



2015 Updating and Screening Assessment for Peterborough City Council

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

Date: June 2015

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| Report Reference number | USA 2015 |
| Date | June 2015 |

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 Air Quality Management Area (AQMA) in Peterborough, for emissions of SO₂ 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. This USA proposes to revoke the AQMA, subject to the agreement of DEFRA.

The previous round of review and assessment (beginning with the 2012 Updating and Screening Assessment and continuing through the 2013 and 2014 Progress Reports) did not identify that any further detailed assessments were necessary beyond that already undertaken for the existing AQMA.

This Updating and Screening Assessment (USA) discusses changes to the air quality monitoring programme in Peterborough and the identification of an area within the city (Taverners Road) that requires closer attention due to concerns regarding potential exceedence of the NO₂ annual mean objective.

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1 Introduction

1.1 Description of Local Authority Area

The Peterborough district covers an area of 343.44 km² and is made up of a variety of landscapes. The city of Peterborough, which acts as a sub-regional centre for the north west of the East region and the south west of the East Midlands region, dominates the area.

Outside of the urban centre, the eastern and northern parts of the district are 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. The larger settlements outside of Peterborough are located mainly to the north and west of the city and include Eye, Wittering (including a Ministry of Defence base), Glinton, Thorney, Newborough and Northborough.

Local authorities with land adjoining Peterborough City Council are South Kesteven District Council, Fenland District Council, South Holland District Council, Huntingdonshire District Council and East Northamptonshire District Council. All of these are second-tier authorities working in conjunction with Cambridgeshire County Council. A sixth (unitary) local council, Rutland, is very close by (See Figure 1.1).

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.

The city's 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.

Peterborough City Council

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. In April 1998 the City Council achieved Unitary Status and is now responsible for all local government services in the district.

The Master Plan for development was to concentrate development in four new residential townships, each with a full range of social and economic facilities. With three of these completed, the development of Peterborough's fourth township, Hampton, continues at pace with over 4,200 dwellings built at March 2013 attracting interest as well as new residents from outside of the district. Hampton is planned to provide around 7,200 dwellings between 1997 and 2031.

Such is the success of the Hampton development that discussions about a fifth township at Great Haddon, comprising some 5,300 dwellings and major employment areas, are underway. These two developments are likely to be the main areas for future growth in the district.

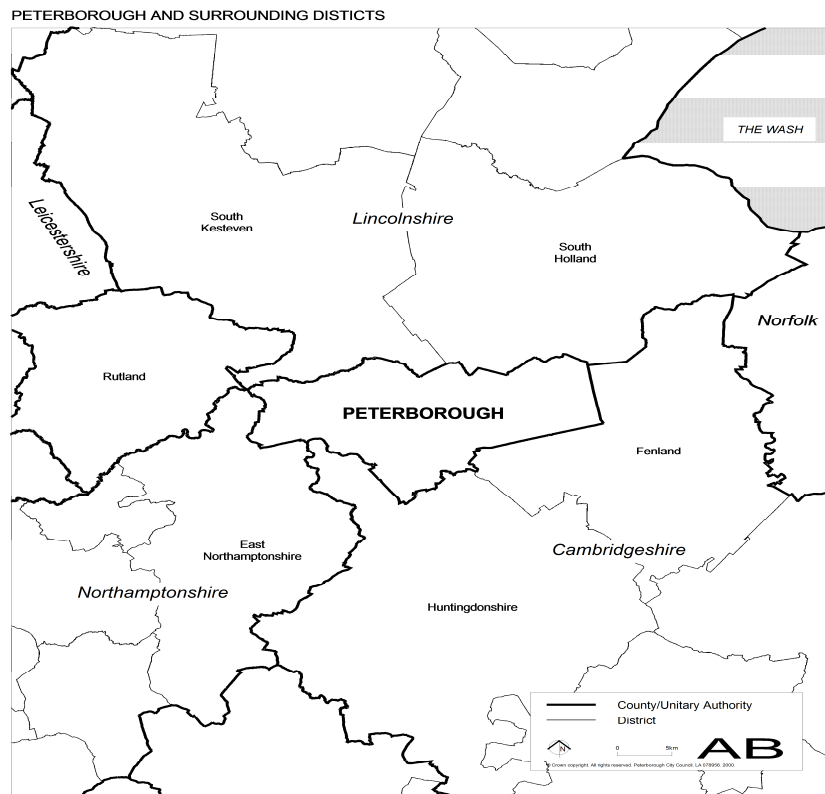
The City has an estimated population of 183,600 (2011 Census), a number that has risen 17.7% from 2001 and is projected to rise by a further 30% between 2012 and 2031 to around 242,600. The Centre for Cities Report 'City Outlook 2015' places Peterborough as the second fastest growing city in the UK.

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.

Road traffic remains one of the major sources contributing to air quality in Peterborough. However consideration must be given to industrial processes including those prescribed in legislation (defined as A1, A2 and B) as well as the rail network as these also have the potential to 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 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of 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 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2003 |
| | 5.00 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2010 |
| 1,3-Butadiene | 2.25 $\mu\text{g}/\text{m}^3$ | Running annual mean | 31.12.2003 |
| Carbon monoxide | 10.0 mg/m^3 | Running 8-hour mean | 31.12.2003 |
| Lead | 0.5 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2004 |
| | 0.25 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2008 |
| Nitrogen dioxide | 200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| | 40 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2005 |
| Particles (PM ₁₀) (gravimetric) | 50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 $\mu\text{g}/\text{m}^3$ | Annual mean | 31.12.2004 |
| Sulphur dioxide | 350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| | 125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| | 266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |

1.4 Summary of Previous Review and Assessments

Peterborough City Council's previous local air quality management reports are summarised as follows:

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 (NO ₂), 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 NO ₂ 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 (EA). |
| 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 EA 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 EA 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 EA. |

Peterborough City Council

| | | |
|-----------------|------|--|
| Progress Report | 2013 | 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 EA to complete and monitor the action plan for the AQMA. |
| Progress Report | 2014 | 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 EA to complete and monitor the action plan for the AQMA. |

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 the Sulphur Dioxide (SO₂) 15-minute mean value of 266 µg/m³. 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 SO₂ 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 is in relation to emissions of sulphur dioxide from a point source industrial premise, exceeding the 15-minute mean objective level of 266 µg/m³ 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 SO₂ in the area administered by Peterborough City Council.

Figure 1.2 Map of AQMA Boundaries



* Location marked in red, the exceedence 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 (NO₂) at 15 sites within the Local Authority Area. One 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, however a summary is provided of recent changes for ease. 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 2014.

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 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 auto analyser 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 **0.81**. 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 of Non-Automatic Monitoring Sites

