
# 2015 Updating and Screening Assessment for Coventry City Council

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

April 2015

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# Executive Summary

Coventry City Council has carried out this Updating and Screening assessment in fulfilment of their local air quality management obligations under Part IV of the Environment Act 1995. This report reviews the results of air quality monitoring carried out within Coventry City Council's area.

Coventry declared a city-wide AQMA in late 2009, and as a consequence of that there are no exceedences of the air quality standards outside of an AQMA. There are several areas that exceed the air quality standards across the city, though there are no new areas of exceedence that have not been identified in previous reports. There therefore is no need for a Detailed Assessment.

There are significant developments happening across the city which are either directly or indirectly affecting air quality, mainly through changes to traffic flows. Monitoring locations are being regularly reviewed and tubes relocated as necessary.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Coventry City Council is a unitary metropolitan authority situated in the West Midlands. The city covers 98.34 square kilometres and has a population of approximately 329,800 residents. The city of Coventry is situated 95 miles northwest of London and 19 miles east of Birmingham. Coventry is near the M6, M69, M45 and M42, and is served by the A45 and A46 dual carriageways.

Typical sources of air pollution include emissions from the commercial and domestic sector, road traffic and industrial processes. Coventry is classed as a smoke control area making it an offence to emit smoke from a chimney caused by the use of an unauthorised appliance, or the burning of unauthorised fuel.

Coventry City Council regulates 85 industrial processes under the Environmental Permitting regime, including petrol filling stations and dry cleaners. In addition to this, the Environment Agency regulates12 Part A1 installations within the city.

Previous reports within earlier rounds of Coventry City Council's review and assessment programme confirmed that emissions from road traffic are the major source of pollution within the city.

## 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 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$^3$ | Running annual mean | 31.12.2010 |
| **1,3-Butadiene** | 2.25 μg/m$^3$ | Running annual mean | 31.12.2003 |
| **Carbon monoxide** | 10.0 mg/m$^3$ | Running 8-hour mean | 31.12.2003 |
| **Lead** | 0.5 μg/m$^3$ | Annual mean | 31.12.2004 |
| | 0.25 μg/m$^3$ | Annual mean | 31.12.2008 |
| **Nitrogen dioxide** | 200 μg/m$^3$ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| | 40 μg/m$^3$ | Annual mean | 31.12.2005 |
| **Particles ($PM_{10}$) (gravimetric)** | 50 μg/m$^3$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 μg/m$^3$ | Annual mean | 31.12.2004 |

| | | | |
|---|---|---|---|
| **Sulphur dioxide** | 350 µg/m$^3$, not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| | 125 µg/m$^3$, not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| | 266 µg/m$^3$, not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |

## 1.4 Summary of Previous Review and Assessments

This Progress Report continues round five of Coventry City Council's Review and Assessment cycle. The results of previous rounds are summarised below:

**Round one**, initiated in 1998, involved several stages:

- ***Stage 1 (Review and Assessment)*** involved the identification of the main sources of air pollution in and around Coventry, reviewing the levels of air pollutants for which prescribed standards and objectives had been set, and estimating the likely future levels.
- ***Stage 2*** required the local authority to provide further screening of pollutant concentrations within the area. The purpose of screening was to assess whether the air quality objectives would be achieved by the target date.
- ***Stage 3*** was a more complex assessment of monitoring and modelling.

For **Round Two** the review and assessment process was revised to include an **Updating and Screening Assessment (USA),** followed by a **Detailed Assessment** whenever necessary. The USA identified two locations in Coventry that were assessed to be unlikely to meet the annual mean objective for nitrogen dioxide by the target date of 2005. These were the Ball Hill area of Walsgrave Road and an area of the city centre including Trinity Street and the Burges. They were both designated as Air Quality Management Areas (AQMAs) in August 2003.

As exceedences of the Air Quality Objectives were predicted in the USA a **Detailed Assessment** was produced. The outcome of which was that the junction of

Queensland Avenue and Allesley Old Road was also unlikely to meet the 2005 annual mean objective for $NO_2$ and was declared an AQMA in August 2004.

For **Round Three,** an **Updating and Screening Assessment** was completed in **2006**, which found that for the majority of pollutants, levels in Coventry still remain below the UK objectives. The exception to this was nitrogen dioxide where more areas were found to exceed the UK objective annual mean for 2005 and will require Detailed Assessment. These areas were:

- Foleshill Road
- London Road / Tollbar Island
- Radford Road / Beake Avenue junction (if residential property is introduced)
- Spon End / Hearsall Lane
- Stoney Stanton Road
- Croft Road, City Centre

The **2007 Detailed Assessment** found that all areas identified by the USA were confirmed as exceeding the UK objective for annual mean $NO_2$. Following DEFRA's suggestion that conjoining areas should be designated a single AQMA, the City Council had to consult and determine whether to:

a) designate the whole of Coventry an AQMA, or
b) designate two separate AQMAs; one covering the city centre and northern area of the city and one covering Tollbar End.

A **Progress Report** was produced in **2008**, which indicated exceedences of the $NO_2$ annual mean objective at the following locations:

- Stoney Stanton Road
- Foleshill Road / Longford Road
- Beake Avenue / Radford Road junction
- Tollbar End
- Croft Road / Victoria Road
- London Road near the Ringway
- Holyhead Road

- Fairfax Street

but not at Spon End / Hearsall Lane as indicated by the Detailed Assessment.

However the **Updating and Screening Assessment of 2009,** beginning the fourth round of review and assessment, found exceedence of $NO_2$ at Spon End/ Hearsall Lane as the **Detailed Assessment of 2007** had predicted but was not found to be the case in the **Progress Report of 2008.**

A city wide AQMA for nitrogen dioxide was declared, effective from 1st November 2009. Subsequent to this a further assessment must be completed within 12 months, together with an Air Quality Action Plan.

The 2010 **Progress Report** indicated that the following areas showed exceedences of the $NO_2$ annual mean objective:

- Ball Hill, Walsgrave Road
- Trinity Street
- Fairfax Street
- Queensland Avenue
- Tollbar End, London Road
- Foleshill Road

Coventry was to develop an Air Quality Action Plan subsequent to the declaration of the city-wide AQMA. The boundary of the city-wide AQMA is shown in Figure 1.1.

The **Further Assessment produced in January 2014** as part of the fifth round of review and assessment concluded that levels of nitrogen dioxide in the city have not reduced and continue to exceed the national air quality objectives at key locations influenced by local traffic.

A **Progress Report** was produced in July 2014 which reviewed data collected during 2011, 2012 and 2013. The report confirmed the conclusions of the Further Assessment in that levels of nitrogen dioxide in the city have not reduced and

continue to exceed the national air quality objectives at key locations influenced by local traffic.

Timescales for the submission of documents required under Local Air Quality Management (LAQM) are given in Box 1.3 of LAQM.TG (09). The documents published by Coventry City Council as part of its obligations under LAQM, are summarised in Table 1. below. Formal extensions to the submission of documents required under LAQM have been given by DEFRA, due to a lack of resources available within Coventry City Council as a result of financial restraints, and an ongoing service review.

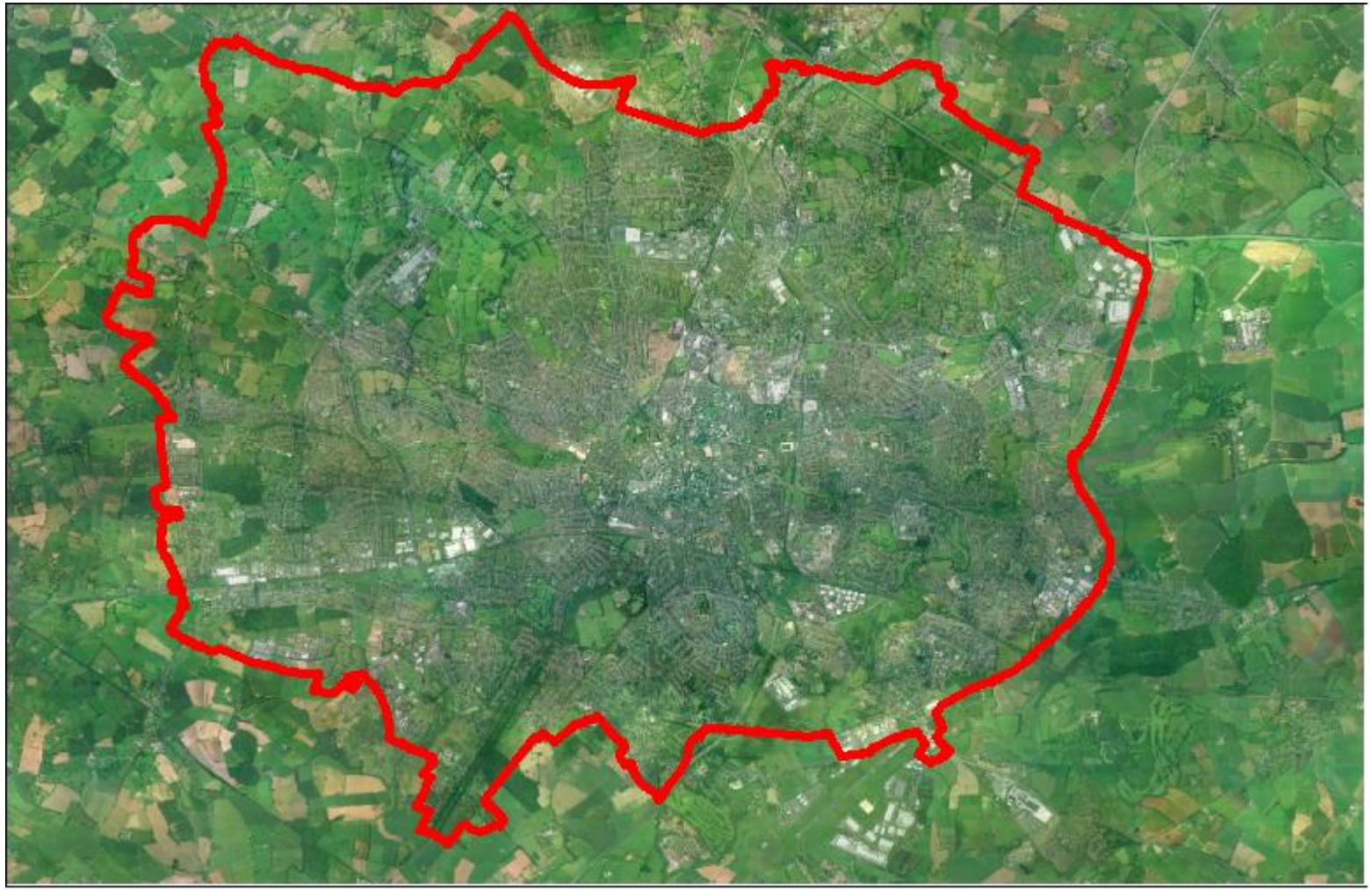
**Table 1.2 Summary of previous Review and Assessment reports**

| Year | Type | Summary |
|---|---|---|
| 1998 | **Stage 1 (Round 1)** | The main sources of air pollution within and around Coventry City Council's boundary were identified, reviewing the levels of air pollutants for which prescribed standards and objectives have been set, and estimating the likely future levels. |
| 2000 | **Stage 2 (Round 1)** | Coventry City Council provided further screening of pollutant concentrations within the area. The purpose of screening was to assess whether the air quality objectives would be achieved by the target date. |
| 2001 | **Stage 3 (Round 1)** | Coventry City Council carried out a more complex assessment of monitoring and modelling which led to the declaration of the first two of the city's AQMAs. |
| 2003 | **Updating and Screening Assessment (Round 2)** | Two locations in Coventry were assessed to be unlikely to meet the annual mean objective for nitrogen dioxide by the target date of 2005. These were the Ball Hill area of Walsgrave Road and an area of the city centre including Trinity Street and the Burges. They were both designated as AQMAs in August 2003. |
| 2004 | **Detailed** | The junction of Queensland Avenue and Allesley Old |

| Year | Type | Summary |
|---|---|---|
| | **Assessment (Round 2)** | Road was also unlikely to meet the 2005 annual mean objective for nitrogen dioxide by 2005 and was declared an AQMA in August 2004. |
| 2006 | **Updating and Screening Assessment (Round 3)** | For the majority of pollutants, levels in Coventry still remain below the UK objectives. The exception to this is nitrogen dioxide where more areas have been found to exceed the UK objective annual mean for 2005 and will need to proceed to Detailed Assessment.<br>The USA also concluded that given the number of areas to proceed to Detailed Assessment it is highly likely that Coventry will have to declare further Air Quality Management Areas. |
| 2007 | **Detailed Assessment (Round 3)** | All areas identified by the Updating and Screening Assessment 2006 were confirmed as exceeding the UK objective for annual mean nitrogen dioxide. |
| 2008 | **Progress Report (Round 3)** | The Progress Report indicates exceedences of the $NO_2$ annual mean objective at a number of locations across the city. |
| 2009 | **Updating and Screening Assessment (Round 4)** | A number of locations outside the AQMAs continued to exceed NO2 objectives. Including Spon End/ Hearsall avenue as was indicated by detailed assessment of 2007 but not 2008 Progress Report. |
| 2010 | **Progress Report (Round 4)** | A city-wide AQMA was declared, effective from 1st November 2009. Several areas of Coventry continued to exceed the annual mean objective for $NO_2$. |
| 2013 | **Further Assessment** | Levels of nitrogen dioxide continue to exceed the national air quality objectives at key locations influenced by local traffic, confirming the need to retain the city-wide AQMA |
| 2014 | **Progress Report (Round 5)** | Levels of nitrogen dioxide continue to exceed the national air quality objectives at key locations |

| Year | Type | Summary |
|---|---|---|
| | | influenced by local traffic. |

**Figure 1.1 Coventry City Council's AQMA boundary**



# 2 New Monitoring Data

## 2.1 Summary of Monitoring Undertaken

### 2.1.1 Automatic Monitoring Sites

The authority currently has 3 automatic monitoring units, all measuring nitrogen dioxide and PM10. These units are located on Foleshill Road, Queensland Avenue and Ball Hill at roadside locations. Two other units at Hales Street and Tollbar End have not been operational since July 2013 and have now been decommissioned. Plans are also in place to decommission the remaining units during 2015 and revert to diffusion tubes as the main source of monitoring.

