



2015 Updating and Screening Assessment for Broxbourne Borough Council

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

April 2015

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|--------------------------------|---|
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Executive Summary

The UK Government published its strategic policy framework for air quality management in 1995 establishing national strategies and policies on air quality which culminated in Part IV of the Environment Act (1995). The Environment Act requires Local Authorities to undertake air quality reviews. In accordance with the Policy and Technical Guidance issued by the Department of the Environment, Food and Rural Affairs (Defra, 2009), all Local Authorities have a statutory duty to carry out a yearly assessment of air quality in their area.

The first, second and third rounds of air quality Review and Assessment have been completed by Broxbourne Borough Council (BBC), which considered all necessary pollutants. BBC declared three Air Quality Management Areas (AQMAs) in 2003, and an Action Plan was published in 2004. A detailed Assessment was submitted in 2011 which recommended a further 2 AQMA's, and an extension to one of the existing ones.

A Progress report was submitted in December 2014, reporting the 2013 diffusion tube data.

This Updating Screening Assessment (USA) Report incorporates the 2012 & 2015 USA, and 2010, 2011, 2013 & 2014 Progress Reports, and considers all of the new air quality monitoring data for this extended period. It also considers new sources or significant changes to existing sources, and any other significant local changes relevant to air quality. It is not necessary to re-assess issues that have already been adequately considered in previous rounds.

Diffusion tube monitoring data has indicated that there were 10 exceedences of the annual mean objective value for nitrogen dioxide in 2010, 2012, 2013 & 2014, and 9 exceedences in 2011.

In 2015, the council will declare the two further Air Quality Management Areas identified in the 2011 Detailed Assessment, and extend an already existing one. The council will work to produce and consult on, an updated Air Quality Action Plan to

incorporate the new AQMAs within 12 months, and will continue to monitor air quality within the district.

The Planning process has identified a new junction (A10 / College Road), and a road (High Road, Wormley) which could exceed the objective for nitrogen dioxide, which will require Detailed Assessment. A further 10 diffusion tubes will be used from 4th April 2015 onwards to further assess this, and other identified locations within the Borough.

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1 Introduction

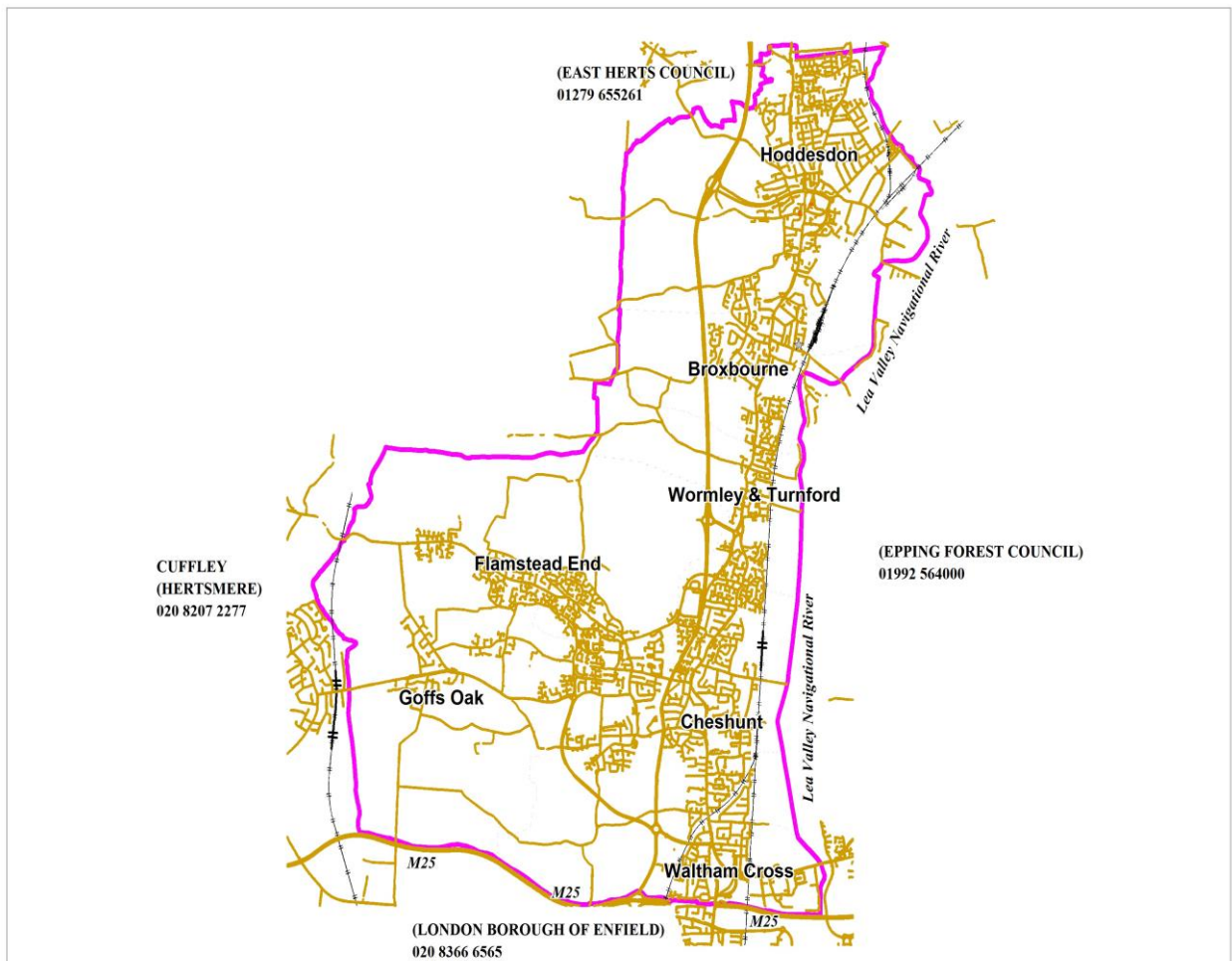
1.1 Description of Local Authority Area

Broxbourne Borough Council covers 20 square miles in south east Hertfordshire and has a population of approximately 96,000.

Broxbourne's towns of Waltham Cross, Cheshunt, Broxbourne and Hoddesdon lie along the Lea Valley's main roads and railways. The green belt protects the surrounding countryside. To the west the Borough extends over well-wooded countryside to include Goffs Oak, and the popular Lee Valley Park marks the eastern boundary. The southern boundary is marked by the M25. Although urbanised with industrial and commercial activity, the whole area retains much of its rural charm and is a favoured place to live for those working in London as there are excellent road and rail links. Broxbourne is close both to London and the attractive countryside of the Home Counties; it is a good place to live, work or locate a business.

There are six hundred companies with factories or warehousing facilities within the borough with the manufacturing, warehousing and distribution sectors being particularly well represented. The main industrial areas are around Waltham Cross and the Essex Road area of Hoddesdon.

Figure1.1 Borough of Broxbourne and neighbouring Authorities



1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 (PM₁₀) (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 | 1-hour mean | 31.12.2004 |

| | | | |
|--|---|----------------|------------|
| | exceeded more than 24 times a year | | |
| | 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 |

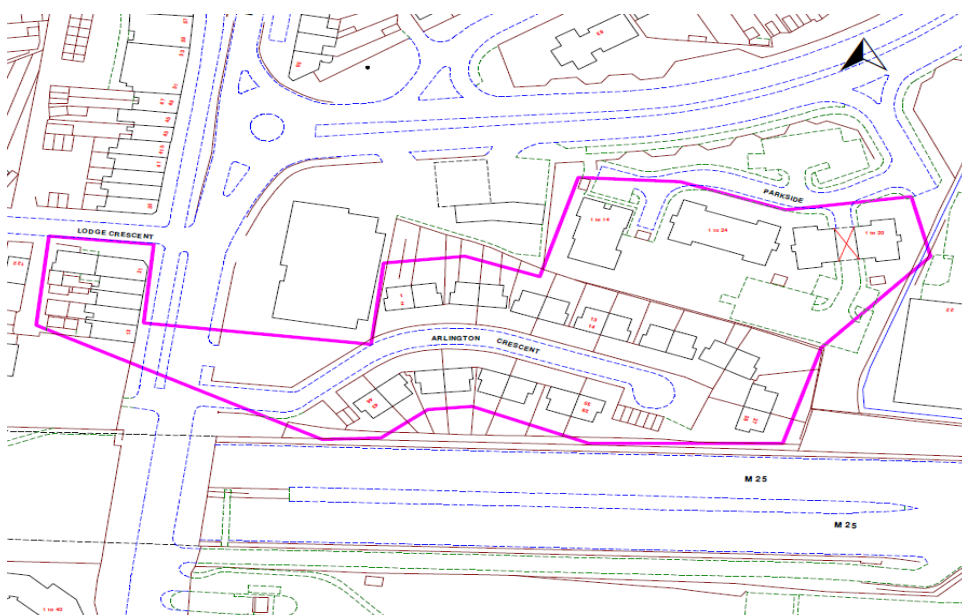
1.4 Summary of Previous Review and Assessments

