

**WELWYN  
HATFIELD**  
BOROUGH COUNCIL

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2012 Air Quality Updating and  
Screening Assessment for the  
*Welwyn Hatfield Borough Council*

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

July 2012

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## Executive Summary

The Council is required to review and assess air quality against the objectives in the Air Quality Regulations 2000 and amendment regulations as part of a rolling three-year cycle ending in 2017. The air quality objectives to be assessed are for the following seven pollutants: carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide, sulphur dioxide and particles (PM<sub>10</sub>).

The role of the local authority Review and Assessment process is to identify any relevant areas where it is considered that the government's air quality objectives for the above air pollutants will be exceeded. The Welwyn Hatfield Borough Council has previously undertaken the earlier rounds of Review and Assessment of local air quality management and not identified areas where the objectives are exceeded and where there is relevant public exposure.

This report concerns the fifth round Updating and Screening Assessment of air quality in the Welwyn Hatfield Borough Council area. It has re-examined pollution sources and air quality monitoring in its area in accordance with Defra LAQM guidance.

The report identifies that:

There is not a significant risk of the objectives being exceeded in the Council's area for nitrogen dioxide, particles PM<sub>10</sub>, carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide.

In view of these findings the Council will undertake the following actions:

1. Undertake consultation with the statutory and other consultees as required.
2. Maintain the existing monitoring programme.
3. Prepare for the submission of its next Air Quality Progress Report.



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# **1 Introduction**

## **1.1 Description of Local Authority Area**

The Borough of Welwyn Hatfield is located in southern Hertfordshire sharing a boundary with the London Borough of Enfield. It is set within the London green belt and covers an area around 50 square miles (13,000 hectares). The Borough Council area covers the two towns of Welwyn Garden City and Hatfield, along with numerous smaller settlements from Woolmer Green in the north to Little Heath in the south. Welwyn Garden City has a famous heritage, being one of only two Garden Cities in the country, and Hatfield was designated as a New Town. The area acts as dormitory area for London, although there is also a strong commercial base with several designated employment areas. The estimated population in Welwyn Hatfield for 2010 is approximately 114,000 (from the Office of National Statistics (ONS)).

The main local sources of atmospheric pollutants are road transport from the busy and congested roads in the Borough and neighbouring areas. Welwyn Hatfield is well served by major arterial road routes, namely the A1 (M), A414 and the M25.

## **1.2 Purpose of Report**

This report fulfils the requirements of the Local Air Quality Management regime 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 regime placed an obligation on 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 (USA) 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  $\mu\text{g m}^{-3}$  (milligrammes per cubic metre,  $\text{mg m}^{-3}$  for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

### **1.4 Summary of Previous Review and Assessments**

The Welwyn Hatfield Borough Council has previously completed all earlier stages of air quality review and assessment as required under the LAQM regime. The main issue with respect to local air quality was found to be road traffic emissions ( $\text{NO}_2$  and  $\text{PM}_{10}$ ) emanating from vehicles, but it was considered that the air quality objectives would be met where there was relevant exposure and that it was not necessary to designate an Air Quality Management Area (AQMA) in the Borough.

The 2011 Progress Report (Welwyn Hatfield, 2011) based on updated monitoring showed that the Council is meeting the air quality objectives for  $\text{NO}_2$ , where there is relevant public exposure.

**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 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
	5.00 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10.0 $\text{mg m}^{-3}$	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
	0.25 $\mu\text{g m}^{-3}$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric)	50 $\mu\text{g m}^{-3}$ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g m}^{-3}$ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g m}^{-3}$ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g m}^{-3}$ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## **2 New Monitoring Data**

### **2.1 Summary of Monitoring Undertaken**

#### **2.1.1 Automatic Monitoring**

The Council operates a continuous site at the Council Offices in Welwyn Garden City monitoring oxides of nitrogen (including nitrogen dioxide) and ozone. (Note – ozone is not one of the seven LAQM pollutants, although it is reported in the Council's Air Quality Progress reports).

The site was opened in 1998 and is classified as an urban background site. It is part of the Herts and Beds Air Pollution Monitoring Network (HBAPMN). Data from the site have traceability to national standards and operational procedures defined for the regional Network, which are similar to those of the government's AURN sites, with validation and ratification undertaken by AQDM. The automatic monitoring site is serviced six monthly and regular two weekly calibrations are undertaken on site.

Further details of the site can be found at [www.hertsbedsair.net](http://www.hertsbedsair.net).