The data capture rates have improved since the progress report in 2014, although the Foleshill Road and Ball Hill units still have capture rates below the 85% required by Defra due to on-going technical issues. The location of the units is shown in figure 2.1 and more detailed information is contained in Table 2.1.

**QA/QC of automatic monitoring**

Each NOx analyser is operated according to manufacturers' instructions. Coventry City Council officers carry out calibration of the equipment every two weeks. Certified Calibration Gas is supplied by BOC and this is used to obtain a span value for each analyser during the calibration. The equipment is also tested against zero air. The data is collected and scaled, and any instrumental drift is corrected during data processing. The filter is changed after every calibration. Engineers from TRL Ltd service the analysers at six monthly intervals

A visual inspection of the TEOM analyser is carried out fortnightly, and the filter changed as required during routine site visits. All site visits are documented to ensure any problems are recorded and any works noted. All calibrations are recorded.

**Data report for Ball Hill 2014**

There was missing data in the middle part of the year caused by power interruptions. However, those data available indicates a reasonably stable performance. The

overall data capture rate was better than the previous year at 80%. There were two recorded service visits by the ESU.

The calibration visits carried out by the site operator showed only slight variations in the zero and span that were within an acceptable range. Only minor adjustments were required to the zero. The span values were generally within 10% and those values were used to adjust the recorded data. There was no obvious step change in instrument response.

**Changes to data (NOx)**

Removal of those data recorded during service or calibration visits and minor adjustment of the zero have been made. Scaling adjustments were made to the data, interpolating between a ratio of 0.85 to 1.07 for both the NOx and NO. From those adjusted data the nitrogen dioxide concentration was calculated by difference. Those adjusted data were then written to the Airviro Time Series Database (hourly) as instance VAL. The use of a calculated $NO_2$ by difference is common within the air quality community. The analysers used by the City only ever measure nitric oxide directly and calculate the reported nitrogen dioxide by difference.

**Comment**

The annual mean result for nitrogen dioxide is 49µgm³, which exceeds the national target of 40µgm³ by 23%. Exceedance of the hourly mean (200µgm³) only occurred on 12 occasions, which is within the national target of 18.

**Changes to $PM_{10}$ data**

The $PM_{10}$ data for this site was stable, but in common with the rest of the sites there were power interruptions that reduced the data capture rate to 79%. The data was cleaned by removing a small number of transients that were due to operator filter changes etc. Although not deemed to be equivalent to the reference method, the data was screened using the Kings College Volatile Correction Model which gave results slightly different to the raw data. Particle data treated in this way have, in the past, been deemed to be sufficiently accurate to demonstrate likely compliance. The concentrations of $PM_{10}$ at this site are not likely to exceed the National Air Quality Objective.

**Data report for Foleshill Road 2014**

There was very little data missing for this site with an initial data capture rate of approximately 93%. However, there was some poor quality data that could not be used due to an instrument fault during April and June resulting in an overall capture rate of 84%. (the same as 2013).

There were four recorded service visit by the ESU including the visits made by the ESU to rectify instrument faults identified as needing repair.

The calibrations carried out by the site operator following a service visit by the ESU, demonstrated that the NOx analyser response to calibration gas was producing lower values than were expected but were in general, stable. Those data recorded during the time the instrument was faulty could not be used and were discounted from the data set. The zero response was within tolerance being in the order of 5µg variance.

**Changes to data (NOx)**

Removal of those data recorded during service or calibration visit and minor adjustment of the zero have been made. Scaling adjustments were made to the data, interpolating between a ratio of 1.02:1.0 to 1.54:1.0 for both the NOx and NO. From those adjusted data, the nitrogen dioxide concentration was calculated by difference and written to the Airviro Time Series Database (hourly) as instance VAL(m). The use of a calculated $NO_2$ by difference is common within the air quality community. The analysers used by the City only ever measure nitric oxide directly and calculate the reported nitrogen dioxide by difference. It is worth noting that the annual mean nitrogen dioxide as measured by the instruments is very similar to the uncorrected diffusion tube data for this site.

**Comment**

No exceedences of national targets for nitrogen dioxide (annual or hourly mean) took place at this site.

**Changes to $PM_{10}$ data**

The $PM_{10}$ data for this site was stable. The data was cleaned by removing a small number of transients that were due to operator filter changes etc. Also there were two occasions when the instrument developed a fault and lost its setup, thus the data collection for this analyser was 94%. Although not deemed to be equivalent to the reference method, the data was screened using the Kings College Volatile Correction Model which gave results not greatly different to the raw data. Particle data treated this way have in the past been deemed to be sufficiently accurate to demonstrate likely compliance. The concentrations of pm10 at this site are not likely to exceed the National Air Quality Objective.

**Data report for Queensland Avenue 2014**

This site showed a very good capture rate of 98% for the oxides of nitrogen and 99% for $PM_{10}$. However, the NOx analyser showed wildly varying responses to calibration gases. The $PM_{10}$ appeared to be stable and performing as expected. There were two service visits by the ESU.

The calibration visits carried out by the site operator showed very large variations in the zero and span, major adjustments were required to the zero and span before the data became usable. There were obvious step changes in instrument response and these were highlighted by the LSO and recorded on their site records.

**Changes to data (NOx)**

Removal of those data recorded during service or calibration visits was carried out. Scaling adjustments were then made to the data, interpolating between a ratio of 0.39 to 1.75 for both the NOx and NO. From those adjusted data the nitrogen dioxide concentration was calculated by difference. Those adjusted data were then written to the Airviro Time Series Database (hourly) as instance VAL. The use of a calculated $NO_2$ by difference is common within the air quality community. The analysers used by the City only ever measure nitric oxide directly and calculate the reported nitrogen dioxide by difference. It is worth noting that the annual mean nitrogen dioxide as

measured by the instruments is of the same order as the uncorrected diffusion tube data for this site.

**Comment**

Whilst this site does not exceed the air quality objective, the data produced with such a poorly performing analyser is considered unreliable.

**Changes to $PM_{10}$ data**

The $PM_{10}$ data for this site was stable with a 'raw' data capture rate of 99%. Although not deemed to be equivalent to the reference method, the data was screened using the Kings College Volatile Correction Model which gave results slightly different to the raw data. Particle data treated this way have in the past been deemed to be sufficiently accurate to demonstrate likely compliance. The concentrations of $PM_{10}$ at this site are not likely to exceed the National Air Quality Objective.

## Figure 2.1 Map of Automatic Monitoring Sites

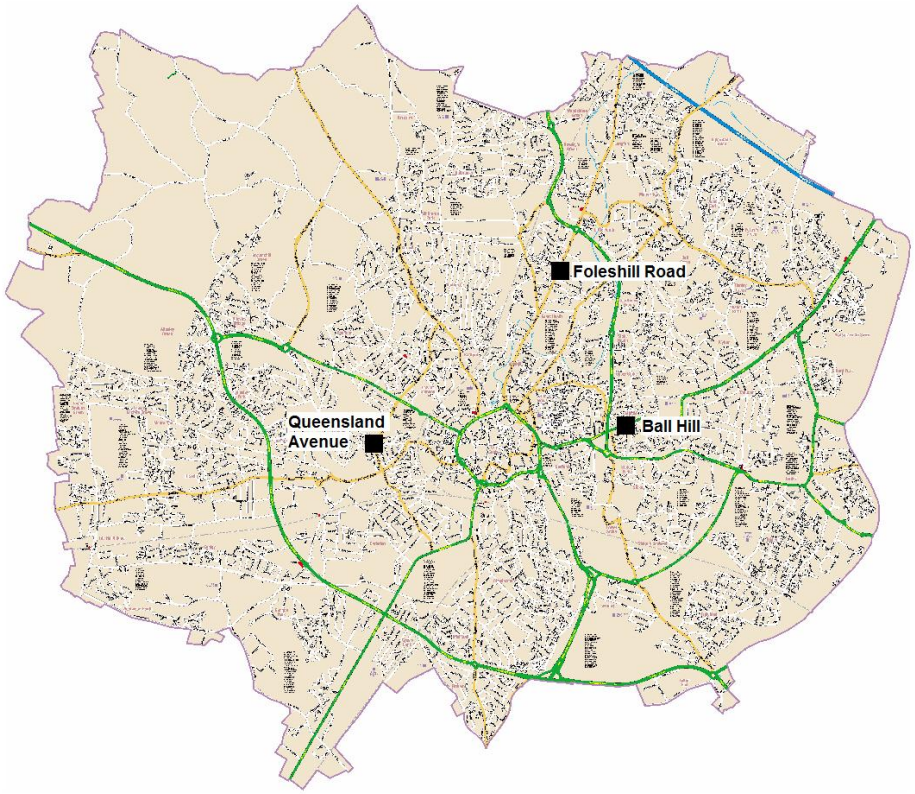


**Table 2.1 Details of Automatic Monitoring Sites**

| Site Name | Site Type | OS Grid Ref | | Pollutants Monitored | Monitoring Technique | In AQMA? | 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? |
|---|---|---|---|---|---|---|---|---|---|
| Queensland Avenue | Roadside | X 431572 | Y 279022 | $PM_{10}$ $NO_2$ | TEOM-VCM method applied | Y | Y(9m) | 3.5m | N |
| Foleshill Road | Roadside | X 434251 | Y 281512 | $PM_{10}$ $NO_2$ | TEOM-VCM method applied | Y | Y(9m) | 6m | N |
| Ball Hill | Roadside | X 435129 | Y 279282 | $PM_{10}$ $NO_2$ | TEOM-VCM method applied | Y | Y(2.5m) | 3.5m | N |

### 2.1.2 Non-Automatic Monitoring Sites

Coventry City Council operates a network of diffusion tubes around the city, as shown in Figure 2.2. In 2011 there were 127 tubes, reducing to 118 tubes in 2012 and rising again to 125 tubes by the end of 2013. Following review, Coventry currently has 53 tubes around the city. Details of the locations of $NO_2$ diffusion tubes can be found in Table 2.2.

Coventry City Council use Gradko International for analysis of diffusion tubes. The preparation method used is 20% TEA in water.

The diffusion tube results have been bias adjusted using the National Diffusion Tube Bias Adjustment Factor Spreadsheet, as historically Coventry's continuous monitoring stations have not had sufficient data capture to produce a robust adjustment factor and so triplicate tubes have been removed to save money.

**QA/QC of non-automatic monitoring**

Gradko International is part of the Workplace Analysis Scheme for Proficiency (WASP), and in 2013 they were deemed to be 100% satisfactory. The tubes are stored and deployed according to the manufacturer's instructions and field and fridge blanks are used each month to ensure that no contamination has occurred.