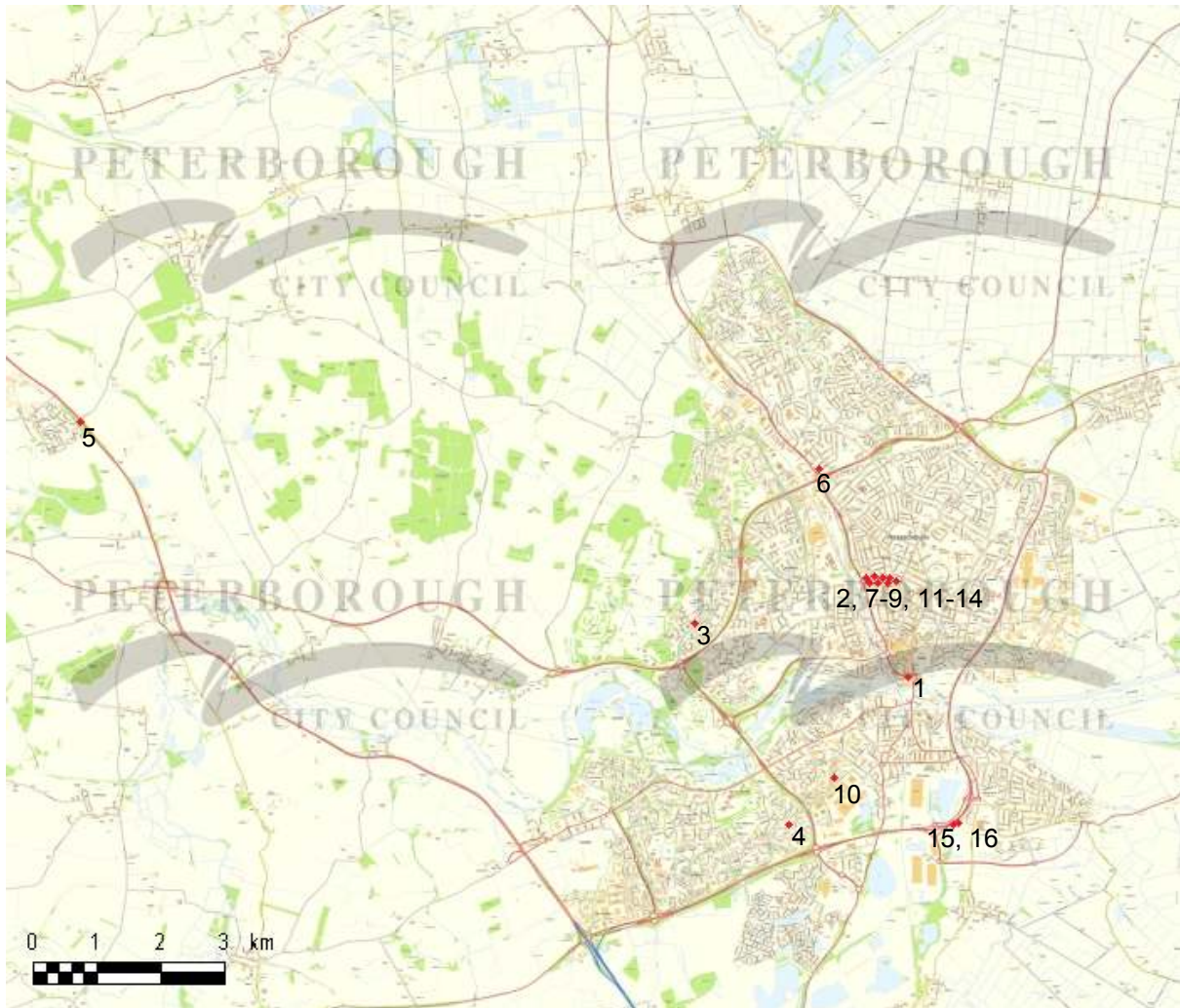


Table 2.1 Details of Non-Automatic Monitoring Sites

a) Sites January – March 2014

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? (Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road (N/A if not applicable) | Does this location represent worst-case exposure? |
|---------|-------------------|------------------|---------------|---------------|----------------------|----------|---|---|--|---|
| 1 | Bourges Boulevard | Roadside | (5)19123 | (2)98369 | NO ₂ | N | N | N | 1m | Y |
| 2 | Gladstone | Kerbside | (5)18708 | (2)99461 | NO ₂ | N | N | Y (3m) | 1m | Y |
| 3 | Copeland | Urban Background | (5)15782 | (2)99220 | NO ₂ | N | N | Y (5m) | N/A | Y |
| 4 | Lythmere | Urban Background | (5)17188 | (2)95966 | NO ₂ | N | N | Y (1m) | N/A | Y |
| 5 | Wittering | Roadside | (5)05698 | (3)02775 | NO ₂ | N | N | Y (5m) | 3m | Y |
| 6 + 7 | Lincoln Rd | Roadside | (5)17717 | (3)01621 | NO ₂ | N | N | Y(5m) | 3m | Y |
| 8 | Walton | Roadside | (5)17533 | (3)01807 | NO ₂ | N | N | Y | 1m | Y |
| 9 | Stanground | Urban Background | (5)20293 | (2)96393 | NO ₂ | N | N | Y (5m) | N/A | Y |
| 10 | Hampton | Roadside | (5)17574 | (2)93934 | NO ₂ | N | N | Y (5m) | 1m | Y |
| 11 | London Rd | Roadside | (5)19145 | (2)97577 | NO ₂ | N | N | Y (5m) | 1m | Y |
| 12 | Fletton | Roadside | (5)19356 | (2)97292 | NO ₂ | N | N | Y (5m) | 1m | Y |
| 13 | Taverners | Kerbside | (5)18593 | (2)99858 | NO ₂ | N | N | Y | 5m | Y |
| 14 | Oundle Road | Roadside | (5)18637 | (2)97842 | NO ₂ | N | N | Y (5m) | 1m | Y |
| 15+16 | Parkway | Roadside | (5)19932 | (2)96056 | NO ₂ | N | N | Y (12m) | 0.5m* | Y |

* Tubes 0.5m from parkway (A1139) slip-road (residential properties 12m from parkway).

b) Sites from April 2014 onwards

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? (Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road (N/A if not applicable) | Does this location represent worst-case exposure? |
|---------|-------------------|------------------|---------------|---------------|----------------------|----------|---|---|--|---|
| 1 | Bourges Boulevard | Roadside | (5)19123 | (2)98369 | NO ₂ | N | N | N | 1m | Y |
| 2 | Taverners TR1 | Roadside | (5)18534 | (2)99845 | NO ₂ | N | N | Y | 3m | Y |
| 3 | Copeland | Urban Background | (5)15782 | (2)99220 | NO ₂ | N | N | Y (5m) | N/A | Y |
| 4 | Lythmere | Urban Background | (5)17188 | (2)95966 | NO ₂ | N | N | Y (1m) | N/A | Y |
| 5 | Wittering | Roadside | (5)05698 | (3)02775 | NO ₂ | N | N | Y (5m) | 3m | Y |
| 6 | Lincoln Rd | Roadside | (5)17717 | (3)01621 | NO ₂ | N | N | Y (5m) | 3m | Y |
| 7 | Taverners TR2 | Kerbside | (5)18563 | (2)99846 | NO ₂ | N | N | Y | 1m | Y |
| 8 | Taverners TR3 | Roadside | (5)18543 | (2)99874 | NO ₂ | N | N | Y (5m) | 5m | Y |
| 9 | Taverners TR4 | Roadside | (5)18624 | (2)99869 | NO ₂ | N | N | Y (7m) | 5m | Y |
| 10 | Maxwell | Industrial | (5)17945 | (2)96724 | NO ₂ | N | N | N | N/A | Y |
| 11 | Taverners TR5 | Kerbside | (5)18677 | (2)99860 | NO ₂ | N | N | Y (3m) | 1m | Y |
| 12 | Taverners TR6 | Kerbside | (5)18780 | (2)99872 | NO ₂ | N | N | Y (2m) | 1m | Y |
| 13 | Taverners TR7 | Kerbside | (5)18861 | (2)99873 | NO ₂ | N | N | Y (3m) | 1m | Y |
| 14 | Taverners TR8 | Kerbside | (5)18870 | (2)99892 | NO ₂ | N | N | Y (3m) | 1m | Y |
| 15+16 | Parkway | Kerbside | (5)19932 | (2)96056 | NO ₂ | N | N | Y (12m) | 0.5m | Y |

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Table 2.2 provides the 2014 annual mean concentrations for each of the sites monitored while Table 2.4 shows the previous five years data (including those for 2014) for comparison.

The 2014 figures show that the measured annual mean concentration was less than the national air quality objective of $40 \mu\text{g}/\text{m}^3$ to be achieved by 31st December 2005, as outlined in table 1.1, for all of the sites monitored. Data capture was generally good although the network was reorganised in late March meaning that many sites were split three months/nine months in two different locations and there have subsequently been issues with the placement of tube TR4 (the post to which this tube was attached was removed on several occasions).

Figure 2.1 illustrates the trend in results over the last 5 years (using the data provided in table 2.4) of those sites at which monitoring is currently taking place and where the data is available (approximately half of the network was relocated in March meaning that historical data for the last five years is only available for the other half).

The chart suggests that following some high results in 2010 and 2011 (previous reports have attested that this was due to road maintenance and associated traffic diversions) the levels have become more constant over the last three years. If this continues, it would suggest that these levels are those more normally associated with the areas monitored. A measured increase in 2013 was not continued into 2014, with the levels instead similar to the lower values apparent in 2012. It is possible that the 2013 increase may have resulted from a particularly high number of road maintenance and improvement works undertaken at various sites around the city during that year (some of these also continued into 2014) although the effect of changes in atmospheric conditions cannot be discounted.

2.2.1.1 Changes in the tube network

A series of changes have been made to sites undergoing monitoring over the last 12-24 months. Some of these changes were made prior to the submission of the 2014 Progress Report and, it appears, were not reflected in that document.

Although the changes applicable at that time did not result in any exceedences of the air quality objective (and therefore do not affect the conclusions of the previous report in any way) they do have importance to matters discussed in this report.

A summary of changes made since April 2013 is detailed in table 2.2 below. It is noted in addition that effective from the May 2015 dataset, the tube at Maxwell road (site 10) has been moved to a new location at Alexandra road. This area has been identified by elected members as one where air quality is of concern to residents (although screening of this site does not indicate this as a location of potential exceedance), and as the Maxwell road site is well below the objective, it has been decided that the tube will be relocated accordingly.

Table 2.2 Summary of Changes to the Nitrogen Dioxide Tube Network since April 2013

| June 2013 (first result July 2013) | | | |
|------------------------------------|------------------|------------------|---|
| Site ID | Initial Location | New Location | Reasoning for move |
| 2 | Thorney | Gladstone street | Following by-pass works (completed in 2008) which resulted in improved air quality in the village of Thorney, results at this location remained well below the 40 µg/m ³ annual objective (see 5-year data included with 2013 Progress Report). It was therefore felt that further monitoring was not required and the tube was moved to a location on Gladstone street (see below for further detail). |
| 13 | Thorney By-pass | Taverners road | Following by-pass works (completed in 2008) which resulted in improved air quality in the village of Thorney, results at this location remained well below the annual 40 µg/m ³ objective (see 5-year data included with 2013 Progress Report). It was therefore felt that further monitoring was not required and the tube was moved to a location on Taverners road (see below for further detail). |

| March 2014 (first result April 2014) | | | |
|--------------------------------------|------------------|--------------------|---|
| Site ID | Initial Location | New Location | Reasoning for move |
| 2 | Gladstone street | Taverners road TR1 | The data gained during the 9 month period of monitoring at Gladstone Street indicated that NO ₂ levels are consistently below the 40 µg/m ³ objective. The Taverners road location had, over the same time period, been identified as an area requiring closer attention, therefore the tube was moved. |
| 7 | Lincoln road | Taverners road TR2 | Lincoln road has been a co-location site since 2008 and results gained have consistently not indicated an exceedence of the air quality objective (exceedences measured in 2009 and 2011 were only recorded by one of the two tubes). As such, it was felt that the tube would be better used elsewhere. |
| 8 | Walton | Taverners road TR3 | This tube had been in place since 2012 (although monitoring of that general location has been ongoing since the mid-1990s) and has not measured an exceedence since being installed. It was therefore felt that this tube would be better used at a relevant location on Taverners road. |
| 9 | Stanground | Taverners road TR4 | Results gained at this location have been consistently below the air quality objective since monitoring began in the mid-1990s. It was therefore felt that this tube would be better used at a relevant location on Taverners road. |
| 10 | Hampton | Maxwell road | The Hampton tube was located in a new township being constructed to the south of Peterborough and has been installed since 2008 (construction work on the wider development continues). During this time, results have been consistently below the air quality objective. The Maxwell road location was identified following complaints about industrial air pollution and the tube was moved in order to assess if there were any issues associated with NO _x . |
| 11 | London road | Taverners road TR5 | The London road tube was located on one of three heavily used roads to the south of the city centre. Since its installation in 2008, results have been consistently below the air quality objective. It was therefore felt that this tube would be better used at a relevant location on Taverners road. |
| 12 | Fletton avenue | Taverners road TR6 | The Fletton avenue tube was located on the second of three heavily used roads to the south of the city centre. Installed at the same time as the London road tube, results have been consistently below the air quality objective. It was therefore felt that this tube would also be better used on Taverners road. |
| 13 | Taverners road | Taverners road TR7 | The Taverners road location been identified as an area requiring closer attention. The location initially selected was, upon reflection, deemed not to be representative of exposure and therefore the tube was moved to an alternative (and relevant) location on the same road. |
| 14 | Oundle road | Taverners road TR8 | The Oundle road tube was located on the third of three heavily used roads to the south of the city centre. Since its installation in 2008, results have been consistently below the air quality objective. It was therefore felt that this tube would be better used at a relevant location on Taverners road. |

2.2.1.2 Gladstone Street

As is identified above, data for the Gladstone street location was collected over a period of 9 months across the calendar years of 2013 and 2014 (July to March). The location was identified as one requiring consideration following a review of the tube locations, during which it was decided that closer attention to air quality in the city's most heavily populated area (Millfield) was required.

