

Review and assessment of air quality

Updating and Screening Assessment 2015

Action Plan Progress Report

In fulfilment of Part IV of the Environment Act 1995

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Executive Summary

The whole of the London Borough of Barnet has been an Air Quality Management Area (AQMA) for the nitrogen dioxide annual mean objective and PM10 particulate daily mean objective since 2001. In 2010 the AQMA was amended to include the one-hour mean for nitrogen dioxide due to elevated concentrations at Golders Green Bus Station and at High Street locations across the borough.

This Updating and Screening Assessment summarises the monitoring data for 2014. The long term data trends from the air quality monitoring stations are very encouraging. There continues to be a steady and consistent reduction in NO₂ concentrations which will be further aided by cleaner fuels/technologies, change in transport habits and future legislation. The results from the background site at Chalgrove School show that large areas of the borough away from major roads enjoy air which is below the NO₂ annual mean objective of 40 µg/m³.

Measured concentrations of PM10 at the two air quality monitoring stations do not exceed the air quality objectives. However there are locations including the major junctions in the borough that have been predicted to exceed the objectives with air quality modelling. Exceedences in these locations would be because of higher traffic flow on major roads, especially during peak times and at junctions where there are a large number of stationary vehicles. For this reason, it has been decided to maintain the AQMA for particulates.

The report also assesses whether there are any new or newly identified sources that may require a Detailed Assessment of air quality. The findings are that no additional detailed assessment is required at this stage.

This report also provides a progress report on the Council's Air Quality Action Plan and work being undertaken for the Mayor's Air Quality Fund.

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Appendix A Tally Ho and Chalgrove AQMS Yearly Reports

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1 Introduction

1.1 Description of Local Authority Area

The 2011 census revealed that Barnet is the second largest London Borough by population (356400) and is projected to be the largest by mid-2015. It is the fourth largest London borough by area (86.7 sq km) and home to a growing and diverse population. It is the 10th largest single tier authority in England and Wales. About 38% of the borough is undeveloped, 28% is Green Belt and 8% is metropolitan open land (which includes around 200 parks, allotments, playing fields and agricultural land). The rest of the borough is made up of suburban areas. Significant growth in Barnet's population and economy is expected over the next twenty years.

Major developments are planned in Barnet over the next 10 to 15 years which will see significant population growth in new and improved neighbourhoods, and significant investment in supporting facilities and infrastructure.

The range of projects include the regeneration of our four largest estates and the development of the three strategic growth areas identified in the London Mayor's Plan – the Cricklewood, Brent Cross and West Hendon Regeneration Area, Colindale and Mill Hill East.

Road traffic is the most significant source of air pollution in Barnet. We have several major roads including the M1, A406, A1, A41 as well as busy High Streets.

1.2 Purpose of Report

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

Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

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

1.3 Air Quality Objectives

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

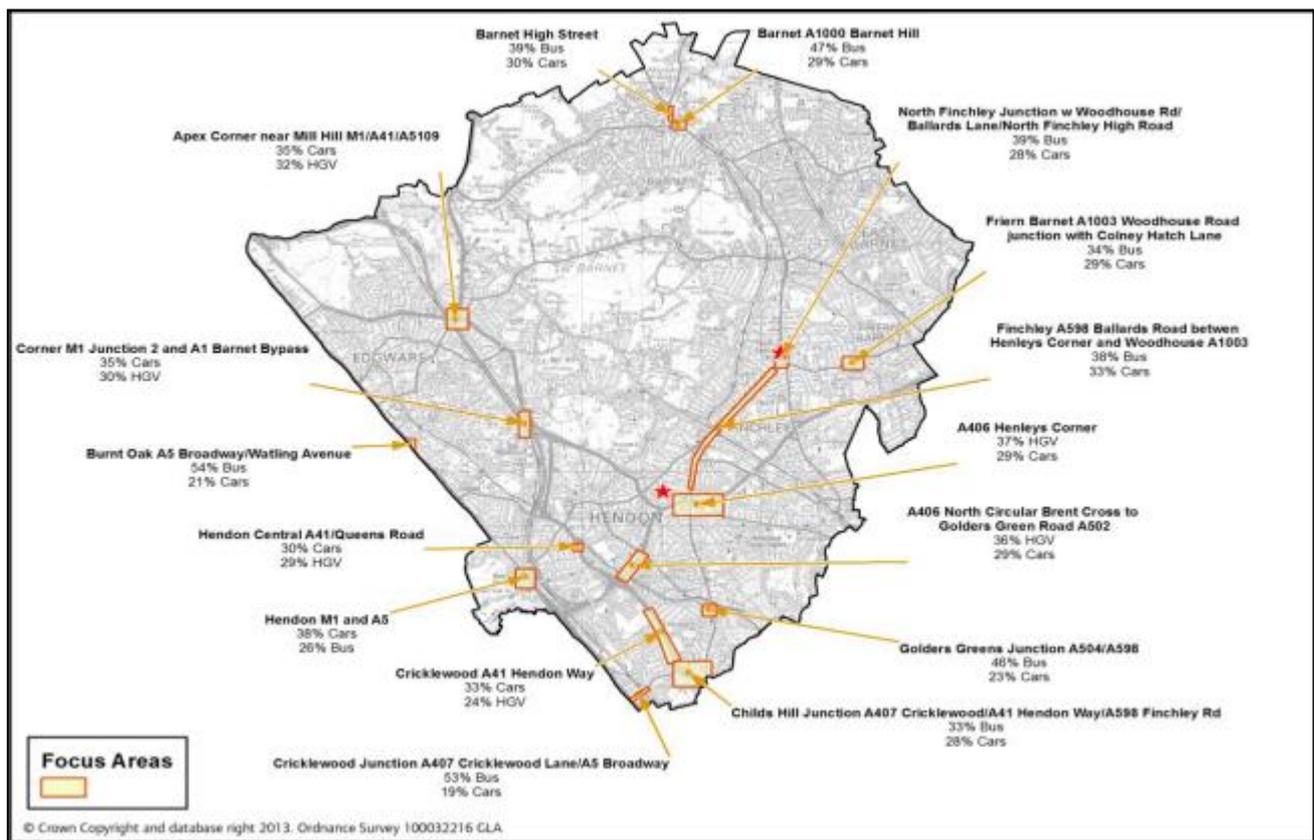
Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005

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Particles (PM₁₀) (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

Figure 1.1 Air Quality 'Focus Areas' Within Barnet



1.4 Summary of Previous Review and Assessments

In April 2001, the whole borough was designated an Air Quality Management Area (AQMA). This was due to the predicted exceedences of the annual mean objective for nitrogen dioxide (NO₂) and the 24-hour mean objective for particulates (PM₁₀). Traffic along the main roads in the borough formed the primary source of the pollutants. The maps of the modelled areas which show the exceedences are provided within the appendices.

The Council's Air Quality Action Plan was first published in 2001. Annual progress reports have been submitted each year.

The second round of review and assessment resulted in a Detailed Assessment of the one-hour mean nitrogen dioxide objective at two of the borough's bus stations – Golders Green and Mill Hill Broadway. Computer modelling again confirmed that the objective was being exceeded at Golders Green bus station more than the limit of 18 times in one year. A map of the modelled concentrations within the bus station can be found within the appendices.

In 2009 a modelling study indicated that the one-hour mean objective for nitrogen dioxide was being exceeded at certain other hotspots in the borough. Monitoring commenced in January 2009 in High Street locations. This confirmed a widespread increase of the hourly mean in areas where people may reasonably be expected to spend one hour or more.

The original AQMA Order was amended in July 2010 to include the one hour mean objective for nitrogen dioxide for the whole borough following approval from the GLA and DEFRA.

The third round of review and assessment started with an Updating and Screening Assessment submitted in July 2009. This concluded that there had been no significant changes and that no detailed assessments were necessary. Similarly, the Annual Progress Reports in 2010 and 2011 concluded that there had been no significant changes in the borough.

The fourth round of review and assessment concluded in 2014. No detailed assessments of air quality were necessary.

This Updating and Screening Assessment report starts the fifth round of review and assessment. The report also summarises the latest actions being taken to improve air quality as part of the Air Quality Action Plan.

Table 1.2 Summaries of Previous Key Stages and Reports

Report	Date	Outcome
Stage Four	2001	AQMA declared for whole Borough for annual mean of NO ₂ and daily mean for PM ₁₀ .
USA 2004	2004	No significant changes since first round; no further action required.
USA 2006	2006	Detailed Assessment Required for the one-hour mean nitrogen dioxide Objectives at Golders Green and Mill Hill Broadway bus stations
Interim Detailed Assessment	June 2007	Reported on progress with Detailed Assessment
Detailed Assessment	August 2009	AQMA not required at Mill Hill Broadway bus station; AQMA amendment required to incorporate exceedance of the one-hour mean for nitrogen dioxide at and around Golders Green Bus Station – 42 exceedance of one-hour mean in 6 months. AQMA amended July 2010 to include one hourly mean for NO ₂ after report submitted and approved by Defra and GLA.
USA 2009	July 2009	No significant changes since second round; no further action required
Annual Progress Report	July 2010	No significant changes since third round; no further action required.
Annual Progress Report	October 2011	No significant changes; no further action required
USA 2012	April 2014	No significant changes; no further action required
Annual Progress Report 2013	April 2014	No significant changes; no further action required
USA 2015	May 2015	Latest report; no significant changes; no further action required

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The London Borough of Barnet Council has two automatic monitoring sites that monitor for particulates (PM₁₀) and Nitrogen dioxide (NO₂). The monitoring sites are strategically located so that both an urban centre (worst case scenario) and an urban background location are sampled. Table 2.2 details the location, type and other key information regarding the two sites.

Automatic Monitoring QA/QC

ABN1 and ABN2 are routinely calibrated, serviced and audited to ensure data is as accurate as possible. In 2014, the site audits and data management was carried out by Ricardo-AEA to national standards and operational procedures defined by AURN. Site audits were carried out every six months and post audit the site data was then ratified. The 2014 Data was fully validated and ratified in April 2015.

Routine calibrations take place bi-monthly for ABN1 and monthly for ABN2 by Barnet Scientific Officers. Servicing and maintenance is carried out bi-annually by an external contractor. Until December 2014 the contractor was Supporting U and since December 2014 service and maintenance has been carried out by Matts Monitors.

Throughout the calendar year, there were times where data capture was reduced because of either planned maintenance or equipment faults.

Table 2.1 Significant Periods of Data Loss in 2014

Site	Date	Fault Type	Description
ABN1	Late February to end of March	Analyser upgrade	NO _x analyser upgraded to Casella Evolution CM2041.
ABN1	June to mid-July 2014	NO ₂ and PM ₁₀	Modem issue: Internal data was overwritten before issue could be resolved. Pump fault: Data rejected as a pump fault coincided with the modem issue.
ABN1	October 2014	PM ₁₀	Pump fault: Data rejected

ABN1	Late November to mid-December 2014	NO ₂	A large internal leak meant that calibration and ambient readings were much lower than they should have been. Therefore the data was rejected.
ABN2	Early October to mid-December	NO ₂	Multiple issues including poorly serviced pump on 6 th October that created too strong a vacuum and subsequently higher readings. Readings were not representative of the ambient concentrations and therefore discarded.

The above table details all of the significant periods of data loss throughout 2014. Although there were only a small number of faults at each site, the faults were significant and in most cases took a long time to rectify.

Figure 2.1.1 Map of ABN1 – Tally Ho Corner Automatic Monitoring Site

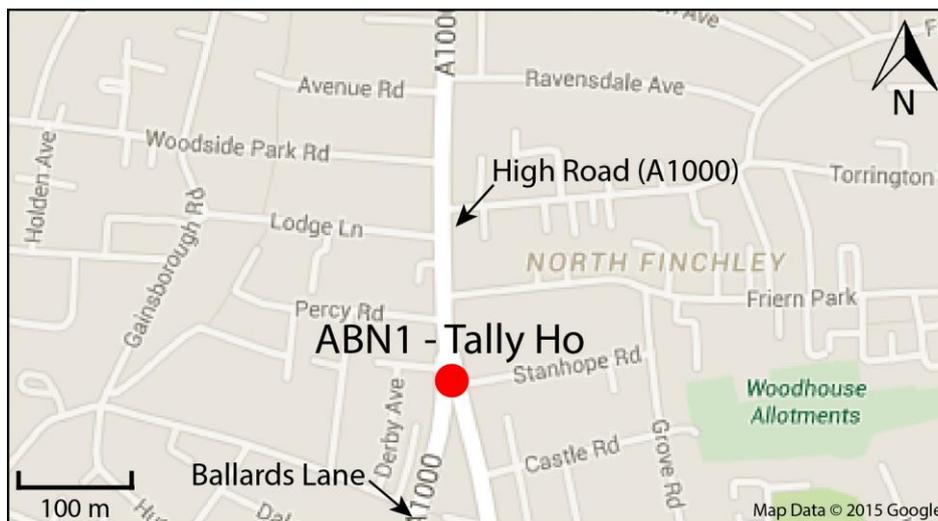


Figure 2.1.2 Map of ABN2 – Chalgrove School Automatic Monitoring Site

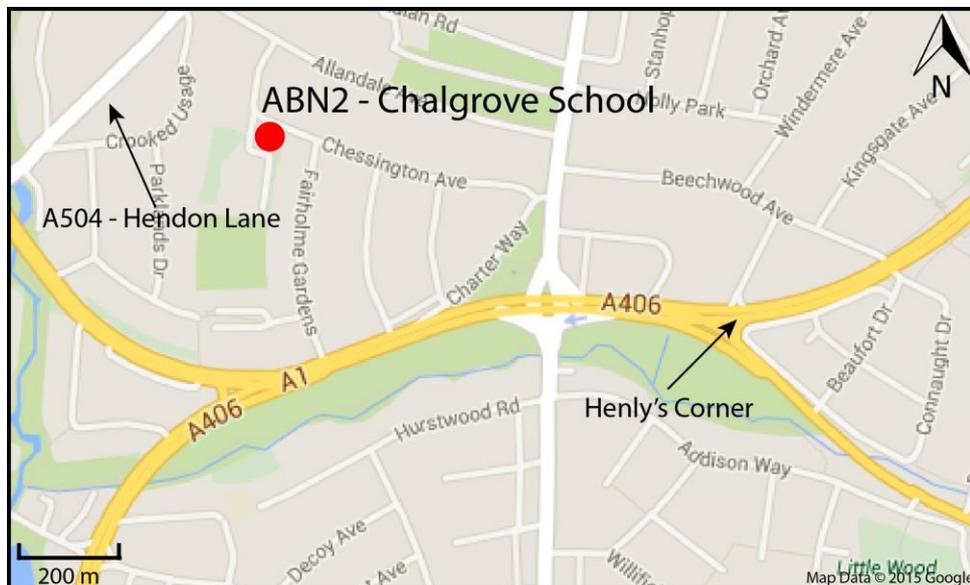


Table 2.2 Details of Automatic Monitoring Sites

Site Name	Site Ref number	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Tally Ho Corner	ABN1	Urban Centre	X526350 Y92166	NO ₂ and PM10	Y	Y(6m)	1m	Y
Chalgrove School	ABN2	Urban background	X524328 Y189599	NO ₂ and PM10	Y	Y	N/A	N

2.1.2 Non-Automatic Monitoring Sites

In 2014 the Council had 15 sites monitoring for nitrogen dioxide using diffusion tubes. The sites are described and located below in Table 2.3 and Figure 2.3 respectively. There have been no relocations or reclassifications as in 2013. The tubes are spread out across the Borough in a mixture of site types and give useful information on long-term air quality trends. Six of the locations have been sampling for six years (PBN3, PBN5, PBN7, PBN8 and PBN17) and therefore provide long term trends. The other nine locations have been sampling for four years and will therefore also show any shorter term trends at these key locations.

Diffusion Tube QA/QC

The diffusion tubes used in all London Borough of Barnet sampling are supplied and analysed by Gradko (UKAS 2187) and conform to BS EN 13528 Parts 1-3: 2002/3. All of the tubes used are prepared using 50% TEA/Acetone and analysed using the UKAS accredited in house method (GLM 9), by continuous flow colorimetric analyser. Gradko participates in the WASP scheme (Workplace Analysis Scheme for Proficiency).

Using the March 2015 national bias adjustment data, a bias adjustment factor of 0.97 has been applied to all of the diffusion tubes in the 2014 calendar year. The relevant examples were selected using the spreadsheet workflow by using the same manufacturer, preparation method and similar site location type. A local bias adjustment was not used as the co-location study at Tally Ho Corner would not have been accurate as the NO₂ capture rate for ABN1 was only 75%.

There is a co-location study at ABN1 – Tally Ho, where diffusion tube PBN8 is situated, to allow for the comparison of an automatic NO_x analyser and a diffusion tube. In calendar year 2014, ABN1 produced an annual mean of 57.2µg/m³ and the annual mean for PBN8 was 59.6 µg/m³. As the BN1 NO₂ data capture was 75% for 2014 and the annual means only had a difference of 2.4 µg/m³, there is no reason to suggest that that PBN8 or any of the other 14 tubes around the borough have produced any spurious or anomalous results. Therefore, according to our co-location

study, we believe that the 2014 diffusion tube survey is an accurate and precise representation of NO₂ concentrations within the borough.

