15.7	
PETE/12A/NA7S13	THORNEY BYPASS	26/09/2012 12:31	06/11/2012 16:10	987.65	2.15	31.2	16.2	
PETE/12A/NA7S14	OUNDLE RD	26/09/2012 09:45	06/11/2012 17:10	991.42	1.98	28.6	14.9	
PETE/12A/NA7S15	PARKWAY	26/09/2012 09:21	06/11/2012 07:44	982.38	2.75	40.1	20.8	
PETE/12A/NA7S16	PARKWAY	26/09/2012 09:21	06/11/2012 07:44	982.38	3.03	44.2	23	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA8S1	BORG	06/11/2012 17:00	29/11/2012 13:45	548.75	2.29	59.8	31.1	
PETE/12A/NA8S2	THORNGY	06/11/2012 16:15	29/11/2012 12:15	548.00	1.48	38.7	20.1	
PETE/12A/NA8S3	COPE	06/11/2012 08:35	29/11/2012 17:00	560.42	1.44	36.8	19.1	
PETE/12A/NA8S4	LYTH	06/11/2012 08:24	29/11/2012 17:00	560.60	1.19	30.5	15.8	
PETE/12A/NA8S5	WITTERING	06/11/2012 09:00	29/11/2012 17:30	560.50	1.53	39	20.3	
PETE/12A/NA8S6	LINCOLN	06/11/2012 16:45	29/11/2012 12:45	548.00	2.24	58.5	30.4	
PETE/12A/NA8S7	LINCOLN	06/11/2012 16:45	29/11/2012 12:45	548.00	2.2	57.5	29.9	
PETE/12A/NA8S8	WALTON	06/11/2012 16:34	29/11/2012 12:45	548.18	1.7	44.5	23.2	
PETE/12A/NA8S9	STAN	06/11/2012 07:34	29/11/2012 13:00	557.43	1.65	42.4	22	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA8S10	HAMPTON	06/11/2012 08:03	29/11/2012 16:45	560.70	1.33	34	17.7	
PETE/12A/NA8S11	LONDON	06/11/2012 17:20	29/11/2012 13:30	548.17	1.8	47.1	24.5	
PETE/12A/NA8S12	FLETTON	06/11/2012 07:57	29/11/2012 13:15	557.30	1.58	40.7	21.2	
PETE/12A/NA8S13	THORNEY BYPASS	06/11/2012 16:10	29/11/2012 12:15	548.08	1.53	40.1	20.8	
PETE/12A/NA8S14	OUNDLE RD	06/11/2012 17:10	29/11/2012 13:15	548.08	1.6	41.9	21.8	
PETE/12A/NA8S15	PARKWAY	06/11/2012 07:44	29/11/2012 13:00	557.27	1.84	47.4	24.6	
PETE/12A/NA8S16	PARKWAY	06/11/2012 07:44	29/11/2012 13:00	557.27	1.88	48.4	25.2	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA9S1	BORG	29/11/2012 13:45	03/01/2013 11:00	837.25	3.18	54.4	28.3	
PETE/12A/NA9S2	THORNGY	29/11/2012 12:15	03/01/2013 09:30	837.25	1.78	30.5	15.8	
PETE/12A/NA9S3	COPE	29/11/2012 17:00	03/01/2013 08:45	831.75	1.63	28.1	14.6	
PETE/12A/NA9S4	LYTH	29/11/2012 17:00	03/01/2013 10:45	833.75	1.53	26.2	13.6	
PETE/12A/NA9S5	WITTERING	29/11/2012 17:30	03/01/2013 08:30	831.00	2.35	40.6	21.1	
PETE/12A/NA9S6	LINCOLN	29/11/2012 12:45	03/01/2013 09:00	836.25	2.81	48.1	25	
PETE/12A/NA9S7	LINCOLN	29/11/2012 12:45	03/01/2013 09:00	836.25	2.7	46.4	24.1	
PETE/12A/NA9S8	WALTON	29/11/2012 12:45	03/01/2013 09:00	836.25	2.05	35.2	18.3	
PETE/12A/NA9S9	STAN	29/11/2012 13:00	03/01/2013 10:15	837.25	2.72	46.6	24.2	

Sample Number	Site	Date and Time ON	Date and Time OFF	Exposure Time (Hours)	Total µg	µg m^{-3}	ppb	Comments
PETE/12A/NA9S10	HAMPTON	29/11/2012 16:45	03/01/2013 10:30	833.75	1.95	33.5	17.4	
PETE/12A/NA9S11	OUNDLE RD	29/11/2012 13:15	03/01/2013 11:00	837.75	2.4	41.1	21.4	
PETE/12A/NA9S12	FLETTON	29/11/2012 13:15	03/01/2013 10:00	836.75	2.38	40.7	21.2	
PETE/12A/NA9S13	THORNEY BYPASS	29/11/2012 12:15	03/01/2013 09:30	837.25	1.92	32.9	17.1	
PETE/12A/NA9S14	LONDON RD	29/11/2012 13:30	03/01/2013 11:00	837.50	2.55	43.6	22.7	
PETE/12A/NA9S15	PARKWAY	24/11/2012 13:00	10/01/2013 13:45	1128.75	4.17	53	27.5	
PETE/12A/NA9S16	PARKWAY	24/11/2012 13:00	10/01/2013 13:45	1128.75	4.15	52.6	27.4	

Appendix D: Hanson Building Products Limited Ambient Monitoring of Sulphur Dioxide from their Whittlesey Brickworks

Emission Point	Substance / Parameter	AQS Compliance Value[5]	Result [1,5]	Test Method[2]	Accreditation/ Certification [3]	Uncertainty [4]
AM1	Sulphur Dioxide Period Mean		*3.2*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Sulphur Dioxide Period Mean		*2.7*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Sulphur Dioxide 99.18%ile daily value (μg/m^3)	125	*18.5*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Sulphur Dioxide 99.18%ile daily value (μg/m^3)	125	*14.4*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Sulphur Dioxide 99.73%ile hourly value (μg/m^3)	350	*81.7*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Sulphur Dioxide 99.73%ile hourly value (μg/m^3)	350	*52.3*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Sulphur Dioxide 99.90%ile 15-minute value (μg/m^3)	266	*126.9*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Sulphur Dioxide 99.90%ile 15-minute value (μg/m^3)	266	*81.4*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Number of readings greater than AQS daily threshold	≤3 pa > 125μg/m^3	*0*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Number of readings greater than AQS daily threshold	≤3 pa > 125μg/m^3	*0*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Number of readings greater than AQS hourly threshold	≤24 pa > 350μg/m^3	*0*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Number of readings greater than AQS hourly threshold	≤24 pa > 350μg/m^3	*0*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Number of readings greater than AQS 15-minute threshold	≤35 pa > 266μg/m^3	*1*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM2	Number of readings greater than AQS 15-minute threshold	≤35 pa > 266μg/m^3	*4*	UV Fluorescence	*UKAS (Calibration Gas)*	*15%*
AM1	Period data coverage		*100*			
AM2	Period data coverage		*98*			

[1] The result given is the value obtained during the reporting period, expressed in the same terms as the emission limit value.
[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.
[3] The accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.
[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated. The Agency will need to agree an appropriate uncertainty value.
[5] Concentrations are given in μg/m^3 at 20°C and 1013mb. To convert to ppb (v/10^{9}v) divide the listed concentrations by 2.66.