**Figure 2.2 Map of Non-Automatic Monitoring Sites**

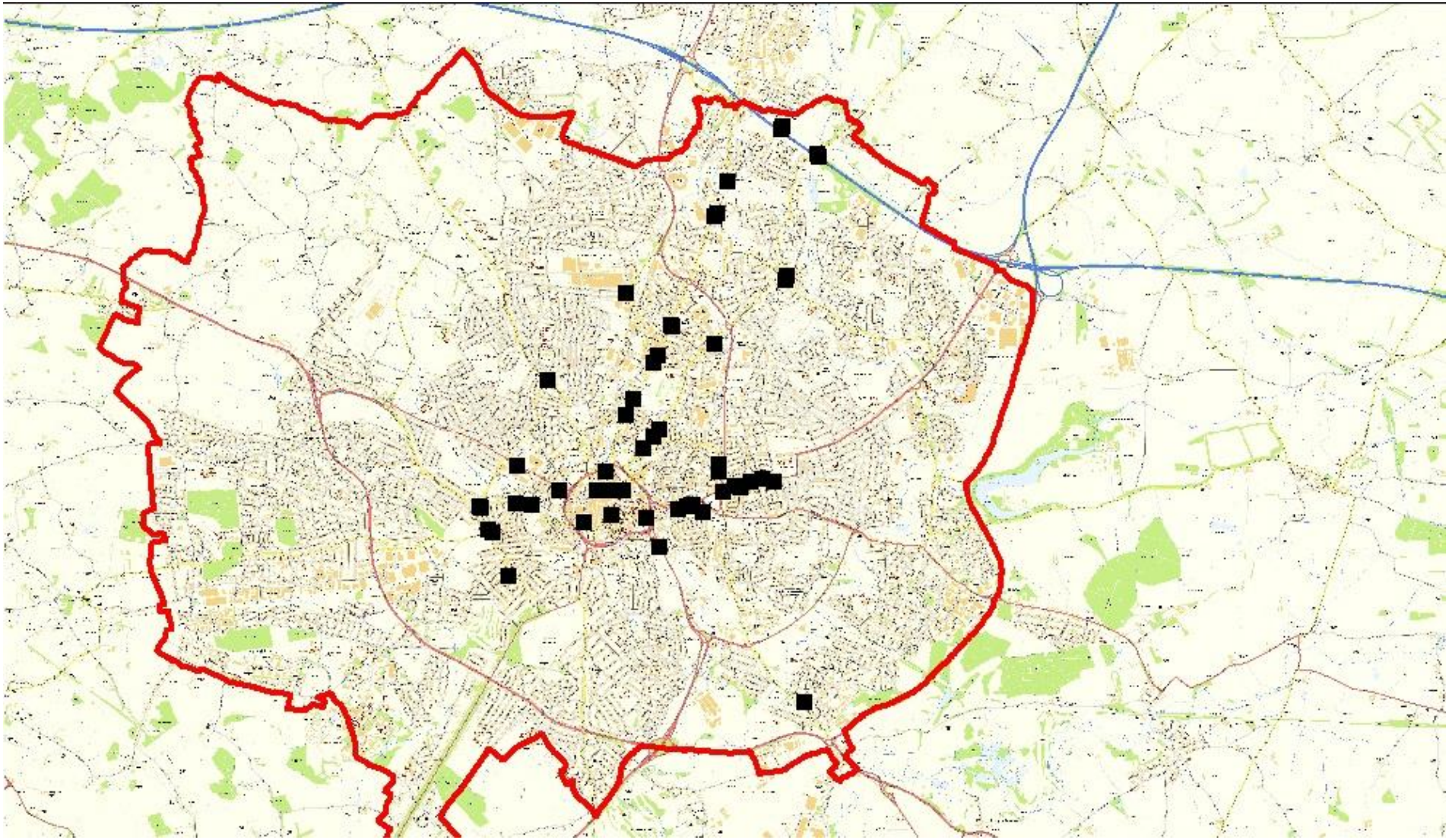


**Table 2.2 Details of Non-Automatic Monitoring Sites**

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCO1*/1N | Holyhead Road | Roadside | 432105 | 279578 | 1.6 | $NO_2$ | Y | N | Y(7.2m) | 3.1 | Y |
| HR1 | Holyhead Road | Façade | 432683 | 279240 | 2.7 | $NO_2$ | Y | N | Y(0m) | 5.8 | Y |
| BH1 | Ball Hill | Roadside | 434966 | 279204 | 3.5 | $NO_2$ | Y | N | Y(5.2m) | 2.6 | Y |
| BH2a | Ball Hill | Façade | 435126 | 279286 | 2.8 | $NO_2$ | Y | N | Y(0m) | 3.9 | Y |
| BH4 | Ball Hill | Roadside | 435331 | 279358 | 1.8 | $NO_2$ | Y | N | Y(3.5m) | 1.3 | Y |
| BH6i | Ball Hill | Roadside | 435184 | 279298 | 3.1 | $NO_2$ | Y | Y | Y(4.5m) | 1.0 | Y |
| BH10 | Ball Hill | Roadside | 435189 | 279281 | 3.1 | $NO_2$ | Y | N | Y(2m) | 0.1 | Y |
| BH13 | Walsgrave Road | Façade | 435508 | 279387 | 2.5 | $NO_2$ | Y | N | Y(0m) | 5.2 | Y |
| BH14 | Walsgrave Road | Roadside | 435658 | 279357 | 2.5 | $NO_2$ | Y | N | Y(9m) | 2.6 | Y |
| FS1 | City Centre | Roadside | 433569 | 279234 | 3 | $NO_2$ | Y | N | Y(4.9m) | 1 | Y |
| CS1 | City Centre | Roadside | 433204 | 279234 | 2.7 | $NO_2$ | Y | N | Y(22m) | 1.9 | Y |
| CS2 | City Centre | Roadside | 433322 | 279500 | 2.85 | $NO_2$ | Y | N | Y(12m) | 1.7 | Y |
| HS2 | City Centre | Roadside | 433420 | 279236 | 3.0 | $NO_2$ | Y | N | Y(35m) | 2.0 | Y |

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LON12 | London Road | Façade | 434075 | 278450 | 2.3 | $NO_2$ | Y | N | Y(0m) | 5.1 | Y |
| SE1 | Spon End | Roadside | 432084 | 279042 | 2.5 | $NO_2$ | Y | N | Y(2.6m) | 0.1 | Y |
| SE3 | Spon End | Façade | 432303 | 279028 | 2.5 | $NO_2$ | Y | N | Y(0m) | 2.3 | Y |
| QAV01 | Queensland Avenue | Roadside | 431595 | 278991 | 2.5 | $NO_2$ | Y | N | Y(3m) | 0.1 | Y |
| QAV8 | Queensland Avenue | Roadside | 431573 | 279020 | 3.1 | $NO_2$ | Y | Y | Y(10.8m) | 4.9 | Y |
| QAV12 | Queensland Avenue | Façade | 431704 | 278680 | 2 | $NO_2$ | Y | N | Y(0m) | 4.3 | Y |
| QAV13 | Queensland Avenue | Façade | 431763 | 278657 | 2.5 | $NO_2$ | Y | N | Y(0m) | 4.9 | Y |
| R1 | Foleshill Road | Roadside | 434250 | 281513 | 3.3 | $NO_2$ | Y | N | Y(13.2m) | 5.1 | Y |
| R4 | Foleshill Road | Façade | 434233 | 281526 | 3.75 | $NO_2$ | Y | N | Y(0m) | 8.8 | Y |
| R5 | Foleshill Road | Façade | 433716 | 280503 | 2.8 | $NO_2$ | Y | N | Y(0m) | 3.7 | Y |
| R6 | Foleshill Road | Façade | 433617 | 280276 | 2.75 | $NO_2$ | Y | Y | Y(0m) | 4.9 | Y |
| R8 | Foleshill Road | Façade | 433992 | 281008 | 3.1 | $NO_2$ | Y | N | Y(0m) | 4.3 | Y |
| R9 | Foleshill Road | Roadside | 434059 | 281105 | 3 | $NO_2$ | Y | N | Y(4.9m) | 3.0 | Y |
| LR1 | Longford Road | Façade | 434836 | 283030 | 2 | $NO_2$ | Y | N | Y(0m) | 5.6 | Y |
| LR2 | Longford Road | Façade | 434880 | 283077 | 2 | $NO_2$ | Y | N | Y(0m) | 4.2 | Y |

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LR3 | Longford Road | Façade | 435016 | 283515 | 1.5 | $NO_2$ | Y | N | Y(0m) | 8.5 | Y |
| BRN2 | Burnaby Road | Façade | 433605 | 281965 | 2.75 | $NO_2$ | Y | N | Y(0m) | 5.5 | Y |
| BA1 | Beake Avenue/Radford Road | Roadside | 432531 | 280769 | 3 | $NO_2$ | Y | N | Y(7.5m) | 2.2 | Y |
| SS1 | Stoney Stanton Road | Façade | 434062 | 280082 | 2.5 | $NO_2$ | Y | N | Y(0m) | 3.7 | Y |
| SS2 | Stoney Stanton Road | Façade | 433994 | 279969 | 2.5 | $NO_2$ | Y | N | Y(0m) | 4.5 | Y |
| SS3 | Stoney Stanton Road | Façade | 434842 | 281272 | 2.5 | $NO_2$ | Y | N | Y(0m) | 4.5 | Y |
| SS5 | Stoney Stanton Road | Façade | 433847 | 279814 | 1.5 | $NO_2$ | Y | N | Y(0m) | 3.0 | Y |
| EH1 | Earlsdon High Street | Façade | 431978 | 278050 | 2.75 | $NO_2$ | Y | N | Y(0m) | 4.6 | Y |
| BELL1 | Bell Green | Façade | 435849 | 282211 | 2.8 | $NO_2$ | Y | N | Y (0m) | 1.7 | Y |
| BELL2 | Bell Green | Façade | 435826 | 282158 | 2.5 | $NO_2$ | Y | N | Y (0m) | 5.7 | Y |
| FGS1 | Far Gosford Street | Façade | 434330 | 278973 | 2.7 | $NO_2$ | Y | N | Y (0m) | 2.9 | Y |
| FGS2 | Far Gosford Street | Façade | 434450 | 279001 | 2.7 | $NO_2$ | Y | N | Y (0m) | 5.1 | Y |
| FGS3 | Far Gosford Street | Façade | 434530 | 279026 | 2.7 | $NO_2$ | Y | N | Y (0m) | 2.4 | Y |

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GR1 | Gulson Road | Façade | 434678 | 278922 | 2.5 | $NO_2$ | Y | N | Y(0m) | 4.5 | Y |
| Grange2 | Grange Road N of M6 | Roadside | 435765 | 284246 | 2.1 | $NO_2$ | Y | N | Y(1.74) | 0.3 | Y |
| Grange 3 | Grange Road | Roadside | 435790 | 284285 | 2.4 | $NO_2$ | Y | N | Y(1.74m) | 0.3 | Y |
| AGR1 | Inside compound M6 contribution only | Roadside | 436262 | 283893 | 2.5 | $NO_2$ | Y | N | N/A | 17.5 | N/A |
| AGR2 | Aldermans Green Road N of M6 | Roadside | 436286 | 283860 | 2.3 | $NO_2$ | Y | N | Y(10m) | 1.75 | Y |
| SW1 | Swan Lane | Façade | 434898 | 279587 | 2.7 | $NO_2$ | Y | N | Y(0m) | 4.7 | Y |
| SW2 | Swan Lane | Roadside | 434897 | 279484 | 2.5 | $NO_2$ | Y | N | Y(5.2m) | 1.4 | Y |
| GS1 | Gosford Street | Façade | 433899 | 278845 | 2.8 | $NO_2$ | Y | N | Y(0m) | 9.8 | Y |
| GF1 | Greyfriars Lane | Facade | 433407 | 278882 | 2.6 | $NO_2$ | Y | N | Y(0m) | 0.47 | Y |
| TS3 | Trinity Street | Roadside | 433492 | 279239 | 2.3 | $NO_2$ | Y | N | Y(3.28m) | 2.4 | Y |
| QV1 | Queen Victoria Road | Roadside | 433029 | 278798 | 2.5 | $NO_2$ | Y | N | Y(4m) | 1.95 | Y |
| JL1 | St. James Lane | Façade | 436092 | 276296 | 2.2 | $NO_2$ | Y | N | Y(0m) | 3.95 | Y |

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### 2.2.1 Nitrogen Dioxide

**Automatic Monitoring Data**

Data capture rates in some periods and locations were less than the 85% required by DEFRA due to technical difficulties at some of the stations.

A summary of the annual mean data for each station in the past 3 years is given in table 2.3 below. Where no data is reported (-) technical difficulties resulted in significant data losses.

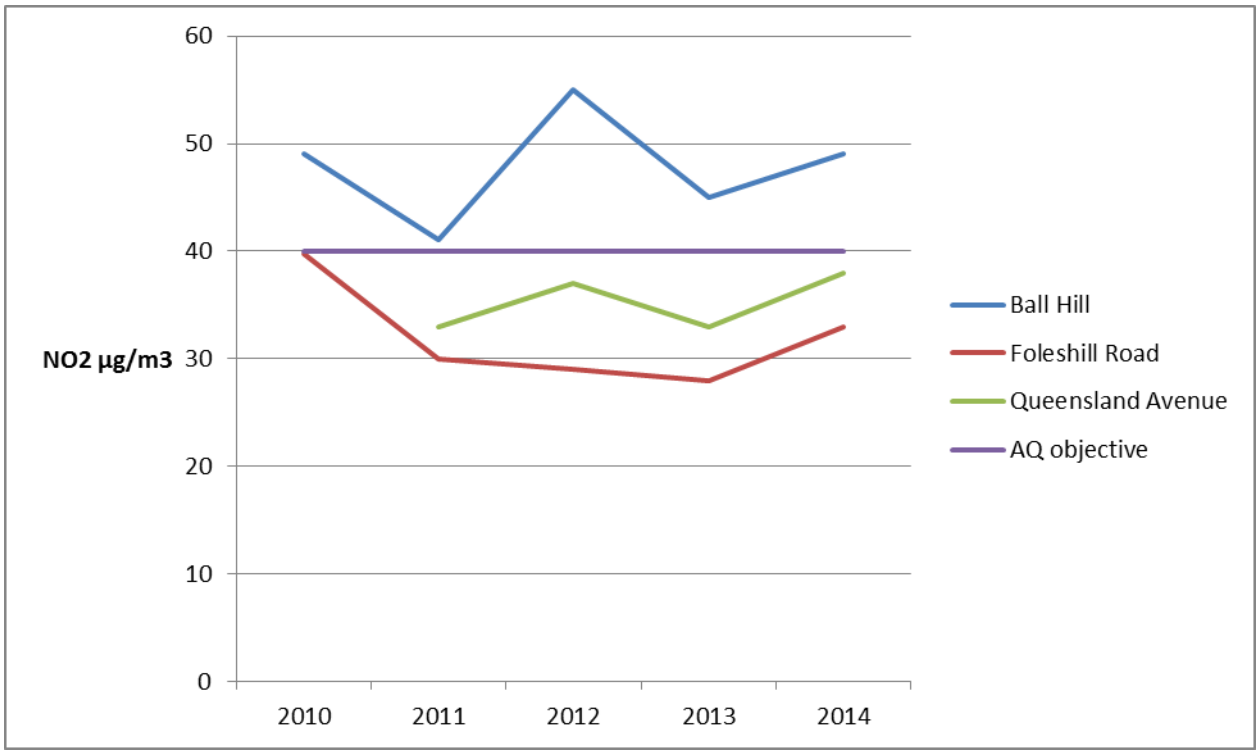
**Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for period of monitoring %[a] | Valid Data Capture 2014 % [b] | Annual Mean Concentration μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010* [c] | 2011* [c] | 2012* [c] | 2013* [c] | 2014 [c] |
| Ball Hill | Roadside | Y | 80 | 80 | **49**[93] | **41**[95] | **55**[71] | **45**[65] | **49** |
| Foleshill Road | Roadside | Y | 84 | 84 | 39.8[75] | 30[84] | 29[99] | 28[84] | 33 |
| Queensland Avenue | Roadside | Y | 98 | 98 | - | 33[66] | 37[39] | 33[52] | 38 |