Figure 2.2 Map of Non-Automatic Monitoring Sites

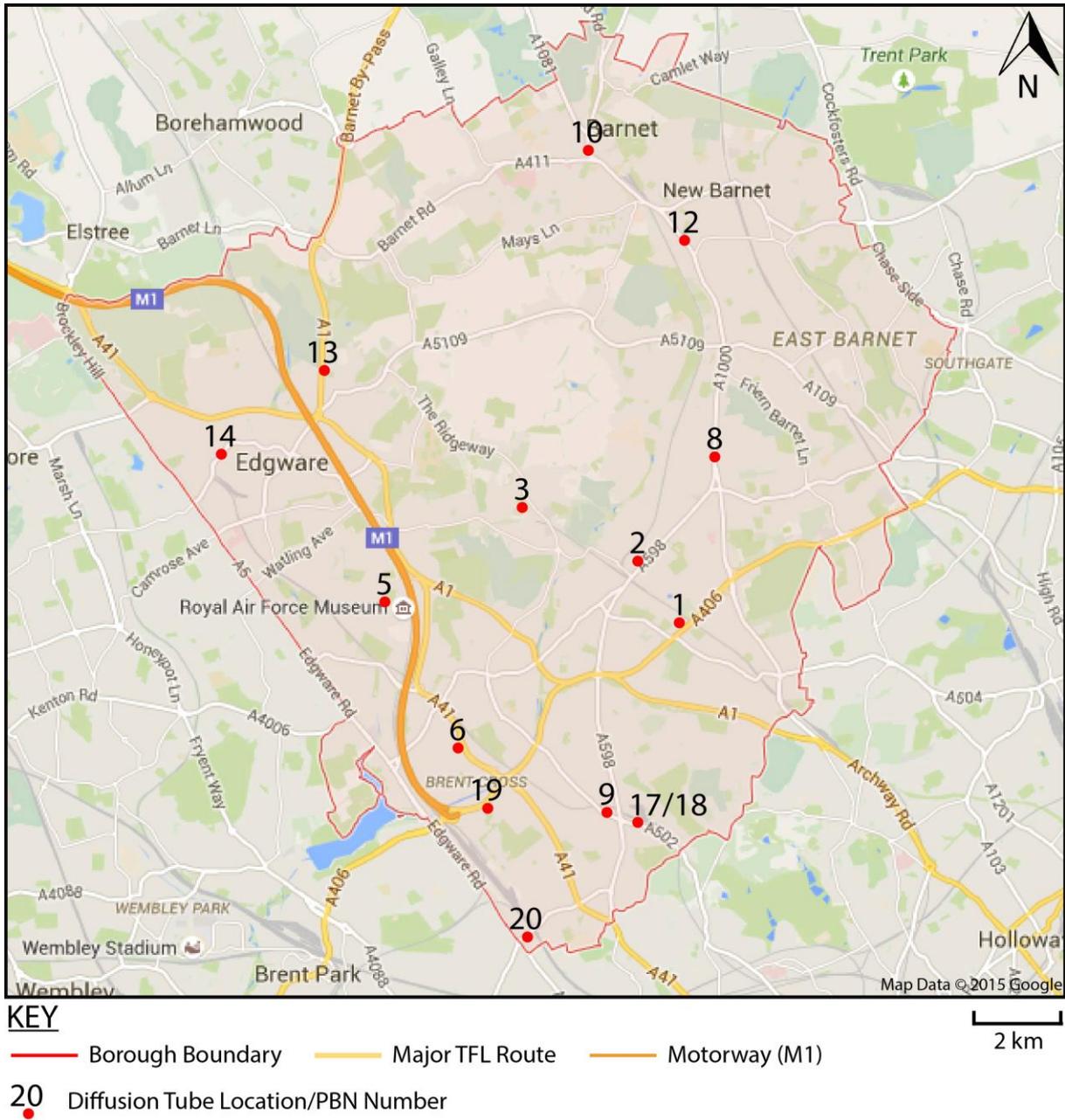


Table 2.3 Details of Non-Automatic Monitoring Sites

Site No:	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
PBN1	1 Pointalls Close	Roadside	X526278 Y190444	NO ₂	Y	Y (6m)	13m	Y
PBN2	71 Ballards Lane	Urban Centre	X525410 Y190980	NO ₂	Y	Y (2m to flats above)	4m	Y
PBN3	Sanders Lane Allotments	Urban background	X523754 Y191588	NO ₂	Y	N	N/A	N/A
PBN5	St James Catholic High School	Urban background	X521885 Y190489	NO ₂	Y	Y (5m)	2m	N/A
PBN6	337 Hendon Way	Roadside	X523158 Y188157	NO ₂	Y	Y (10m)	2m	Y
PBN8	Tally Ho monitoring station	Urban Centre	X526350 Y92166	NO ₂	Y	Y (Indicator for 1 hour mean)	1.2m	Y
PBN9	52 Golders Green Road	Urban Centre	X524965 Y187505	NO ₂	Y	Y (2m to flats above)	5m	Y
PBN10	Greggs, Barnet High Road	Urban Centre	X524493 Y196612	NO ₂	Y	Y(0m)	3m	Y
PBN12	1295 High Road Whetstone	Urban Centre	X526379 Y194055	NO ₂	Y	Y (0m)	6m	Y
PBN13	Courtland Avenue, A1	Roadside	X520968 Y193457	NO ₂	Y	Y (3m)	22m	Y
PBN14	William Hill, Station Road Edgware	Urban Centre	X519497 Y192075	NO ₂	Y	Y (0m)	5m	Y
PBN17	National Express Bus Stop, Golders Green Bus Station	Bus station	X525207 Y187425	NO ₂	Y	Y (indicator for 1 hour mean only)	N/A	Y
PBN18	Rear of GG Bus Station	Bus station	X525275 Y187441	NO ₂	Y	Y (indicator for 1 hour mean only)	N/A	Y
PBN19	Rear of 7-12 Dyson Court, Tilling Road	Roadside	X523245 Y187648	NO ₂	Y	Y (0m)	10m	Y
PBN20	Flats above 16 Cricklewood Lane	Urban Centre	X523885 Y185764	NO ₂	Y	Y (0m)	6m	Y

Note:

The table above gives the distance to relevant exposure. This means the distance to the nearest residential facades where residents would be exposed to exceedences of the annual mean. However some sites are placed for relevance to the one-hour mean. These are sites where people may spend one hour or more outside doing shopping, waiting for buses, sitting at cafes, playing in parks etc. Sites where the hourly mean is relevant are the urban centre and bus station sites.

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

This section will give an overview of the monitoring results for nitrogen dioxide for 2014. The London Borough of Barnet has two automatic monitoring stations. There were 15 nitrogen dioxide diffusion tubes in 2014. The entire borough is an Air Quality Management Area for the NO₂ annual mean and hourly mean and for PM₁₀: the daily mean. The whole borough continues to be an Air Quality Management Areas as there are various busy roads passing through the borough (M1, A406 etc.) that have a detrimental effect on air quality. In addition to these roads, congestion on many roads during peak times means that in some cases, the annual and hourly means may be exceeded. All of the monitoring is carried out across the borough and within the borough's Air Quality Management Area.

2.2.2 Automatic Monitoring Data

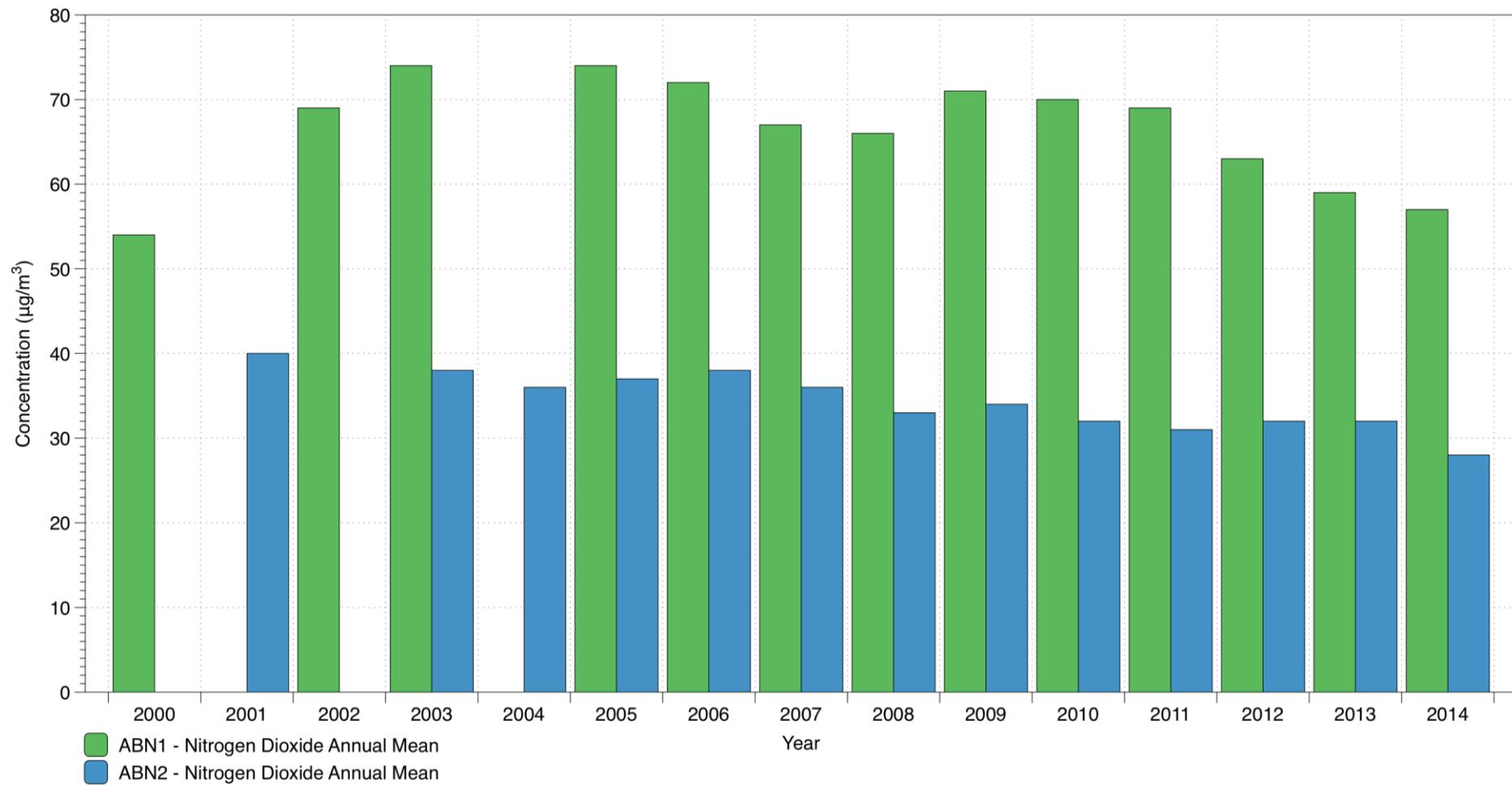
Table 2.4 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Valid Data Capture for 2014 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)								
				2006	2007	2008	2009	2010	2011	2012	2013	2014
ABN1	Tally Ho Corner, N12	Y	75.0	74	67	66	71	70	69	63	59	57
ABN2	Chalgrove Primary School, Chalgrove Gardens	Y	79.8	38	36	34	34	32	31	32	32	27

Notes:

1. The annual mean objective is $40\mu\text{g}/\text{m}^3$
2. Figures in bold denote an exceedence of the annual mean objective

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



Notes:

1. The annual mean objective is 40µg/m³

Table 2.5 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for 2014 (%)	Number of Exceedances of Hourly Mean (200 µg/m ³)								
				2006	2007	2008	2009	2010	2011	2012	2013	2014
ABN1	Tally Ho Corner, N12	Y	75.0	9	15	4	11	33	15	17(208)	5	9(182)
ABN2	Chalgrove Primary School, Chalgrove Gardens	Y	79.8	1	8	0	0	0	0	0	0	0 (115)

Notes:

1. The number in brackets for 2014 shows the 99.8th percentile of 1-hour mean concentrations as the annual data capture was below 90%.
2. The number in brackets for 2012 shows the 99.8th percentile of 1-hour mean concentrations. As this is higher than 200µg/m³, this indicates that the hourly mean was breached in 2012
3. Figures in bold show an exceedances of the UK air quality objective

Table 2.6 List of exceedences of hourly mean objective for NO₂ at Tally Ho

Date	GMT Hour Ending	Concentration $\mu\text{g m}^{-3}$ (20°C 1013mb)
26/10/2014	18:00	212
30/10/2014	16:00	202
31/10/2014	13:00	225
31/10/2014	14:00	252
31/10/2014	15:00	271
31/10/2014	16:00	256
31/10/2014	17:00	267
31/10/2014	18:00	256
01/11/2014	13:00	216
Total		
Number of exceedences	9	
Number of days	4	
Maximum exceedence	271 $\mu\text{g m}^{-3}$ (20°C 1013mb) Ending 15:00 GMT 31/10/2014	

Automatic Monitoring Data Discussion

Tally Ho Corner

2014 monitoring continues the trend of yearly decreases for NO₂. However, with an annual mean of 57.2 $\mu\text{g/m}^3$, the site is still significantly over the annual mean objective of 40 $\mu\text{g/m}^3$ but there are signs of continued improvement. There was a 3.3% reduction in NO₂ concentrations between 2013 and 2014 with an overall decrease of 22% since 2003. The annual mean objective exceedence is to be expected as the monitoring station is in the middle of the busy A1000, on a pedestrianised island between two lanes of traffic. Northbound traffic also does a U-turn here to turn south and then east and is therefore a complex traffic system.

In 2014, there were nine exceedances of the hourly mean objective of $200 \mu\text{g}/\text{m}^3$. Six of these were on one day (31/10/2014), with the other three also falling within five days of this event.

In comparison to previous years, the reduced capture rate of the site could have an impact on the annual mean. However, as described in Table 2.1, the times at which data was lost means there should be minimal impact to the validity of the results. This is because there is an equal amount of loss over summer and autumn months, where typically there would be lower and higher concentrations respectively.

Chalgrove School

Chalgrove School is a background site away from major roads, yet still within 500m of the busy A406 (North Circular Road).

Figure 2.3 shows that in recent years the NO_2 concentration has remained relatively consistent whilst being below the annual mean objective of $40 \mu\text{g}/\text{m}^3$. There continues to be no exceedance of the annual or hourly means. In comparison to 2013, there was a 15.6% decrease in NO_2 concentrations with a reduction from $32 \mu\text{g}/\text{m}^3$ to $27.7 \mu\text{g}/\text{m}^3$. However the magnitude of this decreased may be somewhat inaccurate as there was significant analyser downtime in Early October to mid-December. This period could have increased the annual mean to a level similar to 2013 as there were days in 2014 (Table 2.7) where there were significantly increased concentrations.

Summary

In summary, the long term data trends from the air quality monitoring stations are very encouraging. There continues to be a steady and consistent reduction in NO_2 concentrations which will be further aided by cleaner fuels/technologies, change in transport habits and future legislation. The results from Chalgrove School show that large areas of the borough away from major roads enjoy air which is below the NO_2 annual mean objective of $40 \mu\text{g}/\text{m}^3$.

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2.2.3 Diffusion Tube Monitoring Data

Table 2.7 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (%)	Has data with less than 9 months has been annualised?	Has data been distance corrected?	Annual mean concentration (Bias=0.97)
								2014 ($\mu\text{g}/\text{m}^3$)
PBN1	1 Pointalls Close	Roadside	Y	N	100	N/A	N	42.5
PBN2	71 Ballards Lane	Urban Centre	Y	N	92	N/A	N	50.9
PBN3	Sanders Lane Allotments	Urban background	Y	N	75	N/A	N	27.3
PBN5	St James Catholic High School	Urban background	Y	N	100	N/A	N	33.2
PBN6	337 Hendon Way	Roadside	Y	N	58	N	N	<u>72.9</u>
PBN8	Tally Ho monitoring station	Urban Centre	Y	Co-located	92	N/A	N	59.6
PBN9	52 Golders Green Road	Urban Centre	Y	N	100	N/A	N	51.9
PBN10	Greggs, Barnet High Road	Urban Centre	Y	N	100	N/A	N	53.9
PBN12	1295 High Road Whetstone	Urban Centre	Y	N	100	N/A	N	52.4
PBN13	Courtland Avenue, A1	Roadside	Y	N	100	N/A	N	37.6
PBN14	William Hill, Station Road Edgware	Urban Centre	Y	N	100	N/A	N	56.4
PBN17	National Express Bus Stop, Golders Green Bus Station	Bus station	Y	N	75	N/A	N	<u>78.4</u>
PBN18	Rear of GG Bus Station	Bus station	Y	N	100	N/A	N	54.5
PBN19	Rear of 7-12 Dyson Court, Tilling Road	Roadside	Y	N	100	N/A	N	54.8
PBN20	Flats above 16 Cricklewood Lane	Urban Centre	Y	N	100	N/A	N	<u>62.3</u>

Notes:

1. Annualisation of PBN6 was not possible as data loss was spread over the calendar year.
2. The monthly data is in the appendices.
3. The bias adjustment factor used for 2014 was 0.97, taken from the March 2015 version of the Defra bias adjustment factor spreadsheet.
4. Figures in bold denote an exceedence of the annual mean objective ($40\mu\text{g}/\text{m}^3$)
5. Figures that are in bold and underlined denote an exceedence of the hourly mean objective (over $60\mu\text{g}/\text{m}^3$)

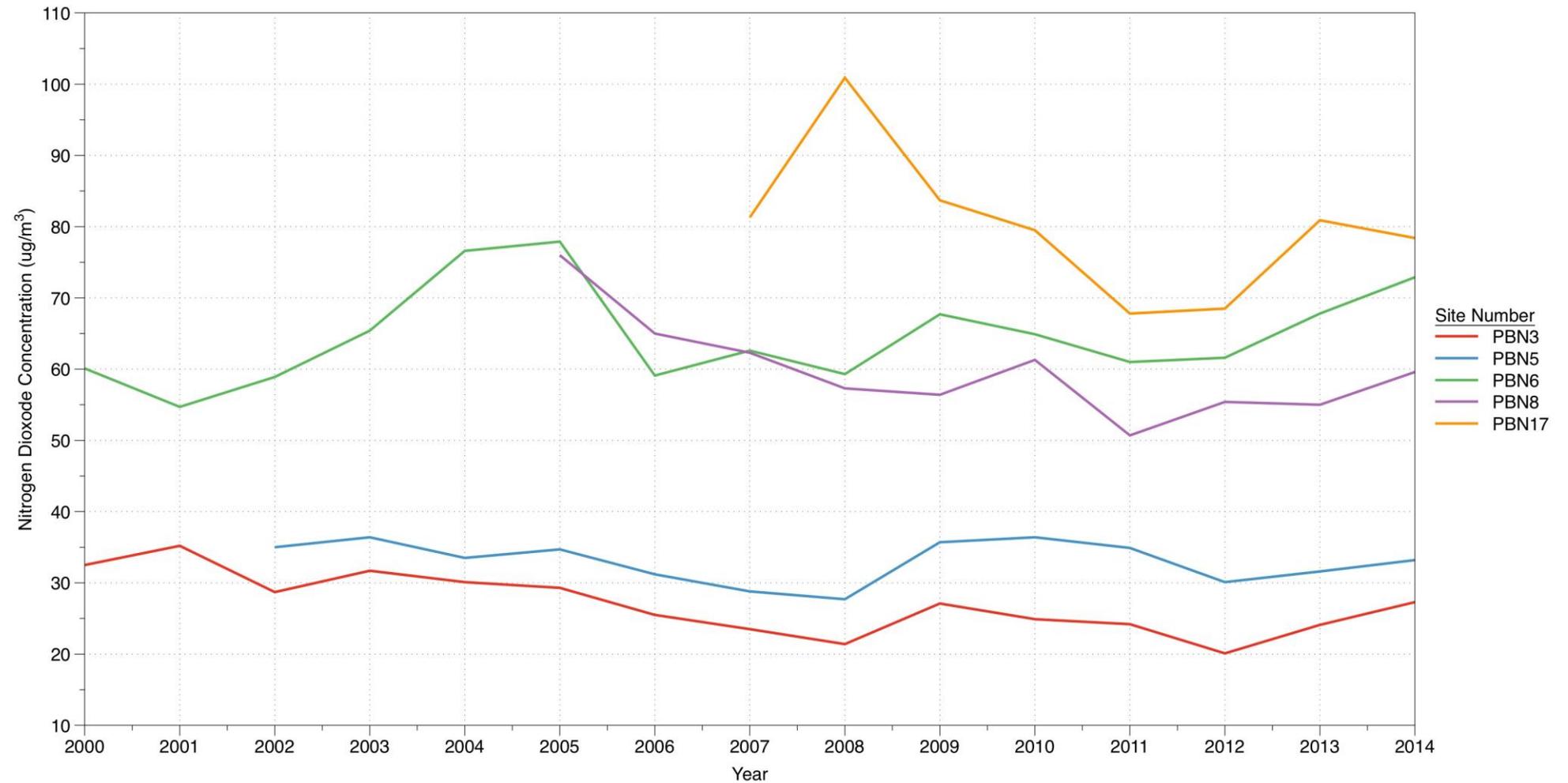
Table 2.8 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site No.	Site Address	In AQMA?	Relevant public exposure?		Data capture for 2014 (%)	Annual Mean concentrations ($\mu\text{g}/\text{m}^3$)				
			Annual mean	One hour mean (indicative only)		2010	2011	2012	2013	2014
PBN1	1 Pointails Close	Y	Y (6m)	Y	100	35.1	38.5	34.0	42.2	42.5
PBN2	71 Ballards Lane	Y	Y (2m vertically)	Y (0.5m below)	92	56.8	47.9	46.8	52.5	50.9
PBN3	Sanders Lane Allotments	Y	N	Y (0.5m below)	75	24.9	24.2	20.1	24.1	27.3
PBN5	St James Catholic High School	Y	Y (5m)	Y	100	36.4	34.9	28.8	31.6	33.2
PBN6	337 Hendon Way	Y	Y(10m)	N	58	<u>64.9</u>	<u>61.0</u>	<u>60.1</u>	<u>67.8</u>	<u>72.9</u>
PBN8	Tally Ho monitoring station	Y	N	N	92	<u>61.3</u>	50.7	53.4	55.0	59.6
PBN9	52 Golders Green Road	Y	Y (2m above)	Y	100	58.7	48.7	48.3	56.0	51.9
PBN10	Greggs, Barnet High Road	Y	Y (0m)	Y (0.5m below)	100	52.9	47.9	51.0	51.0	53.9
PBN12	1295 High Road Whetstone	Y	Y (0m)	Y (0.5m below)	100	51.4	48.8	51.9	53.0	52.4
PBN13	Courtland Avenue, A1	Y	Y (3m)	Y	100	39.3	32.7	34.5	37.3	37.6
PBN14	William Hill, Station Road Edgware	Y	Y (0m)	Y	100	<u>61.8</u>	50.7	51.7	58.9	56.4
PBN17	National Express Bus Stop, Golders Green Bus Station	Y	N	Y (for one hour mean only)	75	<u>79.5</u>	<u>67.8</u>	<u>66.7</u>	<u>80.9</u>	<u>78.4</u>
PBN18	Tube to rear of GG Bus Station	Y	N	Y (for one hour mean only)	100	<u>61.1</u>	50.4	53.2	55.6	54.5
PBN19	Rear of 7-12 Dyson Court, Tilling Road	Y	Y	Y	100	57.6	49.5	50.0	55.5	54.8
PBN20	Flats above 16 Cricklewood Lane	Y	Y(0m)	Y	100	59.7	55.9	52.5	57.1	<u>62.3</u>