The first round of review and assessment of air quality in the Borough of Broxbourne ended in August 2003 with the declaration of three Air Quality Management Areas, (AQMA) in residential areas. The main cause of poor air quality in these areas is traffic on and around the M25 motorway. The 3 Air Quality Management Areas (AQMA) are:

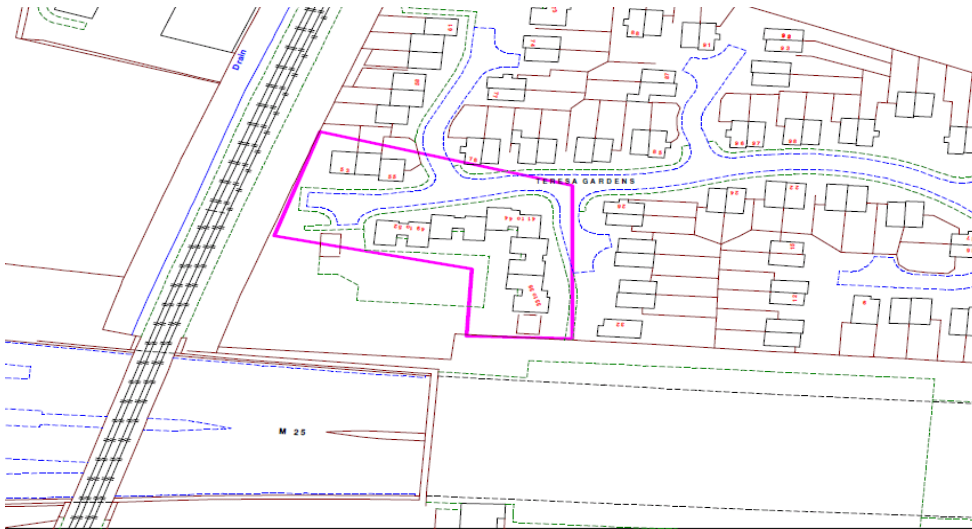
- a) Arlington Crescent and a section of Waltham Cross High Street,
- b) 33-55 Teresa Gardens Waltham Cross
- c) Tyle Kiln Cottage, Waltham Cross

Figure 1.2 Maps of Declared AQMA Boundaries

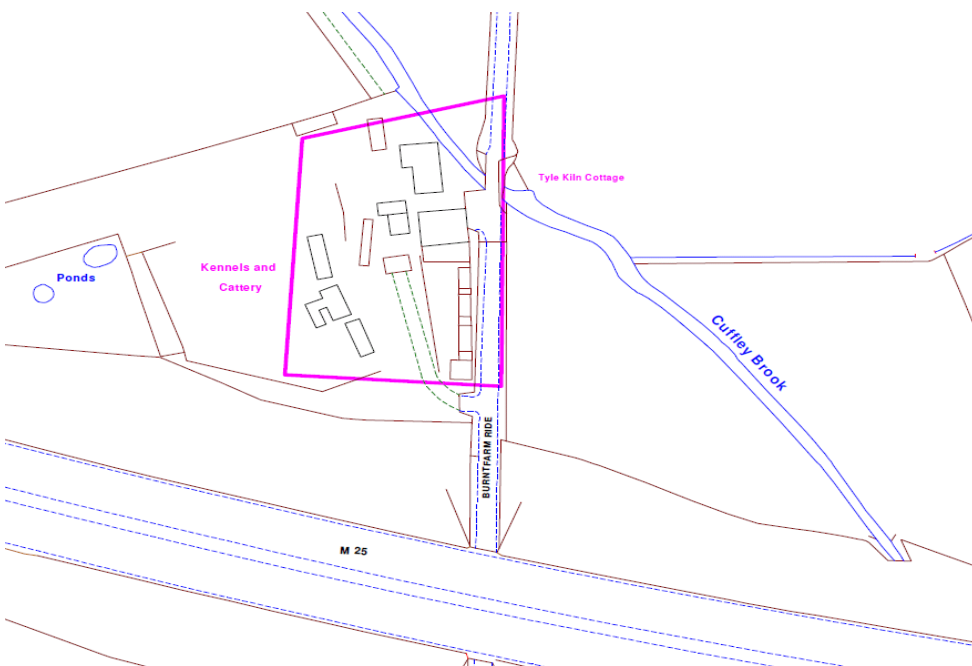
- a) Arlington Crescent, Parkside and 13-21 High Street Waltham Cross



b) 33-55 Teresa Gardens, Waltham Cross



c) Tyle Kiln Cottage, Waltham Cross



The second round of review and assessment of air quality in the Borough began with an Updating and Screening Assessment. This was completed in November 2003. It concluded that a detailed assessment was not required and this was accepted by DEFRA in December 2003. As a part of the annual review and update of air quality issues, the first Air Quality Progress Report was submitted in March 2004. A second Air Quality Progress Report was submitted to DEFRA in 2005.

Stage 3 of the review and assessment was completed, which involved detailed dispersion modelling around selected hot-spots to predict areas of exceedence of nitrogen dioxide and particulate matter. The report concluded that an exceedence of the annual mean nitrogen dioxide objective was likely along the M25 and marginal exceedences were predicted along the A10. It further concluded that an exceedence of the 24-hour particulate matter objective was likely along the M25.

In 2009 a USA was submitted to Defra, and subsequently a Detailed Assessment was submitted in 2011. The report recommended that 3 further AQMA's be declared for exceedences of NO₂ at the following locations in Waltham Cross:

- High Street / Abbey Road Roundabout (Extension to previously declared AQMA)
- Abbey Road / Eleanor Cross Road / Monarch's Way Roundabout
- Monarch's Way / Winston Churchill Way Roundabout.

A report has been submitted (April 2015) to Senior Management and Council Members at Broxbourne Borough Council recommending that these 3 AQMA's be declared in 2015 following consultation. It is proposed that an Action Plan for consultation will be published within 12 months of declaring the AQMAs.

Figure 1.3a: High Street / Abbey Road Roundabout (Proposed extension to AQMA 1 from 2011 Detailed Assessment)