*Superscript figures denote data capture rate as a percentage

Exceedences of annual mean are highlighted in bold

**Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites**

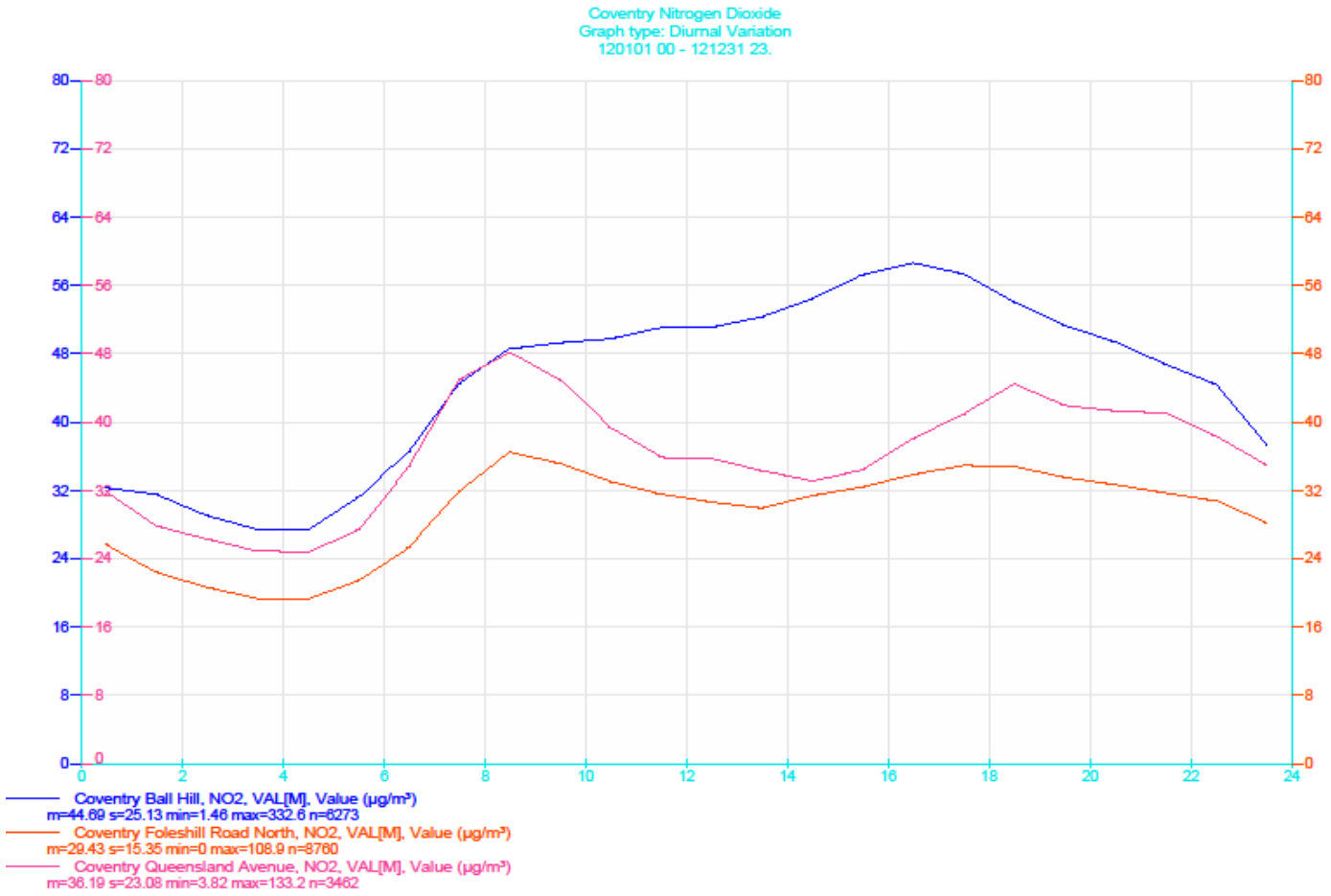



Due to the fact that that data capture has not been above the 85% recommended by Defra at all sites and years, any trend analysis of the data should be taken as indicative only

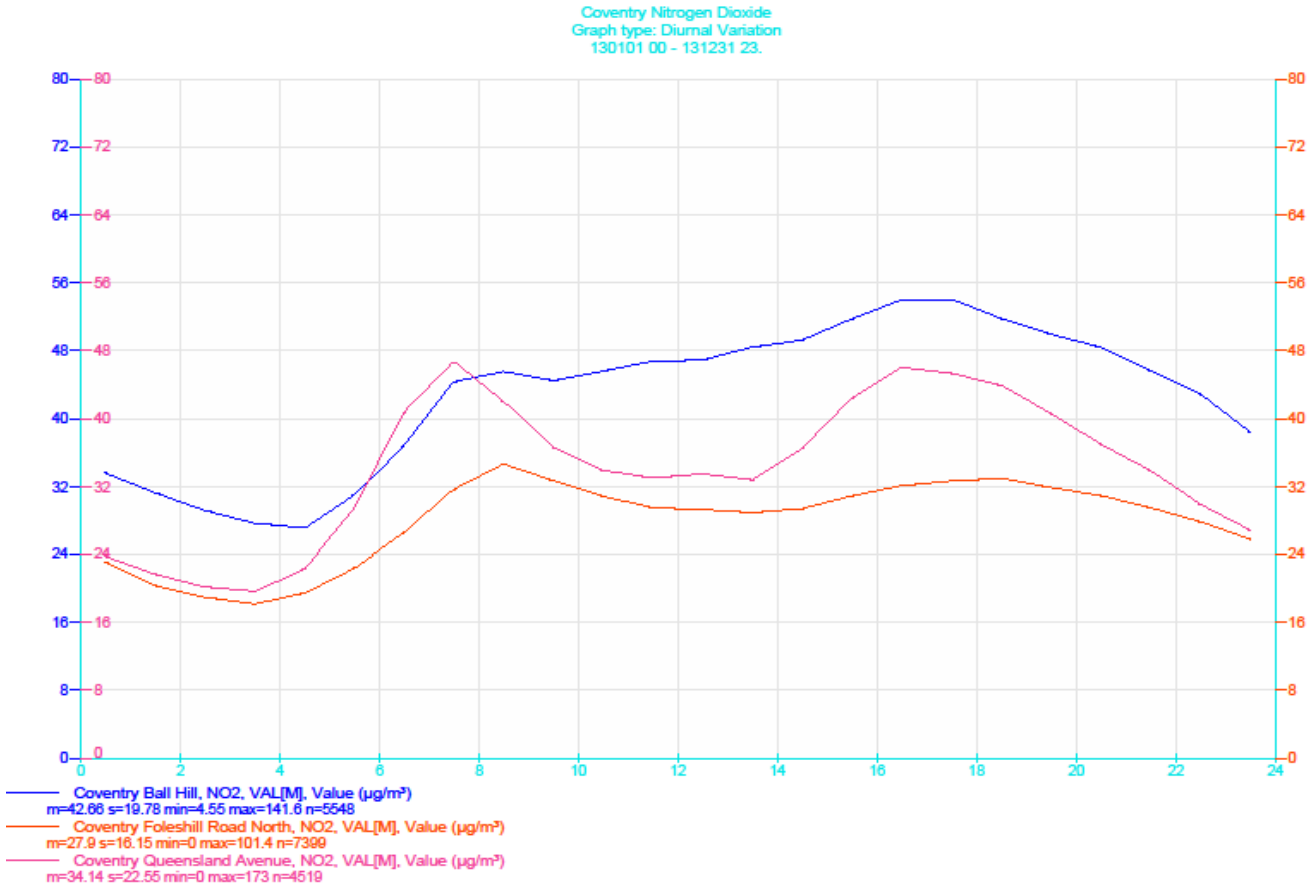
Ball Hill shows an exceedence of the air quality standard for the last five years with no overall trend to the annual averages.

The data for Foleshill Road shows the concentrations being consistently within the air quality standard, again with no clear trend over the past five years.

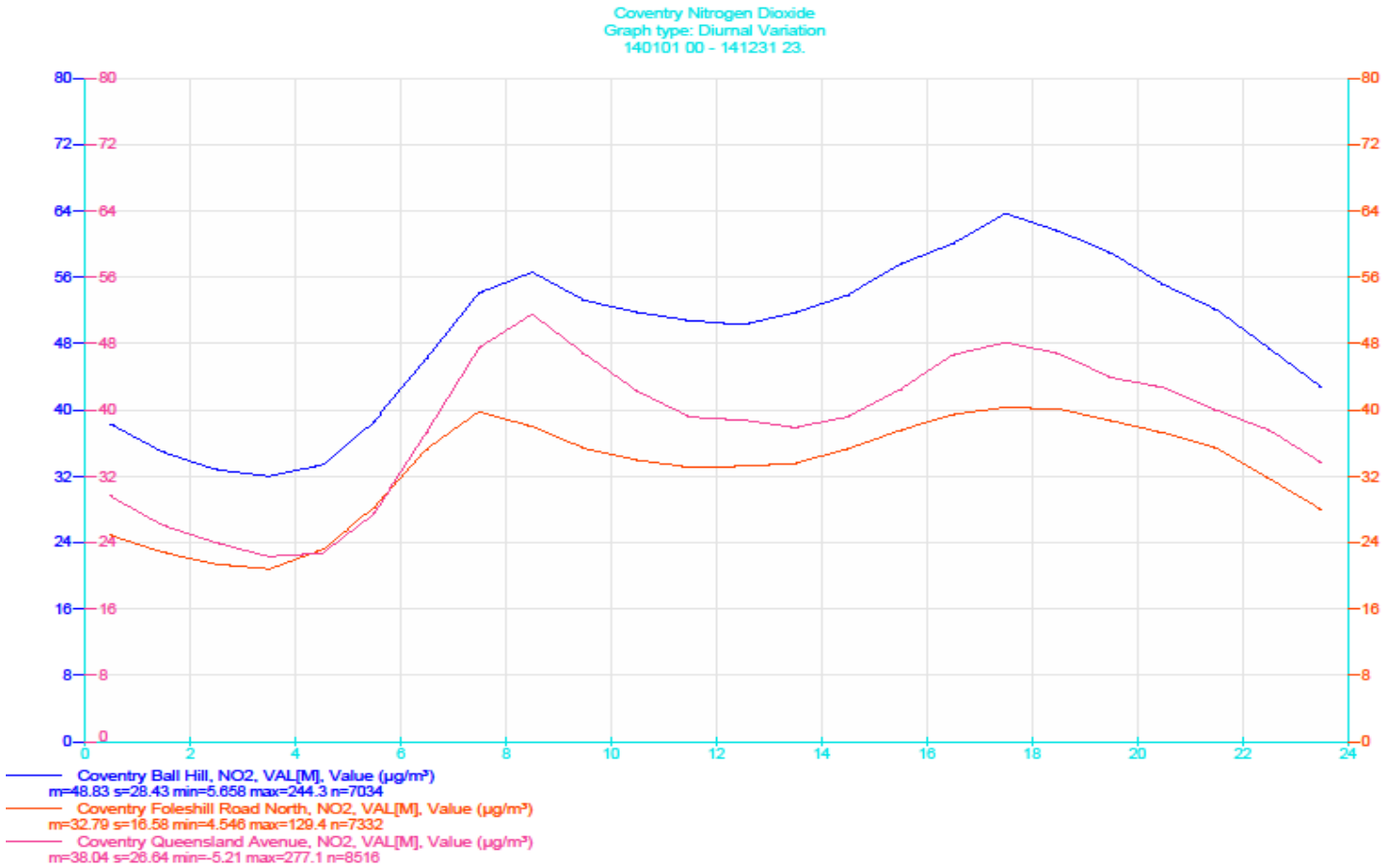
The data for Queensland Avenue also shows the concentrations to be consistently within the air quality objective, again with no clear trend over the past four years.




The above graph shows the average diurnal values for the three currently operational continuous monitoring stations for 2012. The values for Foleshill Road and Queensland Avenue show clear peaks that coincide with peak traffic flows for the morning and evening rush hours. The values for Ball Hill are consistently above those recorded by the other units and do not dip again after the morning rush hour, suggesting that the nitrogen dioxide does not disperse and traffic flows remain high during the day.