**Table 2.1 Details of Automatic Monitoring in Welwyn Hatfield**

<b>Site Name</b>	<b>Site Type</b>	<b>Easting</b>	<b>Northing</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>PM<sub>10</sub> Monitoring Technique</b>	<b>Relevant Exposure? (Y/N with distance (m) to relevant exposure)</b>	<b>Distance (m) to kerb of nearest road (N/A if not applicable)</b>	<b>Does this location represent worst-case exposure?</b>
Welwyn Hatfield (Council offices) <sup>a</sup>	Background	523799	213401	NO <sub>2</sub>	N	N/A	Y	N/A	N

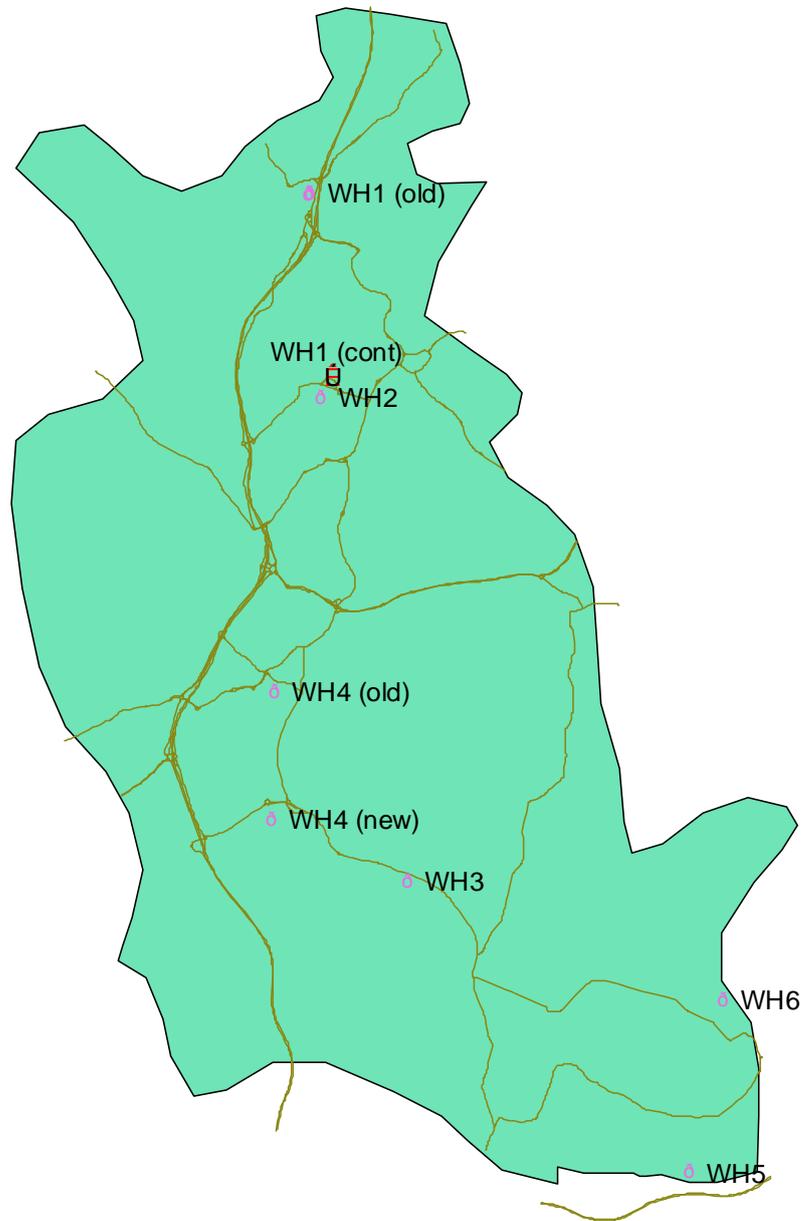
<sup>a</sup> Ozone is also monitored at this site (See previous Welwyn Hatfield Air Quality Progress reports for further information).

### 2.1.2 Non-Automatic Monitoring Sites

The Welwyn Hatfield Borough Council also undertook non-automatic monitoring using NO<sub>2</sub> diffusion tubes across the Borough; the purpose of which was to supplement and extend its understanding of air quality.

Since the previous USA in 2009, there have been 6 monitoring sites located across the Borough; in 2011 however two of the original site locations were changed. This was due to local concerns. The diffusion tubes at each site were deployed and collected at 4 to 5 weeks intervals (in accordance with the UK NO<sub>2</sub> Diffusion Tube calendar requirements). A co-located study with the Council's automatic monitoring station was not undertaken. The locations of the diffusion tubes are illustrated in Figure 1 (marked in pink and the continuous site marked in red). Details of the areas are given in the table below.

**Figure 1 Map of Air Quality Monitoring Sites in Welwyn Hatfield**



The diffusion tubes were supplied and analysed by ESG Didcot (formerly Harwell Scientifics Limited), with a preparation method using 50% TEA in acetone. The analysing laboratory participates in the Health and Safety Laboratory's (HSL) Workplace Analysis Scheme for Proficiency (WASP) programme for diffusion tubes, which provides a Quality Assurance / Quality Control (QA/QC). It achieved a score of 100% for the laboratory performance testing rounds 108 to 115 between January 2010 and December 2011 and had good precision scores for the period reported.

A major disadvantage of undertaking monitoring using diffusion tubes is that the method is less precise and accurate than continuous monitoring. The recommended methods to reduce errors include the use of good QA/QC practices and bias adjustment factors that are derived from co-location studies between continuous analysers and diffusion tubes.