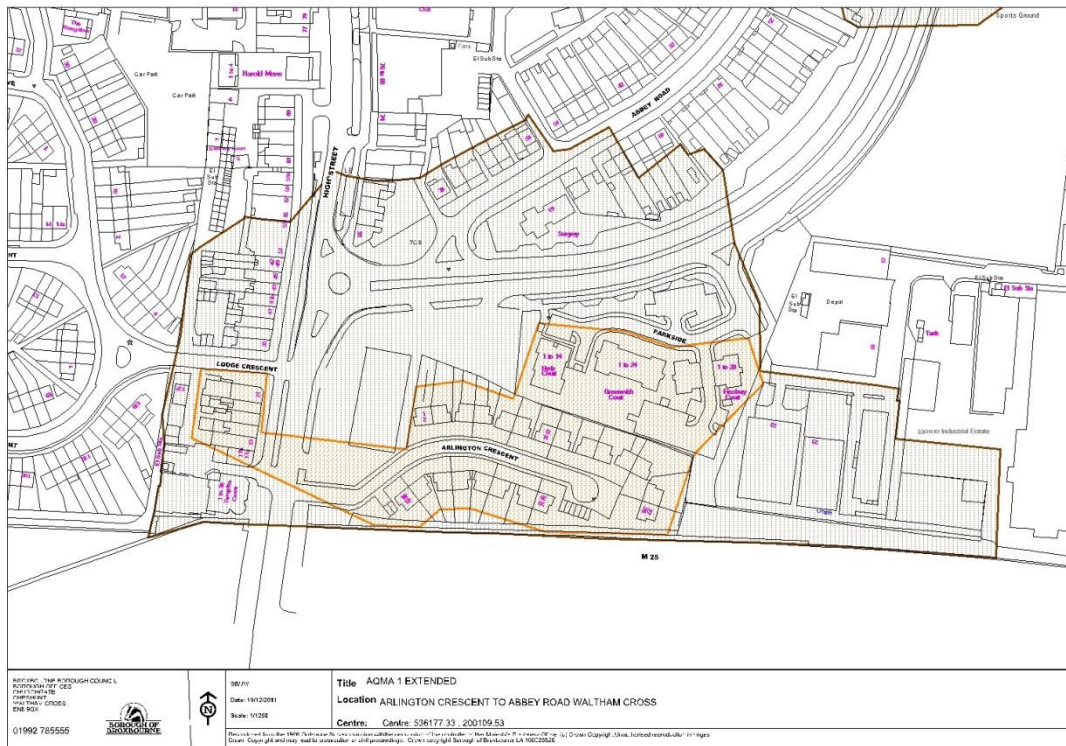
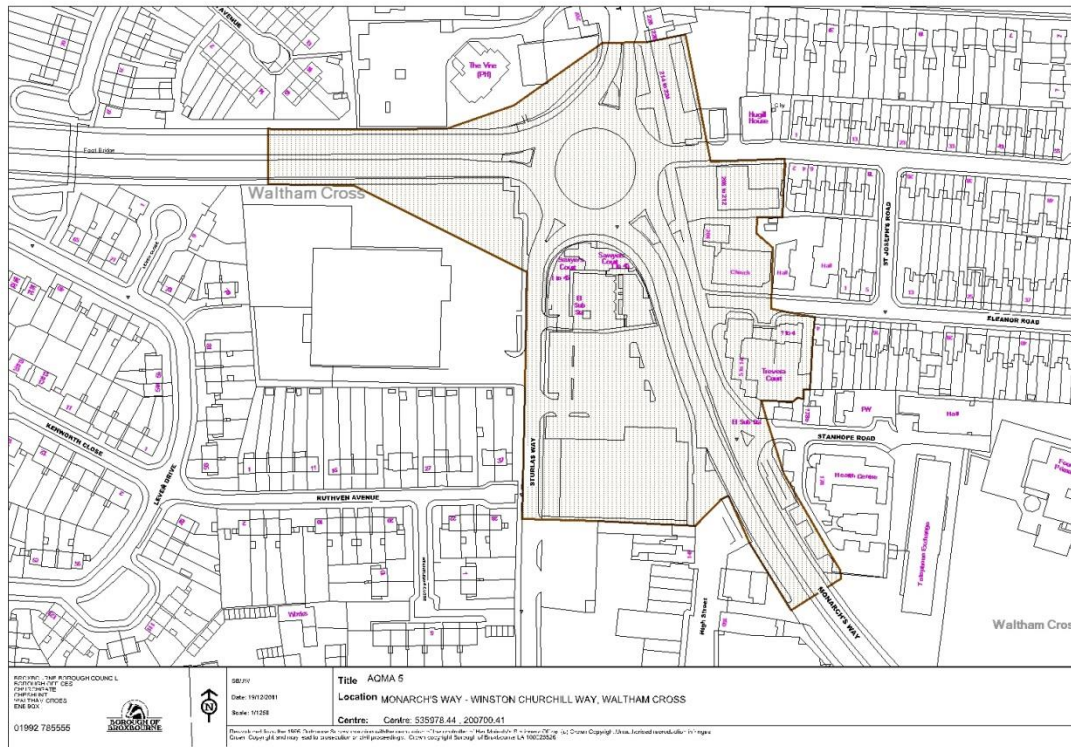


Figure 1.3b: Abbey Road / Eleanor Cross Road / Monarch's Way Roundabout (Proposed AQMA 4 from 2011 Detailed Assessment)



Figure 1.3c: Monarchs Way / Winston Churchill Way Roundabout (Proposed AQMA 5 from 2011 Detailed Assessment)



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

No automatic monitoring has been carried out during this reporting period.

2.1.2 Non-Automatic Monitoring Sites

Figure 2.2 Map of Non-Automatic Monitoring Sites

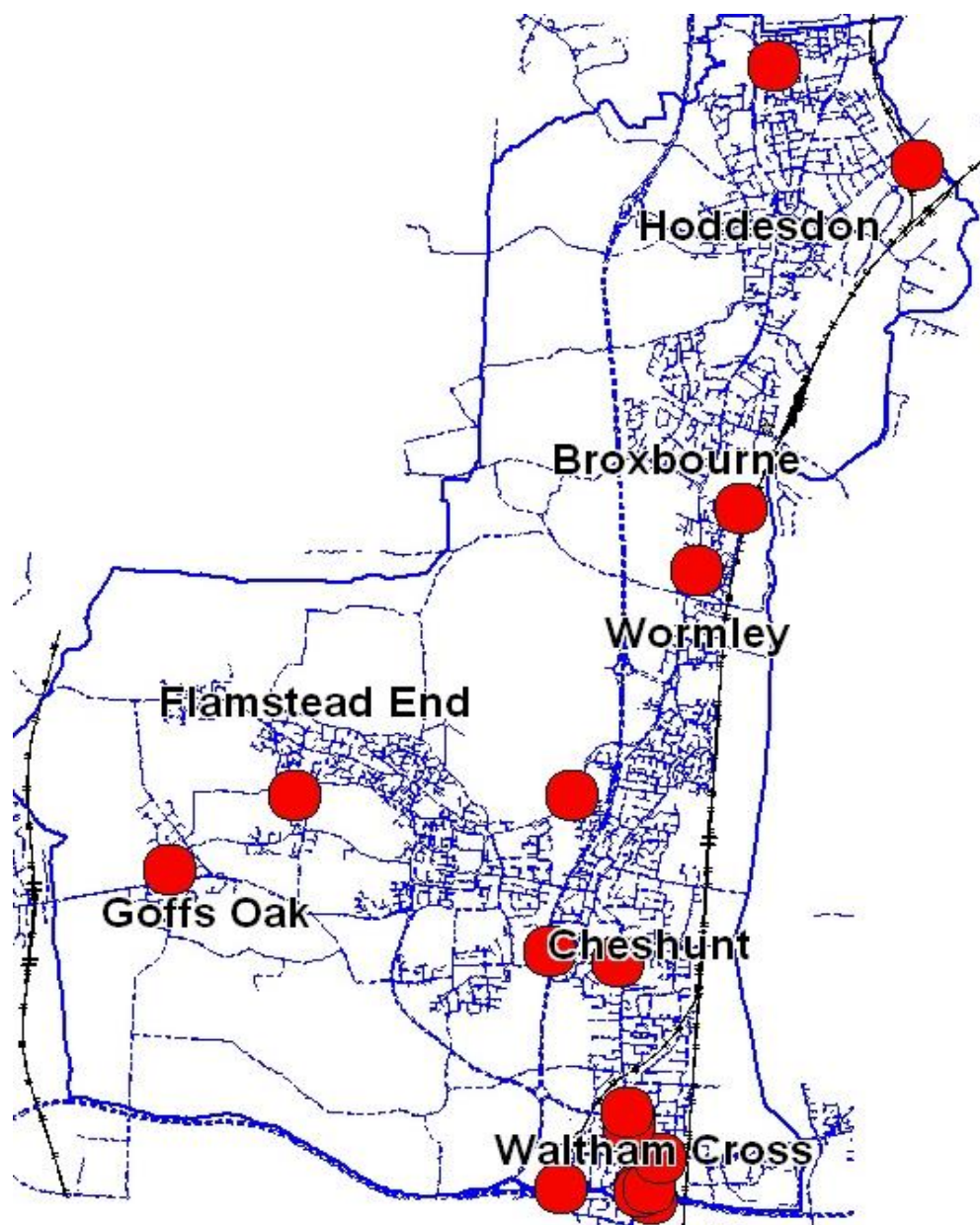


Table 2.2 Details of Non-Automatic Monitoring Sites

| 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? |
|---------|----------------------------------|------------------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| DT1 | Site Name 1 | Urban background | 332395 | 433175 | 2.5 | NO ₂ | Y | N | Y (1m) | 3.5 | Y |
| DT3 | Turners Hill Cheshunt | K | 535900 | 202200 | 2.2 | NO ₂ | N | N | Y | 1m | Y |
| DT1 | Winford Drive Broxbourne | B | 537000 | 206400 | 2.2 | NO ₂ | N | N | Y (7m) | 2m | Y |
| DT6 | Arlington Crescent Waltham Cross | M25 | 536200 | 200000 | 1.6 | NO ₂ | Y | N | Y (7m) | 3m | Y |
| DT2 | Molesworth Hoddesdon | B | 537300 | 210500 | 2.3 | NO ₂ | N | N | Y (7m) | 1m | Y |
| DT5 | Great Cambridge Road Cheshunt | K | 535300 | 202300 | 2.3 | NO ₂ | N | N | Y (10m) | 1m | Y |
| DT7 | Teresa Gardens, Waltham Cross | B | 535400 | 200100 | 2.3 | NO ₂ | Y | N | Y (4m) | 1m | Y |