The above graph shows the average diurnal values for the three currently operational continuous monitoring stations for 2013. As in 2012, the values for Foleshill Road and Queensland Avenue show clear peaks that coincide with peak traffic flows for the morning and evening rush hours. The values for Ball Hill are consistently above those recorded by the other units and do not dip again after the morning rush hour, suggesting that the nitrogen dioxide does not disperse and traffic flows remain high during the day.




The above graph shows the average diurnal values for the three currently operational continuous monitoring stations for 2014. As in 2012, the values for Foleshill Road and Queensland Avenue show clear peaks that coincide with peak traffic flows for the morning and evening rush hours. The values for Ball Hill dip more noticeably again after the morning rush hour, suggesting that the traffic flows are now dropping during the day.

All three graphs show a sharper peak for the morning rush hour suggesting that there are more traffic movements over a shorter time period than the evening rush hour which has a similarly high peak but is more spread out suggesting that the traffic migration period is over a longer time period in the evening period.

**Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for period of monitoring %[a] | Valid Data Capture 2014 % [b] | Number of Exceedences of Hourly Mean (200 μg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010* [c] | 2011* [c] | 2012* [c] | 2013* [c] | 2014 [c] |
| Ball Hill | Roadside | Y | 80 | 80 | 0 | 0 | 0(139) | 0(115) | 12(196) |
| Foleshill Road | Roadside | Y | 84 | 84 | 0(144.7) | 0 | 0 | 0(101) | 0(99) |
| Queensland Avenue | Roadside | Y | 98 | 98 | - | 0 | 0(119) | 0(173) | 7 |

In 2014 the data capture rate was below 90% at Ball Hill and Foleshill Road and therefore the 99.8$^{th}$ percentile of the hourly data was calculated. No sites showed more than 18 exceedences of the hourly mean thus there are no breaches of the hourly standard.

*Shows we have no need for continuous monitors as only exceeding annual average. Supports losing AQ units*

## Diffusion Tube Monitoring Data

By December 2013, again due to a lack of resources, all triplicate tubes and all tubes with values consistently below 40 μg/$m^3$ had been removed. 8 new tubes were situated in sites where new receptors had been identified as part of continuing city development. There are currently 53 tubes in Coventry. Tubes will continue to be relocated throughout 2015 as development of the city continues to result in new traffic flows and new receptors in areas of heavy traffic.

**Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014**

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 (Number of Months or %) | 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 = 0.91) 2014 (μg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| CCO1*/1N | Holyhead Road | Roadside | Y | N | 92% | - | Y | 39.3 |
| HR1 | Holyhead Road | Façade | Y | N | 75% | - | Y | **63.1** |
| BH1 | Ball Hill | Roadside | Y | N | 83% | - | Y | 39.0 |
| BH2a | Ball Hill | Façade | Y | N | 83% | - | Y | **48.9** |
| BH4 | Ball Hill | Roadside | Y | N | 92% | - | Y | **47.0** |
| BH6i | Ball Hill | Roadside | Y | N | 75% | - | Y | **42.3** |
| BH10 | Ball Hill | Roadside | Y | N | 92% | - | Y | **42.3** |
| BH13 | Walsgrave Road | Façade | Y | N | 92% | - | Y | 37.4 |
| BH14 | Walsgrave Road | Roadside | Y | N | 92% | - | Y | 36.7 |
| FS1 | City Centre | Roadside | Y | N | 92% | - | Y | **44.2** |
| CS1 | City Centre | Roadside | Y | N | 92% | - | Y | 38.1 |
| CS2 | City Centre | Roadside | Y | N | 92% | - | Y | 38.0 |
| HS2 | City Centre | | Y | N | 92% | - | Y | 35.6 |
| LON12 | London Road | Façade | Y | N | 42% | Y | Y | **43.9** |
| SE1 | Spon End | Roadside | Y | N | 92% | - | Y | 36.1 |
| SE3 | Spon End | Façade | Y | N | 92% | - | Y | **41.4** |
| QAV01 | Queensland Avenue | Roadside | Y | N | 83% | - | Y | 35.0 |
| QAV8 | Queensland Avenue | Roadside | Y | N | 75% | - | Y | 29.6 |
| QAV12 | Queensland Avenue | Façade | Y | N | 75% | - | Y | 38.5 |
| QAV13 | Queensland Avenue | Façade | Y | N | 92% | - | Y | **43.3** |
| R1 | Foleshill Road | Roadside | Y | N | 83% | - | Y | 31.2 |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 (Number of Months or %) | 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 = 0.91) 2014 (μg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| R4 | Foleshill Road | Façade | Y | N | 92% | - | Y | 39.6 |
| R5 | Foleshill Road | Façade | Y | N | 83% | - | Y | **44.9** |
| R6 | Foleshill Road | Façade | Y | N | 50% | Y | Y | **52.9** |
| R8 | Foleshill Road | Façade | Y | N | 92% | - | Y | 38.9 |
| R9 | Foleshill Road | Roadside | Y | N | 83% | - | Y | **41.2** |
| LR1 | Longford Road | Façade | Y | N | 92% | - | Y | **44.0** |
| LR2 | Longford Road | Façade | Y | N | 92% | - | Y | **43.4** |
| LR3 | Longford Road | Façade | Y | N | 92% | - | Y | **44.6** |
| BRN2 | Burnaby Road | Façade | | N | 92% | - | Y | 39.1 |
| BA1 | Beake Avenue/Radford Road | Roadside | Y | N | 33% | Y | Y | 38.3 |
| SS1 | Stoney Stanton Road | Façade | Y | N | 83% | - | Y | 36.8 |
| SS2 | Stoney Stanton Road | Façade | Y | N | 92% | - | Y | 38.1 |
| SS3 | Stoney Stanton Road | Façade | Y | N | 92% | - | Y | 39.1 |
| SS5 | Stoney Stanton Road | Façade | Y | N | 92% | - | Y | **49.2** |
| EH1 | Earlsdon High Street | Façade | Y | N | 83% | - | Y | 35.7 |
| BELL1 | Bell Green | Façade | Y | N | 92% | - | Y | **40.2** |
| BELL2 | Bell Green | Façade | Y | N | 92% | - | Y | 38.9 |
| FGS1 | Far Gosford Street | Façade | Y | N | 92% | - | Y | **41.7** |
| FGS2 | Far Gosford Street | Façade | Y | N | 92% | - | Y | 38.9 |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 (Number of Months or %) | 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 = 0.91) 2014 (μg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| FGS3 | Far Gosford Street | Façade | Y | N | 83% | - | Y | **42.7** |
| GR1 | Gulson Road | Façade | Y | N | 92% | - | Y | 36.5 |
| Grange2 | Grange Road N of M6 | Roadside | Y | N | 50% | Y | Y | **42.9** |
| Grange 3 | Grange Road | Roadside | Y | N | 58% | Y | Y | **43.0** |
| AGR1 | Inside compound M6 contribution only | Roadside | Y | N | 92% | - | Y | / |
| AGR2 | Aldermans Green Road N of M6 | Roadside | Y | N | 67% | Y | Y | 30.4 |
| SW1 | Swan Lane | Façade | Y | N | 92% | - | Y | 30.5 |
| SW2 | Swan Lane | Roadside | Y | N | 83% | - | Y | 32.0 |
| GS1 | Gosford Street | Façade | Y | N | 92% | - | Y | 44.5 |
| GF1 | Greyfriars Lane | Facade | Y | N | 83% | - | Y | 37.8 |
| TS3 | Trinity Street | Roadside | Y | N | 83% | - | Y | **47.9** |
| QV1 | Queen Victoria Road | Roadside | Y | N | 83% | - | Y | 39.8 |
| JL1 | St. James Lane | Façade | Y | N | 58% | Y | Y | 27.6 |

**Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)**

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2010* (Bias Adjustment Factor = 0.92) | 2011* (Bias Adjustment Factor = 0.90) | 2012* (Bias Adjustment Factor = 0.96) | 2013* (Bias Adjustment Factor = 0.95) | 2014 (Bias Adjustment Factor = 0.91) |
| CCO1*/1N | Roadside | Y | 33.89 | 38.15 | **41.7** | 32.5 | 39.3 |
| HR1 | Façade | Y | / | **48.67** | **63.5** | **60.4** | **63.1** |
| BH1 | Roadside | Y | / | **48.34** | **52.8** | **41.2** | 39.0 |
| BH2a | Façade | Y | 29.02 | 29.47 | **77.4** | **53.8** | **48.9** |
| BH4 | Roadside | Y | **43.88** | **45.21** | **56.1** | **46.2** | **47.0** |
| BH6i | Roadside | Y | **44.71** | **48.47** | / | **44.7** | **42.3** |
| BH10 | Roadside | Y | **43.88** | **45.21** | **53.7** | **45.3** | **42.3** |
| BH13 | Façade | Y | / | 37.28 | **42.9** | **41.2** | 37.4 |
| BH14 | Roadside | Y | / | / | **43.9** | 36.2 | 36.7 |
| FS1 | Roadside | Y | **57.07** | **68.26** | **60.0** | **49.6** | **44.2** |
| CS1 | Roadside | Y | / | 36.26 | **40.5** | 39.8 | 38.1 |
| CS2 | Roadside | Y | / | **46.34** | **49.1** | **45.9** | 38.0 |
| HS2 | Roadside | Y | 33.58 | 29.47 | 37.2 | 33.2 | 35.6 |
| LON12 | Façade | Y | 38.34 | **44.01** | **45.8** | **44.0** | **43.9** |
| SE1 | Roadside | Y | 37.86 | 38.55 | 38.1 | 37.0 | 36.1 |
| SE3 | Façade | Y | 36.81 | 38.73 | **46.4** | **42.5** | **41.4** |
| QAV01 | Roadside | Y | **41.05** | **43.37** | 39.1 | 38.1 | 35.0 |
| QAV8 | Roadside | Y | 25.84 | 25.53 | **44.5** | 30.7 | 29.6 |
| QAV12 | Façade | Y | 26.13 | 38.26 | **41.6** | 39.4 | 38.5 |
| QAV13 | Façade | Y | 26.19 | **41.92** | **46.0** | **43.1** | **43.3** |
| R1 | Roadside | Y | 29.37 | 27.80 | 33.9 | 31.3 | 31.2 |
| R4 | Façade | Y | 36.77 | 36.77 | 39.5 | **40.1** | 39.6 |
| R5 | Façade | Y | **42.15** | **42.15** | **53.4** | **48.8** | **44.9** |
| R6 | Façade | Y | **48.98** | **48.98** | **58.5** | **55.7** | **52.9** |
| R8 | Façade | Y | 38.30 | 38.30 | **41.5** | **43.0** | 38.9 |
| R9 | Roadside | Y | 34.63 | 34.63 | **46.6** | **45.8** | **41.2** |

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2010* (Bias Adjustment Factor = 0.92) | 2011* (Bias Adjustment Factor = 0.90) | 2012* (Bias Adjustment Factor = 0.96) | 2013* (Bias Adjustment Factor = 0.95) | 2014 (Bias Adjustment Factor = 0.91) |
| LR1 | Façade | Y | **42.85** | **42.18** | **47.6** | **42.6** | **44.0** |
| LR2 | Façade | Y | **42.60** | **44.85** | **47.2** | **47.4** | **43.4** |
| LR3 | Façade | Y | **40.63** | **41.56** | **64.7** | **46.5** | **44.6** |
| BRN2 | Façade | Y | 36.47 | 38.84 | **44.7** | 38.9 | 39.1 |
| BA1 | Roadside | Y | 34.89 | 39.99 | **59.8** | 32.9 | 38.3 |
| SS1 | Façade | Y | 38.39 | 37.55 | **42.7** | 37.3 | 36.8 |
| SS2 | Façade | Y | 38.76 | 37.53 | **43.2** | 39.0 | 38.1 |
| SS3 | Façade | Y | 37.74 | 38.68 | **40.9** | 39.0 | 39.1 |
| SS5 | Façade | Y | **40.06** | **42.67** | **51.8** | **50.7** | **49.2** |
| EH1 | Façade | Y | 37.23 | 35.19 | **40.8** | 37.6 | 35.7 |
| BELL1 | Façade | Y | / | 39.98 | **44.1** | **42.3** | **40.2** |
| BELL2 | Façade | Y | / | 39.18 | **42.9** | 39.5 | 38.9 |
| FGS1 | Façade | Y | / | **41.39** | **45.0** | **43.9** | **41.7** |
| FGS2 | Façade | Y | / | 37.97 | **43.4** | 39.7 | 38.9 |
| FGS3 | Façade | Y | / | 38.18 | **47.4** | **44.0** | **42.7** |
| GR1 | Façade | Y | / | 37.25 | **40.8** | 37.7 | 36.5 |
| Grange2 | Roadside | Y | / | / | 37.6 | 38.2 | **42.9** |
| Grange 3 | Roadside | Y | / | / | / | / | **43.0** |
| AGR1 | Roadside | Y | / | **40.31** | **40.7** | 33.7 | / |
| AGR2 | Roadside | Y | / | / | / | / | 30.4 |
| SW1 | Façade | Y | / | / | / | / | 30.5 |
| SW2 | Roadside | Y | / | / | / | / | 32.0 |
| GS1 | Façade | Y | / | / | / | / | 44.5 |
| GF1 | Facade | Y | / | / | / | / | 37.8 |
| TS3 | Roadside | Y | / | / | / | / | **47.9** |
| QV1 | Roadside | Y | / | / | / | / | 39.8 |
| JL1 | Façade | Y | / | / | / | / | 27.6 |