The location chosen was in the southern part of this area (which is divided by Taverners road) close to one of the city's two largest mosques as it was considered that this would represent the worst case exposure of residents living in that area due to heavy use of the area by motor vehicles. A full nine months' worth of data was collected and when average and adjusted for bias this provided a result of 29.45 $\mu\text{g}/\text{m}^3$, well below the 40 $\mu\text{g}/\text{m}^3$ objective.

2.2.1.3 Taverners Road

Taverners road is a link road between two of the city's major north-south arterial roads (Bourges Boulevard and Lincoln Road) close to the city centre. It cuts through the city's most densely populated area (Millfield) and is the location of a primary school also. It has previously been considered as a location for monitoring but following DMRB calculations undertaken in order to screen potential sites it was not selected; as the assessment suggested traffic flows would be insufficient to result in an exceedence of the air quality objectives. Other sites appeared more important.

However, following the consideration of alternative sites for monitoring in 2013 (with the tubes located in Thorney being available for relocation), it was decided that attention should be given to the more densely populated area of the city and a tube was placed on Taverners road in July 2013 notwithstanding the result of the previous screening exercise. The eight months' worth of results obtained from this initial nine month period of monitoring, when averaged and adjusted for bias, provided a result of 38.87 $\mu\text{g}/\text{m}^3$ which was close enough to the objective for NO_2 to require further consideration.

As is outlined in Table 2.2, the Council's NO_x tube network was rearranged accordingly with eight relevant locations covering the length of the road being selected. The initial location was not one of these as it was determined on reflection that this was not representative and therefore the tube was relocated.

This report focuses on the data gained during the previous calendar year (2014 - see table 2.3 below) and these results demonstrate that there has been no exceedence of the objective. However, data is only available for the nine months from April 2014 and this suggests the area continues to require close attention.

At the time of writing data for the early part of 2015 was also available and it was therefore considered that adjusting the data to the last financial year (April 2014 to March 2015) would allow some discussion in this assessment with the benefit of a full twelve month monitoring period. This adjusted data is included in table 2.4 below and shows a very slight (0.15µg/m³) exceedence of the air quality objective at one location (TR2).

However, the Council is aware that there are major ongoing road maintenance and improvement works (which began in the summer of 2014) on Bourges Boulevard. These will have had an impact on traffic flow on the latter route (both increasing traffic volume and reducing speed, particularly at peak times). This is demonstrated by the following photographs:

Figure 2.2 Photo taken at TR2 location showing traffic on Taverners Road



Figure 2.3 Photo taken to the south of Taverners Road/Bourges Boulevard junction (Centre of previous photo) showing traffic queuing on approach to road works



In view of this and as the exceedence is extremely small ($0.15 \mu\text{g}/\text{m}^3$) it is proposed that the location will remain under close scrutiny for 2015. If the exceedence is replicated following this full year of monitoring then it is likely that a detailed assessment of the area will be required with a view to declaring an AQMA. This will be discussed as part of the 2016 Progress Report.

It is also of note that the Council is currently preparing a bid for funding to undertake a project aimed at encouraging taxi fleets to make greater use of ultra-low emission vehicles. As Taverners road is a major thoroughfare which sees substantial taxi activity, it is anticipated that the successful implementation of such a scheme may potentially have a positive impact on air quality in this area.

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes in 2014

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture (Number of Months/12*) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.81) |
|---------|---------------------------------|------------------|--------------|-------------------------------|-------------------------------------|--|---|---|
| | | | | | | | | 2014 ($\mu\text{g}/\text{m}^3$) |
| 1 | Bourges Boulevard | Roadside | N | N | 11 | N | N | 32.76 |
| 2 | Gladstone | Kerbside | N | N | 3 (of 3) | N | N | 28.83 |
| | Taverners TR1 | Roadside | N | N | 6 (of 9) | N** | N | 30.89 |
| 3 | Barnard Way (formerly Copeland) | Urban Background | N | N | 12 | N | N | 15.79 |
| 4 | Lythmere | Urban Background | N | N | 12 | N | N | 16.04 |
| 5 | Wittering | Roadside | N | N | 12 | N | N | 23.21 |
| 6 | Lincoln Rd | Roadside | N | Y (with 7 until April 2014) | 11 | N | N | 29.02 |
| 7 | Lincoln Rd | Roadside | N | Y (with 6 until April 2014) | 3 (of 3) | N | N | 35.07 |
| | Taverners TR2 | Kerbside | N | N | 9 (of 9) | N | N | 38.85 |
| 8 | Walton | Roadside | N | N | 3 (of 3) | N | N | 27.13 |
| | Taverners TR3 | Roadside | N | N | 7 (of 9) | N** | N | 22.65 |
| 9 | Stanground | Urban Background | N | N | 3 (of 3) | N | N | 25.58 |
| | Taverners TR4 | Roadside | N | N | 6 (of 9) | N** | N | 23.18 |
| 10 | Hampton | Roadside | N | N | 3 (of 3) | N | N | 23.93 |
| | Maxwell | Industrial | N | N | 9 (of 9) | N | N | 16.73 |
| 11 | London | Roadside | N | N | 3 (of 3) | N | N | 25.22 |
| | Taverners TR5 | Kerbside | N | N | 9 (of 9) | N | N | 30.22 |
| 12 | Fletton | Roadside | N | N | 3 (of 3) | N | N | 25.84 |
| | Taverners TR6 | Kerbside | N | N | 8 (of 9) | N** | N | 29.76 |
| 13 | Taverners | Kerbside | N | N | 2 (of 3) | N | N | 37.75 |
| | Taverners TR7 | Kerbside | N | N | 9 (of 9) | N | N | 31.96 |
| 14 | Oundle Road | Roadside | N | N | 2 (of 3) | N | N | 28.54 |
| | Taverners TR8 | Kerbside | N | N | 8 (of 9) | N** | N | 30.61 |

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| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture (Number of Months/12*) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.81) |
|---------|----------|-----------|--------------|-------------------------------|-------------------------------------|--|---|---|
| | | | | | | | | 2014 ($\mu\text{g}/\text{m}^3$) |
| 15 | Parkway | Kerbside | N | Co-located with 16 | 12 | N | N | 32.19 |
| 16 | Parkway | Kerbside | N | Co-located with 15 | 12 | N | N | 29.19 |

* unless otherwise stated

** Taverners road results not adjusted to give 12 months due to amendment for financial year (see Table 2.4 below)

Table 2.4 Results for Taverners Road Adjusted to Reflect Financial Year Data (April 2014 to March 2015)

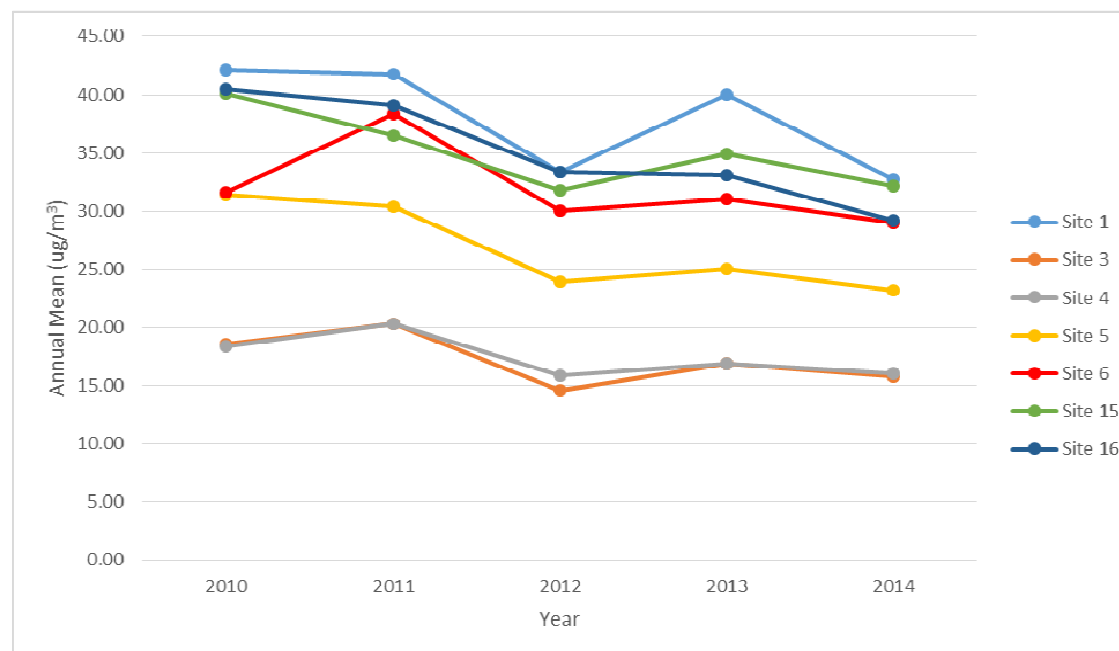
| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture (Number of Months/12) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.81) |
|---------|---------------|-----------|--------------|-------------------------------|------------------------------------|--|---|---|
| | | | | | | | | 2014 ($\mu\text{g}/\text{m}^3$) |
| 2 | Taverners TR1 | Roadside | N | N | 9* | N | N | 32.45 |
| 7 | Taverners TR2 | Kerbside | N | N | 12 | N | N | 40.15 |
| 8 | Taverners TR3 | Roadside | N | N | 10 | N | N | 24.17 |
| 9 | Taverners TR4 | Roadside | N | N | 8 | N | N | 27.15 |
| 11 | Taverners TR5 | Kerbside | N | N | 12 | N | N | 30.89 |
| 12 | Taverners TR6 | Kerbside | N | N | 11 | N | N | 31.97 |
| 13 | Taverners TR7 | Kerbside | N | N | 12 | N | N | 33.66 |
| 14 | Taverners TR8 | Kerbside | N | N | 10 | N | N | 32.23 |

* only 8 months data used in calculations as one result (May 2014) considered anomalous.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$ | | | | |
|---------|------------------|--------------|--|---|---|---|---|
| | | | 2010 (Bias Adjustment Factor = 0.83) | 2011 (Bias Adjustment Factor = 0.83) | 2012 (Bias Adjustment Factor = 0.79) | 2013 (Bias Adjustment Factor = 0.81) | 2014 (Bias Adjustment Factor = 0.81) |
| 1 | Roadside | N | 42.13 | 41.73 | 33.35 | 39.99 | 32.74 |
| 3 | Urban Background | N | 18.57 | 20.36 | 14.59 | 16.85 | 15.79 |
| 4 | Urban Background | N | 18.36 | 20.33 | 15.92 | 16.94 | 16.04 |
| 5 | Roadside | N | 31.43 | 30.38 | 23.92 | 25.01 | 23.21 |
| 6 | Roadside | N | 31.61 | 38.35 | 30.03 | 31.08 | 29.02 |
| 15 | Kerbside | N | 40.06 | 36.45 | 31.79 | 34.89 | 32.19 |
| 16 | Kerbside | N | 40.44 | 39.09 | 33.32 | 33.04 | 29.19 |

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



2.2.2 PM₁₀

PM₁₀ is not currently monitored at any location within the district of Peterborough City Council.