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| 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? |
|----------------|-----------------------------------|------------------|----------------------------|----------------------------|------------------------|-----------------------------|-----------------|--|---|---|--|
| DT8 | High Street Waltham Cross | K | 536100 | 200100 | 2.3 | NO ₂ | N | N | Y (10m) | 1m | Y |
| DT4 | High Road, Wormley | K | 536610 | 205823 | 2.3 | NO ₂ | N | N | N | 2m | Y |
| DT17 | Colthurst Gardens, Hoddesdon | B | 535860 | 209590 | 2.3 | NO ₂ | N | N | Y (9m) | 1m | Y |
| DT13 | Parkside Waltham Cross | B | 536190 | 200100 | 2.3 | NO ₂ | N | N | Y (7m) | 6m | Y |
| DT16 | Mylne Close Cheshunt | B | 535500 | 203740 | 2.3 | NO ₂ | N | N | Y (7m) | 2m | Y |
| DT14 | Great Stockwood Rd, Cheshunt | B | 533010 | 203740 | 2.3 | NO ₂ | N | N | Y (3m) | 3m | Y |
| DT15 | The Chase Goffs Oak | B | 531900 | 203050 | 2.3 | NO ₂ | N | N | Y (10m) | 2m | Y |
| DT12 | Eleanor Cross Road, Waltham Cross | K | 536290 | 200370 | 2.3 | NO ₂ | N | N | Y (5m) | 3m | Y |

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| 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? |
|----------------|---|------------------|----------------------------|----------------------------|------------------------|-----------------------------|-----------------|--|---|---|--|
| DT9 | Sturlas Way Waltham Cross | K | 536000 | 200750 | 2.3 | NO ₂ | N | N | Y (4m) | 3m | Y |
| DT10 | Wicks Car Park Waltham Cross | B | 536000 | 200680 | 2.4 | NO ₂ | N | N | N | 1m | Y |
| DT11 | Winston Churchill Way, Waltham Cross | K | 535990 | 200800 | 2.4 | NO ₂ | N | N | N | 3m | Y |
| DT18 | Jones Road, Goffs Oak | B | 531500 | 201000 | 2.4 | NO ₂ | Y | N | Y (9m) | 6m | Y |

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

There has been no automatic monitoring at Broxbourne Borough Council over this time period.

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 (%) | 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 =0.97) |
|---------|----------------------------------|-----------|--------------|-------------------------------|-----------------------|--|---|--|
| | | | | | | | | 2014 ($\mu\text{g}/\text{m}^3$) |
| BB01 | Turners Hill Cheshunt | K | N | N | 75 | n/a | N | 44.3 |
| BB04 | Winford Drive Broxbourne | B | N | N | 58 | N | N | 20.2 |
| BB05 | Arlington Crescent Waltham Cross | M25 | Y | N | 92 | n/a | N | 76.7 |
| BB07 | Molesworth Hoddesdon | B | N | N | 83.3 | n/a | N | 30.9 |
| BB09 | Great Cambridge Road Cheshunt | K | N | N | 92 | n/a | N | 75.1 |
| BB10 | Teresa Gardens, Waltham Cross | B | Y | N | 75 | n/a | N | 37.9 |
| BB11 | High Street Waltham Cross | K | N | N | 92 | n/a | N | 73.1 |
| BB12 | High Road, Wormley | K | N | N | 92 | n/a | N | 56.8 |
| BB16 | Colthurst Gardens, Hoddesdon | B | N | N | 58 | N | N | 24.3 |
| BB17 | Parkside Waltham | B | N | N | 92 | n/a | N | 53.5 |
| BB18 | Mylns Close Cheshunt | B | N | N | 92 | n/a | N | 28.0 |

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| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 (%) | 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 =0.97) |
|---------|--------------------------------------|-----------|--------------|-------------------------------|-----------------------|--|---|--|
| | | | | | | | | 2014 ($\mu\text{g}/\text{m}^3$) |
| BB19 | Great Stockwood Rd, Cheshunt | B | N | N | 92 | n/a | N | 25.2 |
| BB20 | The Chase Goffs Oak | B | N | N | 58 | N | N | 32.6 |
| BB21 | Eleanor Cross Road, Waltham Cross | K | N | N | 92 | n/a | N | 64.0 |
| BB22 | Sturlas Way Waltham Cross | K | N | N | 92 | n/a | N | 56.1 |
| BB23 | Wicks Car Park Waltham Cross | B | N | N | 92 | n/a | N | 44.9 |
| BB24 | Winston Churchill Way, Waltham Cross | K | N | N | 92 | n/a | N | 63.4 |
| BB25 | Jones Road, Goffs Oak | B | Y | N | 0 | n/a | N | 0 |

Table 2.6 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 = 1.03) | 2011* (Bias Adjustment Factor = 0.95) | 2012* (Bias Adjustment Factor = 1.02) | 2013* (Bias Adjustment Factor = 1.01) | 2014 (Bias Adjustment Factor = 0.97) |
| BB01 | K | N | 51.8 | 43.8 | 46.5 | 52.2 | 44.3 |
| BB04 | B | N | 28.0 | 24.1 | 32.9 | 25.3 | 20.2 |
| BB05 | M25 | Y | 74.6 | 71.3 | 72.5 | 79.3 | 76.7 |
| BB07 | B | N | 28.4 | 21.9 | 34.5 | 22.9 | 30.9 |
| BB09 | K | N | 81.2 | 63.2 | 59.5 | 69.7 | 75.1 |
| BB10 | B | Y | 39.5 | 34.3 | 40.4 | 32.1 | 37.9 |
| BB11 | K | N | 70.0 | 77.8 | 77.8 | 74.9 | 73.1 |
| BB12 | K | N | 60.5 | 45.3 | 47.3 | 53.4 | 56.8 |
| BB16 | B | N | 29.9 | 27.0 | 28.8 | 28.5 | 24.3 |
| BB17 | B | N | 50.8 | 48.6 | 56.5 | 47.8 | 53.5 |
| BB18 | B | N | 28.2 | 25.9 | 28.9 | 27.6 | 28.0 |
| BB19 | B | N | 26.1 | 20.9 | 32.3 | 26.6 | 25.2 |
| BB20 | B | N | 29.8 | 24.1 | 33.8 | 25.8 | 32.6 |
| BB21 | K | N | 73.4 | 62.2 | 55.4 | 53.7 | 64.0 |
| BB22 | K | N | 51.9 | 48.8 | 59.1 | 49.5 | 56.1 |
| BB23 | B | N | 50.5 | 38.9 | 37.0 | 44.7 | 44.9 |
| BB24 | K | N | 58.6 | 57.9 | 55.0 | 66.1 | 63.4 |
| BB25 | B | Y | 29.3 | X | X | X | X |

2.2.2 PM₁₀

PM10 has not been monitored during this period.

2.2.3 Sulphur Dioxide

No Sulphur Dioxide monitoring available

2.2.4 Benzene

No Benzene monitoring available for this period.

2.2.5 Other pollutants monitored

No other pollutants monitored during this period.

2.2.6 Summary of Compliance with AQS Objectives

Broxbourne Borough Council has measured concentrations of Nitrogen Dioxide above the annual mean objective at relevant locations outside of the AQMA, and **will need to proceed to a Detailed Assessment** for: 3-23 High Road Wormley

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Broxbourne Borough Council confirms that there are no new/newly identified narrow congested streets with residential properties close to the kerb.

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

Broxbourne Borough 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.

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

3.4 Junctions

A planning application submitted to the council contained the following modelled data (Table 2.7 & 2.8), at the A10 / College Road Junction in Cheshunt. The traffic count is in excess of 10,000 vehicles per day, and there are residential properties within 10m of the kerb. The full document is available to view on the council's public access planning portal page (application ref: 07/14/1119/F). This junction has not been assessed in previous rounds, and has shown considerable growth in traffic numbers over the last 15 years. The proposal for 88 new residential units introduces new exposure. In this instance the council has not completed DMRB modelling as the following modelling has been submitted with the application.