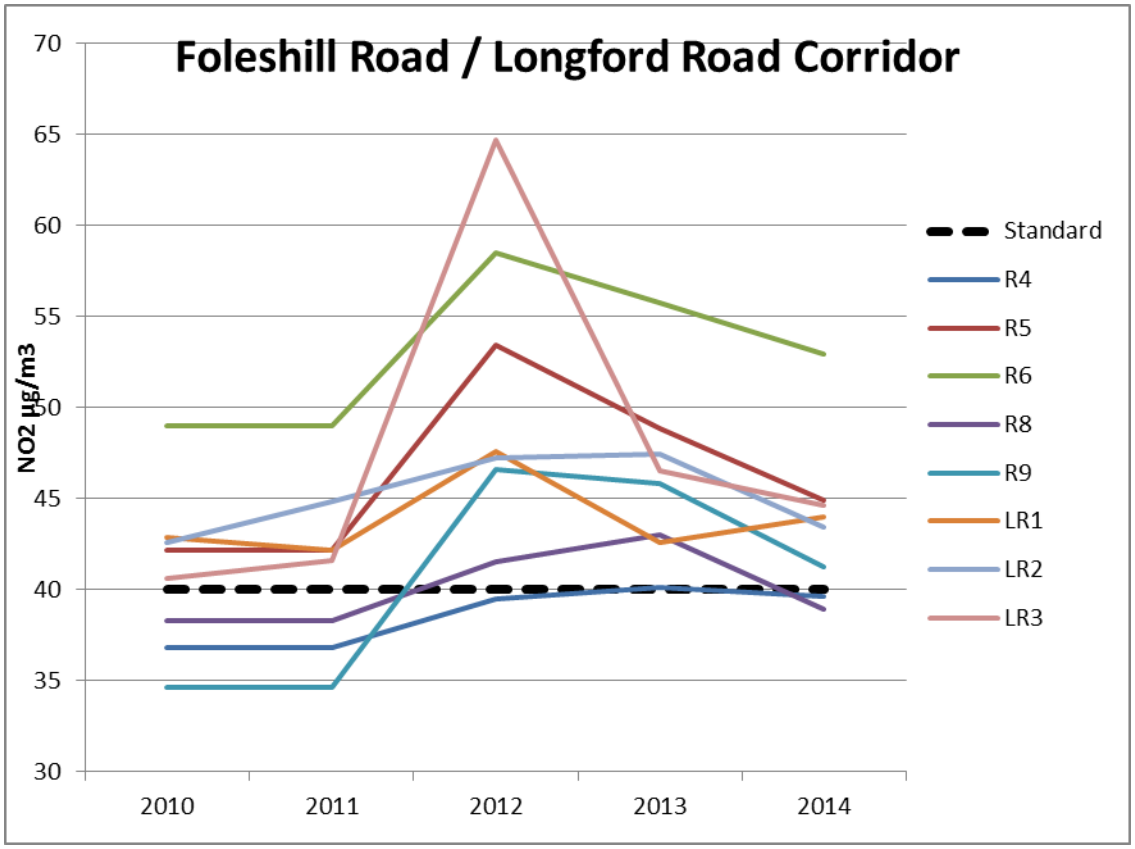
There is no overall trend in the results of diffusion tubes across the city, although all results show a peak in nitrogen dioxide concentrations in 2012.

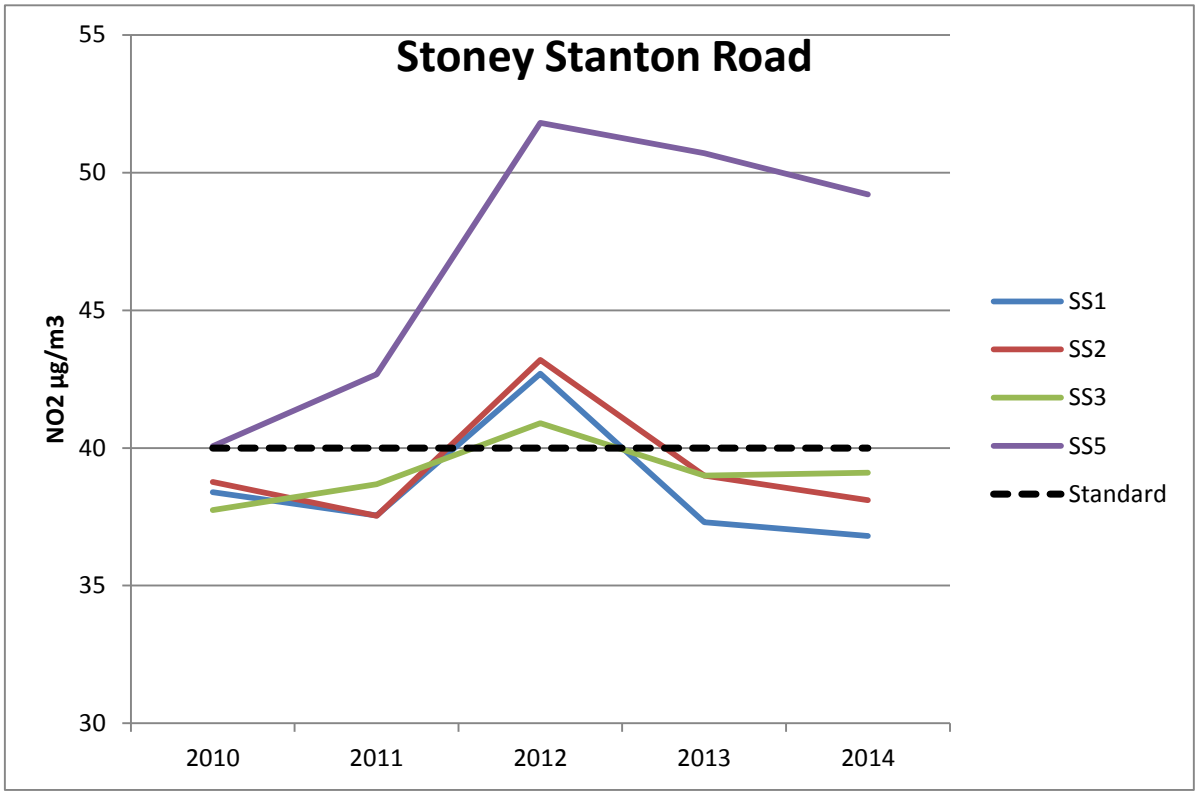
There were no specific actions taken between 2009 and 2014 to reduce the levels of nitrogen dioxide, and therefore no significant reductions were anticipated. However, there has been a significant amount of work undertaken to improve traffic flows across Coventry and the pedestrianisation of parts of the city centre has led to improvements within these areas. The removal of planning controls that allows offices to be converted into housing has facilitated the emergence of several new receptors in areas of high nitrogen dioxide levels. For example Tube TS3 was placed next to an office block that was converted into accommodation and shows levels which exceed the annual mean for nitrogen dioxide at the façade of this building at 47.9 $\mu g/m^3$.

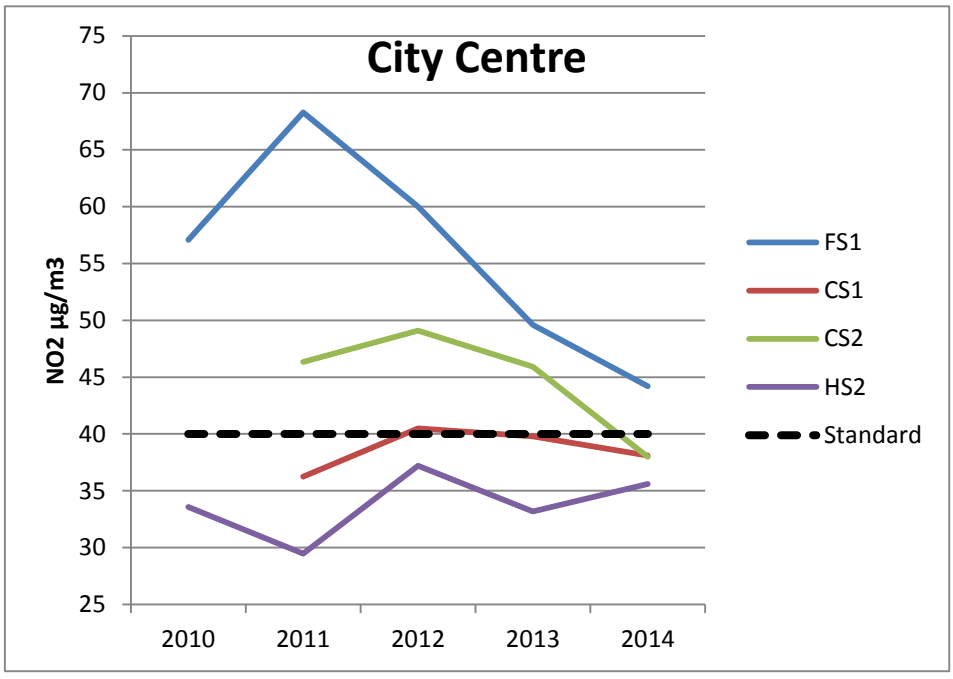
In 2014, there were 22 tubes with exceedences of the annual mean (40 $\mu g/m^3$) from a total of 53 results. Of these 1 tube exceeded 60 $\mu g/m^3$. This tube is located on the façade of a terrace house directly fronting a narrow pavement. There is no possibility of placing a continuous monitor in or near this location due to the lack of space.

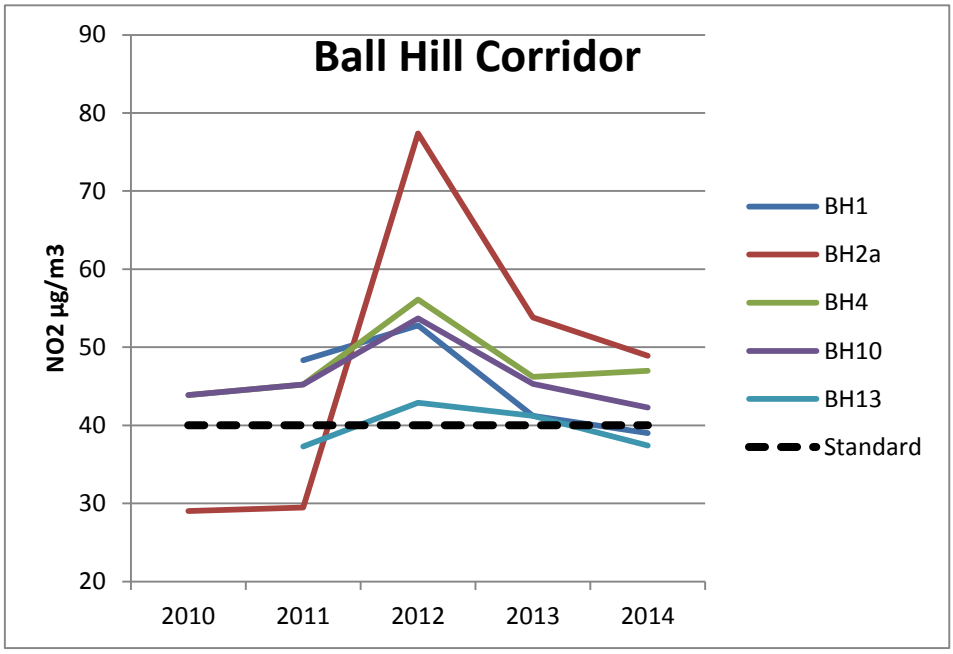
The following graphs show the trend in nitrogen dioxide tube results for the past five years for five specific areas of the city. Whilst the majority of results show falling levels, there is one tube in each area that shows an increase.