Notes:

1. Annualisation of PBN6 was not possible as data loss was spread over the calendar year.
2. The monthly data is in the appendices.
3. The bias adjustment factor used for 2014 was 0.97, taken from the March 2015 version of the Defra bias adjustment factor spreadsheet.
4. Figures in bold denote an exceedence of the annual mean objective ($40\mu\text{g}/\text{m}^3$)
5. Figures that are in bold and underlined denote an exceedence of the hourly mean objective (over $60\mu\text{g}/\text{m}^3$)

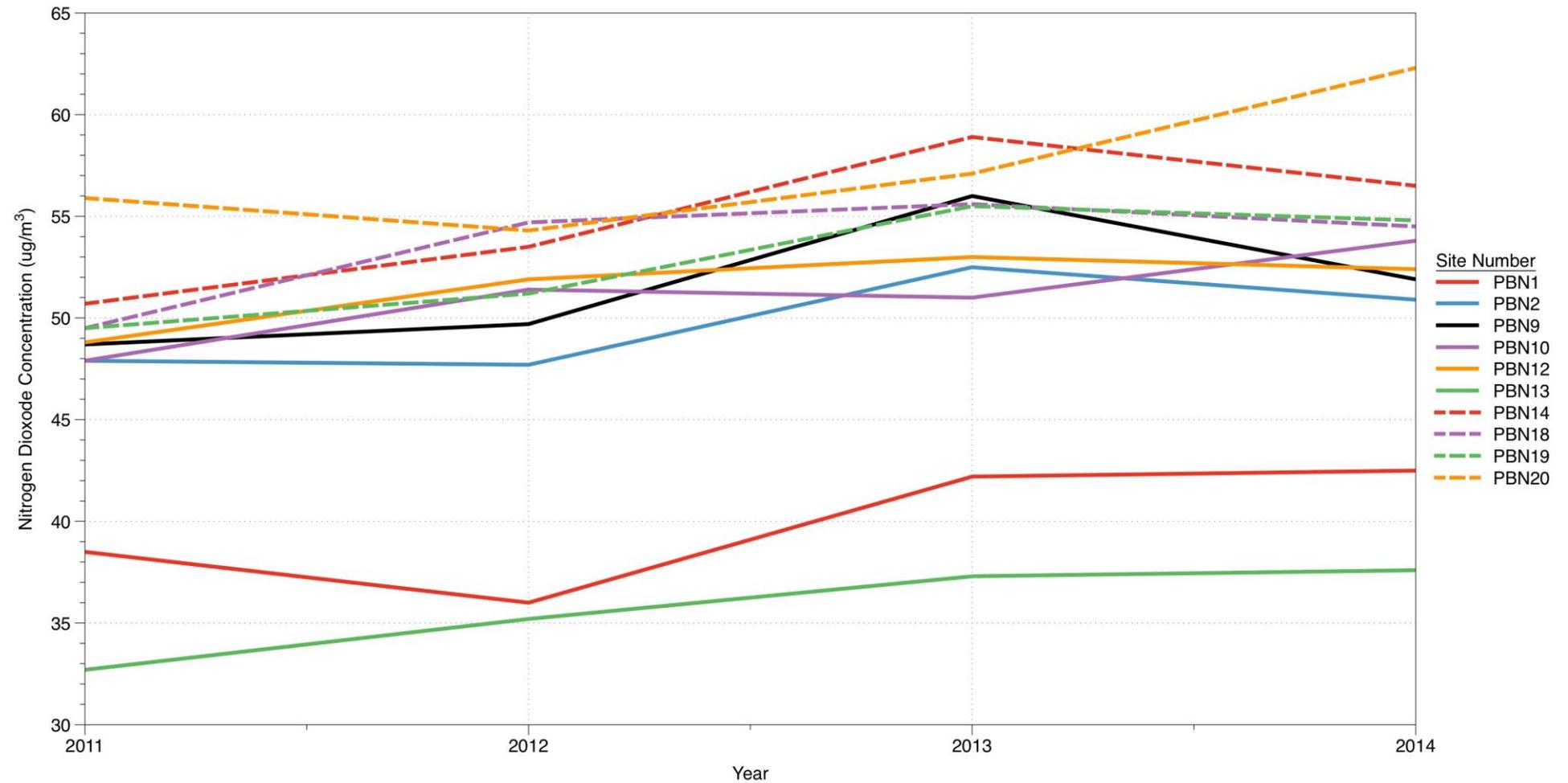
Figure 2.4 Long Term Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



Notes:

1. Long term trends are those that have been sampling prior to 2011
2. All data has been bias adjusted for each year
3. PBN6 had a low data capture in 2014, so in most cases should be considered carefully before use.

Figure 2.5 Short Term Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



Notes:

1. Short term trends are shown by tubes that have been sampling since 2011
2. All data has been bias adjusted for each year

NO₂ Diffusion Data Tube Discussion

There were a number of diffusion tubes that showed increases, decreases and no change. Firstly, PBN8 at Tally Ho Corner shows a very small difference between the automatic monitoring and the passive monitoring. ABN1 produced an annual mean of 57.2µg/m³ and the annual mean for PBN8 was 59.6 µg/m³. Therefore in 2014 there was a difference of 2.4 µg/m³ between the two monitoring types. Although the data capture for AB1 was relatively low, the accuracy of the PBN8 shows that the diffusion tubes used around the borough represent an accurate and economical means of sampling NO₂.

In Figure 2.4, all but PBN3 (Golders Green station bus stop) showed small increases. The greatest of these was PBN6 (Hendon Way) but because of the low data capture, this result may not be accurate. Any location with a significant or noticeable increase has reduced data capture over 2014 (>75%) and should therefore not be seen as a marker for increased NO₂ concentrations in that area. The long term trends at PBN3 and PBN5 do however provide a good representation of urban background areas with little traffic and light traffic respectively.

Figure 2.5 shows the trends of the newer tubes that have been sampling since 2011. There was a mixture of results with only PBN20 (Cricklewood Lane) showing a significant increase from 2013. PBN10 (High Barnet) was the only other noticeable increase and the rest of the sites had either comparable values with 2013 or a noticeable decrease. This is somewhat encouraging as up until 2013, the NO₂ concentrations at all of the locations were increasing. Now, it seems that these concentrations may now be decreasing as per the automatic results. 2015 and 2016 results will be able to reinforce this observation if the trend continues. In 2015 it may be prudent to increase sampling in areas of development, as this will be able to identify any areas which may experience an increase in NO₂ concentrations.

2.3 PM₁₀

Table 2.9 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration $\mu\text{g}/\text{m}^3$								
					2006	2007	2008	2009	2010	2011	2012	2013	2014
ABN1	Urban Centre	Y	87.6	N	24	23	24	24	24	28	27	27	26 (36)
ABN2	Urban Background	Y	96.3	N	23	20	20	20	20	21	19	19	20

Notes:

1. Monitoring was carried out for the whole calendar year
2. Results from TEOM PM10 analysers have been converted to reference equivalent using TEOMx1.3 in 2012 and 2013. Results will be VCM corrected once the AURN data has been ratified. 2011 data was VCM corrected.
3. 2014 results have not been adjusted
4. 2014 data in brackets shows the 90th percentile

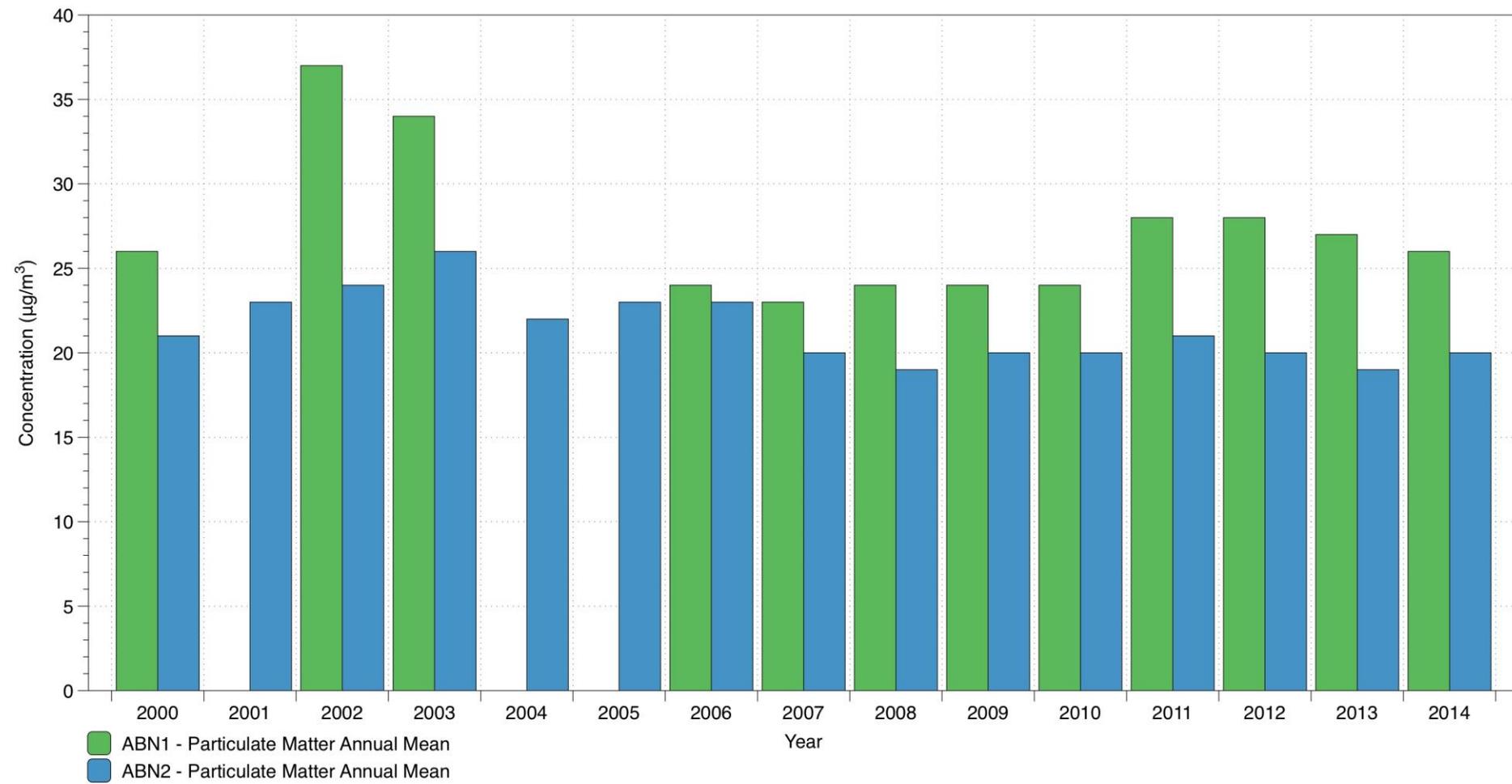
Table 2.10 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent (Y or NA)	Number of Exceedences of 24-Hour Mean (50 µg/m ³)								
					2006	2007	2008	2009	2010	2011	2012	2013	2014
ABN1	Urban Centre	Y	87.6	N	12	16	9	7	6	24	7(41)	5	6
ABN2	Urban Background	Y	96.3	N	13	11	4	4	1	14	0	0	0

Notes:

1. Monitoring was carried out for the whole calendar year.
2. Results from TEOM PM10 analysers have been converted to reference equivalent using TEOMx1.3 in 2012 and 2013. Results will be VCM corrected once the AURN data has been ratified. 2011 data was VCM corrected.
3. In order for the objective to be failed, 35 exceedences of 50µg/m³ are required.

Figure 2.6 Trends in Annual Mean PM₁₀ Concentrations



2.3.1 PM10 Data discussion

PM10 concentrations at both sites remain stable with a reduction at Tally Ho Corner from 27 $\mu\text{g}/\text{m}^3$ to 26 $\mu\text{g}/\text{m}^3$ (albeit with 87.6% data capture) and an increase from 19 $\mu\text{g}/\text{m}^3$ to 20 $\mu\text{g}/\text{m}^3$. Although it seems like there is stagnation regarding process, the typical levels are well below the objective for both 1-hour and 24-hour means.

There were also a similar number of daily exceedences in 2014 at Tally Ho Corner with six. These events were separate from the NO₂ pollution event at the end of October 2014 and occurred in Early January 2014. Chalgrove School however had no exceedences again.

Tally Ho Corner represents a worst case location in a typical Barnet urban centre, with many buses, HGVs and cars on the road. In addition, with station on a corner with stopping and turning buses, these concentrations may be higher than a typical high street in Barnet. Although the measured concentrations do not exceed the air quality objectives, there are locations including the major junctions in the borough that have been predicted to exceed the objectives with air quality modelling. Exceedences in these locations would be because of higher traffic flow on major roads, especially during peak times and at junctions where there are a large number of stationary vehicles. For this reason, it has been decided to maintain the AQMA for particulates.

2.4 Sulphur Dioxide

The London Borough of Barnet does not monitor for sulphur dioxide.

2.5 Benzene

The London Borough of Barnet does not monitor for benzene.

2.6 Other pollutants monitored

The London Borough of Barnet does not monitor for any other pollutants.

2.7 Summary of Compliance with AQS Objectives

The London Borough of Barnet Council has examined the results from monitoring in the borough.

Concentrations within the borough-wide AQMA still exceed the annual mean objective for nitrogen dioxide and the AQMA should remain.

Concentrations still exceed the hourly mean objective for nitrogen dioxide in Golders Green Bus Station and the AQMA should remain.

Concentrations of nitrogen dioxide in the busy High Street locations were between 51 and 60 $\mu\text{g}/\text{m}^3$ in 2014. Although this monitoring indicates that the hourly mean objective for nitrogen dioxide is being achieved, it has been decided not to revoke the AQMA for this pollutant. This is due to the uncertainty in nitrogen dioxide monitoring, which means that concentrations may be higher than recorded. There is also a trend for pavement cafes and new residential development alongside high streets, so a continued focus on pollutants in these locations is beneficial.

Concentrations of PM10 are considerably below the annual mean and daily mean objectives at our two air quality monitoring stations. However there are busier roads and junctions where modelling has predicted that the objectives are being exceeded. Therefore the AQMA should remain.

There is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

There are no new or newly identified road traffic sources since the 2012 Updating and Screening Assessment.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The London Borough of Barnet 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

The London Borough of Barnet 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.

The London Borough of Barnet Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

The London Borough of Barnet 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

The London Borough of Barnet Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The London Borough of Barnet Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The council's Air Quality Management Area was adapted to include Golders Green Bus Station in 2009. This is due to exceedences of the one-hour mean objective for nitrogen dioxide. Mill Hill Broadway bus station was also assessed as part of a Detailed Assessment but the further study confirmed that an AQMA was not required at this bus station.

The London Borough of Barnet Council confirms that there are no other relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

The London Borough of Barnet Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

The London Borough of Barnet 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

The London Borough of Barnet 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)

The London Borough of Barnet 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

The regeneration schemes in the borough have proposals to introduce local gas Combined Heat and Power plants. These have all required an air quality assessment. Locations include Mill Hill East and West Hendon. It has been assessed that the CHP plants are not going to result in an exceedance of the UK Air Quality Objectives.

There are no new processes regulated by the Council or Environment Agency in Barnet or adjacent boroughs.

The London Borough of Barnet 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

The London Borough of Barnet 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

The North London Waste Authority is currently consulting on a new Energy from Waste facility in Edmonton within the London Borough of Enfield. Waste from the London Borough of Barnet will go to this facility. Further information will be reported as it becomes available.

The London Borough of Barnet 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

The London Borough of Barnet Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

There are no poultry farms within the London Borough of Barnet.

The London Borough of Barnet Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Proposals for small biomass heating systems have been received with planning applications. Air quality assessments for each one have been required by planning condition. None have been assessed to have been likely to cause a significant impact on local air quality.