As a local co-location study was not undertaken the default factors from Defra were used for this report. The bias adjustment factors (shown below) are specific to each year, analysing laboratory, method of analysis and location. The factors are therefore also limited to the data supplied. The Review and Assessment website advises that “in many cases, using an overall correction factor derived from as many co-location studies as possible will provide the ‘best estimate’ of the ‘true’ annual mean concentration, it is important to recognise that there will still be uncertainty associated with this bias adjusted annual mean. One analysis has shown that the uncertainty for tubes bias adjusted in this way is  $\pm 20\%$  (at 95% confidence level). This compares with a typical value of  $\pm 10\%$  for chemiluminescence monitors subject to appropriate QA/QC procedures.”

<b>Year</b>	<b>Bias Default factor</b>
2008	0.78 (14 studies)
2009	0.82 (27 studies)
2010	0.86 (20 studies)
2011	0.83 (44 studies)

The above listed Defra default factors indicate that the diffusion tube results for each year overestimate continuously monitored concentrations for all years shown.

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

<b>Ref</b>	<b>Address</b>	<b>Easting</b>	<b>Northing</b>	<b>Location</b>	<b>Relevant Exposure? (Y/N with distance (m) to relevant exposure)</b>	<b>Distance to kerb of nearest road (N/A if not applicable)</b>	<b>Does this location represent worst-case exposure ?</b>
<i>WH1</i>	<i>Lockleys Welwyn (Closed 2011)</i>	<i>523471</i>	<i>216342</i>	<i>Kerbside</i>	<i>N</i>	<i>1m</i>	<i>Y</i>
WH1	Dicket Mead, Welwyn	523439	216315	Background	Y	N/A	N
WH2	Parkway, Welwyn Garden City	523656	213133	Background	Y	2m	N
WH3	Great North Road, Bell Bar	524991	205525	Kerbside	N	N/A	Y
<i>WH4</i>	<i>Brain Close Hatfield (Closed 2011)</i>	<i>522924</i>	<i>208506</i>	<i>Background</i>	<i>Y</i>	<i>2m</i>	<i>N</i>
WH4	New Barnfield Hatfield	522863	206489	Background	Y	N/A	N
WH5	Coopers Lane Road, Northaw	529402	200929	Background	Y	N/A	N
WH6	Bradgate, Cuffley	529933	203654	Background	Y	N/A	N

Note: *italics* indicates site now closed

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

The monitoring reported below represents the continuous and non-continuous results for recent years' monitoring. Results from previous years can be found in earlier Council reports. Details for the automatic site can also be found on the Herts and Beds Air Quality Network website (see <http://www.hertsbedsair.net/>). The results are reported in accordance with the requirements of TG09.

### 2.2.1 Nitrogen Dioxide

The results for nitrogen dioxide are reported separately for the Council's automatic site and the diffusion tube sites. The automatic results are directly compared to the annual mean and hourly mean objective, whereas the diffusion tube results are compared to the annual mean objective and also to an annual mean of  $60 \mu\text{g m}^{-3}$ , which represents an indicative value to represent the hourly mean objective. This is in line with TG09 guidance.

#### Automatic Monitoring Data

The following table (Table 2.3) provides details of the monitoring. The results are for the period from 2007 to 2011 inclusive.

For all years (other than 2007) the data capture at the continuous site was good (representing over 90%). The data are fully ratified for all years, apart from 2011, which includes provisional data. The annual mean concentration for all years was around  $25 \mu\text{g m}^{-3}$  and so the site easily met the AQS annual mean objective of  $40 \mu\text{g m}^{-3}$ . This site therefore provides a representative and good understanding of background air quality for the area.

Table 2.4 provides a comparison with the AQS hourly mean objective, which requires that the number of periods that exceed a one-hour mean of  $200 \mu\text{g m}^{-3}$  does not arise more than 18 times over a calendar year. These episodic periods typically arise during meteorological conditions that are conducive e.g. when conditions are settled

leading to reduced dispersion from local sources, such as during the wintertime. The results for the site show that the hourly mean standard was not exceeded at any time during the period reported. Accordingly the objective of more than 18 periods was also not exceeded.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % <sup>a</sup>	Valid Data Capture 2011 % <sup>b</sup>	Annual Mean Concentration $\mu\text{g m}^{-3}$				
					2007 <sup>c</sup>	2008	2009	2010	2011 <sup>d</sup>
Welwyn Hatfield	Background	N	-	99	32	26	29	26	25

<sup>a</sup> I.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> I.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

<sup>c</sup> Data capture for 2007 was 44%.

<sup>d</sup> Data capture for 2011 includes provisional data.

Notes: Bold indicates that AQS objective exceeded; italics indicates < 90% valid data capture.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % <sup>a</sup>	Valid Data Capture 2011 % <sup>b</sup>	Number of Exceedences of Hourly Mean (200 µg m <sup>-3</sup> )				
					2007 <sup>c</sup>	2008	2009	2010	2011 <sup>d</sup>
Welwyn Hatfield	Background	N	-	99	<i>0</i>	0	0	0	0

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

<sup>c</sup> Data capture for 2007 was 44%.