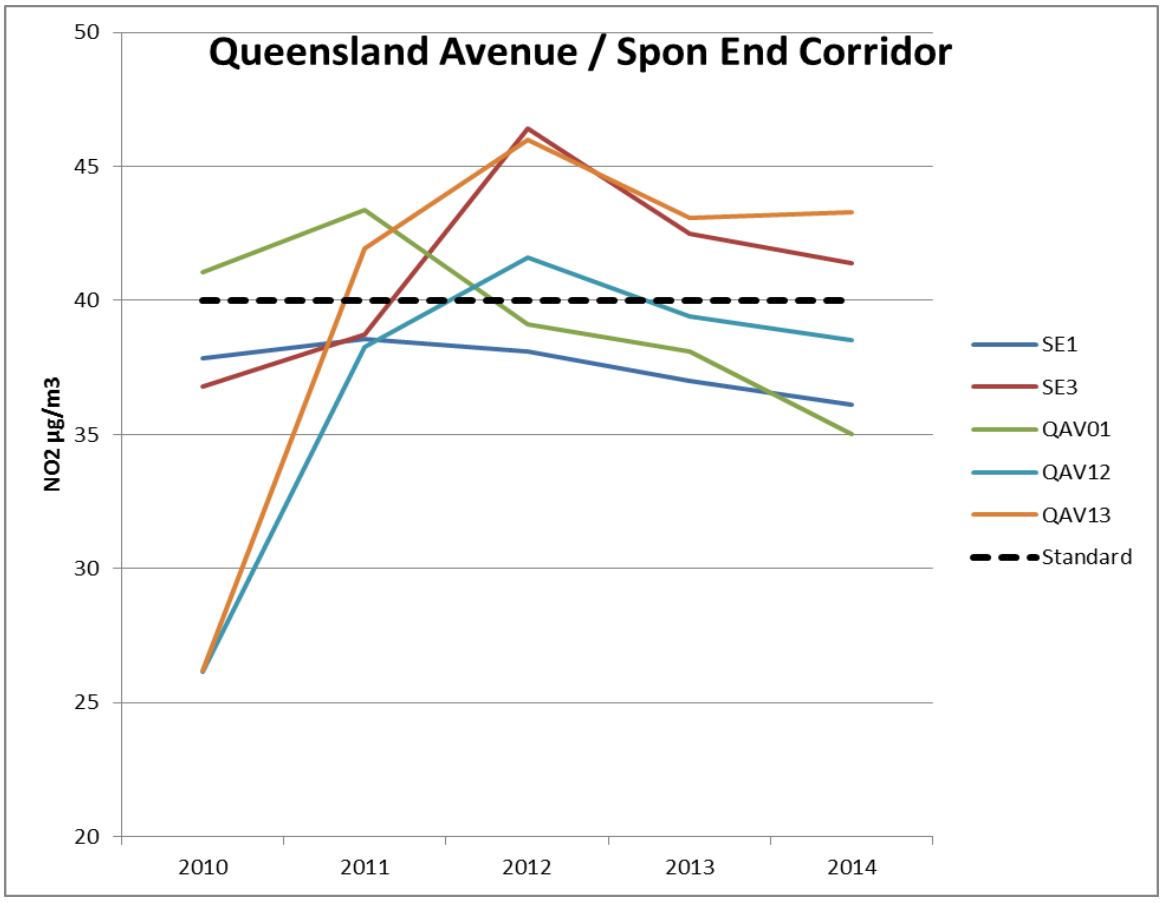
**Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites**




Stoney Stanton Road
NO2 µg/m3
55
50
45
40
35
30
2010
2011
2012
2013
2014
SS1
SS2
SS3
SS5
Standard


City Centre
NO2 µg/m3
75
70
65
60
55
50
45
40
35
30
25
2010
2011
2012
2013
2014
FS1
CS1
CS2
HS2
Standard


Ball Hill Corridor
NO2 µg/m3
90
80
70
60
50
40
30
20
2010
2011
2012
2013
2014
BH1
BH2a
BH4
BH10
BH13
Standard


Queensland Avenue / Spon End Corridor
NO2 µg/m3
50
45
40
35
30
25
20
2010
2011
2012
2013
2014
SE1
SE3
QAV01
QAV12
QAV13
Standard

### 2.2.2 Particulate Matter ($PM_{10}$)

All three of Coventry's continuous monitoring stations monitor for $PM_{10}$. All monitor $PM_{10}$ using a Tapered Element Oscillating Microbalance (TEOM).

Concentrations of $PM_{10}$ in 2014 are shown in Table 2.7 and 2.8. Where no data is reported (-) technical difficulties resulted in significant data losses.

Results show that concentrations of $PM_{10}$ are not likely to have exceeded either the annual mean or 24 hours mean National Air Quality Objective at any of the sites within Coventry.

There is insufficient data to allow any trend analysis.

**Table 2.7 Results of Automatic Monitoring of $PM_{10}$: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture 2014 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010*[c] | 2011*[c] | 2012*[c] | 2013*[c] | 2014[c] |
| Ball Hill | Roadside | Y | 80 | Y | - | - | - | - | 23 |
| Foleshill Road | Roadside | Y | 84 | Y | - | 18 | - | - | 19 |
| Queensland Avenue | Roadside | Y | 98 | Y | - | 16 | 22 | - | 19 |

**Table 2.8 Results of Automatic Monitoring for $PM_{10}$: Comparison with 24-hour mean Objective**

| Site ID | Site Type | Within AQMA? | Valid Data Capture 2014 % | Confirm Gravimetric Equivalent | Number of Exceedences of 24-Hour Mean (50 μg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010*[c] | 2011*[c] | 2012*[c] | 2013*[c] | 2014[c] |
| Ball Hill | Roadside | Y | 80 | Y | - | - | - | - | 10 |
| Foleshill Road | Roadside | Y | 84 | Y | - | 18 | - | - | 2 |
| Queensland Avenue | Roadside | Y | 98 | Y | - | 1 | 13 | - | 8 |

### 2.2.3 Sulphur Dioxide

Sulphur dioxide is not currently monitored by Coventry City Council.

### 2.2.4 Benzene

Benzene is not currently monitored by Coventry City Council.

### 2.2.5 Summary of Compliance with AQS Objectives

Coventry City Council has examined the results from monitoring in the City.

Concentrations within the AQMA still exceed the objective for nitrogen dioxide and the AQMA should remain. In particular, results derived from 22 of the 53 diffusion tubes showed exceedances and results from 1 out of the 3 automatic monitoring stations recorded an overall exceedance.

Since the existing AQMA is city wide, there is no need to proceed to any further Detailed Assessment.

# 3 Road Traffic Sources

Coventry is undergoing a concentrated phase of regeneration with increased pedestrianisation of the city centre and improvements to major traffic routes. There is also continuing development of residential and commercial sites, including mixed uses which are both having positive and negative effects on air quality.

There were changes to road traffic layouts between 2010-2013 which may have a cumulative impact on air quality measurements, these have been detailed in section 3 of the 2012-14 Progress Report.

In terms of assessing the impact on air quality resulting from new road schemes the intention is that more detailed assessments on air quality and monitoring will be undertaken when the routes are fully operational.

All the road schemes detailed below commenced construction in 2013/14 and controls have been put in place through the planning and construction process to limit and control emissions of dust and fumes. The proposed road schemes are designed to deliver improvements in terms of traffic flows, reducing congestion and improving air quality.

- The Tollbar Island (A45/A46) junction improvement forms a critical part of the network, and this junction is currently being upgraded at a cost of £106m to reduce queuing which should improve air quality and the scheme is due for completion in autumn 2016. The City Council is actively lobbying for further enhancements along the A46 corridor which will support further improvements to traffic flows and air quality.

- Friargate Junction 6 of ring road with bridge deck and closure of right turn traffic from Warwick Road on to ring road and into City Centre, commenced 2014. Road diversions have been put in place causing delays around Warwick Road and railway station area, Holyhead Road and Allesley Old Road. Expected completion 2015/16.

- Whitley Bridge - New bridge over A444 into Jaguar Whitley site – Underway – Delays on A444

- Gibbet Hill Road – New bus interchange involving long term temporary road closures – Underway

- Hospital Pinch point – Various junction improvement schemes on Walsgrave/Ansty/Hinckley Road corridor – Underway

- Council House Square - road narrowing and one-way system - Complete, should be a resulting improvement in air quality as the traffic is now one way.

- Gosford St – New roundabout - Underway – Some delays around Sky Blue Way

## 3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Coventry 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

Coventry 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.

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

## 3.4 Junctions

Coventry 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

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

## 3.6 Roads with Significantly Changed Traffic Flows

Coventry City Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

## 3.7 Bus and Coach Stations

Coventry City Council has assessed potential $NO_2$ and $PM_{10}$ emissions at bus stations located within the city during previous rounds of review and assessment. There is no relevant exposure with reference to the 1-hour exposure criteria within 10 metres of Pool Meadow bus station, therefore there is no need to proceed further with the assessment of bus stations in Coventry.

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

# 4 Other Transport Sources

## 4.1 Airports

Coventry Airport stopped running passenger flights in December 2009, but continues to operate cargo services. The airport is located within Warwick District Council.

Coventry City Council confirms that there are no airports in the Local Authority area.

## 4.2 Railways (Diesel and Steam Trains)

### 4.2.1 Stationary Trains

Coventry 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

Coventry 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)

Coventry City Council confirms that there are no ports or shipping that meet the specified criteria 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

Coventry City Council has approved some new installations since the last USA. They are as follows:

- 2 metal and plastic coating
- 1 non-ferrous foundry
- 1 dry cleaner
- 5 waste oil burners

All of the above processes are regulated under the Environmental Permitting Regulations. These processes have limited $NO_x$ output, especially in comparison to the $NO_x$ contribution from road traffic, and therefore it is not considered necessary to assess these in more detail.

Coventry 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

Coventry 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

Coventry 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

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

## 5.4 Poultry Farms

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

# 6 Commercial and Domestic Sources

## 6.1 Biomass Combustion – Individual Installations

There has been one new biomass combustion installation since the last updating and screening assessment, at the following location:

- Coventry University, Faculty of Engineering and Computing

This biomass installation has been assessed by Coventry City Council at the planning stage. The applicant submitted detailed information on proposed installation, which we used to assess the stack height and any air quality impacts in line with DEFRA and EPUK guidance. The above installations have been assessed in this way and have been deemed to have negligible impact on air quality.

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

## 6.2 Biomass Combustion – Combined Impacts

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

## 6.3 Domestic Solid-Fuel Burning

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

# 7 Fugitive or Uncontrolled Sources

Coventry City Council has considered dust emissions from a number of uncontrolled and fugitive sources that may give rise to elevated $PM_{10}$ concentrations. Through the planning system there have been proactive controls put in place for the mitigation and control of dust from construction/demolition works.

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

# 8 Conclusions and Proposed Actions

## 8.1 Conclusions from New Monitoring Data

The latest monitoring data has indicated continual exceedences of the annual mean objective for $NO_2$ at a number of diffusion tube locations across the city, as follows:

- Walsgrave Road, Ball Hill
- Foleshill Road / Longford Road
- Trinity Street and Fairfax Street
- Far Gosford Street
- Queensland Avenue and Spon End

These are all within the city-wide designated AQMA.
The majority of tube results show a slight decrease in $NO_2$ concentrations since the peak values of 2012, although not sufficient to consider revocation of the AQMA.

There is currently no AQMA declaration for $PM_{10}$. Coventry City Council has carried out continuous monitoring of $PM_{10}$ at three locations, and this has shown that the annual mean objective is not currently being exceeded. It is considered unlikely that the objective will be exceeded at these locations.

## 8.2 Conclusions from Assessment of Sources

Since the last round of Review and Assessment, there have been no new industrial sources or introduction of new exposure to industrial sources. All existing sources have not undergone any changes which may lead to increased pollutant emissions. One new biomass installation has been identified and calculations show that the emissions are below that required for a detailed assessment for both $NO_2$ and $PM_{10}$.

## 8.3 Proposed Actions

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

The assessment has identified that continued use of automatic monitoring sites is not necessary. The existing diffusion tube monitoring network will be annually reviewed to consider potential developing 'hotspots' or in preparation for larger infrastructure schemes.

No changes are required to the existing City wide AQMA.

Our next course of action will be submission of the 2016 Progress Report.

# 9 References

National Diffusion Tube Bias Adjustment Factor Spreadsheet, from http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html, version 03/15

Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 121-124 from http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html., March 2015

Local Air Quality Management Technical Guidance LAQM.TG(09), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69334/pb13081-tech-guidance-laqm-tg-09-090218.pdf , February 2009.

# Appendices

## Appendix A: QA/QC Data

### Diffusion Tube Bias Adjustment Factors

The bias adjustment for 2014 was taken from the National Diffusion Tube Bias Adjustment Factor spreadsheet, as issues with automatic monitoring data made it impossible to obtain a robust local bias adjustment factor. There were 16 studies that contributed and therefore the adjustment factor of 0.91 is thought to be representative. Figure **9.1Figure 9.1 A screenshot of the National Diffusion Tube Bias Adjustment Factor spreadsheet, showing the laboratory, preparation method and factor used.**

# National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/15

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

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

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2015

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

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

If a laboratory is not shown, we have no data for this laboratory.

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

If a preparation method is not shown, we have no data for this method at this laboratory.