2.2.3 Sulphur Dioxide

Sulphur Dioxide (SO₂) 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 2014 are included as Appendix D. The monitoring locations utilised by Hanson are shown on Figure 2.3 below. The location to the top left of the map is of importance for Peterborough. Figure 2.4 provides a more useable version of Figure 1.2 (showing the air quality management area) for comparison. These maps have been reproduced from a document produced on behalf of Fenland District Council by Air Quality Consultants Ltd (2008).

Figure 2.5 Map showing Monitoring Locations for SO₂

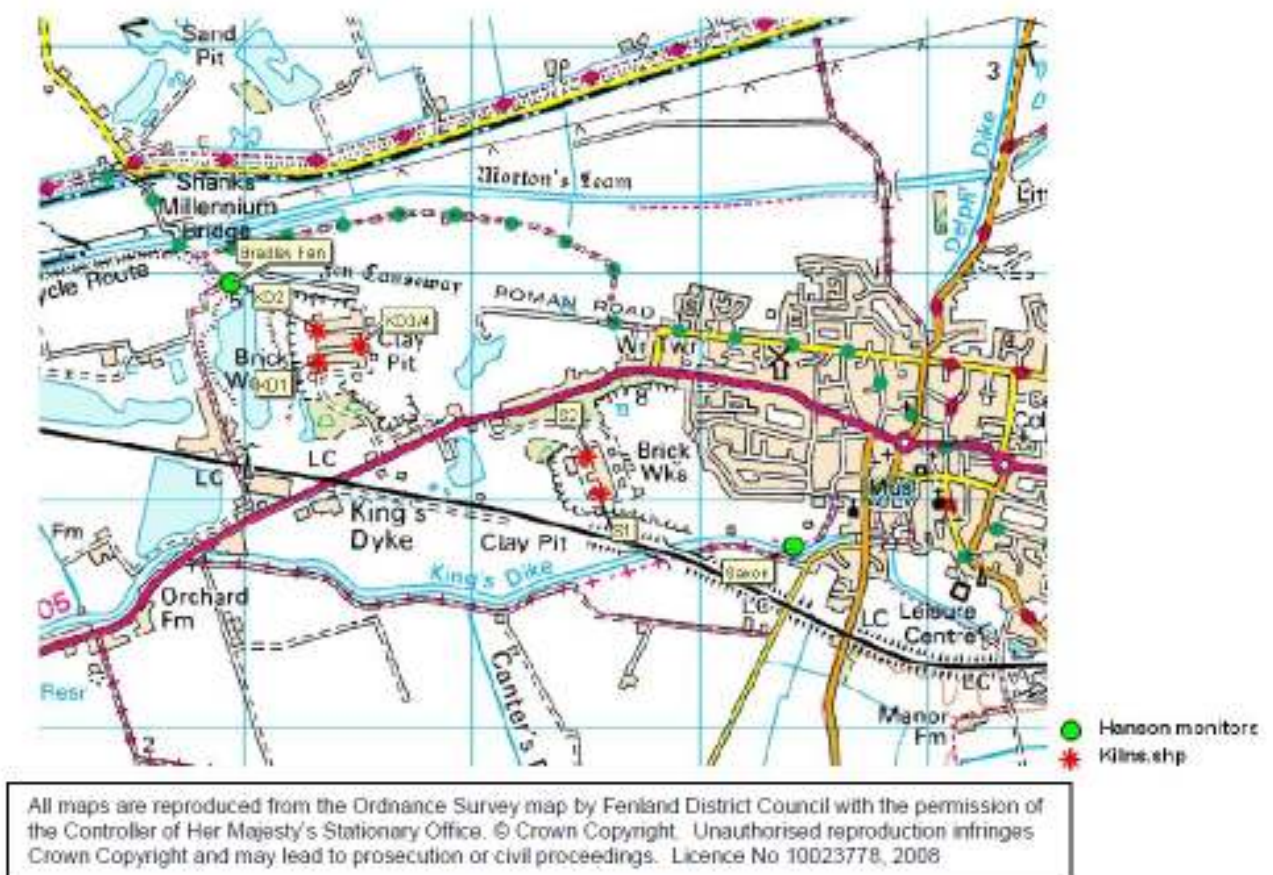
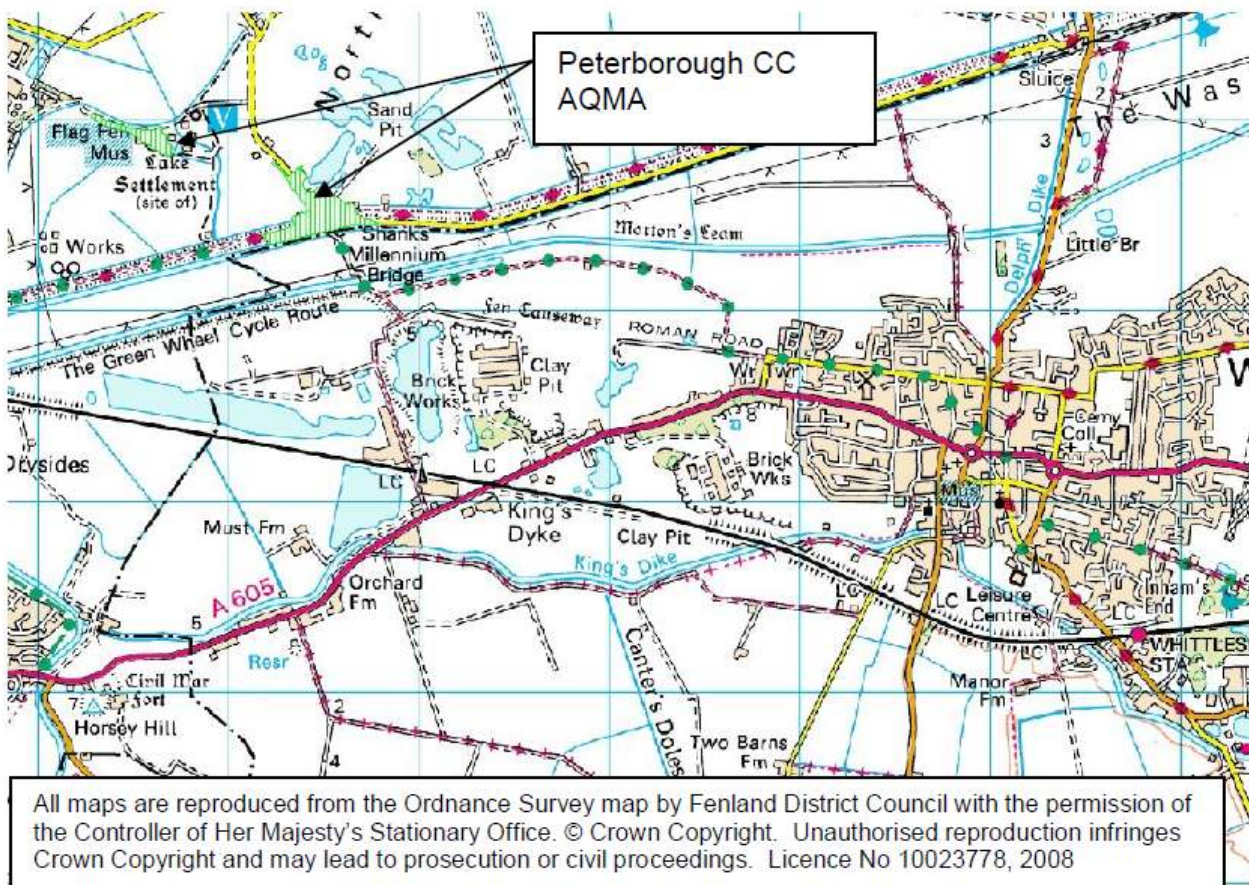


Figure 2.6 Map showing close up of AQMA



The data provided in appendix D show that there have not been any exceedences of the air quality objectives.

Following discussion with Fenland District Council, it is the opinion of Peterborough City Council that the AQMA declared in respect of SO₂ should be revoked. This decision is made on the basis that the exceedence was modelled and this has not, at any time, been supported by a subsequent measured exceedence at any location.

Since the AQMA was declared, the second site shown on Figure 2.3 above (where kilns S1 and S2 are located) has been closed down. This will have had a considerable impact on the emission modelled and it is unlikely that any increase in production at the existing site (the capacity for which is limited) would have a substantial effect on air quality. It is therefore proposed that the AQMA can be revoked without the need for a detailed assessment.

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. However, the Taverners road location remains of concern, further commentary regarding a potential Detailed Assessment will be provided in the 2016 Progress Report.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Peterborough City Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Peterborough City Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Peterborough City Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Peterborough City Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Peterborough City Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

There are a large number of road maintenance/improvement projects currently in progress around the city. Appendix B gives details of the traffic flow rate data for the year as well as that for 2013 (taken from last year's Progress Report) for comparison.

With regard to the data provided in Appendix B, it is important to note that at the time of writing, Bourges Boulevard and Fletton Parkway both have major road works in place. The A47 has also been reduced to a single lane for maintenance works between Junctions 17 and 18.