<sup>d</sup> Data capture for 2011 includes provisional data.

Notes: Bold indicates that AQS objective exceeded; italics indicates < 90% valid data capture.

## Diffusion Tube Monitoring Data

The results given in Table 2.5 are the bias adjusted mean values of the tubes exposed (as detailed earlier). The overall data capture rate during 2011 was reasonable, although for some sites there was very low data capture. This was mainly as a result of site changes but also minor vandalism. The lowest data capture was reported for the new background monitoring site at Dicket Mead (new WH1) with 16% and the closed Brain Close site (old WH4) with a 33% capture rate. Excluding these two sites improves overall data capture to 75%.

The results for those sites with better than 50% data capture were annualised (to reflect possible seasonal changes in pollutant levels) following TG09 methodology. Three nearby continuous background sites (with 90% data capture or more for 2011) were used. The derived annual adjustment factors varied between 0.97 and 1.1. Full details (with the monthly results) are provided in the Appendix. As already stated, the Defra default factors were used for bias adjustment.

The kerbside site at Lockleys (WH1 old) approached the annual mean objective of  $40 \mu\text{g m}^{-3}$  for 2011. This site however has no relevant exposure. (Note – for 2010 the annual mean exceeded the objective however there was low data capture at the site and also the result was not annualised).

The other sites in the Borough all easily met the annual mean objective for the years reported, with concentrations around the level of  $30 \mu\text{g m}^{-3}$ .

**Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2011)**

Ref	Address	Location	2008 <sup>a</sup>	2009	2010	2011
WH1	Parkside Welwyn	Background	n/a <sup>b</sup>	n/a	- <sup>c</sup>	-
WH1	Lockleys Welwyn	Kerbside	-	-	<i>48.0</i>	<i>39.2</i>
WH1	Dicket Mead, Welwyn	Background	-	-	-	-
WH2	Parkway, Welwyn Garden City	Urban Background	n/a	n/a	<i>31.8</i>	<i>29.4</i>
WH3	Great North Road, Bell Bar	Kerbside	<i>26.7</i>	<i>30.9</i>	<i>29.0</i>	<i>32.1</i>
WH4	Brain Close Hatfield	Background	n/a	<i>28.0</i>	<i>30.3</i>	-
WH4	New Barnfield Hatfield	Background	-	-	-	<i>27.8</i>
WH5	Coopers Lane Road, Northaw	Background	<i>25.1</i>	<i>23.6</i>	<i>25.4</i>	<i>25.3</i>
WH6	Bradgate, Cuffley	Background	<i>22.0</i>	<i>21.2</i>	<i>19.9</i>	<i>23.2</i>

<sup>a</sup> Results for 2008 to 2010 from 2011 AQ Progress report

<sup>b</sup> n/a indicates insufficient data with < 50% data capture for the year

<sup>c</sup> indicates site not open during year

Note: italics indicate <75% data capture

## 2.2.2 Summary of Compliance with AQS Objectives

The Welwyn Hatfield Borough Council has examined the results from monitoring in the Council's area. Concentrations at all monitoring sites are below the annual mean objective for nitrogen dioxide in 2011. As a consequence of these findings there is no need to proceed to a Detailed Assessment.

### 3 Road Traffic Sources

The focus of attention for road traffic sources is on those relevant locations close to busy roads, especially in congested areas and near to junctions, where traffic emissions are higher, and in built up areas where the road is canyon like and buildings restrict the dispersion and dilution of pollutants. Only those locations, which have not been assessed during the earlier rounds or where there has been a change or new development, are assessed.

Updated traffic data for the Council's area obtained from the DfT website (see <http://www.dft.gov.uk/traffic-counts/>) were examined for this section.

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

Concentrations are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion. Screening models so far have not proved helpful at identifying potential exceedences, which have only been identified by monitoring. This assessment is for NO<sub>2</sub> only.

The TG09 guidance requires the identification of residential properties within 2 m of the kerb. Previous Review and Assessments undertaken by the Council investigated the presence of narrow roads with residential properties close to the kerb and none were found. There has been no change to that previously reported in the Council's area.

The Welwyn Hatfield Borough 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**

These include some street locations where individuals may regularly spend 1-hour or more, for example, streets with many shops and streets with outdoor cafes and bars, close to road traffic where there may be high concentrations of NO<sub>2</sub>. (Note - those people that are occupationally exposed are not included, as they are not covered by the regulations). The assessment is for NO<sub>2</sub> only.

Busy streets where people may spend an hour or more close to traffic were examined in previous assessments and none were found. There has been no change to these findings.

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

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

These include street locations in the Borough where traffic flows are not necessarily high (i.e. fewer than 20,000 vehicles per day) but where there are an unusually high proportion of buses and/or HGVs. The assessment is for both NO<sub>2</sub> and PM<sub>10</sub> and is dependent on the proximity of relevant exposure within 10 m of the kerbside. The Council in earlier Review and Assessments identified those roads within the Borough with high flows of heavy-duty vehicles.

No new roads relevant to this section have been identified in the Borough during this latest assessment.

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

### 3.4 Junctions

Air pollutant concentrations are usually higher close to junctions, due to the combined impact of traffic emissions on roads forming the junction, and to the higher emissions due to stop start driving. The assessment is for both NO<sub>2</sub> and PM<sub>10</sub> and is dependent on the proximity of relevant exposure within 10 m of the kerbside.

There is no change to the previously reported situation in the Borough concerning junctions and no new or newly identified junctions with relevant exposure located within 10 m of the road.

The Welwyn Hatfield Borough 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 approach to considering new roads depends on whether or not an assessment was carried out in advance of building the new road. The assessment is for both NO<sub>2</sub> and PM<sub>10</sub> and is dependent on the proximity of relevant exposure within 10 m of the kerbside.

There have been no new or newly proposed roads in the Borough where an air quality assessment was required.

The Welwyn Hatfield Borough Council confirms that there are no new/ or newly proposed roads in the Council's area.

### 3.6 Roads with Significantly Changed Traffic Flows

Only roads with significantly changed traffic flows that have not already been considered above were investigated. The assessment is for both NO<sub>2</sub> and PM<sub>10</sub>. A comparison of traffic flows from the latest traffic data available confirms that there are no new roads with significantly changed traffic flows.

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

### 3.7 Bus and Coach Stations

This section only applies to bus stations or sections of bus stations that are not enclosed, and where there is relevant exposure, including at nearby residential properties. The assessment is for both the annual mean and the 1-hour NO<sub>2</sub> objectives. (Note - the term “bus” in this instance is used to signify both buses and coaches).

Bus stations in Welwyn Hatfield were examined in previous USAs and found not to require further investigation. Based on the TG09 guidance if such sources were previously considered and are within an existing AQMA there is no need to proceed further.

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

## 4 Other Transport Sources

### 4.1 Airports

Aircraft are potentially significant sources of nitrogen oxides (NO<sub>x</sub>) emissions, especially during takeoff. The TG09 guidance used new information, which has resulted in the criteria to trigger a Detailed Assessment being relaxed, while the requirement to assess PM<sub>10</sub> has been removed. Thus this section only applies to NO<sub>2</sub>. (Note – any road traffic using airports was considered in the previous section.)

The nearest major airport to the Council's area is Luton Airport, which is outside the Borough and sufficiently distant (greater than 10km) as not to be relevant.

The Welwyn Hatfield Borough Council confirms that there are no airports in the Council's area.

### 4.2 Railways (Diesel and Steam Trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of sulphur dioxide (SO<sub>2</sub>) close to the point of emission. Recent evidence also suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high NO<sub>2</sub> concentrations close to the track where, along busy lines, emissions can be equivalent to those from a busy road.

#### 4.2.1 Stationary Trains

Previous rounds of Review and Assessment also found that there are no areas within the Borough where diesel or steam locomotives are stationary for periods of 15 minutes or more and within 15 m of locations where regular outdoor exposure arises. This situation has not changed.

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

#### **4.2.2 Moving Trains**

Diesel locomotives use rail lines that run through Welwyn Hatfield, however these are not included within the list of lines (from Table 5.1 of TG09), which identify those with a “high” usage of diesel locomotives.

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

### **4.3 Ports (Shipping)**

The assessment for shipping needs to consider SO<sub>2</sub> only. The Borough is land locked and therefore there are no ports or shipping within the Borough.

The Welwyn Hatfield Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Council’s area.

## 5 Industrial Sources

### 5.1 Industrial Installations

The Council and the Environment Agency (EA) control industrial sources within the Borough under the Environmental Permitting Regulations (England and Wales) 2010, as amended. The Council also has control over some smaller industrial and commercial sources, largely through the Clean Air Act, with its associated control of the stack heights. As a result of these controls, there are relatively few sources that may be relevant under the Local Air Quality Management (LAQM) regime. Many of these sources were also addressed during previous rounds of Review and Assessment. The focus is thus on new installations and those with significantly changed emissions.

Industrial sources are considered unlikely to make a significant local contribution to annual mean concentrations, but could be significant in terms of the short-term objectives in the Borough. Sources in neighbouring authorities and the combined impact of several sources are considered. The approach used is based on use of the planning and permitting processes. The assessment considers all the LAQM pollutants, including those most at risk of requiring further work (SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub> and benzene).

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

Since the last round of Review and Assessment the Council have permitted seven non-reduced installations (including waste oil burners, dry cleaners and petrol station).

None of these however have required an air quality assessment. Furthermore other installations are no longer permitted, including three Part B installations (i.e. vehicle resprayers).

The Welwyn Hatfield Borough 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 lists of existing Part A and B processes that are regulated under the Environmental Permitting regime are provided in the Appendix (including waste sites). These are all processes with low emissions of LAQM pollutants. None of these have increased emissions by greater than 30% and no new relevant exposure has been introduced nearby.

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

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

Since the last round of Review and Assessment the Council has received several applications for new installations. None of these however has required an air quality assessment.

No other applications have been received for new or proposed sources where it has been determined that the installation is likely to give rise significant pollutant emissions.

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

## 5.2 Major Fuel (Petrol) Storage Depots

This was previously assessed in earlier rounds of Review and Assessment and it was found that there are no major petrol storage depots in the Borough. This situation has not changed.

There are no major fuel (petrol) storage depots within the Council's area.

## 5.3 Petrol Stations

There is some evidence that petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads. Some sites in the Borough have however already incorporated petrol vapour recovery (PVR) systems, furthermore those service stations with petrol sales above 3.5 million litres per annum were required to install Stage 2 PVR systems before the 1st January 2010 deadline to comply with UK legislation to reduce petrol vapour (and benzene) from vehicles.

The previous round of Review and Assessment assessed all petrol stations for a throughput of more than 2000 m<sup>3</sup> of petrol, and a busy road nearby. Of these none were found to have relevant exposure within 10m of the pumps and therefore it was not necessary to go to a Detailed Assessment. There has been no change in this situation for this round.

The Welwyn Hatfield Borough Council confirms that there are no petrol stations meeting the specified criteria.

## 5.4 Poultry Farms

Some local authorities in England have identified potential exceedences of the PM<sub>10</sub> objectives associated with emissions from poultry farms (defined as chickens (laying hens and broilers), turkeys, ducks and guinea fowl). These relate to large farms (> 100,000 birds) that are regulated by the EA. None however exist within the Council's area.

The Welwyn Hatfield Borough Council confirms that there are no poultry farms meeting the specified criteria.

## 6 Commercial and Domestic Sources

Biomass burning can lead to an increase in PM<sub>10</sub> emissions, from the combustion process itself and also by aerosol formation from the volatile materials distilled from the wood. Compared to conventional gas burning, biomass burning can also result in an increase in NO<sub>x</sub> emissions due to the fuel-derived portion that is not present in gas combustion.

Welwyn Hatfield is not a Smoke Control Area, however the Council has produced an enforcement policy in regard of the requirements of the Clean Air Act, which seeks to minimise smoke emissions.

### 6.1 Biomass Combustion – Individual Installations

The use of biomass to generate energy has potentially significant benefits for the reduction of greenhouse gas emissions. However there are concerns that an increase in biomass combustion in urbanised areas could be detrimental to air quality, particularly with respect to PM<sub>10</sub> and NO<sub>2</sub>. The TG09 guidance includes a procedure to determine the impact of biomass combustion plant to see if there is the potential for the air quality objectives to be exceeded.

The Council has assessed for individual combustion plant burning biomass ranging from 20 MW down to 50 kW units and no plant have been identified.

The Welwyn Hatfield Borough 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

There is the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM<sub>10</sub> concentrations, particularly in areas where PM<sub>10</sub> concentrations are close to or above the objectives.

The impact of domestic biomass combustion in most areas of the Borough is thought to be small at the time of writing, although it could become more important into the future. The potential for combined impacts, other than that discussed above, will be assessed should future plant be proposed. Currently there is minimal domestic solid fuel burning as discussed in the next section.

The Welwyn Hatfield Borough Council has assessed the combined impact of biomass combustion, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 6.3 Domestic Solid-Fuel Burning

The previous rounds of Review and Assessment identified areas where domestic solid fuel burning gives rise to exceedences of the objective for SO<sub>2</sub>. PM<sub>10</sub> from domestic solid fuel burning was also covered above.

The previous assessments have confirmed that there are no areas of significant domestic solid fuel use in the Borough. This position has not changed. Gas is widely available in the Borough and it remains the predominant fuel used for domestic water and space heating.

The Welwyn Hatfield Borough Council confirms that there are no areas of significant domestic fuel use in the Council's area.

## 7 Fugitive or Uncontrolled Sources

Dust emissions from uncontrolled and fugitive sources can give rise to elevated PM<sub>10</sub> concentrations. These sources can include, but are not limited to the following sites: quarrying and mineral extraction sites, landfill sites, coal and material stockyards, or materials handling, major construction works and waste management sites. Dust can arise from the passage of vehicles over unpaved ground and along public roads that have been affected by dust and dirt tracked out from dusty sites. Other sources of dust are from the handling of dusty materials, the cutting of concrete, etc and wind-blown dust from stockpiles and dusty surfaces.

Within the last two years a waste transfer site and a cement mixing process site have opened up in Burrowfield in Welwyn Garden City. This is on an industrial estate that is considered dusty due to both the new and existing sites. Despite this there is no relevant exposure as outlined in TG09 nearby. Careful attention will however be kept on the area in case dust problems become exacerbated, e.g. through the entrainment and re-suspension of dust from the access road to the area.

No other additional fugitive and uncontrolled particulate matter emissions have been identified based on local professional knowledge, recent air quality assessments or recent complaints to the Council.

The Welwyn Hatfield Borough Council confirms that there are no additional potential sources of fugitive particulate matter emissions in the Local Authority area.

## **8 Conclusions and Proposed Actions**

### **8.1 Conclusions from New Monitoring Data**

In 2011 the Council monitored at one location continuously and 6 other locations across the Borough using diffusion tubes. The monitoring results within the Borough confirmed that the annual mean nitrogen dioxide objective was not exceeded at roadside and background locations where there is relevant exposure.

Based on these findings from monitoring in the Borough, the Council does not need to undertake a Detailed Assessment as no new potential or actual exceedences at relevant locations were established.

### **8.2 Conclusions from Assessment of Sources**

The Council has assessed the likely impacts of local developments for road transport, other transport, industrial processes, commercial/domestic, fugitive emissions, plus residential and commercial sources. The findings have indicated that there are no new changes that require the Council to undertake a Detailed Assessment.

### **8.3 Proposed Actions**

This report follows the technical guidance (TG09) produced for this round of Review and Assessment. It therefore fulfils this part of the continuing LAQM process.

The results, from following this methodology, are that the Council has not identified an additional risk of the air quality objectives for the LAQM pollutants: nitrogen dioxide, particles (PM<sub>10</sub>) carbon monoxide, benzene, 1,3-butadiene, lead and sulphur

dioxide, being exceeded anywhere in the Council's area. Thus the Council need not proceed beyond the updating and screening assessment for these pollutants.

The Council will therefore undertake the following actions:

1. Undertake consultation on the findings arising from this report with the statutory and other consultees as required.
2. Maintain the existing monitoring programme.
3. Prepare for the submission of its 2013 Air Quality Progress Report.

## 9 References

Defra, 2007. Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). Defra, London. Cm 7169.

Defra, 2009a. Local Air Quality Management, Technical guidance LAQM.TG09. Defra, London.

Defra, 2012. WASP – Summary of Laboratory Performance in WASP NO<sub>2</sub> Proficiency Testing Scheme for Rounds 108-115. HSL March 2012.

Welwyn Hatfield Borough Council (2009). Local Air Quality Management – Updating and Screening Assessment 2009.

Welwyn Hatfield Borough Council (2011) Local Air Quality Management – Progress Report. 2011.

KCL, 2009. Air Quality in London 2006-7. London Air Quality Network Report 14. ERG, King's College London 2009.

# Appendices

## Appendix 1: Part B installations in Welwyn Hatfield

Table of permitted petrol stations in the Council's area

Ref no.	Company/ Site Address
EP/000000019	Bell Bar Service Station, Great North Road, Hatfield, Hertfordshire, AL9 6DA.
EP/000000021	Tesco Stores Ltd - Petrol Station, Tesco Stores Ltd, Great North Road, Hatfield, Hertfordshire, AL9 5JY.
EP/000000022	BP Express, Nodeway Filling Station, Welwyn By Pass Road, Welwyn, Hertfordshire.
EP/000000023	Asda Stores Ltd, Asda Superstore, 98 Town Centre, Hatfield, Hertfordshire, AL10 0JW.
EP/000000024	Eastbridge Service Station, Bridge Road East, Welwyn Garden City, Hertfordshire, AL7 1LE.
EP/000000025	Morrisons Petrol Filling Station, Morrison Supermarket, 40 Black Fan Road, Welwyn Garden City, Hertfordshire.
EP/000000026	Total, Stadium Service Station, Stanborough Road, Welwyn Garden City, Hertfordshire, AL8 6XA.
EP/000000027	Esso Service Station, 51-53 London Road, Woolmer Green, Knebworth, Hertfordshire, SG3 6JB.
EP/000000028	Tesco Stores Ltd, Cirrus Building A, Falcon Way, Welwyn Garden City, Hertfordshire, AL7 1AB.

Table of Part B installations in the Council's area

<b>PG Note</b>	<b>Company Name</b>	<b>Site Address/ Home Address of Mobile Plant</b>
PG3/1(04) Bulk Cement	Rapid Ready Mix	Alpha Place, Garth Road, Morden, SM4 4LG
PG 6/24 (05) Pet food manufacture	Gilbertson & Page	45-55 Brownfields, Welwyn Garden City, Hertfordshire, AL7 1AN.
PG6/34(11) Respraying of Road Vehicles	Garden City Coach Works	Fiddlebridge Lane, Hatfield, Hertfordshire, AL10 0SP.
PG6/34(11) Respraying of Road Vehicles	Squire Furneaux Saab	Welwyn Saab, 36 Brownfields, Welwyn Garden City, Hertfordshire, AL7 1AN.
PG6/34(11) Respraying of Road Vehicles	Brooks & Stratton	14 Burrowfield, Welwyn Garden City, Hertfordshire, AL7 4SN.
PG6/34(11) Respraying of Road Vehicles	Welspray Accident Repair Centre	12 Southfield, Welwyn Garden City, Hertfordshire, AL7 4ST.
PG6/34(11) Respraying of Road Vehicles	WS Coachworks	Wright Signs And Coachworks Ltd, Travellers Lane, Welham Green, Hatfield, Hertfordshire, AL9 7HF.
PG6/34(11) Respraying of Road Vehicles	UK Assistance Accident Repair Centre	Unit 1, North Park, Great North Road, Hatfield, Hertfordshire, AL9 5JN.
PG1/01(04) Waste Oil and Recovered Oil Burners Less Than 0.4 MW	Ashcroft Autocare	8 Little Ridge, Welwyn Garden City, Hertfordshire, AL7 2BH.
PG1/01(04) Waste Oil and Recovered Oil Burners Less Than 0.4 MW	Aylmer Motor Works	Old Coach Stations, Great North Road, Brookmans Park, Hatfield, Hertfordshire, AL9 6NA.
PG1/01(04) Waste Oil and Recovered Oil Burners Less Than 0.4 MW	Cuzner & White	32 Brownfields, Welwyn Garden City, Hertfordshire, AL7 1AN.
PG1/01(04) Waste Oil and Recovered Oil Burners Less Than 0.4 MW	Mark Tempest Autocentre Cars	Unit, 1 Garden Court, Welwyn Garden City, Hertfordshire, AL7 1BH.

## Table of permitted dry cleaners in the Council's area

<b>Ref No.</b>	<b>Process Name</b>	<b>Address</b>
EP/000000003	Lady Valet Dry Cleaners	25 Station Road, Cuffley, Potters Bar, Hertfordshire, EN6 4HX
EP/000000004	Johnsons Dry Cleaners	43 Fretherne Road, Welwyn Garden City, Hertfordshire, AL8 6NY
EP/000000005	Swift Dry Cleaners	8 The Arcade, Hatfield, Hertfordshire, AL10 0JY
EP/000000006	Charlies Valet	1 Bradmore Green, Brookmans Park, Hatfield, Hertfordshire, AL9 7QW
EP/000000007	Charlie's Cleaning Ltd.	8 Parkhouse Court, Hatfield, Hertfordshire, AL10 9RQ
EP/000000008	Brookmans Park Dry Cleaning Company	87 Bradmore Green, Brookmans Park, Hatfield, Hertfordshire, AL9 7QT
EP/000000029	Welwyn Dry Cleaners	37 Wigmores North, Welwyn Garden City, Hertfordshire, AL8 6PG

## Appendix 2: Part A installations in Welwyn Hatfield

Process	Licence	Operator	Site Address
Inert Landfill	EA/PPC/KP3030XW	Cemex UK Materials Ltd	Suttons Farm Landfill, Woodcock Hill, St Albans, Hertfordshire, AL4 9HJ
Chemical machining of titanium	EA/EPR/NP3333BH	RTI Advanced Forming Ltd (formerly Aeromet International)	Watchmead, Welwyn Garden City, Hertfordshire, AL7 1LT
Lead recovery process	EA/EPR/BL8317IK	British Lead Mills	Peartree Lane, Welwyn Garden City, Hertfordshire, AL7 3UB
Storage, treatment & disposal of waste oils in a facility with a capacity of 10tonnes per day	EA/EPR/ZP3535TP/V003	Honeywagon	34 Burrowfield, Welwyn Garden City, Hertfordshire, AL7 4SR
Waste Transfer Station	EA/EPR/CP3199VT/A001	Burrowfields Waste Ltd	50-52 Burrowfield, Welwyn Garden City, Hertfordshire, AL7 4SR.
Ferrous & Non Ferrous Scrap Metal Merchants	EA/EPR/JP3297EY	Sovchem	Iron Sidings, Travellers Lane, Welham Green, Hatfield, Hertfordshire, AL9 7HF
Scrap Metal Merchants	EA/EPR/TP3198VP/A001	WGC Metals	17 Tewin Road, Welwyn Garden City, Hertfordshire, AL7 1BD
Green waste recycling	EPR/BB3630RH/A001	Land Networks	Cattlegate Farm, Cattlegate Road, Northaw, Potters Bar, Hertfordshire, EN2 8AU.

### Appendix 3: Non continuous monitoring in Welwyn Hatfield

Table showing unbiased diffusion tube results for 2011

Site Ref	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WH1 (old)	61.2	53.6	52.8	45.5	35.3	44.4	19.9					
WH1											42.2	26.9
WH2	46.5			27.3	21.5	22.7			32.1	46.6		36.5
WH3	44.1	37.9	39.1		29.3	40.5	23.3		44.2	58.8	61.4	19.6
WH4 (old)	41.9	22.2	38.7	26								
WH4					20.1	26.3	24.1	25.2		42.8	45	28.6
WH5	34.1	28.8	36.8	26.9	22.7	29.8	19	25	33.4	38	42.4	29
WH6	35.9	33.9	33.9	21.1	17.3		19.3	19.8	29.9	34.5	40.9	30.2

(Note: greyed areas represent < 50% data capture)

Table showing Annual adjustment factors for 2011

Site	Factor
WH1 (old)	1.057153
WH2	1.063338
WH3	0.970841
WH4	1.10602
WH5	1
WH6	0.972791