Table 2.7: AADT Traffic flows for A10 / College Rd Junction

| Road Link | 2014 Base Case |
|-----------------------------------|----------------|
| Great Cambridge Road A10 North | 26816 |
| College Road East | 10029 |
| Great Cambridge Road A10 | 30011 |
| J2 College Road with A10 | 7775 |

Figure 2.5: The roads and receptors included in the dispersion modelling assessment at the Junction of A10 / College Road

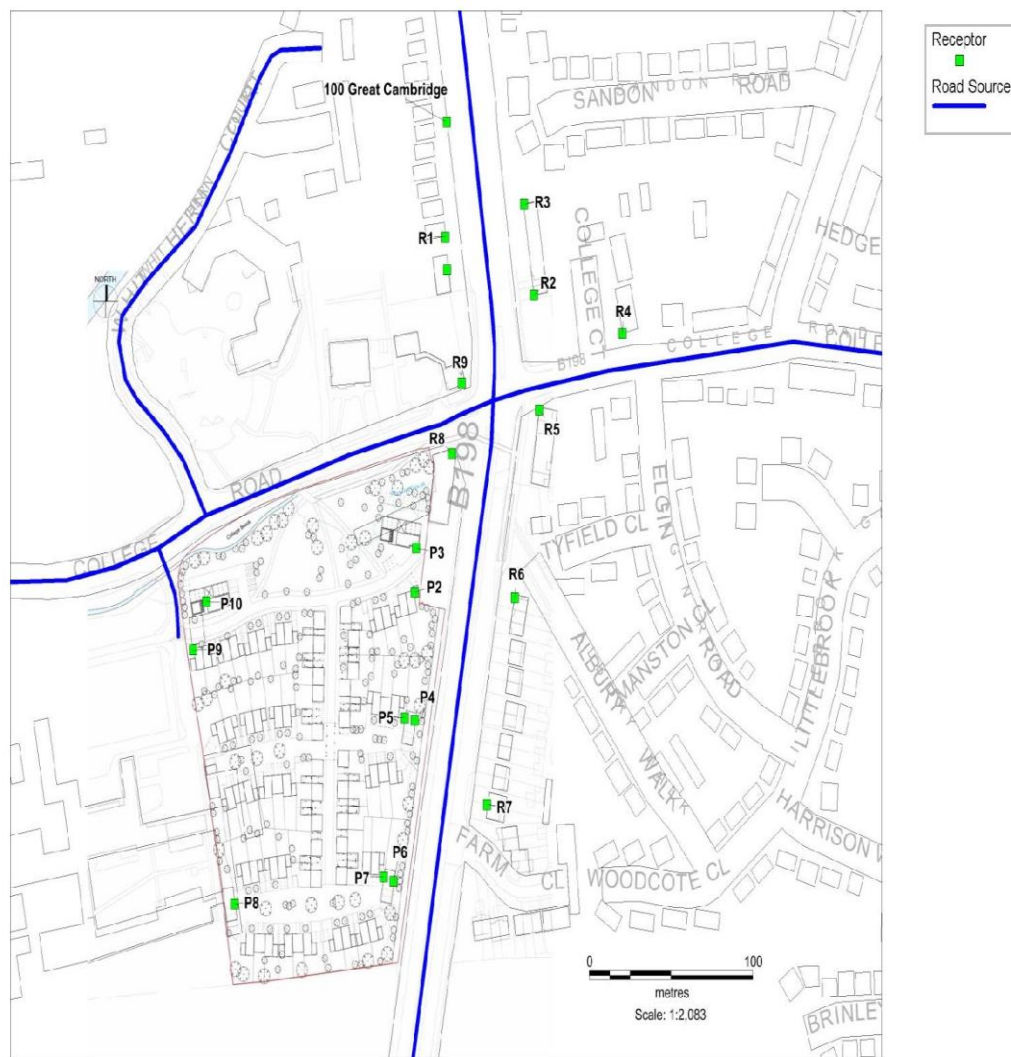
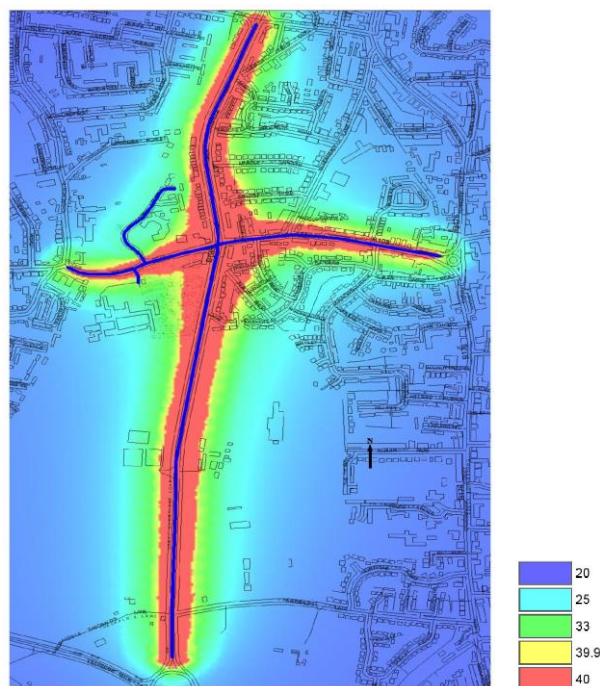


Table 2.8: Predicted long term NO₂ Annual Average Concentrations µg/m³ pollutant levels at existing & proposed residential locations.

| Receptor | 2014 | 2017 |
|-----------------------|-------|-------|
| R1 | 58.00 | 59.76 |
| R2 | 62.40 | 64.36 |
| R3 | 60.41 | 62.23 |
| R4 | 44.90 | 46.22 |
| R5 | 73.32 | 75.93 |
| R6 | 62.50 | 64.59 |
| R7 | 55.43 | 57.19 |
| R8 | 68.08 | 70.86 |
| R9 | 73.35 | 76.18 |
| P2 | 48.69 | 50.24 |
| P3 | 48.03 | 49.59 |
| P4 | 56.00 | 57.81 |
| P5 | 49.68 | 51.22 |
| P6 | 43.80 | 45.04 |
| P7 | 40.45 | 41.53 |
| P8 | 27.03 | 27.42 |
| P9 | 29.41 | 30.46 |
| P10 | 32.04 | 33.40 |
| Air Quality Objective | 40 | 40 |

**Note: the above data is modelled and not measured.*

Figure 2.6 NO_x levels modelled at A10 / College Rd Junction



Broxbourne Borough Council has assessed A newly identified junction meeting the criteria in Section A.4 of Box 5.3 in TG(09), and concluded that **it will be necessary to proceed to a Detailed Assessment for Nitrogen Dioxide** at the Junction of A10 and College Road, Cheshunt.

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

Broxbourne Borough Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

Broxbourne Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

There are no airports within the Borough. However, the authority will increase local knowledge and awareness of the impact of Luton airport and Stanstead airport on the boroughs air quality by reviewing the National Air Traffic Services, (NATS) consultation documentation in the coming year.

NATS has previously recommended a holding stack over Huntingdonshire, but the local authority (Huntingdonshire District Council) has strongly objected. NATS have suggested replacing the two local stacks ('Abbot', centred on Sudbury which is used mainly for Stanstead, and 'Lorel' over Royston, which is used for Stanstead and Luton), with three new stacks, one of which incorporates parts of South Cambridgeshire at heights of 7000 and 14,000 feet. Local councils to the site have been pro-active in objecting, and BBC will engage in the consultation due to the close proximity to both Stanstead and Luton airports.

Broxbourne Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Broxbourne Borough 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

Broxbourne Borough 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)

Broxbourne Borough 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

A 7.5 MW_{th} anaerobic digestion facility at Ratty's Lane, Hoddesdon, received planning permission from Hertfordshire County Council in 2010, and a subsequent application for a PPC permit has been submitted to the Environment Agency. The application included an air quality assessment that is sufficient for Review and Assessment purposes. No exceedences of the objectives have been predicted at relevant locations.

Broxbourne Borough Council has assessed new 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

Broxbourne Borough 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

Broxbourne Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

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

5.3 Petrol Stations

Broxbourne has 14 petrol stations within the borough. All of the sites with an annual throughput of over 2000m³ litres have been upgraded to Stage II Petrol Vapour Recovery.

Broxbourne Borough Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Broxbourne Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

There is a newly identified biomass burner operated by Norbert Dentressangle Logistics UK Ltd, (Unit G St Martins Road, Hoddesdon, Herts, EN11 0BT). Wood chippings are transferred to a 450kW (90kg/hr) burner by way of an enclosed screw feed mechanism. Burner combustion conditions are continuously monitored for oxygen and temperature, to allow the appliance to automatically adjust combustion conditions to ensure complete combustion of the wood chippings. The burner is not classed as a gasifier. Combustion emissions pass through a multi-cyclone separator for the removal of particulate matter, prior to final release of combustion gasses, through the process chimney. Burner ash is automatically removed and stored in an interlocked metal bin. Heat recovered from the combustion process is re-used within the facility to provide both space heating and to dry pallets in ovens after painting.

The emission rates are not known therefore the maximum thermal capacity of the appliance were used, and then the emission rates were estimated from the EMEP/CORINAIR Guidebook. Emission factors were given in g/GJ therefore a conversion calculation was used to convert to g/s as recommended in the technical guidance. (Calculated Emission Rates in appendix C)

Having used the recommended calculation in the technical guidance to calculate the background adjusted emission rate and compared it to the threshold emission rate, it is concluded that both the PM₁₀ and the NO₂ source do not exceed the threshold in the relevant nomogram.

Broxbourne 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

Broxbourne Borough 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

There are no areas within the borough where significant coal burning takes place, the majority of heating systems run on gas central heating or electric storage heating. The last private sector housing stock condition survey carried out in May 2003, confirmed that over 95 percent of dwellings within the borough used gas central heating as their primary source of heating. It is therefore unlikely that there are 500m by 500m areas with 100 housing burning solid fuel.

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

7 Fugitive or Uncontrolled Sources

Broxbourne Borough 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

There have been continued exceedences within the AQMAs, of the NO₂ objective.

Two further exceedences outside of the AQMAs (A10 / College Road Junction, and High Road, Wormley) have been identified, and detailed Assessments are required at these locations.

The 5 year trend across the district shows NO₂ levels to be consistent over time.

8.2 Conclusions from Assessment of Sources

The assessment of new or significantly changed sources has not identified any potential exceedences outside of the existing AQMAs.

8.3 Proposed Actions

This USA has identified the need to proceed to a detailed assessment for NO₂, (annual mean), at the following 2 locations:

1. Junction of A10 and College Road
2. High Road, Wormley.

This USA, along with consultation with the Local Planning Authority in relation to future housing allocation sites, has identified 10 new sites which require further monitoring, and new diffusion tubes have been positioned at the following locations:

Broxbourne Borough Council

| ID | Name | Type | Height (m) | Distance to kerb of nearest road (m) | Pollutant |
|------|------------------------------------|------|------------|--------------------------------------|-----------------|
| BB26 | Travel Lodge, Cheshunt | K | 2.3 | 1 | NO ₂ |
| BB27 | 59 College Road, Cheshunt | K | 2.3 | 1 | NO ₂ |
| BB28 | 214 Great Cambridge Road, Cheshunt | K | 2.3 | 1 | NO ₂ |
| BB29 | Near Brookfield Centre, Cheshunt. | K | 2.3 | 1 | NO ₂ |
| BB30 | A10 / Turnford link | K | 2.3 | 1 | NO ₂ |
| BB31 | Wormley Sports Club | K | 2.3 | 1 | NO ₂ |
| BB32 | 11 Baas Hill Close, Broxbourne | K | 2.3 | 1 | NO ₂ |
| BB33 | High Leigh / A10 | K | 2.3 | 1 | NO ₂ |
| BB34 | 27 Great Cambridge Road, Cheshunt | K | 2.3 | 1 | NO ₂ |
| BB35 | 86 College Road, Cheshunt | K | 2.3 | 1 | NO ₂ |

Next course of action:

- To move to declare the proposed AQMAs 4 & 5 and extension to AQMA 1. (June 2015)
- To prepare Detailed Assessments of NO₂ (annual mean) at the junction of A10 and College Road (2015) & High Road, Wormley (2016).
- To prepare Action Plans for public consultation AQMAs 1, 2, 3, 4 & 5. (July 2015)
- To add 10 further NO_x diffusion tube to the network.
- To submit 2016 Progress Report. (April 2016)

9 References

Air Quality Review and Assessment Website

<http://www.uwe.ac.uk/aqm/review/>

Defra Website

<http://www.defra.gov.uk/environment/airquality/local/guidance/index.htm>

Environment Agency Website

<http://www.environment-agency.gov.uk>

Environment Agency,
Apollo Court,
2 Bishops Square Business Park,
St Albans Road West,
Hatfield,
Herts,
AL10 9EX

Herts and Beds Air Quality Website

<http://www.hertsbedsair.org.uk/hertsbeds/asp/home.asp>

Hertfordshire County Council
Highways Department,
County Hall,
Pegs Lane,
Hertford,
SG13 8DQ

Kings College London Website

<http://erg.kcl.ac.uk/london/asp/information.asp?>

Kings College Environmental Research Group,
King's College London,
Room 4.
189, Franklin-Wilkins Building,
150 Stamford Street,
London,
SE1 9NH

Local Authority Air Quality Support Website

<http://www.laqmsupport.org.uk/no2qaqc.php>

Appendices

Appendix A: QA/QC Data

Appendix B: Raw data diffusion tubes

Appendix C: Biomass Boiler data

Appendix A: QA/QC Data

The diffusion tubes are supplied by Bureau Veritas and analysed by Gradko International Ltd. The preparation method used is 50% TEA in Acetone. The laboratory follows the procedures set out in the Harmonisation Practical Guidance.

Factor from Local Co-location Studies (if available)

Broxbourne Borough Council does not carry out a local co-location study

Diffusion Tube Bias Adjustment Factors

Tubes supplied by Gradko, 50% TEA in Acetone.

2010 factor: 1.03

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | | | Spreadsheet Version Number: 09/14 | | |
|--|---|--|---|-------------------|--------------------------|---|--|--|----------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies | | | | | | | | This spreadsheet will be updated at the end of March 2015 | | |
| 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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | | 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 | Step 2: Select a Preparation Method from the Drop-Down List | Step 3: Select a Year from the Drop-Down List | 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* shown in blue at the foot of the final column. | | | | | | | |
| If a laboratory is not shown, we have no data for this laboratory. | If a preparation method is not shown, we have no data for this method at this laboratory. | If a year is not shown, we have no data. | If you have your own co-location study then see footnote*. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@uk.bureauveritas.com or 0800 0327953 | | | | | | | |
| Analysed By | Method | Year | 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 | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | 50% TEA in Acetone | 2010 | R | Reading BC | 12 | 40 | 46 | -13.2% | G | 1.15 |
| Gradko | 50% TEA in Acetone | 2010 | R | East Hampshire DC | 11 | 27 | 25 | 6.5% | G | 0.94 |
| Gradko | 50% TEA in Acetone | 2010 | R | Volvothampton CC | 12 | 42 | 41 | 4.1% | G | 0.95 |
| Gradko | 50% TEA in Acetone | 2010 | R | Volvothampton CC | 12 | 38 | 38 | 0.8% | G | 0.99 |
| Gradko | 50% TEA in Acetone | 2010 | R | Exeter CC | 12 | 42 | 40 | 5.6% | G | 0.95 |
| Gradko | 50% TEA in Acetone | 2010 | R | Levensham Council | 10 | 74 | 51 | 46.0% | G | 0.69 |
| Gradko | 50% TEA in Acetone | 2010 | B | LB Brent | 10 | 28 | 28 | -1.5% | G | 1.01 |
| Gradko | 50% TEA in Acetone | 2010 | R | Vorthing BC | 10 | 44 | 42 | 6.0% | G | 0.94 |
| Gradko | 50% TEA in Acetone | 2010 | B | LB Brent | 10 | 28 | 28 | -1.5% | G | 1.01 |
| Gradko | 50% TEA in Acetone | 2010 | R | LB Richmond | 12 | 39 | 41 | -6.7% | G | 1.06 |
| Gradko | 50% TEA in Acetone | 2010 | B | LB Richmond | 12 | 28 | 26 | 4.8% | G | 0.95 |
| Gradko | 50% TEA in Acetone | 2010 | UB | Reading BC | 9 | 20 | 26 | -29.5% | G | 1.26 |
| Gradko | 50% TEA in Acetone | 2010 | UB | Sandwell MBC | 12 | 27 | 30 | -10.2% | G | 1.11 |
| Gradko | 50% TEA in Acetone | 2010 | R | Sandwell MBC | 12 | 43 | 47 | -7.3% | G | 1.08 |
| Gradko | 50% TEA in Acetone | 2010 | R | Sandwell MBC | 12 | 32 | 40 | -18.6% | S | 1.23 |
| Gradko | 50% TEA in Acetone | 2010 | UB | Sandwell MBC | 11 | 19 | 23 | -15.9% | S | 1.19 |
| Overall Factor* (16 studies) | | | | | | | | Use | 1.03 | |