The London Borough of Barnet 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

The London Borough of Barnet 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

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

7 Fugitive or Uncontrolled Sources

The most likely source of PM10 in this category is from the many small and large construction sites in the Borough. Dust complaints are dealt with under nuisance legislation (Environmental Protection Act 1990). Planning conditions on the sites require a Construction Method Statement and this is another tool for dealing with potential dust issues. Experience suggests that this is sufficient and that the construction sites are unlikely to result in exceedences of the Air Quality Objective for PM10.

The London Borough of Barnet council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 New Development

The London Borough of Barnet has a rapidly growing population. Between 2011 and 2016, it was predicted that the population will grow by 20,000 people. New housing is being built across the Borough and is a mixture of apartments and houses. A new town centre is proposed in Cricklewood. New schools, businesses, shops and restaurants are also being built across the borough. This will have an effect on air quality as the amount of traffic increases. Scientific Officers work closely with planning colleagues to ensure that air quality is taken into consideration for every development.

In areas where the air quality is likely to exceed the one-hour mean for nitrogen dioxide, balconies are not permitted, and winter gardens are recommended instead. Other mitigation measures include redesigning layout so that habitable rooms face away from roads. Whole house mechanical ventilation is used so that residents do not need to open their windows for sufficient ventilation. Air intakes are positioned at height and away from roads. Where air quality is particularly poor the air is filtered to remove nitrous oxides. In the worst locations, developments have been refused on grounds of poor air quality.

Each development in an area of poor air quality requires an air quality assessment prior to approval.

While the new development will not require a Detailed Assessment, a list of key new and on-going developments is given below:

West Hendon Estate, West Hendon, London, NW9

Ref. No: H/01054/13 | **Received:** Fri 15 Mar 2013 | **Validated:** Mon 18 Mar 2013 |
Status: Approved subject to conditions

Hybrid planning application for the demolition and redevelopment of the West Hendon Estate to accommodate up to 2000 residential units, a new 2 form entry primary school, community building and commercial uses and associated open space and infrastructure comprising: Outline submission for the demolition of existing

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buildings and the construction of up to 1642 new residential units (Class C3); up to 3,870m² (GEA) of D1 Class floorspace comprising nursery and primary school and community centre uses and up to 1,635m² (GEA) Class A1/A2/A3/A4/A5/B1 floorspace, within buildings ranging from 2 to 29 stories, associated cycle and car parking provision including basement level parking, landscaping and public realm works, interim works, associated highway works, and two pedestrian bridges across the Welsh Harp. Full planning submission (Phase 3 Blocks G1, G2, E1, E2, E3, E4) for the construction of 358 new residential units (Class C3), and 131m² (GEA) Class A1/A2/A3/A4/A5/B1 floorspace, within buildings ranging from 5 to 26 stories, cycle and car parking provision including basement level parking, associated landscaping and public realm works, associated highway works, energy centre, and interim works. Submission of Environmental Statement.

Grahame Park Estate, Colindale

W01731JS/04 dated 17/01/07, 'Redevelopment of site involving the demolition of 1314 existing residential units and construction of 2977 new residential units providing a total of 3440 units on the estate, provision of approximately 9074sqm replacement retail (Class A1), office (Class A2) food and drink (Class A3) and social and community (Class D1) uses and associated public and private open space, car parking and access arrangements.

Beaufort Park, Aerodrome Road, Colindale

W/00198/AA/04 'Redevelopment of site comprising 2800 residential units (Class C3), approximately 7850sqm of retail (Class A1), financial and professional services (Class A2), food and drink (Class A3), business (Class B1), leisure and community (Class D1 and D2) uses and driving test centre (sui generis) with associated landscaped open space, car parking and access arrangements.

Peel Centre, Peel Drive, Colindale, London, NW9 5JE

Ref. No: H/04753/14 | **Received:** Fri 29 Aug 2014 | **Validated:** Fri 29 Aug 2014 | **Status:** Pending Consideration

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Hybrid planning application for the phased comprehensive redevelopment of part of the existing Peel Centre site including the demolition of all existing buildings and the provision of a residential-led mixed use development comprising up to 2,900 new residential units (Use Class C3), with 888 units in full detail and up to 2,012 units in outline in buildings ranging from 2-21 storeys; up to 10,000 square metres of non-residential floorspace (Use Classes A1-A4, D1, D2); the provision of a 3 form entry primary school (including nursery provision) and a minimum of 4 hectares of public open space. Associated site preparation/enabling works, transport infrastructure namely a new pedestrian connection to Colindeep Lane and junction works, landscaping and car parking.

Brent Cross Cricklewood Regeneration Area

Comprehensive mixed use redevelopment of the Brent Cross Cricklewood Regeneration Area comprising residential uses (Use Class C2, C3 and student/special needs/sheltered housing), a full range of town centre uses including Use Classes A1 - A5, offices, industrial and other business uses within Use Classes B1 - B8, leisure uses, rail based freight facilities, waste handling facility and treatment technology, petrol filling station, hotel and conference facilities, community, health and education facilities, private hospital, open space and public realm, landscaping and recreation facilities, new rail and bus stations, vehicular and pedestrian bridges, underground and multi-storey parking, works to the River Brent and Clitterhouse Stream and associated infrastructure, demolition and alterations of existing building structures, CHP/CCHP, relocated electricity substation, free standing or building mounted wind turbines, alterations to existing railway including Cricklewood railway track and station and Brent Cross London Underground station, creation of new strategic accesses and internal road layout, at grade or underground conveyor from waste handling facility to CHP/CCHP, infrastructure and associated facilities together with any required temporary works or structures and associated utilities/services required by the Development (Outline Application). The application is accompanied by an Environmental Statement.

Dollis Valley Estate, Including Former Barnet Hill School, Barnet South Community Association Hall And 131-135 Mays Lane, Barnet, EN5

Ref. No: B/00354/13 | **Received:** Fri 25 Jan 2013 | **Validated:** Fri 08 Feb 2013 |
Status: Approved following legal agreement

Hybrid planning application for the redevelopment of Dollis Valley Estate to accommodate up to 631 residential units, replacement community space, new open space and infrastructure comprising: Outline permission for the demolition of existing buildings and the construction of up to 523 new residential units, together with new public open spaces, junction improvements to existing access onto Mays Lane, enhanced pedestrian, cycle and public transport facilities, car parking, infrastructure and other ancillary works.

Milbrook Park (Former Inglis Barracks) Mill Hill East London NW7 1PX

Planning permission H/04017/09 dated 22/09/11 for "Outline application for the comprehensive redevelopment of the site for residential led mixed use development involving the demolition of all existing buildings (excluding the former officers mess) and ground re-profiling works, to provide 2,174 dwellings, a primary school, GP Surgery, 1,100sqm of 'High Street' (A1/2/3/4/5) uses, 3,470sqm of employment (B1) uses, a district energy centre (Sui Generis) and associated open space, means of access, car parking and infrastructure (with all matters reserved other than access). Full application for the change of use of former officers' mess to residential (C3) and health (D1) uses."

Stonegrove and Spur Road Estates Edgware London HA8 8BT

Ref. No: W13582E/07 | **Received:** Wed 26 Sep 2007 | **Validated:** Wed 26 Sep 2007
Status: Approved following legal agreement

Outline planning application for the redevelopment of Stonegrove and Spur Road Estates to include the demolition of the 603 existing residential units, community and school buildings, and the erection of 937 new residential units, new community hall, church and church hall with nursery facility, the provision of associated public and

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private open space, car parking and cycle parking, new vehicular access off Spur Road, new vehicular access off Stonegrove, and new internal road layout. Of the 937 new residential units, the application includes the submission of full details for Zone 1 of the redevelopment which will involve the erection of 138 residential units (31 houses and 107 flats) of which 86 units will be affordable and 52 will be for private sale, associated hard and soft landscaping incorporating new public open space, and associated car parking and cycle parking. Submission of Environmental Statement.

9 Local Air Quality Strategy

The London Borough of Barnet Council published its Air Quality Strategy in 2002. It set out how the Borough is approaching pollution from a range of sources that

- reduce the quality of the air we breathe
- are believed to contribute to global warming.

The Air Quality Strategy is available at the Council's libraries and easily accessible from the Council website. It consists of 13 policies to improve air quality. The policies have been incorporated into the Council's Air Quality Action Plan.

The Action Plan, first published in 2003, after extensive consultation with the public, plays an important part in the implementation of the Strategy. This is because it sets out a range of actions that focus on the Borough's main air pollution problem: the exhaust emissions from motor vehicles.

10 Air Quality Planning Policies

Barnet Council's cabinet adopted the Sustainable Design and Construction SPD (Supplementary Planning Document) on 18th April 2013. It sits beneath and implements Local Plan policies in the Cores Strategy and the Development Management Policies documents, setting out borough-wide requirements and best practice planning guidance. It is used as a material consideration. Air quality is a key component of this document.

The following is an extract from the SPD and is included to demonstrate the Council's commitment to air quality within the planning process.

2.13.1 The air quality of urban areas has a significant impact on people's health. This has been recognised by the Mayor of London, who updated guidance covering London in Cleaning the Air – The Mayor's Air Quality Strategy (GLA 2010). The design of the built environment has an important role in managing the degree to which people are exposed to air pollutants. The principal sources of air pollution are:

- Traffic emissions from vehicles
- Air pollutants arising from industrial activities
- Emissions from boiler and mechanical plant within buildings
- Dust emissions from demolition and construction activities
- Emissions from construction traffic and plant supporting construction activities.

2.13.2 Within Barnet, emissions from traffic have by far the most severe and pervasive impact on reduction of local air quality. It is critical that the exposure of the public to air pollutants is minimised and the contribution to atmospheric pollution from activities within the built environment is reduced. The principles and related requirements are supported by DM04: SPD – Sustainable Design and Construction April 2013 Page 29

Environmental Considerations and London Plan Policy 7.14 – Improving Air Quality.

Air quality principles:

A. Location – Ensure that development type suits development site. In areas of poor air quality, for example next to some major roads, it may not be appropriate to build residential accommodation or schools or other types of development (so called sensitive receptors) where people, in particular vulnerable people, will spend a substantial amount of time in the accommodation and thereby be exposed to continuous high levels of air pollutants. If there is no other potential use for a site, then the design will be required to prevent exposure to air pollutants both within buildings and in accessible outdoor areas proximate to buildings.

<p>B. Siting and design – Ensure that where there is a localised and proximate source of air pollution, buildings are designed and sited to reduce exposure to air pollutants. Buildings themselves can be used as barriers between sources of air pollution and those areas where people will linger in the outside environment, such as private, communal or public gardens and public realm. Buildings should be actively ventilated allowing air to be drawn from the less polluted side of the building (where a balance needs to be achieved between air quality and energy consumption required for active ventilation). Consideration should also be given to ensuring that buildings façades, which face directly onto a pollution source, are sealed. Table 2.13: Air Quality Requirements</p>	<p>Development scale</p>
<p>Where development could potentially contribute to a worsening of local air quality an air quality assessment will be required.</p>	<ul style="list-style-type: none"> - Minor - Major, Large scale with the potential to increase and/or change road traffic. - Commercial or industrial use requiring environmental permitting⁹. - Development proposing a biomass boiler.
<p>Proposals may be required to demonstrate how the development is designed to reduce people’s exposure to air pollutants to acceptable levels through an air quality assessment.</p>	<p>Minor, Major, Large scale</p>
<p>Restaurants or other odour emitting premises will be required to locate air extracts appropriately to avoid nuisance to neighbouring occupiers.</p>	<p>All Class A3, A4 and A5 development</p>
<p>Developers should comply with the minimum standards on construction management that are detailed in the London <i>Best Practice Guidance to Control Dust and Emissions from Construction and Demolition</i>.</p>	<p>Minor, Major, Large scale</p>

11 Implementation of Action Plans

11.1 Action Plan

This section will provide an update on the work that the London Borough of Barnet Council is doing to work towards improving air quality. This is a key requirement of the Environment Act 1995.

The whole of the London Borough of Barnet has been designated an Air Quality Management Area (AQMA) for nitrogen dioxide (measured as an annual mean and a one-hourly mean) and particles, PM10, (measured as a 24 hour mean). The council therefore has an Air Quality Action Plan which aims to improve air quality in the borough. The AQMA was designated due to the modelled and monitored exceedence of the nitrogen dioxide and particles' objectives next to main roads (A roads, motorways and high streets) in the borough. It was amended in AQMA to include Golders Green bus station.

The council must report on the progress of the Action Plan each year to DEFRA (Department for Environment, Food and Rural Affairs) and the Greater London Authority. The Government uses the information to assess whether actions taken at the local level are achieving air quality improvements. This allows the government to report back to the European Union on whether the UK is meeting the air quality objectives and limit values.

The actions in the Action Plan include the Council's work on the promotion of cycling; walking to school; regulation of potentially polluting businesses and industries; management of its fleet; environmental appraisal of potentially polluting development; planning polices to promote best practice for new residential development. The Council has a good record of interdepartmental working between planning, environmental health and transport colleagues to improve air quality. The Action Plan table lists the actions and progress to date. It remains a vital component of the Council's work on air quality and can be found following the Mayor's Air Quality Fund update below.

11.2 Mayor's Air Quality Fund

In 2013 the GLA announced the Mayor's Air Quality Fund. The London Borough of Barnet was successfully awarded funding for two projects. Work on the projects started in 2014 and will finish in 2016. The MAQF projects are the Council's current key priorities in terms of a proactive approach to air quality action planning.

11.2.1 Air Quality Champion Project

This project is a joint project between Harrow and Barnet Councils, and also involves the public health authority.

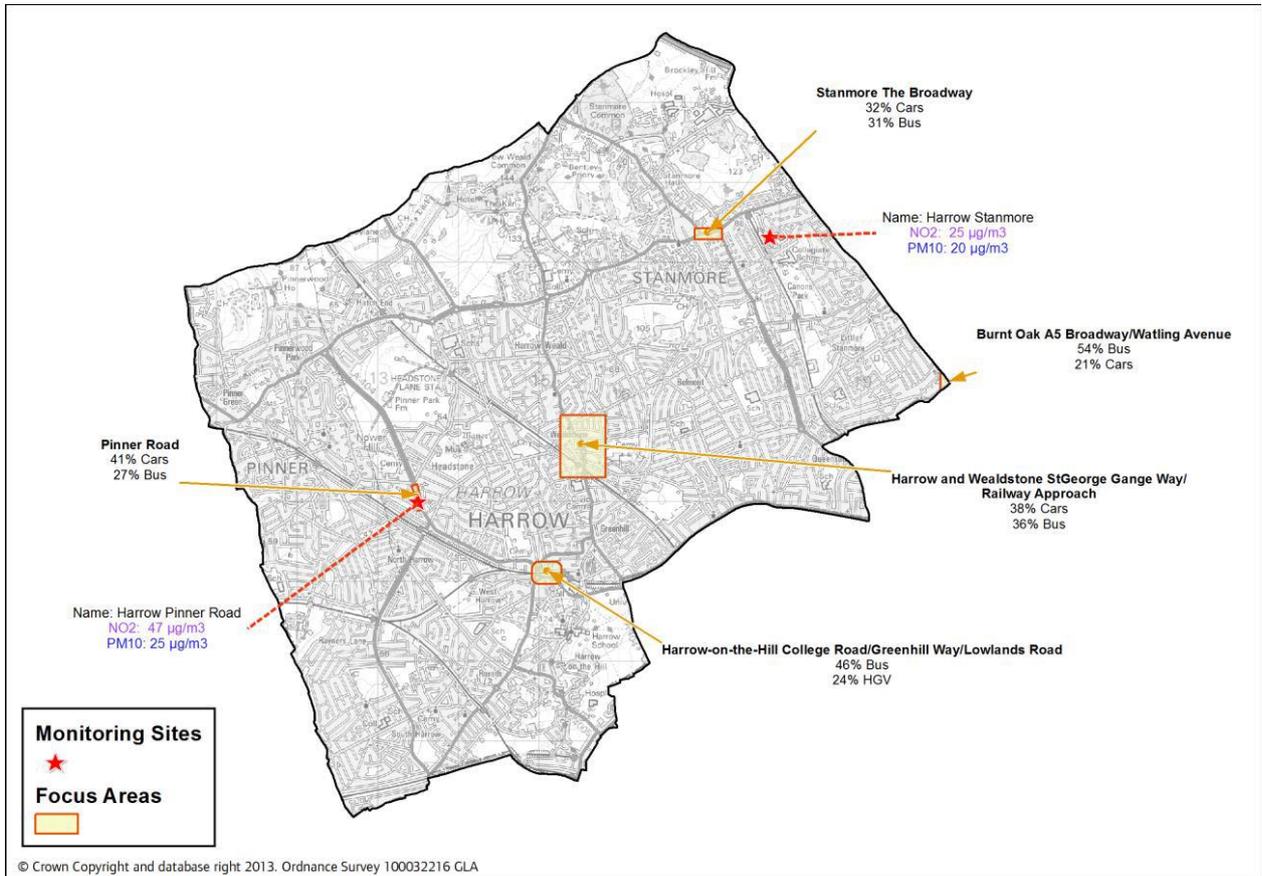
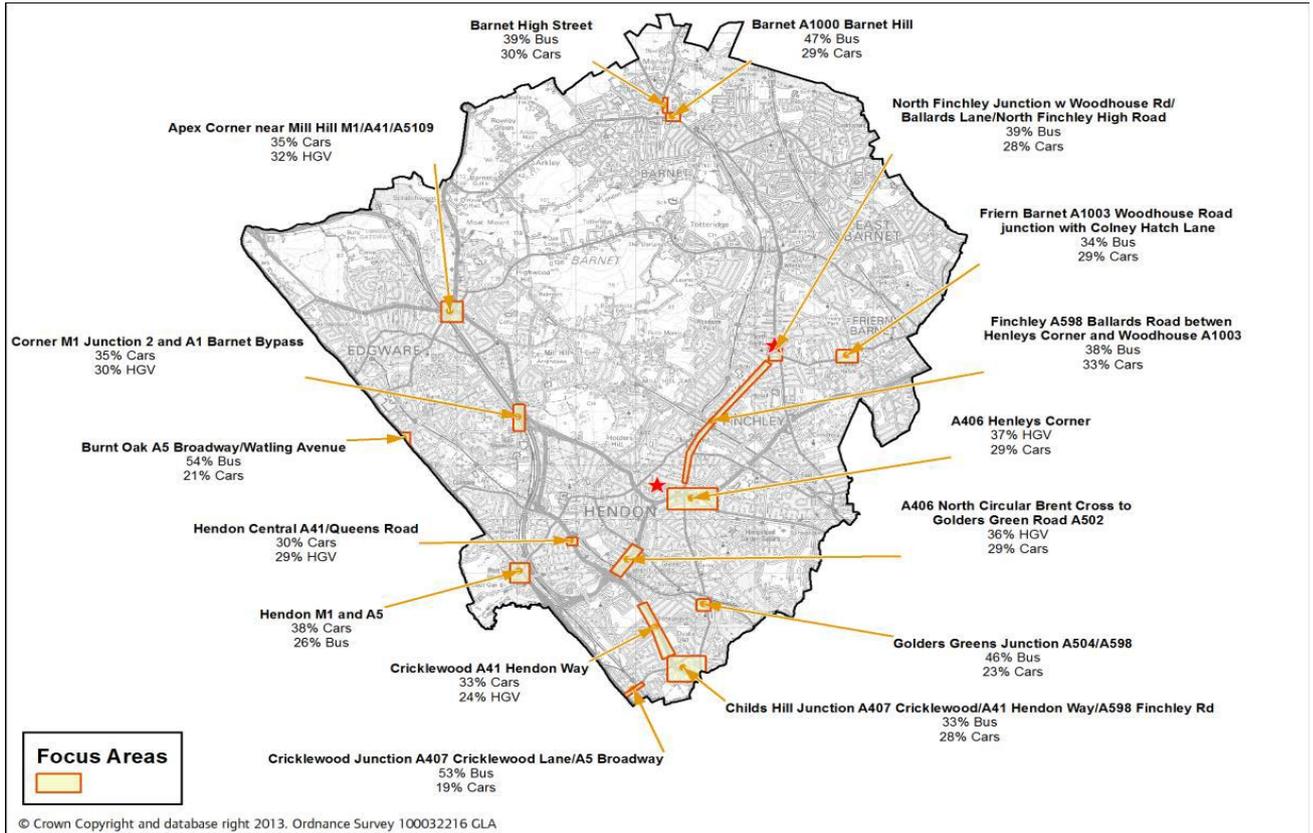
Project Description

The focus of this project was to hire an air quality champion to engage with local residents, schools and businesses to support smarter travel choices and emphasise the links between poor health, air pollution, and sedentary behaviour. A business air quality champion scheme will be also be initiated.

The champion will use existing resources such as the Cleaner Air 4 Primary Schools Toolkit and link this work into existing travel planning support. A curriculum resource for secondary schools will also be developed using data from the Borough's air quality monitoring stations.

Fifteen Air Quality Focus Areas have been identified in LB Barnet, and five in LB Harrow. Schools and businesses close to and within these areas will be targeted.

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Project Objectives

- To raise awareness of the importance of improving air quality for health
- To reduce idling of vehicles near schools
- To increase the amount of trips to school and work by walking, cycling and public transport
- To re-engage schools that have not been recently active with their School Travel Plans
- To improve the health of children by promoting active travel choices
- To improve air quality in air quality focus areas especially close to schools
- To create awareness in local businesses about poor air quality
- To launch an air quality champion scheme for local businesses

Desired Outcomes

- Improved health of children as they are undertaking more physical exercise by walking or cycling to school
- An increased awareness of the links between poor health, air pollution and sedentary behaviour
- Raised community awareness of air quality issues
- A change in how children travel to school
- An improvement in air quality around schools, and in air quality focus areas
- Reduced idling by cars outside schools
- Action initiated by business to reduce their vehicle mileage
- A decrease in residents' dissatisfaction with congestion

Key achievements to date

- Currently the initial 'school packs' are in the final approval stage so are ready to be distributed. This will allow for schools that are not already engaged to be able to express their interest and learn. Includes detailed program pack, flyers and leaflets.

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- A joint event in October (October Airstravaganza) will join events in Barnet and Harrow with a weekly main event. This will incorporate walk to school month and will be available to all interest schools.
- Main schools engagement will commence in September in Barnet and Harrow.
- Currently working with three schools in North Finchley regarding this project and funding for projects from the North Finchley Project
- An example of this is Northside School where the aim is to allocate funding from the North Finchley project. This would go towards making playground space for urgently required cycle/scooter storage along with NO₂/PM reducing foliage. This is a school that is close to the A1000 and therefore has raised NO₂/PM concentrations. This would go a long way to reduce congestion round the school which is currently high. In the works is an engagement program with diffusion tubes, integration of the Cleaner Air 4 Schools toolkit and provision of science lessons/experiments during science week in 2014.
- Bookings for 'science weeks' have been made by several schools in February and March 2015.
- Have given advice to other council departments on air quality – Christ's College Finchley where an air quality and extended active transport plan is currently being integrated into the new School Travel Plan. Also the program will provide advice and support on air quality issues and increased engagement in active transport.
- Martin School has plans for a green screen project that can be part funded by this project. This will involve providing the shrubs etc. and then there will be a mass engagement project within the school to plant the screen and maintain it.
- In total 5 schools have been engaged with before the pack launch and this figure will rise dramatically once promotion starts.
- A completion is being organised so that schools/community can add design elements to the new exterior design of the Tally Ho AQMS.
- In production for 2015 launch is information for the engagement for local community/businesses to promote the issues of air quality and active/sustainable transport. This will include electric car provision in conjunction with the North Finchley Project.
- A website and twitter feed has been developed.
- <http://www.barnetandharrowcleanerair.com/> and <https://twitter.com/BarnetHarrowCA>

11.2.2 North Finchley Clean Air Project

The purpose of the project is two-fold. The first is to target North Finchley, an air quality focus area and one of the largest town centres in the London Borough of Barnet, with a package of measures to improve air quality.

The second purpose is to reduce nitrogen dioxide concentrations in North Finchley as well as across the Borough's air quality focus areas, by planting magnolia, pea and silver birch trees.

Project Objectives

- To directly involve the local community in implementing air quality improvement measures.
- To address the local traffic issue
- To create awareness in local businesses about poor air quality
- To launch an air quality champion scheme for local businesses
- To reduce levels of nitrogen dioxide
- To work with schools in the area to encourage alternative transport to school

Desired Outcomes

- Improved air quality in the North Finchley Cleaner Air area and the other air quality action areas
- Reduction in trips made to North Finchley town centre by car
- Raised community awareness of air quality issues
- A change in how children travel to school
- Reduced idling by cars outside schools
- Action initiated by business to reduce their vehicle mileage
- A decrease in residents' dissatisfaction with congestion

An increase in local people cycling for leisure and for commuting

Key achievements to date

Greening

- 111 air pollution mitigating trees were planted next to busy routes in the North Finchley area. This will be complemented by more planting of trees and shrubs in a novel campaign to get the public involved by allowing us to plant in their gardens.
- The greening of the local Percy Road pocket park

Bicycle Hire Scheme

- 18 bike stands were installed in two separate locations to encourage cycling across the North Finchley area.
- 6 bicycles for hire were provided in a pilot scheme which may be rolled out across the borough later on.

Electric Vehicles

- Work is ongoing to install a dual capacity EV charging point in a public car park in the centre of North Finchley.
- We are preparing plans to fund an EV car sharing scheme.

Car Sharing

- We are preparing plans to fund a local car-pooling scheme or to encourage greater uptake of an existing scheme within North Finchley.

Pop-up Shop

- We will have exclusive use of a community based “shop” in North Finchley every Monday for 8 weeks. We will use this as a base to bring in local community groups and schools to learn more about the project and air quality in general. People will have the chance to contribute their comments and thoughts about the project and what air quality in their area means to them. A successful launch event has already been held in the shop.

Schools Champion

- We have a member of staff who will speak to children at their schools about air quality and the project and work to change their views on walking to school, idling engines, etc.
- He will also work with the schools' travel plan champions to get interest and publicise the project.
- He has already identified a number of schools that would benefit from greening.

Promotional Material

- We will have a range of promotional materials to promote the project from leaflets to encourage private garden tree-planting to signage for the bicycle-hire scheme.

Website

- A website has been developed. This will allow members of the public to post their own photos, drawings, videos and comments about their views of the project, how it affects them and how they see it helping North Finchley. For example, school children can show how their day has changed by walking to school instead of being driven.
- The website will thus have content from every aspect of the project and so pull it all together into a single "user experience" that will be easier for people to understand and thus buy into it encouraging wider participation.
- The website has been built to encourage social sharing which we hope will help promote the project.

Table 11.1 Action Plan Progress

Action Point	Detailed Action	Original Timescale	Progress	Comments
1. Carry out vehicles emissions testing	a. Participation in the London Vehicle Emissions Testing programme	a. July 2003- March 2004	<p>a. A testing programme across London Boroughs ran from July 2003 to March 2004.</p> <p>In LB Barnet a total of 518 vehicles were stopped in 10 test days with an overall failure rate for Barnet of 4.4%.</p> <p>Final Unpublished Report: September 2004 by Transport Research Laboratory (TRL).</p> <p>This action is completed.</p>	<p>a. All petrol vehicles were tested for carbon monoxide (CO) and hydrocarbons (HC), diesel vehicle were tested for smoke opacity. If their emissions failed the test, they were served with a fixed penalty fine. Nitrogen dioxide (NO2) and Fine Particles (PM10) were not measured specifically in the tests.</p> <p>The survey found that there was good general awareness of the issue of air quality and the contribution of vehicle emissions to pollution in London.</p>
	b. Secure appropriate resources for road side emission testing for a smaller number of Boroughs or alone.	b. April 2003 - discontinued	b. Not being implemented so no further action will be taken.	b. This action was not proved viable due to a lack of resources.

Action Point	Detailed Action	Original Timescale	Progress	Comments
2. Introduce penalties for stationary vehicles with idling engines	<i>a. Continue to work in partnership with other London boroughs and the ALG on approach to using legislation on stationary vehicles with idling engines²</i>	<i>b. 2003 - ongoing</i>	a. and b Continual liaison and monthly cluster meetings with other London boroughs.	a. The majority of London Boroughs do not issue fixed penalty notices for idling vehicles. LB Barnet continues to review the situation.
	<i>b. Secure appropriate resources for enforcement</i>	<i>b. 2003 - ongoing</i>	<p>b. see above and the Council website provides information and advice to residents about idling vehicles.</p> <p>TfL have devised an Action Plan for Buses that sets out a range of initiatives for tackling engine idling that is due to be implemented soon.</p> <p>TfL recently embarked on an awareness and education campaign to address issue of engine idling with all professional drivers including bus drivers.</p>	<p>b. The Council has to date been unable to authorise officers to serve fixed penalty notices. Difficulties with implementation of this measure include a lack of resources of both officer time and money.</p> <p>LBB liaises with bus companies and Transport for London. This has significantly reduced the amount of idling buses at Golders Green Bus Station.</p> <p>LB Barnet Environmental Health continues to respond actively to complaints from the public concerning idling engines. LBB advises its own fleet to conform to regulations.</p>

<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
3. Make the Borough a Low Emission Zone (LEZ) for certain categories of vehicles by including the Borough in a London-wide LEZ	a. Continue to work in partnership with other London boroughs and the ALG & GLA ³	a. Phased approach started 2008	<p>a. The whole of London is now a Low Emission Zone. It is embedded in the Mayor's Air Quality Strategy 2010</p> <p>Information on the LEZ can be obtained from www.tfl.gov.uk and specifically from http://www.tfl.gov.uk/assets/downloads/corporate/travel-in-london-report-3.pdf</p>	<p>1. Since January 2012, lorries, buses, coaches and heavy specialist vehicles need to be Euro IV or better to avoid paying the daily charge. (This effectively means vehicles registered prior to 2006 do not meet the emissions criteria without modification)</p> <p>2. Since January 2012, larger vans and minibuses need to be Euro III or better. (This effectively means that vehicles registered prior to 2002 do not meet the emissions criteria without modification).</p> <p>3. The Mayor has announced that there will be a new LEZ standard for Transport for London operated buses coming into effect in 2015.</p>

<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
3. Make the Borough a Low Emission Zone (LEZ) for certain categories of vehicles by including the Borough in a London-wide LEZ	b. Act on, following consideration of: i. The findings of the London wide LEZ feasibility study and, ii. The findings of modelling work carried out by consultants ERG on the effects of a borough wide LEZ.	b. 2007 - 2008	b. Further information can be found at: http://www.tfl.gov.uk/roadusers/lez/default.asp X Action completed.	b. and c. Barnet Environmental Health will continue to promote the LEZ, now that it is implemented.
	c. Work with the Mayor, in conjunction with the ALG and central government in considering the London LEZ Feasibility Study Steering Group's recommendations	c. 2007-2008	c. Action completed.	c. See above
4. Improve traffic flow in town centres by improved coordination of traffic lights	a. Link and coordinate traffic lights to achieve improved traffic flows and less congestion in town centres using electronic control systems	a. 1990 and is discontinued.	a. This is led by TFL and the Council makes comments on their proposals. It is not possible to set a defined quantifiable indicator for this work. This action is discontinued.	a. Limited scope for further work in this area and limited capacity within TfL's traffic signals team because this is primarily a TfL action. Due to the lack of control of this action by Barnet Council, liaison continues – see 4.b. below- however this action is now discontinued.

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Action Point	Detailed Action	Original Timescale	Progress	Comments
	b. Involve the TfL Street Management's Traffic Technology Services Team in discussions regarding changes to traffic control systems ⁴	b. 1990 - ongoing	b. The liaison continues. The revised Mayor's Transport Strategy (May 2010) has resulted in an updated Borough Local Implementation Plan due to be published later this year. The updated actions will be incorporated into the next revision of the Air Quality Action Plan.	<p>b. Regular liaison meetings take place between the Council and TfL's traffic signals team</p> <p>TfL lead on traffic signals work and LB Barnet comment on proposals.</p> <p>In 2010 improvements to traffic signalling at Golders Green bus station and surrounds improved traffic flow.</p>
5. Improve traffic flow in general	a. Work to improve flow on main roads should reduce need for "rat runs" on residential roads	a. 2002 - ongoing	a Ongoing.	<p>a. Limited traffic management changes on borough roads during 2010/11 as the focus has been on maintenance of roads and pavements.</p> <p>Actions to improve congestion are difficult to implement and quantify.</p>
5. Improve traffic flow in general contd.	b. Traffic delays will be reduced at various congestion hotspots through the use of robust traffic management techniques	b. 2002 - ongoing	b. Ongoing	<p>b. Henley's Corner junction improvements started in 2011 are now completed.</p>
6. Introduce Controlled Parking Zone (CPZ)	a. Control the parking space available on streets by introducing meters and residents permits	a. 1990-ongoing Originally CPZs were experimental.	<p>a. and b. It is now an embedded policy in Barnet to have permanent Controlled Parking Zones and a formal programme of reviews.</p> <p>No plans currently for any further CPZ areas.</p>	<p>a. and b. CPZ extension introduced. Pay and Display (P & D) parking scheme introduced in Hampden Square 2010. Free parking places in the borough's CPZs converted to permit/ P&D commenced in 2010/11, completed in 2011/12. There are reduced parking charges for alternative fuelled vehicles- a green resident's permit is 50% normal</p>

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<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
	b. Use experimental traffic orders to establish Controlled Parking Zones that are reviewed and adjusted in the following 18 month period.	b. 1990-ongoing	b. See above	cost .

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<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
7. Promote alternative forms of transport for businesses/commercial properties	a. Continue to encourage large new developments to develop a Green Travel Plan through the UDP	Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing	<p>a. Ongoing</p> <p>UDP adopted 2006 Supplementary Planning Document for Sustainable Design and Construction adopted 2007</p> <p>Will feed into emerging Local Development Framework for late 2011.</p> <p>Adopted London Plan Policy (1 electric vehicle per five parking spaces).</p> <p>The Mayor's Air Quality Strategy 2010.</p>	<p>a. Electric vehicle charging points</p> <p>The borough is awaiting passage of the London Local Authorities and Transport for London (No. 2) Bill into law that should make explicit the power for local authorities to install charging points and clarify responsibilities in relation to charging vehicles. In the meantime the borough continues to:</p> <ul style="list-style-type: none"> -Encourage or require provision for electric vehicles in new developments in line with the Mayor's aspirations -Require no minimum depth of forecourt when providing a vehicle crossover, (a legal agreement is required that the vehicle will not overhang which becomes a local land charge transferring the requirement to future owners of the property) making it easier for owners of electric vehicles (which are often smaller vehicles) to get their vehicle off the road to charge it. -Ensure private sector provision of infrastructure where feasible. <p>This is being considered to be monitored and reported in Barnet's Annual Monitoring report.</p> <p>b. 2014. Work is now underway via the LIP to explore the feasibility of electric charging points within the borough. The Mayor's Air Quality Fund will provide funding to install a dual fast charging point in a council-owned car park.</p> <p>2015 This project is still being explored to overcome the perceived loss in terms of lost revenue from parking charges.</p>
8. Promote alternative	a. Continue to use alternative fuels for	a. January 2000 - ongoing	a. LPG vehicles were leased 2001-2002 By 2005 number reduced to 20. By 2010 no LPG	

<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
forms of transport and fuels in the Council and other public services	courier service carrying internal mail		vehicles being used due to widespread problems. This action is discontinued.	
	b. Establish measures to improve emissions of refuse and street cleansing vehicles.	b. January 2001 - ongoing	b. All diesels use Ultra Low Sulphur fuel. The Council fleet meets the LEZ requirements.	b. The street-cleansing and refuse vehicle fleet is reviewed annually and updates made regularly. All vehicles now meet the LEZ requirements as appropriate. .
8. Promote alternative forms of transport and fuels in the Council and other public services cont.	c. Ensure that Council vehicles are used sensibly, are well maintained and that routes and tasks are coordinated to be as efficient as possible.	c. January 2001 -- ongoing	c. To schedule and ongoing. The Council fleet meets the LEZ requirements.	c. Emissions are tested frequently at the operating centre as part of vehicle maintenance and annually by Vehicle Inspectorate in conjunction with the annual Ministry Test. A Fuel additive is also used in diesel vehicles which improves fuel combustion and further reduces exhaust emissions Transport schedules and mileages are reviewed to minimise fuel consumption and emissions. Use of telematics system is being reviewed. LBB wants to build in flexibility to collecting green waste: the quantities vary seasonally and it is difficult to manage customer expectations.

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<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
8. Promote alternative forms of transport and fuels in the Council and other public services cont.	d. Continue with improvement for Council's vehicle fleet	d. Started 2000 -- ongoing	d. To schedule and ongoing. Annual emissions testing audit ongoing and review by Fleet Management.	d. There is a fleet renewal programme for Barnet's vehicles. In 2008/09 Go Plan commissioned to do a review of alternative fuel use for all Council fleet. In 2010/11 final report now produced and it found that electric costs 3x normal costs. Trials of different ratios of Bio Fuel are planned for Q3 of 2011. In October 2010, the Council held an Open Day at Mill Hill depot where alternative fuels were promoted.
	e. Use minibuses between council sites to carry people and internal mail.	e. 2003/2004	e. Not implemented. This action is discontinued	e. Move to the NLBP site has reduced the need for inter-site travel.
	f. Operate a shuttle bus service between hospital sites.	f. 2003/2004	f. Not implemented This action is discontinued	f. Problems: financial constraints, impracticality and resource implications.
8. Promote alternative forms of transport and fuels in the Council and other public services cont.	g. Develop and promote the Council's Green Travel Plan as part of the Council's Corporate Accommodation Strategy (see also Action Point 7)	g. 2003 - ongoing	g. Travel Plan for employees launched in April 2007. This followed detailed research and surveys of employees' travel habits. Launch included a promotional video and prizes for getting to work sustainably. Travel Plan Coordinator appointed in April 2011. This post has since been discontinued.	g. Initiatives include: <ul style="list-style-type: none"> • Cycle training for staff- available to end of March 2011. • pool Oyster cards for business travel to promote travelling by public transport- in place in some teams. • upgrading shower facilities to encourage cycling to work- showers and lockers installed in Building 4 NLBP.

<i>Action Point</i>	<i>Detailed Action</i>	<i>Original Timescale</i>	<i>Progress</i>	<i>Comments</i>
				<ul style="list-style-type: none"> • encouraging video conferencing- video conferencing room set up in building 4 NLBP • upgrading cycle racks- racks upgraded and increased in 2010/11 • There have been no reviews of the travel plan since its launch and no dedicated officer working on it.
8. Promote alternative forms of transport and fuels in the Council and other public services cont.	h. Develop and promote the Council's Green Travel Plan by facilitating car sharing through the use of specific software in Council premises	h. April 2003 - ongoing	h. Travel Plan Coordinator appointed in April 2011. This post no longer exists.	<p>h. Car sharing software including specific areas for London Borough of Barnet and other large employers is available through "London Lift share" – supported by the North London Transport Forum. Access is via the following website: http://www.northlondontransport.org/carsharing.asp</p> <p>Investigating possibility of priority parking spaces for car sharers.</p> <p>This action has not progressed as there is no dedicated officer working on it.</p>
	i. Establish a fleet register of borough vehicles that includes emissions information ⁵	i. 2003 - ongoing	i. To schedule and ongoing.	i. Fleet Manager maintains a data base register of council vehicle emissions criteria.
	j. Institute Council driver training to improve fuel economy and reduce emissions ⁶	j. 2003 - ongoing	j. To schedule and ongoing.	j. Each department. has nominee assessor trained to Institute of Advanced Motorist Driver Assessment Standard. and arrange for new recruits to be assessed and trained. The Transport Services Department provides an independent external assessor for school staff driver assessments. Everyone who drives a fleet vehicle must do the training. In 2010 two drivers were trained to IAMDAS.

Action Point	Detailed Action	Original Timescale	Progress	Comments
9. Promote alternative forms of transport in schools	a. Promote more sustainable forms of transport to children and young people who live or are schooled in L. B. Barnet as described in the L B Barnet Sustainable Modes of Travel Strategy (SMoTS, 2007)	2001 - ongoing	a. Ahead of schedule and ongoing. National Indicator 198 Mode of Travel to school Schools are preparing their own travel plans to make access to schools safer, to encourage more walking, cycling and use of public transport, to discourage unnecessary car journeys to and from school, discourage parking on main traffic routes and reduce congestion. STPs are reviewed annually and rewritten every 3 years.	a. The Education and Inspections Act 2006 identifies a legal duty for the Council to promote more sustainable forms of transport to children and young people who live or are schooled in L. B. Barnet. How the Council meets this obligation is described in the SMoTS. A main part of SMoTS is the School Travel Plan (STP) process whereby all schools were expected to have a STP in place by 2010. Through the support of the DCSF and Transport for London funded School Travel Plan Coordinator and TfL funded School Travel Advisors, 149 schools (96.75%) across Barnet have an approved STP (April 2011) covering 54,619 pupils or 98.79% of the pupils in a Barnet school.

Action Point	Detailed Action	Original Timescale	Progress	Comments
9. Promote alternative forms of transport in schools cont.	a. Promote more sustainable forms of transport to children and young people who live or are schooled in L. B. Barnet as described in the L B Barnet Sustainable Modes of Travel Strategy (SMoTS, 2007)	a. 2001 - ongoing	a. See above.	2015 http://barnetstp.org/index.php The Council remains actively committed to promoting walking and cycling to school. The dedicated website provides a wealth of information and advice.
	b. Work in Local Agenda 21 Partnership with schools	b. 1999	This action is discontinued.	b. As of February 2004, the council ceased to work directly with LA21 partnerships, but will support specific projects that meet the council's objectives.

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Action Point	Detailed Action	Original Timescale	Progress	Comments
9. Promote alternative forms of transport in schools cont.	c. Continue with “walking buses” to schools scheme	c. 2002 - ongoing	c. To schedule and ongoing.	<p>c. Established walking buses and informal walking buses at a number of schools. 21 schools bid for and were awarded Walking Bus and Walking Initiative grants by the DFES/DTF in April 2007 for 3 years.</p> <p>Over 50 schools took part in the National Walk to School Week in May 2010 and 13 schools participated in the London-wide Big Wow in October 2010.</p> <p>56 schools were signed up as part of the walk on Wednesday scheme in the academic year 10/11</p> <p>Other schemes (Park and Stride, Park and Ride and Car Share) are also being encouraged and are incorporated into the action plan of each School Travel Plan where appropriate.</p> <p>The Road Safety Team delivered up to the end of March 2011 a number of projects</p> <p>c. contd. within schools such as practical pedestrian training ‘Safer Moves’: a series of 5 lessons with the objective of teaching children about Road Safety and</p>

Action Point	Detailed Action	Original Timescale	Progress	Comments
9. Promote alternative forms of transport in schools cont.	c. Continue with “walking buses” to schools scheme contd.	c. 2002 – ongoing contd.	c. To schedule and ongoing contd.	culminates in them crossing the road using the Green Cross Code. Road Safety projects aim to equip children with the skills to stay safe when they are out on the roads. This is usually a pre-requisite for a parent allowing their children to walk to school when they become old enough. This is encouraged and incorporated into the action plan of each School Travel Plan where appropriate.

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Action Point	Detailed Action	Original Timescale	Progress	Comments
9. Promote alternative forms of transport in schools cont.	d. Continue with “walking buses” to schools scheme contd.	d. . 2002 – March 2011 d. . 2002 – March 2011	d. To schedule and ongoing until March 2011. Action discontinued from April 2011	<p>d. Up to the end of March 2011 the Barnet Safe Cycling Scheme was offered to all Year 6 pupils who live in Barnet. It comprised of a two day course held in two schools in the Borough running for seven weeks in the Easter and Summer holidays. Pupils learnt theory, off road and on-road training to Level 2-3 of National Cycle Training Standards</p> <p>Cycle route training scheme for all Barnet school secondary pupils. The training was offered 1:1 training on home d. contd. school- home cycle use, and included a bike check. A free 2hr adult cycle lesson whether an absolute beginner or just a refresher was offered on a 1:1 basis. Further 2 hours if required</p> <p>SEN training completed at four schools.</p> <p>From April 11 to the present no cycle training has been funded of organised.</p>

<p>10. Promote public transport</p>	<p>a. Continue to work in partnership with transport providers e.g. bus and rail companies</p>	<p>a. Ongoing</p>	<p>a. To schedule and ongoing.</p>	<p>a. Liaison occurs with TfL as part of the submission and approval of Planning Applications whereby Section 106 money is frequently allocated as part of major applications to public transport improvements, such as new or improved bus services and improved train and tube stations and other interchanges.</p> <p>In 2010, TfL introduced the 324 bus to service Colindeep Lane. The 186 bus was diverted to go through Grahame Park estate to provide better bus services for local people.</p> <p>Improvements are proposed for buses, cyclists and pedestrians in the vicinity of the A5 through West Hendon as part of the Regeneration of the estate, and the planning application for the latest phase was approved in 2010.</p> <p>Mill Hill East outline planning application was approved by the Council in 2011, and includes working closely with TfL to deliver planned public transport improvements at the tube station, including subject to viability, step-free access. There are also plans to a. a. contd: extend and re-route existing bus services into the site, and create a new bus layover area.</p> <p>The Brent Cross Cricklewood Regeneration scheme, which was granted outline planning permission in October 2010, is planned to create a new train station on the Midland Mainline at Brent Cross, together with a new public transport interchange. The existing railway station at Cricklewood, bus station at the</p>
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10. Promote public transport contd.	a. Continue to work in partnership with transport providers e.g. bus and rail companies continued	a. Ongoing	a. To schedule and ongoing.	<p>Shopping Centre and the tube station at Brent Cross will also all be improved, and there will be new bus services introduced, together with improvements to existing services. Integrated public transport facilities and services will therefore be provided and key trip generating sites within the development are also planned to be connected by a rapid transport system. The development will start in 2016 and is anticipated to continue for up to some 20 years. Ongoing close and collaborative liaison in taking forward the proposals continues to take place with TfL and Network Rail.</p> <p>The London Borough of Barnet website has a link to journey planning by public transport.</p>
10. Promote public transport contd.	b. Work with North London Transport Forum (NLTF)	b. ongoing	b ongoing	b. LB Barnet continues to work in this forum providing input as appropriate to ensure the promotion and delivery of high quality public transport services and facilities in North London, including those which

			benefit Barnet, such as the Thameslink Upgrade programme. From 2011 Barnet is also seeking to become increasingly involved in the equivalent West London grouping as part of the West London Alliance, in order to further promote public transport improvements focused on major Regeneration schemes in the western side of the borough along the A5 Corridor
c. Work with the London Bus Priority Network (LBPN) including the London Bus Initiative (LBI) to shorten journey times	c. 2003 – 2010	c. London Bus Initiative finished in 2003 and was replaced by the LBPN which ceased in 2010. This action is completed.	c. LBI and LBPN both helped to deliver improved bus services in Barnet, especially through providing better bus stops, including accessibility improvements to make the buses fully accessible to disabled people, including wheelchair users.
d. Ensure that large new developments are near to existing public transport network	d. Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing	d. The UDP was adopted in May 2006 and will be replaced in 2012 by the Core Strategy and Development Management Policies documents as part of the Local Development Framework All new development should be matched to transport capacity: d. The UDP was adopted in May 2006 and will be replaced in 2012 by the Core Strategy and Development Management Policies documents as part of the Local Development Framework All new development should be matched to transport capacity:	d. Developments with significant transport implications should provide a full Transport Assessment. For significant trip generating developments the occupier will be required to maintain a Travel Plan to minimise increases in road traffic and meet mode split targets. The thresholds for transport assessments are contained in Appendix B of Department for Transport guidance. The thresholds for different types of development to provide a travel plan are set out in Transport for London guidance.
d. Ensure that large new developments are near to existing public transport network	d. Implement – ed partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing		

10. Promote public transport contd.	d. Ensure that large new developments are near to existing public transport network	d. Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing	
11. Promote design that reduces the need for travel	a. Encourage new developments in locations that reduce the need for travel	<p>.a. and b. The Core Strategy highlights that the provision of an appropriate mix of uses can contribute to managing Barnet's growth and making efficient use of brownfield land. The benefits of a mix of uses is that they can :</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reduce the need to travel, reducing congestion and helping to improve air and noise quality. <input type="checkbox"/> Increase the supply of housing especially above ground floor commercial development in town centres <input type="checkbox"/> Promote successful places with a range of activities that are used throughout the day, increasing safety and security. 	<p>a.and b. Higher density development may be appropriate where there is good public transport access. Apart from the regeneration and development areas of BXC, Colindale and Mill Hill East, the redevelopment of sites in the larger town centres is expected to bring forward a mix of uses to provide greater opportunities to work and live in the same place and support the existing town centres.</p> <p>Car free development is also encouraged where development can provide evidence that there is sufficient on street parking.</p>

London Borough of Barnet Council

11. Promote design that reduces the need for travel contd.	c. Work with Transport for London on the development of freight to rail arrangements ⁸	Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 and ongoing through the LDF.	b. The UDP was adopted in May 2006. UDP Policy M15 is to encourage the use of rail for the movement of bulk freight.	b. A new rail freight facility is planned for the Brent Cross Cricklewood Regeneration Area. This application has been approved in outline however the programming and final details of the new facility are notionally in phase 4 and will be agreed at a later stage. Brent Cross Cricklewood also includes a rail served Waste Handling Facility as part of the first phase.
12. Promote alternative forms of fuel for vehicles	a. Promote the development of new refuelling infrastructure for alternatively fuelled vehicles	a. and b. Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing	a. The UDP was adopted in May 2006. The modified UDP states that the Council will favourably consider plans to install equipment to provide alternative vehicle fuels where it is safe to do so.	a. and b: See also Action Point 7a. For electric vehicles, legislation is currently underway to enable charging points on the streets. The Council is introducing planning requirements on developments to put in vehicle charging points in line with the London Plan. For LPG and other fuels there are no new developments. This is a market driven issue.
	b. Work with the Mayor with a view to identify sites in the future for refuelling infrastructure for alternatively fuelled vehicles ⁹	b. See above	b. The UDP was adopted in May 2006. Increasing the take-up of cleaner fuels is part of the Mayor's Air Quality Strategy, and is in the Regional Planning Context section of the UDP.	b. See above

London Borough of Barnet Council

13. Encourage cleaner energy sources for buildings	a. Lead by example by getting all of the Borough's electricity on the Green Tariff which ensures the use of renewable energy sources	a. Started April 1997	a. To schedule and ongoing.	a. Continuing to use Green Tariff where cost effective.
13. Encourage cleaner energy sources for buildings	b. Higher standards for new build projects e.g. schools rebuild programmes - Primary Schools Capital Investment Programme & Building Schools for the Future	b. Started April 1997	b. Building Schools for the Future discontinued in 2010.	b. Building Schools for the Future funds have ceased in 2010. However, as part of its Primary Schools Program for PSCIP, the Council has rebuilt four schools to the "very good" BREEAM standard as follows: Whittings Hill Primary completed 2009, Broadfields; April 2010, Northway Fairway; February 2011, Hyde School ;September 2009. Renewable technology are included in new build and retrofit. Northway Fairway have Solar PhotoVoltaic and Combined Heat and Power completed February 2011, East Barnet School Biomass; September 2010. JCOSS Biomass; September 2010. Broadfields Primary; SPV and Solar Hot Water April 2010., Henrietta Barnet ; GSHP 2010.The Hyde; Ground Source Heat Pumps, September 2009. Whittings Hill Primary; Wind, SPV and SHW and GSHP September 2009. Parkfield primary; Heat GSHP, 2009.
14. Encourage more efficient energy generation and use	a. Continue to require appropriate methods for assessing the environmental performance of new developments ¹⁰	a. 2000 - ongoing	a. Generic environmental standards are set out in the Council's Sustainable Design and Construction Supplementary Planning Document (SPD) and includes reference to achievement of the Code for Sustainable Homes and BREAAAM	a. In 2006 the Carbon Trust did a survey on a sample of the Borough's premises. It made a number of recommendations including updated heating/ventilation controls; lighting controls; Improve insulation; fitting time switches to electrical appliance etc. The resources to implement the

London Borough of Barnet Council

recommendations have been approved and the mostly retrofit work, started in 2008, was completed by 2011 at a cost of £400k. This money also covered the cost of rebuilding Friern Library.

From 2010, the Council started its program of energy certification for all operational buildings and schools over 1000m² in accordance with Government legislation.

By September 2011, a program for further energy efficiency works should be agreed.

As part of the SPD on Sustainable Design and Construction, householder and planning applications for small office buildings, less than 10 residential units are encouraged to complete a sustainability checklist. The largest developments must supply an Environment Statement. Code Level 3 of the Code for Sustainable Homes is required for all new residential development within the borough, regardless of location. An exception to this requirement will apply for applicants of Major Developments who do not or cannot commit to the 20% renewable energy requirement and where instead a requirement for Code Level 4 will apply.

For non residential developments proposals more than 500m from a public transport mode must achieve a Very Good BREEAM (Building Research Establishment Environmental Assessment Method) rating, and those less than 500m away must achieve an Excellent rating.

<p>b. Work with the Mayor in encouraging local efficient energy generation schemes especially Combined Heat and Power ¹¹</p>	<p>b. Implemented fully after adoption of the Council UDP in 2006</p>	<p>b. The London Plan (Policy 5.6- Decentralised Energy in Development Proposals) requires major development (over 10 residential units or 1,000 sqm of commercial) to consider connection to existing heating or cooling networks before site wide Combined Heat and</p>	<p>b. LB Barnet will monitor the development applications that include CHP schemes and biomass boilers.</p> <p>The new Government initiative - the Heat Incentive Tariff - will provide a financial incentive for sources</p>
--	--	--	--

London Borough of Barnet Council

			Power or communal heating and cooling. The Council's requirements for local efficient energy generation schemes are set out in Section 5 of the Sustainable Design & Construction Supplementary Planning Document which will be revised in 2012.	such as heat pumps and possibly biomass. This should include a caveat in terms of emissions and Barnet Council will require applicants to submit an air quality report for all new biomass and CHP schemes, which includes Combined Heat and Power or decentralised energy or communal heating. The Mayor in London Plan Policy 7.14 – Improving Air Quality requires that development using biomass boilers includes an air quality assessment and suitable mitigating measures, included.
	c. Consider including the gradual replacement of inefficient boilers through the Building Regulations Part L and encourage this process through our HECA activities ¹²	c. Started April 2002	c. Ongoing and to schedule. The Council ceased to report to DEFRA on its HECA activities in 2003 however it continues to support this work.	c. This complies with Part L of the Building Regulations 2002, revised October 2010. The Council has a carbon emissions reduction plan. New National Government Indicators relating to carbon emissions is expected shortly.
	d. Assess combined heat and power (CHP) proposals using appropriate guidance ¹³	d. 1998 - ongoing	d. To schedule and ongoing.	d. CHP plants are being encouraged in the planning process and in the emerging LDF for Barnet.
15. Promote good design and location of new development	a. Work with the Mayor in developing policies, in the Borough's Unitary Development Policy, that increase energy conservation and sustainability and reduce the effects of	Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 and ongoing	To schedule and ongoing. UDP (Unitary Development Plan) adopted May 2006 . The Council approved the Supplementary Planning Guidance for Sustainable Design and Construction in May 2007. This includes a section on air quality – the aim is to manage	Part E of the revised Building Regulations includes higher standards for noise insulation. Revised part L of the Building Regulation (April 2006) (Conservation of fuel and power) will increase energy efficiency in new buildings by 20% from April ongoing) Scientific Services (Environmental Health) ensure

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	air pollution and noise inside buildings ¹⁴		the degree to which people are exposed to air pollutants. This is a key tool for the design of new buildings.	that air pollution and noise are taken into account when assessing planning applications. They liaise with consultants to ensure that all developments conform to the good standards from the World Health Organisation as detailed also in the LBB SPG (2007) Advice to planners was last updated in July 2011.
				<p>The London Councils Air Quality and Planning Guidance was endorsed by the London Councils Transport and Environment Committee (TEC) on 17th October 2006. It provides technical advice on how to deal with planning applications that could have an impact on air quality.</p> <p>This Action Plan will be revised soon to take on board the Mayor's Air Quality Strategy 2010.</p>
15. Promote good design and location of new development	b. Use appropriate conditions and planning obligations to ensure the protection of local air quality (specifically the public transport improvements via Section 106 planning agreements) ¹⁵	Implemented partially in 2001, and fully after publication of adopted UDP (Unitary Development Plan) 2006 ongoing.	b. To schedule and ongoing.	<p>b. There is a monthly Working Group on S106 agreements. Scientific Services are to develop guidance for planners on protection of air quality using S106 agreements.</p> <p>Not yet implemented. This action has been difficult to progress.</p>
16. Encourage composting in the community	a. Continue to work in partnership with the allotment holders to increase composting facilities to reduce the need for bonfires	1994 - ongoing	a. To schedule and ongoing.	<p>a. Shredding services are being offered to all allotment holders through liaison with allotment association.</p> <p>Continual liaison between the Council and allotment association members across the Borough.</p> <p>The green garden waste collection service has been offered to allotment holders and several sites have taken up the scheme.</p>

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				Bonfires are restricted on Barnet's allotments. In May and June, no bonfires are allowed; in July, August and September bonfires are only allowed on the first Wednesday of the month; in October bonfires are allowed after 4pm, and for the remaining months there are no restrictions.
	b. Work with the Mayor in promoting composting at home and in the community ¹⁶	2002 - ongoing	b. To schedule and ongoing.	Home composting units and wormeries are offered at a reasonable cost. A leaflet that includes information on the home composting scheme is delivered to all new residents in their original council tax mailing.
16. Encourage composting in the community	c. Continue with green (garden) waste pilot collection with a view to expand scheme	2002 - ongoing	c. This action is completed.	c. The green garden waste collection scheme now covers the whole of Barnet and includes kitchen waste. It is embedded in LB Barnet policy.
17. Control air pollution from industrial / commercial and residential sources	a. Continue to inspect Part B processes as authorised under the Environmental Protection Act, 1990 in compliance with DEFRA guidelines ¹⁷	1990 - ongoing	a. To schedule and ongoing. Permits issued within DEFRA deadlines and updates achieved.	The Council continued to successfully complete its round of risk based inspection inspections for financial years 2012/2013 and 2013/2014. LB Barnet has 133 installations including cement batchers, dry cleaners, crematoria, printing press, waste oil burners, petrol stations. vehicle re-sprayers and concrete crushers.
	b. Continue to use powers under the Environmental Protection Act, 1990, to investigate complaints and abate Statutory Nuisances where they arise.	1990 – ongoing	b. To schedule and ongoing	b. The Environmental Health department continues to respond on target to complaints about air pollution from different sources.