It appears that these areas are distorting traffic flows all across the network, and that the data being recorded at the moment is not representative of the normal situation. This will be reviewed when the 2016 Progress Report is prepared (at which time it is anticipated that the existing projects will be either at or very close to completion) to confirm that the changes are indeed distortion due to road maintenance and not a significant change worthy of discussion.

Peterborough City Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

Peterborough City Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Peterborough City Council confirms that there are no airports within the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Peterborough City Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Peterborough City Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Peterborough City Council confirms that there are no ports within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Peterborough City Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Peterborough City Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Peterborough City Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Peterborough City Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Peterborough City Council confirms that there are no poultry farms meeting the specified criteria.

Commercial and Domestic Sources

5.5 Biomass Combustion – Individual Installations

A new Energy from Waste facility is currently under construction in Fengate and will involve the use of 21.4MW plant for the burning of waste.

The initial application was made in 2008 with air quality impacts being considered at that time. It was determined that the emission from the site, even when taken cumulatively with that from the existing power station in Fengate, would not result in an exceedence of any of the air quality objectives.

Additionally, a screening opinion has been sought for the building of an anaerobic digester in Crowland. Relevant comments have been made and although information regarding the precise plant to be used is, as yet, limited, it is anticipated that this will be too small to have a substantial impact on air quality. The matter will, however be considered as appropriate should a full planning application be received.

Peterborough City Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.6 Biomass Combustion – Combined Impacts

Peterborough City Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.7 Domestic Solid-Fuel Burning

Peterborough City Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

6 Fugitive or Uncontrolled Sources

Peterborough City Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

No exceedences of the air quality objectives have been measured in 2014, either within or outside the existing AQMA although concerns remain regarding the Taverners road location.

Regarding trends, many of the tubes forming part of the monitoring programme were moved to new locations early in 2014. Clearly, historical data is, as yet, unavailable for the new locations. However, the data available for those sites that have remained in their previous locations (see figure 2.1) suggests that the general trend may be downward. A measured increase in 2013 was not continued into 2014, with the levels instead similar to the lower values apparent in 2012. It is possible that the 2013 increase may have resulted from a particularly high number of road maintenance and improvement works at various sites around the city (some of which continued into 2014) although the effect of atmospheric conditions cannot be ruled out.

Additionally, it is felt that the AQMA can be revoked. The proposed course of action for this is summarised in section 7.3 below.

7.2 Conclusions from Assessment of Sources

As is detailed in this report, assessment of new local developments relating to matters such as transportation, industrial installations and fugitive emissions have not identified any potential exceedences outside existing AQMAs.

Additionally, no sources are identified as being significantly changed so as to result in such an exceedence.

7.3 Proposed Actions

This Updating and Screening Assessment has not identified the need to proceed to a Detailed Assessment for any pollutant at this time.

Some changes to the existing monitoring programme have already been made prior to the writing of this assessment with regard to concerns relating to the annual NO₂ objective on Taverners road in the city. These are detailed in the relevant section of the assessment and do not demonstrate any exceedence for 2014 although several are high enough to be of concern.

However, as data is only available for 9 months of 2014 and the data collected in the early part of 2015 suggests that an exceedence is possible for this year, it is proposed that monitoring will continue and the possible need for a detailed assessment will be dealt with (if necessary) in the 2016 Progress Report.

Additionally, it is felt that the AQMA in relation to SO₂ can be revoked for the following reasons:

- There has never been a measured exceedence of the objective;
- The area was declared following modelling without physical monitoring being undertaken;
- Since the modelling was undertaken, one of the two sites operated by Hanson which were the focus of the modelling has closed down.

It is therefore the opinion of Peterborough City Council, following consultation with Fenland District Council, that there is no need to undertake a detailed assessment and that the area can be revoked following this Updating and Screening Assessment. It has, however, been agreed that the opinion of DEFRA will be sought as part of this USA following the consideration of this assessment before any such action is taken.

In summary, a Progress Report will be submitted to DEFRA in 2016 and will pay particular attention to the Taverners road area of the city with a view to determining if a Detailed Assessment relating to NO₂ is required.

8 References

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

Air Quality Consultants Ltd (2008) Fenland District Council: Further Assessment of Sulphur Dioxide in Whittlesey

Centre for Cities (2015) Cities Outlook 2015

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 (2014) 'Air Quality Progress Report'

Peterborough City Council (2013) 'Air Quality Progress Report'

Peterborough City Council (2012) '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

Appendix B: Road traffic Count Data

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

Appendix D: Hanson Building Products Limited Annual Report Ambient Monitoring of Sulphur Dioxide for 2014

Appendix A: QA/QC Data

Diffusion Tube Bias Adjustment Factors

The Bias Adjustment factor that has been used in this report is 0.81; this has been taken from the Review and Assessment helpdesk database, spreadsheet version number 03/15:

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_15-Final.xls

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 NO₂ 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 11°C, the reported values **have** been adjusted to 20°C 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 Count Data

a) 2014 data

| A road with more than 30,000 vehicles per day. | Flow in 1000s (% of HGVs) AADT (24hr average annual daily traffic flow) |
|---|--|
| A15 Lincoln Road | 17.3 (0.2%) |
| A47 between junction 15-20 | 23.5 |
| Rivergate Gyratory | 31.4 (0.2%) |
| A1139 Frank Perkins Parkway | 53.9 (6.5%) |
| A1139 Fletton Parkway | 53.5 |
| A1 north of the junction with the A1139 Fletton parkway | 34.2 |
| A1260 | 53.6 (1.1%) |
| Bourges Boulevard | 44.1 (0.3%) |
| A busy junction can be taken to be one with more than 10000 vehicles per day | |
| <p>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</p> <p>Jcn of A1073(Eye Green) /A47 Jcn's 43,42,41,40,36 Bourges Boulevard Rivergate Gyratory London Road / Oundle Road</p> | |
| A proportion of heavy duty vehicles which exceed 25% of the daily vehicles per day | |
| None | |
| New roads constructed/planned since April 04 | |
| <p>A1073 new alignment, opened 2011, AADT approx 11,500 Stanground bypass now open, AADT approx 7,500</p> | |

b) 2013 data (taken from 2014 Progress Report for comparison)

| 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/13A/NA10S1 | BOURGES | 30/12/2013 16:45 | 06/02/2014 10:30 | 905.75 | 1.98 | 31.4 | 16.3 | |
| PETE/13A/NA10S2 | GLADSTONE | 30/12/2013 13:45 | 06/02/2014 11:00 | 909.25 | 2.38 | 37.6 | 19.5 | |
| PETE/13A/NA10S3 | BARNARD WAY | 30/12/2013 14:15 | 06/02/2014 12:00 | 909.75 | 1.44 | 22.8 | 11.8 | |
| PETE/13A/NA10S4 | LYTHEMERE | 30/12/2013 16:15 | 06/02/2014 09:15 | 905.00 | 1.62 | 25.7 | 13.4 | |
| PETE/13A/NA10S5 | WITTERING | 30/12/2013 14:30 | 06/02/2014 08:30 | 906.00 | 1.83 | 29 | 15.1 | |
| PETE/13A/NA10S6 | LINCOLN RD | 30/12/2013 16:00 | 06/02/2014 09:00 | 905.00 | 3.92 | 62 | 32.3 | |
| PETE/13A/NA10S7 | LINCOLN RD | 30/12/2013 16:00 | 06/02/2014 09:00 | 905.00 | 3.48 | 55.1 | 28.6 | |
| PETE/13A/NA10S8 | WALTON | 30/12/2013 15:45 | 06/02/2014 09:00 | 905.25 | 1.88 | 29.7 | 15.5 | |
| PETE/13A/NA10S9 | STANGROUND | 30/12/2013 15:30 | 05/02/2014 16:30 | 889.00 | 2.01 | 32.5 | 16.9 | |
| PETE/13A/NA10S10 | HAMPTON (VALE DR) | 30/12/2013 14:45 | 05/02/2014 16:30 | 889.75 | 2.14 | 34.5 | 18 | |
| PETE/13A/NA10S11 | LONDON RD | 30/12/2013 15:00 | 05/02/2014 17:00 | 890.00 | 2.21 | 35.6 | 18.5 | |
| PETE/13A/NA10S12 | FLETTON AVE | 30/12/2013 15:15 | 05/02/2014 16:15 | 889.00 | 2.3 | 37.1 | 19.3 | |
| PETE/13A/NA10S13 | TOWERNERS RD | 30/12/2013 13:45 | 06/02/2014 10:45 | 909.00 | 2.62 | 41.4 | 21.5 | |
| PETE/13A/NA10S14 | OUNDLE | 30/12/2013 16:30 | 06/02/2014 09:30 | 905.00 | 2.37 | 37.5 | 19.5 | |
| PETE/13A/NA10S15 | PARKWAY | 30/12/2013 15:30 | 05/02/2014 16:15 | 888.75 | 1.81 | 29.2 | 15.2 | |
| PETE/13A/NA10S16 | PARKWAY | 30/12/2013 15:30 | 05/02/2014 16:15 | 888.75 | 1.78 | 28.8 | 15 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|------------------|----------------------|---------------------|---------------------|-----------------------|----------|--------------------|------|--|
| PETE/13A/NA11S1 | BOURGES | 06/02/2014 10:30 | 07/03/2014 14:40 | 700.17 | 1.9 | 38.8 | 20.2 | |
| PETE/13A/NA11S2 | GLADSTONE | 06/02/2014 11:00 | 07/03/2014 17:30 | 702.50 | 1.88 | 38.3 | 19.9 | |
| PETE/13A/NA11S3 | BARNARD WAY | 06/02/2014 12:00 | 06/03/2014 14:25 | 674.42 | 1.25 | 26.6 | 13.8 | |
| PETE/13A/NA11S4 | LYTHEMERE | 06/02/2014 09:15 | 06/03/2014 14:40 | 677.42 | 1.19 | 25.1 | 13.1 | |
| PETE/13A/NA11S5 | WITTERING | 06/02/2014 08:30 | 06/03/2014 13:55 | 677.42 | 1.23 | 26 | 13.5 | |
| PETE/13A/NA11S6 | LINCOLN RD | 06/02/2014 09:00 | 07/03/2014 13:40 | 700.67 | 2.27 | 46.4 | 24.1 | |
| PETE/13A/NA11S7 | LINCOLN RD | 06/02/2014 09:00 | 07/03/2014 13:40 | 700.67 | 2.27 | 46.5 | 24.2 | |
| PETE/13A/NA11S8 | WALTON | 06/02/2014 09:00 | 07/03/2014 13:25 | 700.42 | 1.71 | 35 | 18.2 | |
| PETE/13A/NA11S9 | STANGROUND | 05/02/2014 16:30 | 06/03/2014 15:05 | 694.58 | 1.45 | 30 | 15.6 | |
| PETE/13A/NA11S10 | HAMPTON (VALE DR) | 05/02/2014 16:30 | 07/03/2014 16:45 | 720.25 | 1.38 | 27.4 | 14.2 | LOCATION MOVED TO MAXWELL ROAD ON 27/02/14 |
| PETE/13A/NA11S11 | LONDON RD | 05/02/2014 17:00 | 07/03/2014 15:00 | 718.00 | 1.47 | 29.4 | 15.3 | |
| PETE/13A/NA11S12 | FLETTON AVE | 05/02/2014 16:15 | 07/03/2014 14:55 | 718.67 | 1.61 | 32.1 | 16.7 | |
| PETE/13A/NA11S13 | TAVERNERS RD | | | | | | | MISSING |
| PETE/13A/NA11S14 | OUNDLE | 06/02/2014 09:30 | 07/03/2014 15:10 | 701.67 | 1.64 | 33.5 | 17.4 | |
| PETE/13A/NA11S15 | PARKWAY | 05/02/2014 16:15 | 06/03/2014 15:00 | 694.75 | 1.61 | 33.2 | 17.3 | |
| PETE/13A/NA11S16 | PARKWAY | 05/02/2014 16:15 | 06/03/2014 15:00 | 694.75 | 1.38 | 28.5 | 14.8 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|------------------|-----------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------------------------|
| PETE/13A/NA12S1 | BOURGES | 07/03/2014 14:40 | 04/04/2014 09:30 | 666.83 | 2.47 | 53.2 | 27.7 | |
| PETE/13A/NA12S2 | GLADSTONE | 07/03/2014 17:30 | 04/04/2014 09:45 | 664.25 | 1.47 | 31.8 | 16.5 | |
| PETE/13A/NA12S3 | BARNARD WAY | 06/03/2014 14:25 | 04/04/2014 08:30 | 690.08 | 1 | 20.8 | 10.8 | |
| PETE/13A/NA12S4 | LYTHEMERE | 06/03/2014 14:40 | 04/04/2014 08:45 | 690.08 | 0.95 | 19.7 | 10.3 | |
| PETE/13A/NA12S5 | WITTERING | 06/03/2014 13:55 | 04/04/2014 08:00 | 690.08 | 1.32 | 27.4 | 14.2 | |
| PETE/13A/NA12S6 | LINCOLN RD | 07/03/2014 13:40 | 04/04/2014 14:45 | 673.08 | 1.46 | 31 | 16.1 | |
| PETE/13A/NA12S7 | LINCOLN RD | 07/03/2014 13:40 | 04/04/2014 14:45 | 673.08 | 1.37 | 29.2 | 15.2 | |
| PETE/13A/NA12S8 | WALTON | 07/03/2014 13:25 | 04/04/2014 14:30 | 673.08 | 1.71 | 36.4 | 18.9 | |
| PETE/13A/NA12S9 | STANGROUND | 06/03/2014 15:05 | 04/04/2014 15:00 | 695.92 | 1.6 | 32.9 | 17.1 | |
| PETE/13A/NA12S10 | MAXWELL | 07/03/2014 16:45 | 04/04/2014 09:00 | 664.25 | 1.27 | 27.3 | 14.2 | |
| PETE/13A/NA12S11 | LONDON RD | 07/03/2014 15:00 | 04/04/2014 10:00 | 667.00 | 1.35 | 29.1 | 15.1 | |
| PETE/13A/NA12S12 | FLETTON AVE | 07/03/2014 14:55 | 04/04/2014 15:15 | 672.33 | 1.27 | 27.1 | 14.1 | |
| PETE/13A/NA12S13 | TAVERNERS RD | 07/03/2014 14:30 | 04/04/2014 15:30 | 673.00 | 2.47 | 52.6 | 27.3 | Missing tube RE- placed |
| PETE/13A/NA12S14 | OUNDLE | | | | | | | Missing |
| PETE/13A/NA12S15 | PARKWAY | 06/03/2014 15:00 | 04/04/2014 15:15 | 696.25 | 2 | 41.2 | 21.4 | |
| PETE/13A/NA12S16 | PARKWAY | 06/03/2014 15:00 | 04/04/2014 15:15 | 696.25 | 1.85 | 38.1 | 19.8 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|------------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA1S1 | BOURGES | 04/04/2014 09:30 | 01/05/2014 10:15 | 648.75 | 2.09 | 46.1 | 24 | |
| PETE/14A/NA1S2 | TAVERNERS TR1 | 03/04/2014 15:45 | 01/05/2014 10:45 | 667.00 | 1.53 | 33 | 17.2 | |
| PETE/14A/NA1S3 | BARNARD WAY | 04/04/2014 08:30 | 01/05/2014 11:15 | 650.75 | 0.77 | 16.9 | 8.8 | |
| PETE/14A/NA1S4 | LYTHEMERE | 04/04/2014 08:45 | 01/05/2014 11:30 | 650.75 | 0.87 | 19.2 | 10 | |
| PETE/14A/NA1S5 | WITTERING | 04/04/2014 08:00 | 30/04/2014 09:00 | 625.00 | 1.37 | 31.5 | 16.4 | |
| PETE/14A/NA1S6 | LINCOLN RD | 03/04/2014 14:45 | 01/05/2014 11:00 | 668.25 | 1.21 | 25.9 | 13.5 | |
| PETE/14A/NA1S7 | TAVERNERS TR2 | 03/04/2014 15:45 | 01/05/2014 10:45 | 667.00 | 2.25 | 48.3 | 25.1 | |
| PETE/14A/NA1S8 | TAVERNERS TR3 | 03/04/2014 16:00 | 01/05/2014 10:45 | 666.75 | 1.32 | 28.4 | 14.8 | |
| PETE/14A/NA1S9 | TAVERNERS TR4 | 03/04/2014 16:00 | 01/05/2014 10:45 | 666.75 | 1.38 | 29.8 | 15.5 | |
| PETE/14A/NA1S10 | MAXWELL | 04/04/2014 09:00 | 01/05/2014 11:30 | 650.50 | 0.91 | 20.1 | 10.5 | |
| PETE/14A/NA1S11 | TAVERNERS TR5 | 03/04/2014 16:15 | 01/05/2014 10:30 | 666.25 | 1.94 | 41.7 | 21.7 | |
| PETE/14A/NA1S12 | TAVERNERS TR6 | 03/04/2014 16:15 | 01/05/2014 10:30 | 666.25 | 1.69 | 36.4 | 18.9 | |
| PETE/14A/NA1S13 | TAVERNERS TR7 | 03/04/2014 16:30 | 01/05/2014 10:30 | 666.00 | 1.74 | 37.4 | 19.5 | |
| PETE/14A/NA1S14 | TAVERNERS TR8 | 03/04/2014 16:30 | 01/05/2014 10:30 | 666.00 | 1.63 | 35.1 | 18.2 | |
| PETE/14A/NA1S15 | PARKWAY | 03/04/2014 15:15 | 01/05/2014 10:00 | 666.75 | 2.14 | 46 | 23.9 | |
| PETE/14A/NA1S16 | PARKWAY | 03/04/2014 15:15 | 01/05/2014 10:00 | 666.75 | 1.94 | 41.6 | 21.6 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA2S1 | Bourges | 01/05/2014 10:15 | 30/05/2014 09:30 | 695.25 | 2.06 | 42.4 | 22.1 | |
| PETE/14A/NA2S2 | Taverners TR1 | 01/05/2014 10:45 | 28/05/2014 15:50 | 653.08 | 0.11 | 2.5 | 1.3 | |
| PETE/14A/NA2S3 | Barnard Way | 01/05/2014 11:15 | 28/05/2014 14:30 | 651.25 | 0.6 | 13.2 | 6.9 | |
| PETE/14A/NA2S4 | Lythemere | 01/05/2014 11:30 | 28/05/2014 14:15 | 650.75 | 0.76 | 16.8 | 8.7 | |
| PETE/14A/NA2S5 | Wittering | 30/04/2014 09:00 | 28/05/2014 13:40 | 676.67 | 1.37 | 29 | 15.1 | |
| PETE/14A/NA2S6 | Lincoln Rd | 01/05/2014 11:00 | 28/05/2014 14:39 | 651.65 | 1.4 | 30.7 | 16 | |
| PETE/14A/NA2S7 | TavernersTR2 | 01/05/2014 10:45 | 28/05/2014 15:50 | 653.08 | 2.18 | 47.8 | 24.9 | |
| PETE/14A/NA2S8 | Taverners TR3 | 01/05/2014 10:45 | 28/05/2014 15:50 | 653.08 | 1.16 | 25.4 | 13.2 | |
| PETE/14A/NA2S9 | Taverners TR4 | 01/05/2014 10:45 | 28/05/2014 15:50 | 653.08 | 1.33 | 29.3 | 15.2 | |
| PETE/14A/NA2S10 | Maxwell | 01/05/2014 11:30 | 28/05/2014 14:50 | 651.33 | 0.53 | 11.7 | 6.1 | |
| PETE/14A/NA2S11 | Taverners TR5 | 01/05/2014 10:30 | 28/05/2014 15:40 | 653.17 | 1.5 | 32.9 | 17.1 | |
| PETE/14A/NA2S12 | Taverners TR6 | 01/05/2014 10:30 | 28/05/2014 15:40 | 653.17 | 1.38 | 30.3 | 15.8 | |
| PETE/14A/NA2S13 | Taverners TR7 | 01/05/2014 10:30 | 28/05/2014 15:40 | 653.17 | 1.6 | 35.2 | 18.3 | |
| PETE/14A/NA2S14 | Taverners TR8 | | | | | | | Missing |
| PETE/14A/NA2S15 | Parkway | 01/05/2014 10:00 | 28/05/2014 17:20 | 655.33 | 1.63 | 35.7 | 18.6 | |
| PETE/14A/NA2S16 | Parkway | 01/05/2014 10:00 | 28/05/2014 17:20 | 655.33 | 1.54 | 33.6 | 17.5 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA3S1 | Bourges | 30/05/2014 09:30 | 02/07/2014 14:45 | 797.25 | 1.85 | 33.3 | 17.3 | |
| PETE/14A/NA3S2 | Taverners TR1 | 28/05/2014 15:50 | 02/07/2014 14:30 | 838.67 | 1.62 | 27.6 | 14.4 | |
| PETE/14A/NA3S3 | Barnard Way | 28/05/2014 14:30 | 02/07/2014 14:00 | 839.50 | 0.55 | 9.4 | 4.9 | |
| PETE/14A/NA3S4 | Lythemere | 28/05/2014 14:15 | 02/07/2014 13:15 | 839.00 | 0.73 | 12.4 | 6.5 | |
| PETE/14A/NA3S5 | Wittering | 28/05/2014 13:40 | 02/07/2014 13:45 | 840.08 | 1.58 | 27 | 14.1 | |
| PETE/14A/NA3S6 | Lincoln Rd | | | | | | | Missing |
| PETE/14A/NA3S7 | TavernersTR2 | 28/05/2014 15:50 | 02/07/2014 14:30 | 838.67 | 2.29 | 39.1 | 20.3 | |
| PETE/14A/NA3S8 | Taverners TR3 | 28/05/2014 15:50 | 02/07/2014 14:30 | 838.67 | 1.01 | 17.3 | 9 | |
| PETE/14A/NA3S9 | Taverners TR4 | 28/05/2014 15:50 | 02/07/2014 14:15 | 838.42 | 1.25 | 21.3 | 11.1 | |
| PETE/14A/NA3S10 | Maxwell | 28/05/2014 14:50 | 02/07/2014 13:15 | 838.42 | 0.7 | 12 | 6.3 | |
| PETE/14A/NA3S11 | Taverners TR5 | 28/05/2014 15:40 | 02/07/2014 14:30 | 838.83 | 1.66 | 28.4 | 14.8 | |
| PETE/14A/NA3S12 | Taverners TR6 | | | | | | | Missing |
| PETE/14A/NA3S13 | Taverners TR7 | 28/05/2014 15:40 | 02/07/2014 14:30 | 838.83 | 1.18 | 20.2 | 10.5 | |
| PETE/14A/NA3S14 | Taverners TR8 | 28/05/2014 15:40 | 02/07/2014 14:30 | 838.83 | 1.78 | 30.5 | 15.9 | |
| PETE/14A/NA3S15 | Parkway | 28/05/2014 17:20 | 02/07/2014 15:00 | 837.67 | 1.88 | 32.2 | 16.7 | |
| PETE/14A/NA3S16 | Parkway | 28/05/2014 17:20 | 02/07/2014 15:00 | 837.67 | 1.79 | 30.6 | 15.9 | |

Peterborough City Council

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA4S1 | Bourges | 02/07/2014 14:45 | 31/07/2014 10:05 | 691.33 | 1.89 | 39.2 | 20.4 | |
| PETE/14A/NA4S2 | Taverners TR1 | | | | | | | Missing |
| PETE/14A/NA4S3 | Barnard Way | 02/07/2014 14:00 | 31/07/2014 08:40 | 690.67 | 0.51 | 10.7 | 5.6 | |
| PETE/14A/NA4S4 | Lythemere | 02/07/2014 13:15 | 31/07/2014 08:05 | 690.83 | 0.69 | 14.4 | 7.5 | |
| PETE/14A/NA4S5 | Wittering | 02/07/2014 13:45 | 31/07/2014 08:20 | 690.58 | 1.24 | 25.8 | 13.4 | |
| PETE/14A/NA4S6 | Lincoln Rd | 02/07/2014 14:15 | 31/07/2014 08:55 | 690.67 | 1.05 | 21.7 | 11.3 | |
| PETE/14A/NA4S7 | TavernersTR2 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 1.66 | 34.5 | 17.9 | |
| PETE/14A/NA4S8 | Taverners TR3 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 0.89 | 18.5 | 9.6 | |
| PETE/14A/NA4S9 | Taverners TR4 | 02/07/2014 14:15 | 31/07/2014 09:30 | 691.25 | 0.96 | 19.9 | 10.4 | |
| PETE/14A/NA4S10 | Maxwell | 02/07/2014 13:15 | 31/07/2014 07:55 | 690.67 | 0.79 | 16.4 | 8.5 | |
| PETE/14A/NA4S11 | Taverners TR5 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 1.07 | 22.2 | 11.6 | |
| PETE/14A/NA4S12 | Taverners TR6 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 1.27 | 26.3 | 13.7 | |
| PETE/14A/NA4S13 | Taverners TR7 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 1.48 | 30.7 | 16 | |
| PETE/14A/NA4S14 | Taverners TR8 | 02/07/2014 14:30 | 31/07/2014 09:30 | 691.00 | 1.37 | 28.4 | 14.8 | |
| PETE/14A/NA4S15 | Parkway | 02/07/2014 15:00 | 31/07/2014 09:50 | 690.83 | 1.76 | 36.4 | 18.9 | |
| PETE/14A/NA4S16 | Parkway | 02/07/2014 15:00 | 31/07/2014 09:50 | 690.83 | 1.48 | 30.7 | 16 | |

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| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA5S1 | Bourges | 31/07/2014 10:05 | 29/08/2014 08:00 | 693.92 | 1.62 | 33.4 | 17.4 | |
| PETE/14A/NA5S2 | Taverners TR1 | | | | | | | Missing |
| PETE/14A/NA5S3 | Barnard Way | 31/07/2014 08:40 | 29/08/2014 11:45 | 699.08 | 0.75 | 15.4 | 8 | |
| PETE/14A/NA5S4 | Lythemere | 31/07/2014 08:05 | 29/08/2014 12:00 | 699.92 | 0.76 | 15.5 | 8 | |
| PETE/14A/NA5S5 | Wittering | 31/07/2014 08:20 | 29/08/2014 10:30 | 698.17 | 1.03 | 21.1 | 11 | |
| PETE/14A/NA5S6 | Lincoln Rd | 31/07/2014 08:55 | 29/08/2014 11:00 | 698.08 | 1.31 | 26.9 | 14 | |
| PETE/14A/NA5S7 | TavernersTR2 | 31/07/2014 09:30 | 29/08/2014 11:30 | 698.00 | 1.66 | 34.2 | 17.8 | |
| PETE/14A/NA5S8 | Taverners TR3 | | | | | | | Missing |
| PETE/14A/NA5S9 | Taverners TR4 | | | | | | | Missing |
| PETE/14A/NA5S10 | Maxwell | 31/07/2014 07:55 | 29/08/2014 12:00 | 700.08 | 0.63 | 12.9 | 6.7 | |
| PETE/14A/NA5S11 | Taverners TR5 | 31/07/2014 09:30 | 29/08/2014 11:30 | 698.00 | 1.59 | 32.7 | 17 | |
| PETE/14A/NA5S12 | Taverners TR6 | 31/07/2014 09:30 | 29/08/2014 11:30 | 698.00 | 1.3 | 26.7 | 13.9 | |
| PETE/14A/NA5S13 | Taverners TR7 | 31/07/2014 09:30 | 29/08/2014 11:30 | 698.00 | 1.59 | 32.7 | 17 | |
| PETE/14A/NA5S14 | Taverners TR8 | 31/07/2014 09:30 | 29/08/2014 11:30 | 698.00 | 1.46 | 29.9 | 15.6 | |
| PETE/14A/NA5S15 | Parkway | 31/07/2014 09:50 | 29/08/2014 11:00 | 697.17 | 1.73 | 35.6 | 18.5 | |
| PETE/14A/NA5S16 | Parkway | 31/07/2014 09:50 | 29/08/2014 11:00 | 697.17 | 1.51 | 31 | 16.1 | |

| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA6S1 | Bourges | 29/08/2014 08:00 | 01/10/2014 13:00 | 797.00 | 2.5 | 44.9 | 23.4 | |
| PETE/14A/NA6S2 | Taverners TR1 | 28/08/2014 11:15 | 01/10/2014 13:15 | 818.00 | 2.06 | 36.1 | 18.7 | |
| PETE/14A/NA6S3 | Barnard Way | 28/08/2014 11:45 | 01/10/2014 11:45 | 816.00 | 0.83 | 14.5 | 7.5 | |
| PETE/14A/NA6S4 | Lythemere | 28/08/2014 12:00 | 01/10/2014 12:15 | 816.25 | 1.16 | 20.3 | 10.6 | |
| PETE/14A/NA6S5 | Wittering | 28/08/2014 10:30 | 01/10/2014 12:00 | 817.50 | 1.99 | 35 | 18.2 | |
| PETE/14A/NA6S6 | Lincoln Rd | 28/08/2014 11:00 | 01/10/2014 11:15 | 816.25 | 1.34 | 23.6 | 12.3 | |
| PETE/14A/NA6S7 | TavernersTR2 | 28/08/2014 11:30 | 01/10/2014 13:15 | 817.75 | 2.75 | 48.1 | 25 | |
| PETE/14A/NA6S8 | Taverners TR3 | | | | | | | Missing |
| PETE/14A/NA6S9 | Taverners TR4 | 28/08/2014 11:50 | 01/10/2014 13:15 | 817.42 | 1.63 | 28.7 | 14.9 | |
| PETE/14A/NA6S10 | Maxwell | 29/08/2014 12:00 | 01/10/2014 12:15 | 792.25 | 1.15 | 20.9 | 10.9 | |
| PETE/14A/NA6S11 | Taverners TR5 | 29/08/2014 11:30 | 01/10/2014 13:15 | 793.75 | 2.4 | 43.4 | 22.5 | |
| PETE/14A/NA6S12 | Taverners TR6 | 29/08/2014 11:30 | 01/10/2014 13:15 | 793.75 | 2.41 | 43.6 | 22.7 | |
| PETE/14A/NA6S13 | Taverners TR7 | 29/08/2014 11:30 | 01/10/2014 13:15 | 793.75 | 2.39 | 43.1 | 22.4 | |
| PETE/14A/NA6S14 | Taverners TR8 | 29/08/2014 11:30 | 01/10/2014 13:15 | 793.75 | 2.25 | 40.6 | 21.1 | |
| PETE/14A/NA6S15 | Parkway | 29/08/2014 11:00 | 01/10/2014 12:45 | 793.75 | 3.31 | 59.8 | 31.1 | |
| PETE/14A/NA6S16 | Parkway | 29/08/2014 11:00 | 01/10/2014 12:45 | 793.75 | 2.87 | 51.9 | 27 | |

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| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA7S1 | Bourges | | | | | | | Missing |
| PETE/14A/NA7S2 | Taverners TR1 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 2.61 | 44.6 | 23.2 | |
| PETE/14A/NA7S3 | Barnard Way | 29/10/2014 09:15 | 03/12/2014 09:15 | 840.00 | 1.93 | 33 | 17.1 | |
| PETE/14A/NA7S4 | Lythemere | 29/10/2014 09:06 | 03/12/2014 10:45 | 841.65 | 1.49 | 25.3 | 13.2 | |
| PETE/14A/NA7S5 | Wittering | 29/10/2014 09:34 | 03/12/2014 08:45 | 839.18 | 2.34 | 40 | 20.8 | |
| PETE/14A/NA7S6 | Lincoln Rd | 29/10/2014 10:24 | 03/12/2014 09:30 | 839.10 | 1.63 | 27.8 | 14.5 | |
| PETE/14A/NA7S7 | TavernersTR2 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 3.63 | 62 | 32.2 | |
| PETE/14A/NA7S8 | Taverners TR3 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 1.94 | 33.2 | 17.2 | |
| PETE/14A/NA7S9 | Taverners TR4 | 29/10/2014 11:00 | 03/12/2014 09:45 | 838.75 | 2.57 | 43.9 | 22.8 | |
| PETE/14A/NA7S10 | Maxwell | 29/10/2014 09:00 | 03/12/2014 10:45 | 841.75 | 2.25 | 38.3 | 19.9 | |
| PETE/14A/NA7S11 | Taverners TR5 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 3.28 | 56.1 | 29.2 | |
| PETE/14A/NA7S12 | Taverners TR6 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 2.98 | 50.9 | 26.5 | |
| PETE/14A/NA7S13 | Taverners TR7 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 3.42 | 58.5 | 30.4 | |
| PETE/14A/NA7S14 | Taverners TR8 | 29/10/2014 10:40 | 03/12/2014 09:45 | 839.08 | 2.8 | 47.8 | 24.9 | |
| PETE/14A/NA7S15 | Parkway | 29/10/2014 08:40 | 03/12/2014 10:30 | 841.83 | 2.6 | 44.3 | 23.1 | |
| PETE/14A/NA7S16 | Parkway | 29/10/2014 08:40 | 03/12/2014 10:30 | 841.83 | 2.26 | 38.5 | 20 | |

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| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA8S1 | Bourges | 01/10/2014 13:00 | 29/10/2014 10:10 | 669.17 | 1.79 | 38.2 | 19.9 | |
| PETE/14A/NA8S2 | Taverners TR1 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 1.74 | 37.2 | 19.3 | |
| PETE/14A/NA8S3 | Barnard Way | 01/10/2014 11:45 | 29/10/2014 09:15 | 669.50 | 1.04 | 22.3 | 11.6 | |
| PETE/14A/NA8S4 | Lythemere | 01/10/2014 12:15 | 29/10/2014 09:06 | 668.85 | 0.96 | 20.6 | 10.7 | |
| PETE/14A/NA8S5 | Wittering | 01/10/2014 12:00 | 29/10/2014 09:34 | 669.57 | 1.19 | 25.6 | 13.3 | |
| PETE/14A/NA8S6 | Lincoln Rd | 01/10/2014 11:15 | 29/10/2014 10:24 | 671.15 | 2.2 | 47 | 24.4 | |
| PETE/14A/NA8S7 | TavernersTR2 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 2.56 | 54.7 | 28.5 | |
| PETE/14A/NA8S8 | Taverners TR3 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 1.72 | 36.9 | 19.2 | |
| PETE/14A/NA8S9 | Taverners TR4 | | | | | | | Missing |
| PETE/14A/NA8S10 | Maxwell | 01/10/2014 12:15 | 29/10/2014 09:00 | 668.75 | 1.25 | 26.8 | 13.9 | |
| PETE/14A/NA8S11 | Taverners TR5 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 1.69 | 36.3 | 18.9 | |
| PETE/14A/NA8S12 | Taverners TR6 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 1.56 | 33.5 | 17.4 | |
| PETE/14A/NA8S13 | Taverners TR7 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 2.3 | 49.2 | 25.6 | |
| PETE/14A/NA8S14 | Taverners TR8 | 01/10/2014 13:15 | 29/10/2014 10:40 | 669.42 | 2.01 | 43 | 22.4 | |
| PETE/14A/NA8S15 | Parkway | 01/10/2014 12:45 | 29/10/2014 08:40 | 667.92 | 1.41 | 30.3 | 15.8 | |
| PETE/14A/NA8S16 | Parkway | 01/10/2014 12:45 | 29/10/2014 08:40 | 667.92 | 1.68 | 36.1 | 18.8 | |

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| Sample Number | Site | Date and Time ON | Date and Time OFF | Exposure Time (Hours) | Total µg | µg m ⁻³ | ppb | Comments |
|-----------------|---------------|---------------------|---------------------|-----------------------|----------|--------------------|------|----------|
| PETE/14A/NA9S1 | Bourges | 03/12/2014 10:00 | 08/01/2015 13:00 | 867.00 | 2.8 | 46.3 | 24.1 | |
| PETE/14A/NA9S2 | Taverners TR1 | 03/12/2014 09:45 | 08/01/2015 11:00 | 865.25 | 3.13 | 51.9 | 27 | |
| PETE/14A/NA9S3 | Barnard Way | 03/12/2014 09:15 | 08/01/2015 12:30 | 867.25 | 1.82 | 30.1 | 15.7 | |
| PETE/14A/NA9S4 | Lythemere | 03/12/2014 10:45 | 08/01/2015 08:00 | 861.25 | 1.43 | 23.9 | 12.4 | |
| PETE/14A/NA9S5 | Wittering | 03/12/2014 08:45 | 08/01/2015 12:15 | 867.50 | 1.74 | 28.7 | 14.9 | |
| PETE/14A/NA9S6 | Lincoln Rd | 03/12/2014 09:30 | 08/01/2015 11:45 | 866.25 | 3.24 | 53.6 | 27.8 | |
| PETE/14A/NA9S7 | TavernersTR2 | 03/12/2014 09:45 | 08/01/2015 11:00 | 865.25 | 3.98 | 65.9 | 34.3 | |
| PETE/14A/NA9S8 | Taverners TR3 | 03/12/2014 09:45 | 08/01/2015 11:00 | 865.25 | 2.27 | 37.6 | 19.5 | |
| PETE/14A/NA9S9 | Taverners TR4 | | | | | | | Missing |
| PETE/14A/NA9S10 | Maxwell | 03/12/2014 10:45 | 08/01/2015 08:15 | 861.50 | 1.68 | 27.9 | 14.5 | |
| PETE/14A/NA9S11 | Taverners TR5 | 03/12/2014 09:45 | 08/01/2015 11:15 | 865.50 | 2.67 | 44.3 | 23 | |
| PETE/14A/NA9S12 | Taverners TR6 | 03/12/2014 09:45 | 08/01/2015 11:30 | 865.75 | 2.91 | 48.1 | 25 | |
| PETE/14A/NA9S13 | Taverners TR7 | 03/12/2014 09:45 | 08/01/2015 11:15 | 865.50 | 3.05 | 50.5 | 26.2 | |
| PETE/14A/NA9S14 | Taverners TR8 | 03/12/2014 09:45 | 08/01/2015 11:30 | 865.75 | 2.95 | 48.9 | 25.4 | |
| PETE/14A/NA9S15 | Parkway | 03/12/2014 10:30 | 08/01/2015 08:30 | 862.00 | 3.37 | 56.1 | 29.2 | |
| PETE/14A/NA9S16 | Parkway | 03/12/2014 10:30 | 08/01/2015 08:30 | 862.00 | 2.77 | 46 | 23.9 | |

Appendix D: Hanson Building Products Limited Annual Report Ambient Monitoring of Sulphur Dioxide for 2014

| Emission Point | Substance / Parameter | AQS Compliance Value ^[5] | Result ^[1,5] | Test Method ^[2] | Accreditation/ Certification ^[3] | Uncertainty ^[4] |
|----------------|--|-------------------------------------|-------------------------|----------------------------|---|----------------------------|
| AM1 | Sulphur Dioxide Period Mean | | 2.2 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Sulphur Dioxide Period Mean | | 1.2 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Sulphur Dioxide 99.18%ile daily value ($\mu\text{g}/\text{m}^3$) | 125 | 20.8 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Sulphur Dioxide 99.18%ile daily value ($\mu\text{g}/\text{m}^3$) | 125 | 13.4 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Sulphur Dioxide 99.73%ile hourly value ($\mu\text{g}/\text{m}^3$) | 350 | 70.5 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Sulphur Dioxide 99.73%ile hourly value ($\mu\text{g}/\text{m}^3$) | 350 | 47.5 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Sulphur Dioxide 99.90%ile 15-minute value ($\mu\text{g}/\text{m}^3$) | 266 | 117.3 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Sulphur Dioxide 99.90%ile 15-minute value ($\mu\text{g}/\text{m}^3$) | 266 | 113.6 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Number of readings greater than AQS daily threshold | >125 $\mu\text{g}/\text{m}^3$ | 0 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Number of readings greater than AQS daily threshold | >125 $\mu\text{g}/\text{m}^3$ | 0 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Number of readings greater than AQS hourly threshold | >350 $\mu\text{g}/\text{m}^3$ | 0 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Number of readings greater than AQS hourly threshold | >350 $\mu\text{g}/\text{m}^3$ | 0 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Number of readings greater than AQS 15-minute threshold | >266 $\mu\text{g}/\text{m}^3$ | 4 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM2 | Number of readings greater than AQS 15-minute threshold | >266 $\mu\text{g}/\text{m}^3$ | 2 | UV Fluorescence | UKAS (Calibration Gas) | 7.4% |
| AM1 | Period data coverage | | 99.8% | | | |
| AM2 | Period data coverage | | 99.9% | | | |

[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 $\mu\text{g}/\text{m}^3$ at 20°C and 1013mb. To convert to ppb (v/10⁹v) divide the listed concentrations by 2.66.