2011 factor: 0.95

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | | Spreadsheet Version Number: 09/14 | | | |
|--|--------------------|---|-----------|--|------------------------------|---|--|----------|----------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies | | | | | | | This spreadsheet will be updated at the end of March 2015 | | | |
| 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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | 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 | | Step 2: Select a Preparation Method from the Drop-Down List | | Step 3: Select a Year from the Drop-Down List | | Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor shown in blue at the foot of the final column. | | | | |
| If a laboratory is not shown, we have no data for this laboratory. | | If a preparation method is not shown, we have no data for this method at this laboratory. | | If a year is not shown, we have no data. | | If you have your own co-location study then see footnote*. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@uk.bureauveritas.com or 0800 0327953 | | | | |
| Analysed By | Method | Year | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m³) | Automatic Monitor Mean Conc. (Cm) (µg/m³) | Bias (B) | Tube Precision | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | 50% TEA in acetone | 2011 | R | London Borough of Richmond upon Thames | 12 | 38 | 40 | -4.1% | G | 1.04 |
| Gradko | 50% TEA in acetone | 2011 | B | London Borough of Richmond upon Thames | 12 | 28 | 26 | 6.0% | P | 0.94 |
| Gradko | 50% TEA in acetone | 2011 | UB | Reading Borough Council | 12 | 22 | 24 | -5.4% | G | 1.06 |
| Gradko | 50% TEA in Acetone | 2011 | R | Worthing Borough Council | 11 | 43 | 38 | 13.1% | G | 0.88 |
| Gradko | 50% TEA in acetone | 2011 | R | Reading Borough Council | 10 | 38 | 43 | -10.8% | G | 1.12 |
| Gradko | 50% TEA in acetone | 2011 | R | Vest Berkshire Council | 11 | 41 | 44 | -6.7% | G | 1.07 |
| Gradko | 50% TEA in acetone | 2011 | K | Marblebone Road Intercomparison | 12 | 98 | 100 | -2.0% | G | 1.02 |
| Gradko | 50% TEA in acetone | 2011 | R | Levensham Council | 12 | 80 | 48 | 66.4% | P | 0.60 |
| Gradko | 50% TEA in acetone | 2011 | R | Volvothampton City | 12 | 38 | 36 | 6.4% | G | 0.94 |
| Gradko | 50% TEA in acetone | 2011 | R | Volvothampton City | 12 | 39 | 33 | 17.6% | G | 0.95 |
| Gradko | 50% TEA in acetone | 2011 | R | Volvothampton City | 9 | 34 | 39 | -12.1% | G | 1.14 |
| Gradko | 50% TEA in acetone | 2011 | R | East Hampshire District Council | 11 | 24 | 22 | 9.1% | G | 0.92 |
| Gradko | 50% TEA in Acetone | 2011 | R | Stevenage Borough Council | 13 | 35 | 30 | 16.3% | G | 0.86 |
| Gradko | 50% TEA in Acetone | 2011 | UB | London Borough of Beale | 11 | 26 | 23 | 11.7% | G | 0.90 |
| Gradko | 50% TEA in Acetone | 2011 | SU | London Borough of Beale | 10 | 28 | 28 | -3.5% | G | 1.04 |
| Gradko | 50% TEA in Acetone | 2011 | SU | London Borough of Beale | 9 | 27 | 28 | -3.6% | G | 0.96 |
| Gradko | 50% TEA in Acetone | 2011 | R | London Borough of Beale | 11 | 53 | 44 | 21.6% | G | 0.82 |
| Gradko | 50% TEA in acetone | 2011 | UB | Norwich City Council | 10 | 16 | 13 | 9.2% | G | 0.92 |
| Gradko | 50% TEA in acetone | 2011 | UB | Sandwell Metropolitan Borough Council | 12 | 24 | 23 | 3.1% | G | 0.97 |
| Gradko | 50% TEA in acetone | 2011 | R | Sandwell Metropolitan Borough Council | 10 | 42 | 41 | 1.0% | G | 0.99 |
| Gradko | 50% TEA in acetone | 2011 | R | LB Newham | 12 | 40 | 47 | -15.5% | G | 1.18 |
| Gradko | 50% TEA in acetone | 2011 | R | London Borough of Hounslow | 12 | 53 | 51 | 3.7% | G | 0.96 |
| Gradko | 50% TEA in acetone | 2011 | R | London Borough of Croydon | 9 | 46 | 41 | 11.9% | P | 0.89 |
| Gradko | 50% TEA in acetone | 2011 | KS | London Borough of Croydon | 12 | 61 | 61 | 0.1% | G | 1.00 |
| Gradko | 50% TEA in acetone | 2011 | R | London Borough of Hounslow | 10 | 59 | 56 | 4.9% | P | 0.95 |
| | | | | | Overall Factor* (25 studies) | | Use | 0.95 | | |

2012 factor: 1.02

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | | Spreadsheet Version Number: 09/14 | | | | | | |
|--|--|---|------|--|---------------------------------------|--|---|--------------------------|---|--|----------|-----------------------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies | | | | | | | This spreadsheet will be updated at the end of March 2015 | | | | | | |
| 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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | 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: | | Step 2: | | Step 3: | | Step 4: | | | | | | | |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List | | Select a Preparation Method from the Drop-Down List | | Select a Year from the Drop-Down List | | 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 shown in blue at the foot of the final column. | | | | | | | |
| If a laboratory is not chosen, we have no data for this laboratory. | | If a preparation method is not chosen, we have no data for this method at this laboratory. | | If a year is not chosen, we have no data for this year. | | If you have your own co-location study then see footnote*. 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 ² <small>To make your selection, choose (M) from the pop-up list</small> | | Year ³ <small>To make your selection, choose (M)</small> | | Local Authority | | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$) | Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$) | Bias (B) | Tube Precision ⁴ | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | | 50% TEA in Acetone | 2012 | SU | London Borough of Bexley | 10 | 26 | 28 | -6.9% | G | | 1.07 | |
| Gradko | | 50% TEA in Acetone | 2012 | SU | London Borough of Bexley | 11 | 27 | 26 | 2.7% | P | | 0.97 | |
| Gradko | | 50% TEA in Acetone | 2012 | R | London Borough of Bexley | 11 | 49 | 46 | 6.3% | G | | 0.94 | |
| Gradko | | 50% TEA in acetone | 2012 | R | Vest Berkshire Council | 11 | 42 | 46 | -7.0% | G | | 1.08 | |
| Gradko | | 50% TEA in acetone | 2012 | R | Vest Berkshire Council | 12 | 25 | 27 | -6.5% | G | | 1.07 | |
| Gradko | | 50% TEA in acetone | 2012 | R | Volverhampton CC | 12 | 40 | 49 | -18.4% | P | | 1.24 | |
| Gradko | | 50% TEA in acetone | 2012 | R | Volverhampton CC | 12 | 37 | 34 | 11.1% | G | | 0.90 | |
| Gradko | | 50% TEA in acetone | 2012 | R | Sandwell Metropolitan Borough Council | 11 | 46 | 45 | 0.6% | G | | 0.99 | |
| Overall Factor* (21 studies) | | | | | | | | | | | Use | 1.02 | |

2013 factor: 1.01

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | | Spreadsheet Version Number: 09/14 | | | |
|--|---|---|------------------------|---|--------------------------|---|--|----------|-----------------------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies | | | | | | | This spreadsheet will be updated at the end of March 2015 | | | |
| 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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | 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 4: | | | |
| Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List | | Step 2: Select a Preparation Method from the Drop-Down List | | Step 3: Select a Year from the Drop-Down List | | 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* shown in blue at the foot of the final column. | | | | |
| If a laboratory is not chosen, we have no data for this laboratory. | | If a preparation method is not chosen, we have no data for this method or the laboratory. | | If a year is not chosen, we have no data for this year. | | If you have your own co-location study then see footnote*. 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 ² <small>To make your selection, choose (M) from the pop-up list</small> | Year ³ <small>To make your selection, choose (M)</small> | Site Type ⁴ | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$) | Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$) | Bias (B) | Tube Precision ⁵ | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | 50% TEA in acetone | 2013 | R | West Berkshire Council | 12 | 39 | 42 | -6.8% | G | 1.07 |
| Gradko | 50% TEA in acetone | 2013 | R | West Berkshire Council | 10 | 21 | 24 | -9.5% | G | 1.10 |
| Gradko | 50% TEA in acetone | 2013 | R | London Borough of Richmond upon Thames | 11 | 41 | 40 | 4.4% | G | 0.96 |
| Gradko | 50% TEA in acetone | 2013 | R | London Borough of Richmond upon Thames | 9 | 50 | 43 | 15.8% | G | 0.86 |
| Gradko | 50% TEA in acetone | 2013 | B | London Borough of Richmond upon Thames | 11 | 26 | 25 | 4.7% | G | 0.95 |
| Gradko | 50% TEA in Acetone | 2013 | SU | London Borough of Bexley | 12 | 28 | 27 | 2.2% | G | 0.98 |
| Gradko | 50% TEA in Acetone | 2013 | R | London Borough of Bexley | 11 | 60 | 51 | 16.8% | G | 0.86 |
| Gradko | 50% TEA in acetone | 2013 | R | East Hampshire District Council | 12 | 24 | 24 | 3.7% | G | 0.96 |
| Gradko | 50% TEA in acetone | 2013 | R | Royal Borough Windsor and Maidenhead | 10 | 35 | 46 | -23.4% | G | 1.30 |
| Gradko | 50% TEA in acetone | 2013 | R | Royal Borough Windsor and Maidenhead | 12 | 41 | 46 | -10.3% | G | 1.11 |
| Gradko | 50% TEA in acetone | 2013 | R | Worthing Borough Council | 12 | 41 | 40 | 2.7% | G | 0.97 |
| Gradko | 50% TEA in acetone | 2013 | R | London Borough of Croydon | 9 | 48 | 50 | -4.3% | P | 1.05 |
| Gradko | 50% TEA in acetone | 2013 | KS | London Borough of Croydon | 10 | 69 | 71 | -2.5% | G | 1.03 |
| Gradko | 50% TEA in acetone | 2013 | UB | Norwich City Council | 11 | 13 | 15 | -9.9% | G | 1.11 |
| Gradko | 50% TEA in acetone | 2013 | KS | Marglebone Road Intercomparison | 11 | 90 | 81 | 10.6% | G | 0.90 |
| Gradko | 50% TEA in acetone | 2013 | R | Volverhampton CC | 10 | 43 | 41 | 6.3% | G | 0.94 |
| Gradko | 50% TEA in acetone | 2013 | R | Volverhampton CC | 12 | 35 | 32 | 8.6% | G | 0.92 |
| Gradko | 50% TEA in acetone | 2013 | UB | Reading Borough Council | 12 | 23 | 27 | -12.3% | G | 1.14 |
| Gradko | 50% TEA in acetone | 2013 | R | Reading Borough Council | 12 | 41 | 44 | -6.5% | G | 1.07 |
| Gradko | 50% TEA in acetone | 2013 | SU | London Borough of Bexley | 12 | 28 | 28 | -0.3% | G | 1.00 |
| Gradko | 50% TEA in acetone | 2013 | | Overall Factor* (20 studies) | | | | | Use | 1.01 |

2014 factor: 0.97

| 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 | | | | | | This spreadsheet will be updated at the end of June 2015 | | | | |
| 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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | 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: | | Step 2: | | Step 3: | | Step 4: | | | | |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List | | Select a Preparation Method from the Drop-Down List | | Select a Year from the Drop-Down List | | 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* shown in blue at the foot of the final column. | | | | |
| If a laboratory is not chosen, we have no data for this laboratory. | | If a preparation method is not chosen, we have no data for this method on this laboratory. | | If a year is not chosen, we have no data | | If you have your own co-location study then see footnote*. 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 ² <small>To make your selection, choose (M) from the pop-up list</small> | Year ³ <small>To make your selection, choose (M)</small> | 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 ⁴ | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | 50% TEA in acetone | 2014 | R | East Hampshire District Council | 12 | 25 | 23 | 10.9% | G | 0.90 |
| Gradko | 50% TEA in acetone | 2014 | R | London Borough of Croydon | 11 | 48 | 46 | 4.5% | P | 0.96 |
| Gradko | 50% TEA in acetone | 2014 | R | London Borough of Richmond upon Thames | 10 | 39 | 36 | 6.2% | G | 0.94 |
| Gradko | 50% TEA in acetone | 2014 | R | London Borough of Richmond upon Thames | 12 | 48 | 42 | 15.2% | G | 0.87 |
| Gradko | 50% TEA in acetone | 2014 | B | London Borough of Richmond upon Thames | 11 | 24 | 25 | -4.0% | G | 1.04 |
| Gradko | 50% TEA in acetone | 2014 | KS | Marglebone Road Intercomparison | 12 | 92 | 80 | 14.8% | G | 0.87 |
| Gradko | 50% TEA in acetone | 2014 | UB | Norwich City Council | 12 | 13 | 14 | -6.2% | G | 1.07 |
| Gradko | 50% TEA in acetone | 2014 | R | Reading Borough Council | 11 | 42 | 41 | 3.6% | G | 0.97 |
| Gradko | 50% TEA in acetone | 2014 | R | Worthing Borough Council | 12 | 43 | 51 | -15.2% | G | 1.18 |
| Gradko | 50% TEA in acetone | 2014 | | Overall Factor* (9 studies) | | | | | Use | 0.97 |

Discussion of Choice of Factor to Use

No local bias adjustment factor was available so the national adjustment factors were used. This is therefore considered a conservative measure.

PM Monitoring Adjustment

No PM monitoring has taken place.

Short-term to Long-term Data Adjustment

Short to long-term adjustment has not been conducted, as the only 3 sites with less than 75% data capture (BB04 / 16 / 20) are background sites which have annual means (based on 58% data capture) of 25.3, 28.5 & 25.8 respectively, and therefore do not represent a risk of exceeding the objective.

QA/QC of Automatic Monitoring

Broxbourne Borough Council has not carried out automatic monitoring during this period.

QA/QC of Diffusion Tube Monitoring

WASP results: Gradko International: 100%

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent HSL WASP NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of $\leq \pm 2$ as defined above.

| WASP Round | WASP R117 | WASP R118 | WASP R119 | WASP R120 | WASP R121 | WASP R122 | WASP R123 | WASP R124 |
|--|-------------------|-----------------------|-------------------------|----------------------|-------------------|-----------------------|-------------------------|----------------------|
| Round conducted in the period | April – June 2012 | July – September 2012 | October – December 2012 | January – March 2013 | April – June 2013 | July – September 2013 | October – December 2013 | January – March 2014 |
| Aberdeen Scientific Services | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | NR [2] | 75 % |
| Cardiff Scientific Services | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Edinburgh Scientific Services | 100 % | 100 % | 100 % | 100 % | 100 % | 75 % | 100 % | 100 % |
| Environmental Services Group, Didcot [1] | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | |
| Exova (formerly Clyde Analytical) | 0 % | 100 % | 25 % | 75 % | NR [2] | NR [2] | NR [2] | 50 % |
| Glasgow Scientific Services | 50 % | 100 % | 100 % | 50 % | 25 % | 100 % | 100 % | 100 % |
| Gradko International [1] | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Kent Scientific Services | 100 % | 75 % | 100 % | 50 % | 75 % | 100 % | 100 % | 100 % |
| Kirklees MBC | 100 % | 75 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Lambeth Scientific Services | 100 % | 0 % | 100 % | 100 % | 0 % | 50 % | 75 % | 25 % |
| Milton Keynes Council | 100 % | 75 % | 100 % | 50 % | 100 % | 75 % | 75 % | 75 % |
| Northampton Borough Council | 100 % | 100 % | 100 % | 0 % | 100 % | 100 % | 100 % | 100 % |
| Somerset Scientific Services | 100 % | 100 % | 100 % | 100 % | 100 % | 75 % | 100 % | 100 % |
| South Yorkshire Air Quality Samplers | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % |
| Staffordshire County Council | 100 % | 75 % | 100 % | 50 % | 100 % | 100 % | 100 % | 100 % |
| Tayside Scientific Services (formerly Dundee CC) | 100 % | 100 % | 100 % | 75 % | 100 % | 100 % | 100 % | 100 % |
| West Yorkshire Analytical Services | 75 % | 50 % | 100 % | | 100 % | 50 % | 100 % | 75 % |

[1] Participant subscribes to two sets of test samples (2 x 4 test samples) in each WASP PT round.

[2] NR Not reported

11. *Journal of the American Medical Association*, 2000; 284: 2669-2674.

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Appendix C

Data used to assess biomass burner at Norbert Dentressangle Logistics UK Ltd,
(Unit G St Martins Road, Hoddesdon, Herts, EN11).

Calculated Emission Rates

| | Emission Rate, g/s | Background Concentration $\mu\text{g}/\text{m}^3$ | Background adjusted emission rate, g/s | Threshold emission rate for 5m effective stack height, g/s |
|------------------|--------------------|---|--|--|
| PM ₁₀ | 0.033 | 19.26 | 0.0026 | 0.0247 |
| NO ₂ | 0.075 | 20.46 | 0.0038 | 0.1133 |