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17. Control air pollution from industrial / commercial and residential sources	c. Continue to use powers under the Environmental Protection Act, 1990, to work with construction companies to reduce air pollution from construction sites.	1990 - ongoing	c. To schedule and ongoing.	c. The Environmental Health department continue to respond and act on complaints from the public concerning dust issues from construction companies. Building Control continue to issue construction companies with the Considerate Contractors Scheme. This scheme aims to improve the environmental performance of construction companies on site.
	d. Adopt the London Code of Practice Part 1: The Control of Dust from Construction.	1990 - ongoing	d. Final Guidance published in November 2006.	d. LB Barnet's Environmental Health aim to reduce the impact on the public of dust and emissions from construction sites by using this guidance. Its aim is to provide the best common approach across London. The LBB Scientific services team also aim to keep up with the most up to date technology for best practice.
18. Monitor air quality	a. Continue to monitor Nitrogen dioxide and Fine particles (PM10)	1993 - ongoing	a. To schedule and ongoing.	a. LB Barnet's Scientific Services team continues to maintain two air quality stations at Tally Ho and Chalgrove School (measuring PM10 and NO2). These results are published on the web at www.airqualityengland.co.uk . NO2 is also monitored using 15 diffusion tubes across the borough.

Footnote: Superscripts 1 – 17 include the proposals as outlined in the Mayor's Air Quality Strategy, 2002. These have been superseded in December 2010 by the Mayor's Air Quality Strategy and will be updated in the next revision of the Action Plan.

12 Conclusions and Proposed Actions

12.1 Conclusions from New Monitoring Data

The London Borough of Barnet Council has examined the results from monitoring in the borough.

Concentrations within the borough-wide AQMA still exceed the annual mean objective for nitrogen dioxide and the AQMA should remain.

Concentrations still exceed the hourly mean objective for nitrogen dioxide in Golders Green Bus Station and the AQMA should remain.

Concentrations of nitrogen dioxide in the busy High Street locations were between 51 and 60 $\mu\text{g}/\text{m}^3$ in 2014. Although this monitoring indicates that the hourly mean objective for nitrogen dioxide is being achieved, it has been decided not to revoke the AQMA for this pollutant. This is due to the uncertainty in nitrogen dioxide monitoring, which means that concentrations may be higher than recorded. There is also a trend for pavement cafes and new residential development alongside high streets, so a continued focus on pollutants in these locations is beneficial.

Concentrations of PM10 are considerably below the annual mean and daily mean objectives at our two air quality monitoring stations. However there are busier roads and junctions where modelling has predicted that the objectives are being exceeded. Therefore the AQMA should remain.

There is no need to proceed to a Detailed Assessment.

12.2 Conclusions from Assessment of Sources

The London Borough of Barnet has assessed the likely impacts of local developments that have not previously been assessed (road transport, other

transport, industrial installations, commercial/domestic, fugitive emissions, residential and commercial emissions) and concluded that there are no new or newly identified sources that will have an impact on air quality.

There is therefore no requirement to proceed to a Detailed Assessment.

12.3 Conclusions from assessment of new planning applications

There are several significant planning applications for large new developments in the borough. These all have the potential to either introduce new receptors to areas of poor air quality; or to increase traffic and congestion and result in poorer air quality. However air quality issues are being addressed by close working with planning colleagues to ensure high quality design mitigates the impacts. It is therefore not intended to proceed to a detailed assessment due to new planning applications at this time.

12.4 Proposed Actions

In conclusion this 2014 Updating and Screening Assessment has not identified the need to proceed to a Detailed Assessment for any pollutant. The next course of action will be to submit the 2016 Progress Report in April 2006.

13 Appendices

Appendix A: Tally Ho and Chalgrove AQMS Yearly Reports

Air Pollution Report



1st January to 31st December 2014

Tally Ho (Site ID: BN1)

These data have been fully ratified

Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	NO µg/m ³	NO ₂ µg/m ³	NO _x asNO ₂ µg/m ³	PM ₁₀ µg/m ³
Number Days Low	-	277	-	316
Number Days Moderate	-	4	-	6
Number Days High	-	0	-	0
Number Days Very High	-	0	-	0
Max Daily Mean	197	152	428	64
Annual Max	342	272	643	186
Annual Mean	50	57	133	26
98th Percentile of daily mean	-	-	-	50
90th Percentile of daily mean	-	-	-	36
99.8th Percentile of hourly mean	-	182	-	-
98th Percentile of hourly mean	171	128	377	60
95th Percentile of hourly mean	131	111	298	49
50th Percentile of hourly mean	41	54	119	25
% Annual data capture	74.52%	74.52%	74.52%	87.57%

Instruments:

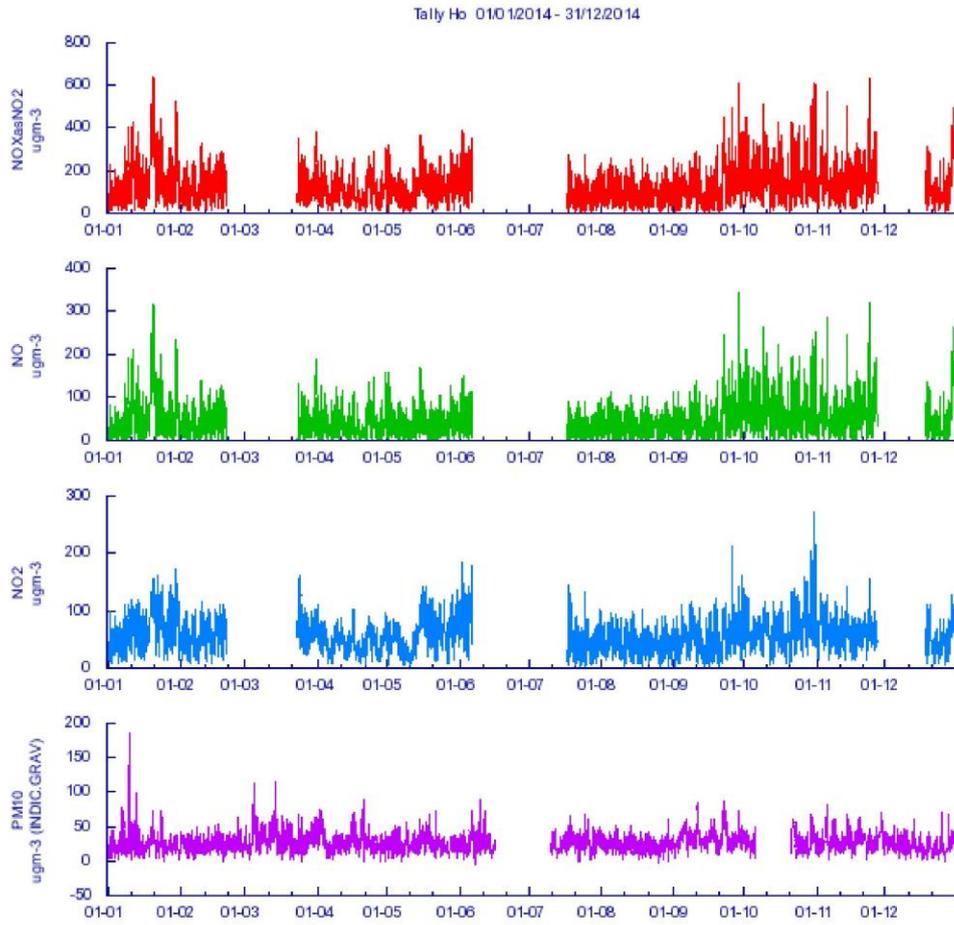
PM₁₀: Conventional TEOM Gravimetric Equivalent

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO_x mass units are NO_x as NO₂ µg m⁻³

London Borough of Barnet Council

Pollutant	Air quality standard	Exceedances	Days
PM ₁₀ particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	6	6
PM ₁₀ particulate matter (Hourly measured)	Annual mean > 40 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	9	4
Nitrogen dioxide	Annual Mean > 40 microgrammes per metre cubed	1	-

Annual Graph



Air Pollution Report

1st January to 31st December 2014

London Barnet Chalgrove School (Site ID: BN2)

These data have been fully ratified

Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	NO µg/m ³	NO ₂ µg/m ³	NO _x asNO ₂ µg/m ³	PM ₁₀ µg/m ³
Number Days Low	-	293	-	349
Number Days Moderate	-	0	-	1
Number Days High	-	0	-	0
Number Days Very High	-	0	-	0
Max Daily Mean	190	84	375	55
Annual Max	471	138	834	87
Annual Mean	11	27	44	20
98th Percentile of daily mean	-	-	-	41
90th Percentile of daily mean	-	-	-	28
99.8th Percentile of hourly mean	-	115	-	-
98th Percentile of hourly mean	106	82	239	48
95th Percentile of hourly mean	45	67	126	39
50th Percentile of hourly mean	2	21	27	18
% Annual data capture	79.78%	79.78%	79.78%	96.30%

Instruments:

PM₁₀: Conventional TEOM Gravimetric Equivalent

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO_x mass units are NO_x as NO₂ µg m⁻³

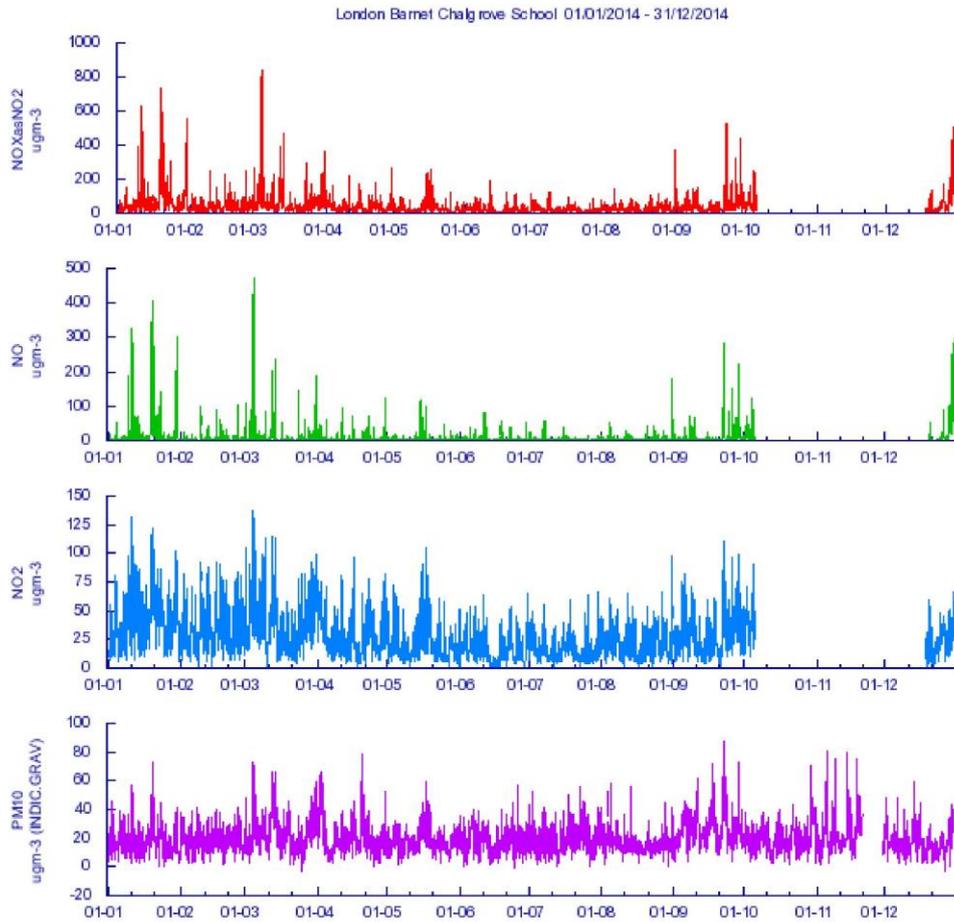
London Borough of Barnet Council

Pollutant	Air quality standard	Exceedances	Days
PM ₁₀ particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	1	1
PM ₁₀ particulate matter (Hourly measured)	Annual mean > 40 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	0	0
Nitrogen dioxide	Annual Mean > 40 microgrammes per metre cubed	0	-

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Report produced by Ricardo-AEA

Annual Graph



Appendix B: Diffusion Tube Monthly Results and Results Example

Tube Number	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average	Max	Min	Data Capture	Bias Adj (0.97)
PBN10	58.32	53.37	57.51	54.46	52.57	51.73	58.78	46.13	57.85	57.85	61.18	57.25	55.58	61.17608	46.13138	100	53.9
PBN 12	61.88	56.41	55.36	54.57	51.12	53.85	50.12	44.91	58.42	58.42	55.52	47.51	54.01	61.87692	44.91156	100	52.4
PBN 8	68.82		58.91	55.86	59.31	57.01	56.74	53.85	70.79	70.79	64.01	60.27	61.49	70.79333	53.85144	92	59.6
PBN 1	55.82	49.16	50.93	43.82	36.37	34.61	27.83	30.01	45.97	45.97	53.20	51.84	43.79	55.81747	27.82811	100	42.5
PBN 2	52.21	54.10	57.39	47.65	50.09	53.28	47.87		50.86	50.86	57.77	55.06	52.47	57.76673	47.65054	92	50.9
PBN 3	32.93	27.40	32.88	19.49	20.99		15.13	41.38			35.35	27.85	28.16	41.37725	15.13064	75	27.3
PBN13	46.76	42.62	38.14	33.86	36.99	36.16	35.26	14.86	45.78	45.78	44.01	45.41	38.80	46.76113	14.86227	100	37.6
PBN14	67.75	59.07	73.05	58.67	60.51	56.70	51.53	32.96	59.02	59.02	67.15	53.09	58.21	73.05374	32.96324	100	56.5
PBN5	43.52	34.62	39.49	26.00	26.13	27.46	16.96	47.51	32.22	32.22	42.08	42.95	34.26	47.50588	16.96455	100	33.2
PBN9	54.91	45.93	63.42	54.23	55.94	59.43	58.17	42.70	48.75	48.75	59.75	50.26	53.52	63.42276	42.70192	100	51.9
PBN17	98.50	87.45	79.16	70.45	83.14	83.36	80.79		72.20	72.20			80.80	98.50145	70.45345	75	78.4
PBN18	63.89	60.60	56.81	49.63	46.74	45.74	55.42	61.65	58.24	58.24	54.76	62.29	56.17	63.8875	45.7386	100	54.5
PBN20	79.12	63.83	58.91	56.82	64.41	61.17	55.98	52.81	75.00	75.00	70.56	57.25	64.24	79.12219	52.80994	100	62.3
PBN19	63.54	54.72	67.27	52.42	55.24	53.65	60.01	53.63	53.71	53.71	57.07	53.39	56.53	67.27153	52.42174	100	54.8
PBN6	72.52	64.72			81.46	74.80	74.35				80.91	77.63	75.20	81.45874	64.71535	58	72.9



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LABORATORY ANALYSIS REPORT
COLORIMETRIC ANALYSIS OF NITROGEN DIOXIDE DIFFUSION TUBES

REPORT NUMBER I04533R
BOOKING IN REFERENCE I04533
DESPATCH NOTE SOR015744
CUSTOMER LB Barnet (Q) RE (Regional Enterprise) Attn: Alex Jones
 ACCOUNTS PAYABLE
 PO BOX 202
 DARLINGTON
 DL1 9HB
DATE SAMPLES RECEIVED 03/11/2014

Location	Sample Number	Exposure Data		Time (hr.)	µg/m ³ *	ppb *	TOTAL µg NO ₂
		Date On	Date Off				
10 Pop up Shop EN5 5UR	440952	29/09/2014	29/10/2014	719.92	57.85	30.19	3.03
12 1295 High Rd Whetstone	440953	29/09/2014	29/10/2014	720.00	58.42	30.49	3.06
8 Tally Ho	440954	29/09/2014	29/10/2014	720.08	70.79	36.95	3.71
1 Pointails Close	440955	29/09/2014	29/10/2014	720.10	45.97	23.99	2.41
2 71 Ballards Lane (Ladbrokes)	440956	29/09/2014	29/10/2014	720.13	50.86	26.55	2.66
13 1 Courtland Ave	440958	29/09/2014	29/10/2014	720.15	45.78	23.89	2.40
14 William Hill, Station Rd, Edgware	440959	29/09/2014	29/10/2014	720.13	59.02	30.80	3.09
5 St James Catholic High School	440960	29/09/2014	29/10/2014	720.33	32.22	16.82	1.69
9 52 Golders Green Rd	440961	29/09/2014	29/10/2014	720.50	48.75	25.45	2.55
17 Coach Stop at Golders Green Station	440962	29/09/2014	29/10/2014	720.53	72.20	37.68	3.78
18 Back of Golders Green Bus Station	440964	29/09/2014	29/10/2014	720.52	58.24	30.40	3.05
20 16 Cricklewood Lane	440965	29/09/2014	29/10/2014	720.58	75.00	39.15	3.93
19 Dyson Court, Tilling Road	440966	29/09/2014	29/10/2014	720.62	53.71	28.03	2.81
Laboratory Blank				720.62	0.31	0.16	0.016

Comment: Results are not blank subtracted
Results have been corrected to a temperature of 293 K (20 °C)

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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Gradko International Ltd
 This signature confirms the authenticity of these results
 Signed.....*L. Gates*.....
 L. Gates, Laboratory Supervisor



(A division of Gradko International Ltd.)
St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH
tel.: 01962 860331 fax: 01962 841339 e-mail:diffusion@gradko.co.uk



LABORATORY ANALYSIS REPORT

Overall M.U. $\pm 3.82\%$ Limit of Detection 0.066 μ g NO₂
Tube Preparation: 50% TEA / Acetone

Analyst Name Alan Jones

Date of Analysis 10/11/2014 Date of Report 10/11/2014

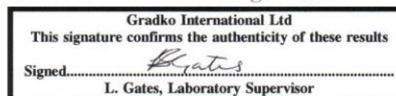
Analysis carried out in accordance with documented in-house Laboratory Method GLM9 -
QuAAtro Analyser

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Appendix C: Areas highlighted by 2009 modelling study to exceed the UK air quality objectives

The hotspots are listed as follows:

1. Nitrogen Dioxide

- Area 1 - Adjacent to the M1 just off Glendor Gardens near the Northway Circus roundabout. This area has been predicted to exceed $60\mu\text{g}/\text{m}^3$ for annual mean NO_2 .
- Area 2 - The junction of Woodhouse Road A1003 and Friern Barnet Road A1003 with Friern Barnet Lane B550 and Colney Hatch Lane B550. This area is a hot spot with annual mean concentrations of NO_2 above the $40\mu\text{g}/\text{m}^3$ objective.
- Area 3 - The junction of the A1 Great North Way (Barnet By Pass) and Watford Way A41 where they meet the M1. This area has been predicted to exceed $60\mu\text{g}/\text{m}^3$ for annual mean NO_2 .
- Area 4 - The junction of the Great North Way A1 and Parson Street B552. This area is a hot spot with annual mean NO_2 concentrations above the $40\mu\text{g}/\text{m}^3$ objective.
- Area 5 - The junction of Watford Way A41 where it meets Colindeep Lane A5150. This area has been predicted to exceed $60\mu\text{g}/\text{m}^3$ for annual mean NO_2 .
- Areas 6 to 10 - Five other areas along the A406 have been identified, including properties around the Brent Cross Flyover (Area 10), and close to the junctions with the A1 (Areas 6 and 7, near Great North Way / Falloden Way). There are high concentrations of NO_2 predicted along these stretches of the A406, and a number of receptors in this area are predicted to be within the $60\mu\text{g}/\text{m}^3$ annual mean NO_2 contour.
- Area 11 - Residential properties near the junction of the A406 North Circular Road and the M1. This area has been predicted to exceed $60\mu\text{g}/\text{m}^3$ for annual mean NO_2 .
- Area 12 - The junction of A1 Lyttelton Road and The Bishops Avenue. This area is a hot spot with annual mean concentrations of NO_2 above the $40\mu\text{g}/\text{m}^3$ objective.

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- Areas 13 and 14 - Two locations have been identified along Hendon Way A41. These areas are hot spots with annual mean concentrations of NO₂ above the 40µg/m³ objective.
- Area 15 – Residential properties near the junction of the A598 Finchley Road and the A407 Hermitage Lane / Cricklewood Lane. This area has been predicted to exceed 40µg/m³ for annual mean NO₂.

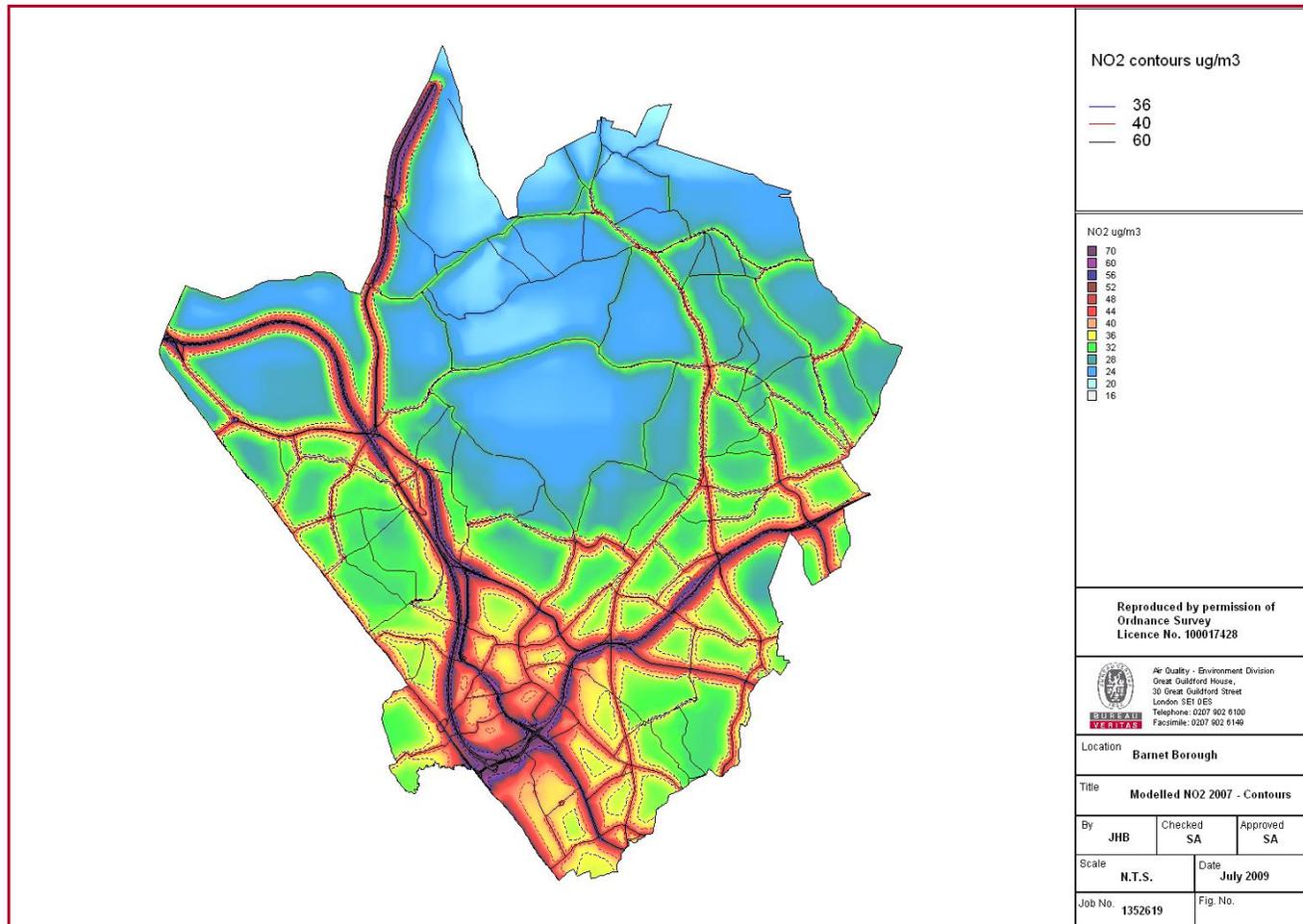
2. Particulates, PM10

The following areas were predicted to exceed the daily mean PM10 objective:

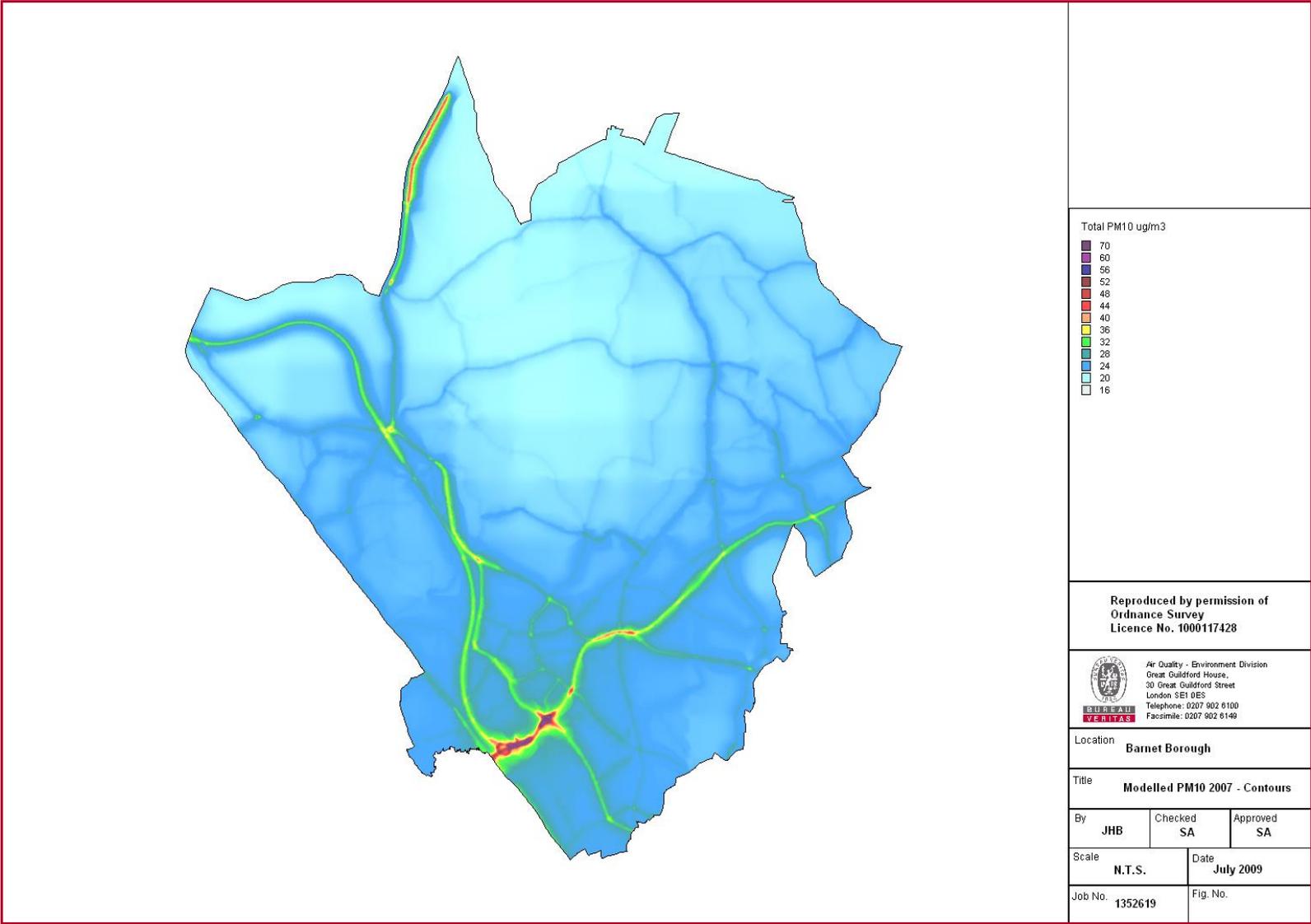
- Area 1 - Adjacent to the M1 just off Glendor Gardens near the Northway Circus roundabout
- Area 3 - The junction of the A1 Great North Way and Watford Way A41
- Area 5 - The junction of Watford Way A41 and Colindeep Lane A5150
- Areas 6 to 11, along the A406 North Circular Road. (Area 10 also predicted to exceed the annual mean PM10 objective)
- Area 14 – near the junction between the A41 Hendon Way and the A407 Cricklewood Lane

Appendix D 2007 Modelling Results and maps

Modelled NO₂ Annual Mean 2007



Modelled PM₁₀ Annual Mean 2007



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Location **Barnet Borough**

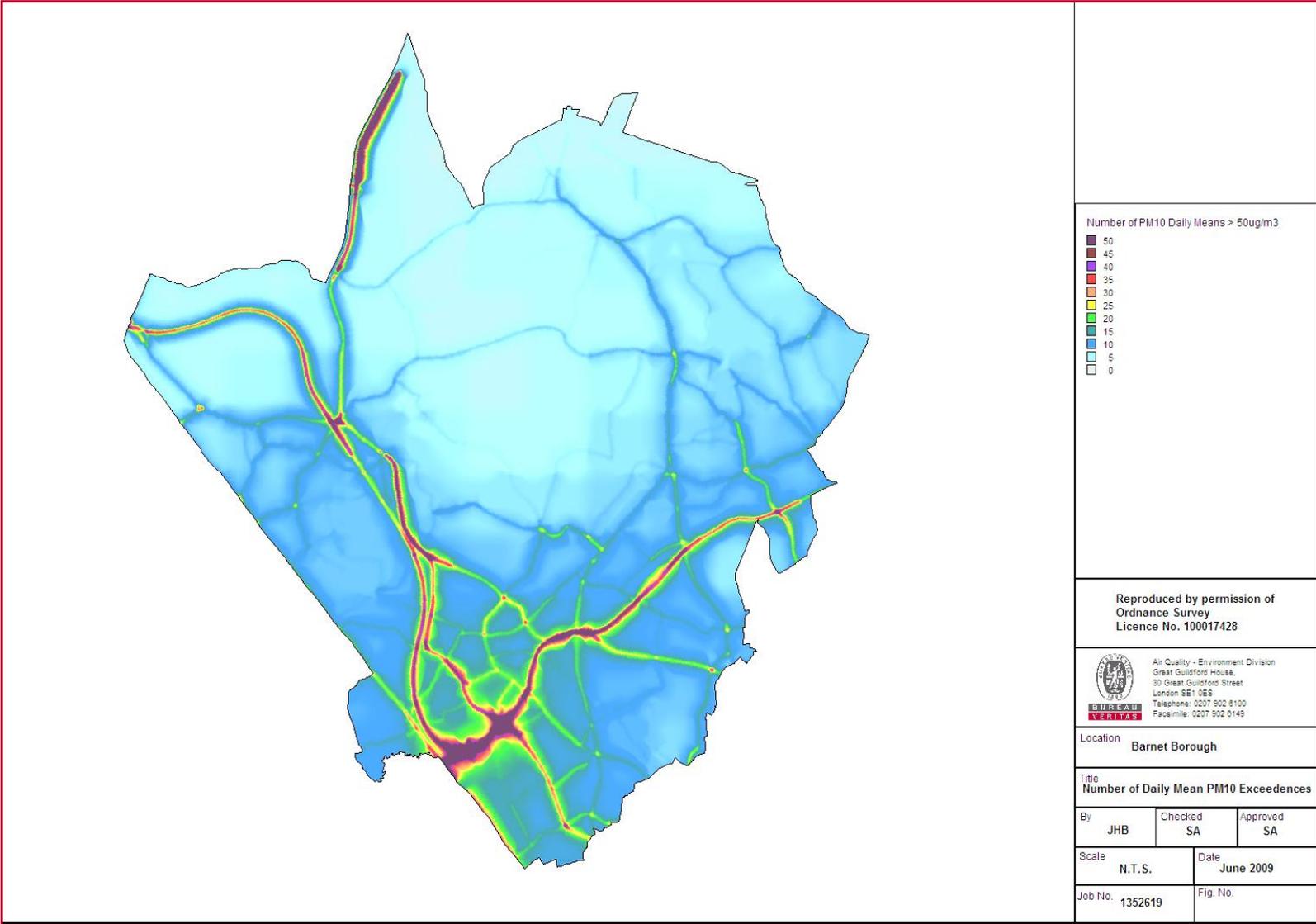
Title **Modelled PM10 2007 - Contours**

By JHB	Checked SA	Approved SA
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Scale N.T.S.	Date July 2009
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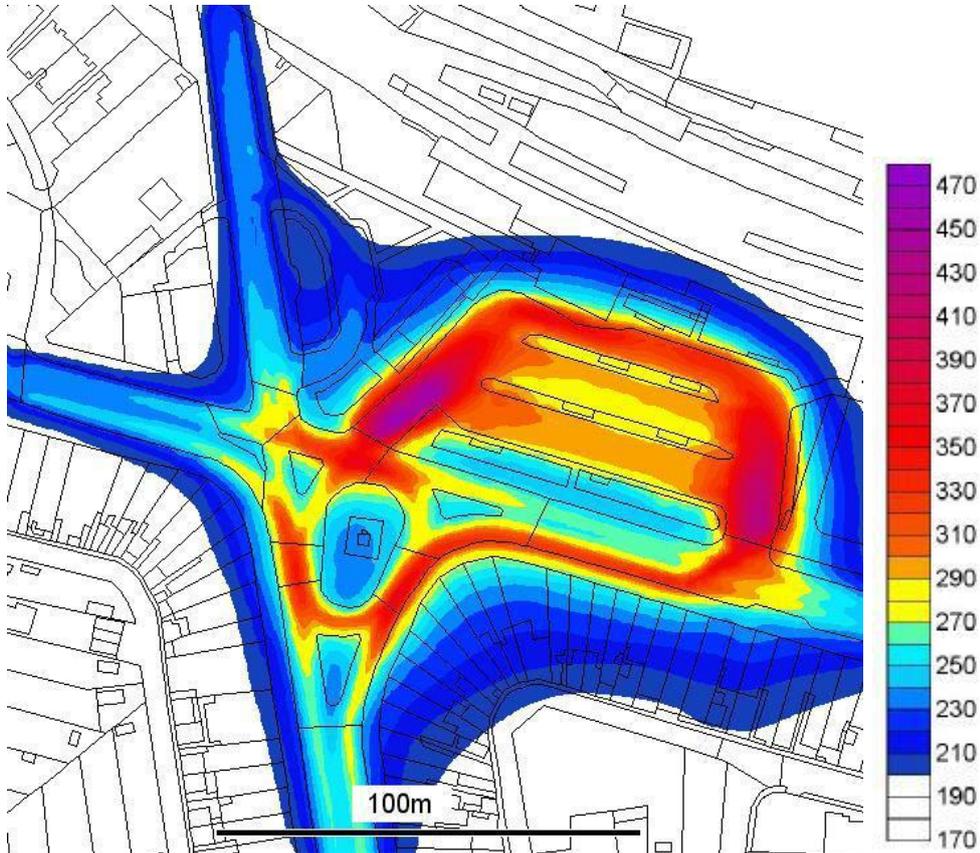
Job No. 1352619	Fig. No.
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Modelled PM₁₀ Daily Mean 2007



Appendix D. Modelled concentrations of nitrogen dioxide in and around Golders Green Bus Station

The following figure is taken from the AQC and TRL report, "Nitrogen dioxide concentrations in and around Golders Green bus station, Barnet. May 22nd 2009."



Predicted 99.79th Percentiles of 1-hour Mean Nitrogen Dioxide Concentrations around Golders Green Bus Station in 2008 (mg/m³) © Crown copyright 2010. All rights reserved. License number 100017674