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

If a year is not shown, we have no data[2]

**Step 4:** **Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.**

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

| Analysed By[1] | Method To make your selection, choose (All) from the pop-up list | Year[5] To make your selection, choose (All) | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m$^3$) | Automatic Monitor Mean Conc. (Cm) (µg/m$^3$) | Bias (B) | Tube Precision[6] | Bias Adjustment Factor (A) (Cm/Dm) |
|---|---|---|---|---|---|---|---|---|---|---|
| Gradko | 20% TEA in water | 2014 | UC | Belfast City Council | 11 | 33 | 32 | 5.6% | G | **0.95** |
| Gradko | 20% TEA in water | 2014 | R | Borough Council of King's Lynn & West Norf | 12 | 29 | 21 | 37.7% | G | **0.73** |
| Gradko | 20% TEA in water | 2014 | R | Brighton & Hove City Council | 12 | 55 | 48 | 15.2% | G | **0.87** |
| Gradko | 20% TEA in water | 2014 | R | Brighton & Hove City Council | 11 | 60 | 57 | 6.2% | G | **0.94** |
| Gradko | 20% TEA in water | 2014 | R | Cheshire West and Chester | 11 | 40 | 40 | -1.0% | G | **1.01** |
| Gradko | 20% TEA in water | 2014 | R | Dudley MBC | 12 | 36 | 31 | 18.1% | G | **0.85** |
| Gradko | 20% TEA in water | 2014 | UB | Dudley MBC | 12 | 26 | 23 | 11.2% | G | **0.90** |
| Gradko | 20% TEA in water | 2014 | R | Dudley MBC | 12 | 41 | 35 | 15.2% | G | **0.87** |
| Gradko | 20% TEA in water | 2014 | R | Dudley MBC | 12 | 52 | 60 | -12.6% | G | **1.14** |
| Gradko | 20% TEA in water | 2014 | R | Gateshead Council | 10 | 35 | 32 | 10.8% | G | **0.90** |
| Gradko | 20% TEA in water | 2014 | R | Gateshead Council | 12 | 36 | 36 | -0.1% | G | **1.00** |
| Gradko | 20% TEA in water | 2014 | R | Gateshead Council | 12 | 34 | 32 | 6.4% | G | **0.94** |
| Gradko | 20% TEA in water | 2014 | UB | Luton Borough Council | 9 | 36 | 37 | -4.0% | G | **1.04** |
| Gradko | 20% TEA in water | 2014 | KS | Marylebone Road Intercomparison | 12 | 115 | 80 | 42.8% | G | **0.70** |
| Gradko | 20% TEA in water | 2014 | R | Monmouthshire County Council | 10 | 42 | 38 | 10.1% | G | **0.91** |
| Gradko | 20% TEA in water | 2014 | R | NOTTINGHAM CITY COUNCIL | 12 | 44 | 39 | 14.9% | G | **0.87** |
| Gradko | 20% TEA in water | 2014 | | **Overall Factor[3] (16 studies)** | | | | **Use** | | **0.91** |

## QA/QC of Automatic Monitoring

Each $NO_x$ analyser is operated according to the manufacturers' instructions. Coventry City Council personnel carry out calibration every two weeks. Certified Calibration Gas is supplied by BOC and this is used to obtain a span value for each analyser during the calibration. The data is collected and scaled, and any instrumental drift is corrected during data processing. The filter is changed after every calibration. Engineers from TRL service the analysers at six monthly intervals.

A visual inspection of the TEOM analyser is carried out fortnightly, and the filter changed as required during routine site visits.

All site visits are documented to ensure any problems are recorded and any works noted. All calibrations are recorded.

## QA/QC of Diffusion Tube Monitoring

The test laboratory currently used by Coventry City Council is Gradko International Ltd. Gradko participates in the Workplace Analysis for proficiency (WASP) scheme managed by the Health and Safety Laboratory.

For the period April 2013 to February 2015 Gradko laboratory has had results which were determined to be 100% satisfactory and so has a good standard of performance with regard to WASP performance criteria.

## Appendix B: Monthly $NO_2$ Diffusion Tube Results 2014

| Site Reference | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec | Annual Mean NO2 (raw) | DC % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC01/1*N | 24.60 | 52.02 | 44.44 | 41.66 | | 39.52 | 38.44 | 43.35 | 44.30 | 45.77 | 38.53 | 57.94 | 42.78 | 92 |
| HR1 | 65.78 | 72.63 | 66.76 | 64.97 | | 65.11 | 62.21 | | | 100.75 | 56.17 | 69.64 | 69.34 | 75 |
| BH1 | 43.64 | 43.92 | 48.79 | 46.03 | | 39.78 | 40.57 | 40.78 | 55.90 | 42.05 | | 55.41 | 45.69 | 83 |
| BH2a | 51.65 | 47.11 | 56.94 | 52.74 | | | 54.68 | 52.23 | 65.83 | 49.33 | 42.59 | 63.83 | 53.69 | 83 |
| BH4 | 65.64 | 56.62 | 56.01 | 57.66 | | 58.66 | 54.09 | 47.39 | 70.52 | 54.95 | 57.23 | 66.25 | 58.64 | 92 |
| BH10 | 38.04 | 39.79 | 50.70 | 52.85 | | 51.51 | 50.23 | 45.14 | 63.54 | 49.18 | 48.75 | 52.67 | 49.31 | 92 |
| BH13 | 48.20 | 44.11 | 42.08 | 40.80 | | 31.74 | 32.34 | 36.17 | 43.00 | 45.74 | 36.56 | 51.72 | 41.13 | 92 |
| BH14 | 45.63 | 41.32 | 54.85 | 46.90 | | 46.34 | 42.80 | 45.51 | 56.36 | 48.36 | 44.09 | 61.01 | 48.47 | 92 |
| BH15i | 49.08 | 44.87 | | 57.27 | | 62.06 | | 50.01 | 68.73 | 50.00 | 54.54 | 65.54 | 55.79 | 75 |
| SW1 | 35.08 | 34.73 | 37.72 | 30.96 | | 27.42 | 27.90 | 27.09 | 32.95 | 35.90 | 38.60 | 40.48 | 33.53 | 92 |
| SW2 | 47.06 | 43.01 | | 36.12 | | 18.91 | 33.79 | 31.57 | 44.05 | 35.37 | 41.18 | 47.98 | 37.91 | 83 |
| HS3 | 58.15 | 47.02 | 59.53 | 52.27 | | 49.12 | 48.23 | 47.51 | 59.96 | 51.67 | 47.30 | 62.64 | 53.04 | 92 |
| TS3 | 64.62 | 52.42 | 65.67 | 55.98 | | 54.20 | 55.32 | | 66.86 | 50.27 | 57.21 | 58.18 | 58.07 | 83 |
| GF1 | 39.47 | | 44.75 | 41.43 | | 38.33 | 36.82 | 33.03 | 47.90 | 41.36 | 44.34 | 47.96 | 41.54 | 83 |
| QV1 | 46.82 | | 46.44 | 43.40 | | 42.58 | 42.06 | 39.34 | 53.76 | 49.16 | 43.34 | 62.89 | 46.98 | 83 |

| Site Reference | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec | Annual Mean NO2 (raw) | DC % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FS1 | 56.69 | 53.40 | 54.99 | 52.41 | | 53.41 | 52.50 | 47.66 | 72.56 | 57.83 | 58.94 | 58.10 | 56.23 | 92 |
| CS1 | 50.63 | 39.25 | 57.38 | 51.86 | | 52.37 | 54.41 | 58.19 | 62.71 | 51.14 | 57.85 | 62.59 | 54.40 | 92 |
| CS2 | 49.54 | 47.35 | 52.43 | 47.61 | | 54.60 | 52.56 | 38.29 | 65.64 | 39.03 | 48.33 | 47.25 | 49.33 | 92 |
| GS1 | 41.74 | 33.15 | 48.17 | 52.18 | | 44.85 | 46.43 | 47.63 | 61.46 | 58.35 | 45.63 | 57.78 | 48.85 | 92 |
| LON12 | 49.47 | 47.69 | 49.60 | 46.16 | | 46.05 | | | | | Lamppost moved | | 47.79 | 42 |
| JL1 | | | 37.61 | 31.74 | | 30.31 | 31.32 | | | 38.81 | 36.50 | 38.38 | 34.95 | 58 |
| SE1 | 54.39 | 51.75 | 54.48 | 47.96 | | 45.42 | 40.52 | 40.42 | 51.02 | 52.64 | 58.06 | 51.51 | 49.83 | 92 |
| SE3 | 46.82 | 51.43 | 47.78 | 43.11 | | 42.95 | 40.35 | 36.62 | 50.54 | 44.35 | 44.40 | 52.33 | 45.52 | 92 |
| QAV01 | 53.87 | 46.84 | 54.79 | 51.19 | | 49.88 | 47.94 | 42.16 | 66.93 | | 45.07 | 57.99 | 51.67 | 83 |
| QAV8 | 41.44 | | 39.63 | 36.93 | | 31.24 | 27.05 | 28.67 | 36.22 | 35.81 | | 41.67 | 35.41 | 75 |
| QAV12 | 50.91 | 45.90 | 47.25 | 38.21 | | 38.33 | 35.55 | 31.85 | 46.51 | 46.07 | | | 42.29 | 75 |
| QAV13 | 49.70 | 46.81 | 50.12 | 46.10 | | 44.31 | 37.93 | 41.70 | 52.90 | 49.79 | 53.81 | 49.91 | 47.55 | 92 |
| R1 | 35.76 | 34.31 | 39.54 | | | 35.79 | 33.25 | 29.14 | 43.63 | 34.28 | 38.77 | 45.96 | 37.05 | 83 |
| R4 | 42.12 | 42.55 | 46.53 | 41.21 | | 42.32 | 42.91 | 37.08 | 47.48 | 48.27 | 43.40 | 45.38 | 43.57 | 92 |
| R5 | 45.44 | 43.27 | 47.89 | 54.66 | | 55.74 | | 42.09 | 60.86 | 48.73 | 47.48 | 46.86 | 49.30 | 83 |
| R6 | 56.69 | 60.00 | 58.70 | 57.20 | | 56.40 | 56.29 | | | | 61.93 | 63.31 | 58.82 | 67 |
| R8 | 39.78 | 40.92 | 45.31 | 44.70 | | 45.70 | 46.07 | 35.66 | 54.70 | 39.29 | 34.95 | 42.94 | 42.73 | 92 |

| Site Reference | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec | Annual Mean NO2 (raw) | DC % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R9 | 57.95 | 58.01 | | 50.85 | | 46.67 | 40.08 | 39.37 | 51.41 | 61.73 | 54.62 | 52.18 | 51.29 | 83 |
| LR1 | 44.99 | 44.75 | 51.17 | 48.77 | | 48.34 | 44.19 | 41.03 | 53.16 | 49.96 | 51.33 | 54.00 | 48.34 | 92 |
| LR2 | 47.50 | 46.63 | 52.95 | 51.67 | | 49.98 | 45.65 | 40.00 | 63.06 | 47.18 | 35.66 | 44.06 | 47.67 | 92 |
| LR3 | 49.01 | 43.66 | 45.49 | 41.92 | | 45.21 | 45.54 | 43.38 | 53.45 | 54.23 | 61.46 | 55.29 | 48.97 | 92 |
| BRN2 | 49.27 | 47.75 | 34.13 | 44.41 | | 41.05 | 39.26 | 36.10 | 45.14 | 41.46 | 46.95 | 47.46 | 43.00 | 92 |
| BA1 | 48.51 | 49.48 | 50.55 | 49.23 | | | | | | | 42.71 | 44.40 | 47.48 | 50 |
| SS1 | 43.39 | 38.19 | 45.43 | 40.00 | | 24.36 | 40.27 | 30.91 | 52.30 | 40.77 | 48.64 | | 40.43 | 83 |
| SS2 | 48.83 | 44.11 | 46.20 | 38.35 | | 38.45 | 36.91 | 30.81 | 48.43 | 42.31 | 41.95 | 44.63 | 41.91 | 92 |
| SS3 | 45.02 | 41.45 | 45.78 | 39.14 | | 39.20 | 40.02 | 34.71 | 50.61 | 44.47 | 44.19 | 48.14 | 42.98 | 92 |
| SS5 | 42.69 | 58.80 | 61.25 | 53.94 | | 54.17 | 52.91 | 45.35 | 64.32 | 49.33 | 48.58 | 63.79 | 54.10 | 92 |
| EH1 | 35.82 | 37.35 | 40.04 | 37.23 | | | 37.99 | 33.75 | 44.43 | 34.74 | 39.07 | 51.88 | 39.23 | 83 |
| BELL1 | 59.10 | 50.91 | 47.22 | 40.43 | | 43.53 | 40.58 | 41.16 | 49.13 | 48.71 | 48.58 | 16.16 | 44.14 | 92 |
| BELL2 | 46.74 | 45.56 | 40.83 | 39.14 | | 40.18 | 37.40 | 33.85 | 43.17 | 48.55 | 51.33 | 44.02 | 42.80 | 92 |
| FGS1 | 42.39 | 41.56 | 51.58 | 45.27 | | 42.23 | 39.94 | 41.96 | 56.12 | 41.15 | 48.47 | 53.01 | 45.79 | 92 |
| FGS2 | 40.52 | 39.22 | 46.08 | 41.73 | | 41.09 | 38.60 | 36.97 | 52.56 | 42.50 | 43.89 | 46.82 | 42.72 | 92 |
| FGS3 | 41.23 | 46.19 | 49.12 | 46.63 | | 44.55 | 41.02 | 43.31 | 58.36 | 43.51 | | 54.92 | 46.88 | 83 |
| GR1 | 37.68 | 34.70 | 44.73 | 38.28 | | 37.32 | 36.40 | 34.45 | 46.61 | 39.36 | 42.87 | 48.21 | 40.06 | 92 |

| Site Reference | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec | Annual Mean NO2 (raw) | DC % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grange2 | | | | 40.80 | | 37.40 | 36.15 | 45.43 | 42.53 | | | 59.03 | 43.56 | 50 |
| Grange3 | | | | 41.33 | | 38.68 | 34.68 | 46.54 | 41.93 | | 45.85 | 58.02 | 43.86 | 58 |
| AGR1 | 51.71 | 48.11 | 37.96 | 30.93 | | 27.70 | 26.91 | 41.90 | 25.55 | 41.70 | 38.25 | 49.90 | 38.24 | 92 |
| AGR2 | | 0.41 | 34.94 | 38.14 | | 30.80 | 28.71 | | | 42.27 | 43.12 | 48.78 | 33.40 | 67 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |