



2012 Air Quality Updating and  
Screening Assessment for  
*North Hertfordshire District Council*

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

April 2012

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## Executive Summary

As required by Part IV of the Environment Act 1995 North Hertfordshire District Council (NHDC) has undertaken the 2012 Local Air Quality Management Updating and Screening Assessment (USA) of air quality for the district.

This USA report is a review of air pollution measurement data compared to the national air quality objectives for human health. In addition the report is a review of any new or existing potential sources of air pollution and an assessment of their potential impacts on air quality for the population of the district.

NHDC assessed new and existing sources of air pollution from within the district and identified no new, or previously unrecognised existing, sources that were likely to be responsible for national air quality objectives for human health being exceeded.

NHDC monitored appropriate locations within the district in 2011 and with the exception of two of those locations the air quality objectives were not exceeded. Therefore, although the majority of the population of the district is not exposed to air pollution at a level above the national air quality objectives for human health there are two areas where this does not appear to be the case. The two areas are identified below.

The mean annual average air quality objective for nitrogen dioxide is being exceeded at Stevenage Road, Hitchin. This is an exceedence that was identified in the 2011 Progress Report and confirmed by a 2011 Detailed Assessment Report. The 2011 data reported here confirms the conclusion of the 2011 Detailed Assessment Report that an Air Quality Management Area will need to be declared for an area along Stevenage Road, Hitchin.

The mean annual average air quality objective for nitrogen dioxide is being exceeded at the north end of Park Way, at the Payne's Park roundabout. This monitoring location was introduced for the first time in March 2011 following the 2011 Detailed Assessment Report. That report considered the Payne's Park area as a possible Air Quality Management Area, but concluded that there was insufficient evidence to designate an Air Quality Management Area.

**NHDC will complete the designation of an Air Quality Management Area at Stevenage Road, Hitchin in 2012, complete a Progress Report in 2013 and review the need for a Detailed Assessment of the Payne's Park area based on it's conclusions.**

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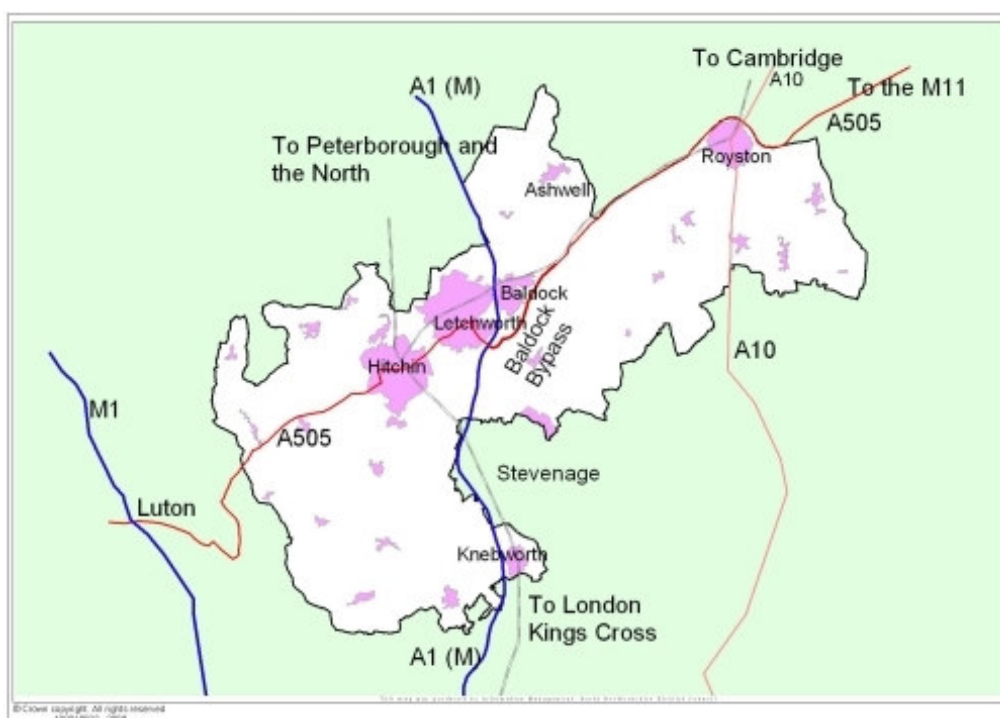
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# 1 Introduction

## 1.1 Description of Local Authority Area

The district of North Hertfordshire is predominantly rural, covering 144.9 square miles, with the bulk of its 116,908 population (as estimated from the 2001 census) located in four main centres, namely Hitchin, Letchworth, Baldock and Royston.



**Figure 1.1: North Hertfordshire District**

The main source of air pollution in the district is road traffic emissions from major roads notably the A1(M), A505 and A602. In terms of traffic congestion the most significant locations are associated with the A505 through Baldock and the A602 and A505 through Hitchin.

Other pollution sources, including commercial, industrial and domestic sources will also contribute to background pollution concentrations.

## 1.2 Purpose of Report

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

The objective of this Updating and Screening Assessment (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  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  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 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles ( $\text{PM}_{10}$ ) (gravimetric)	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

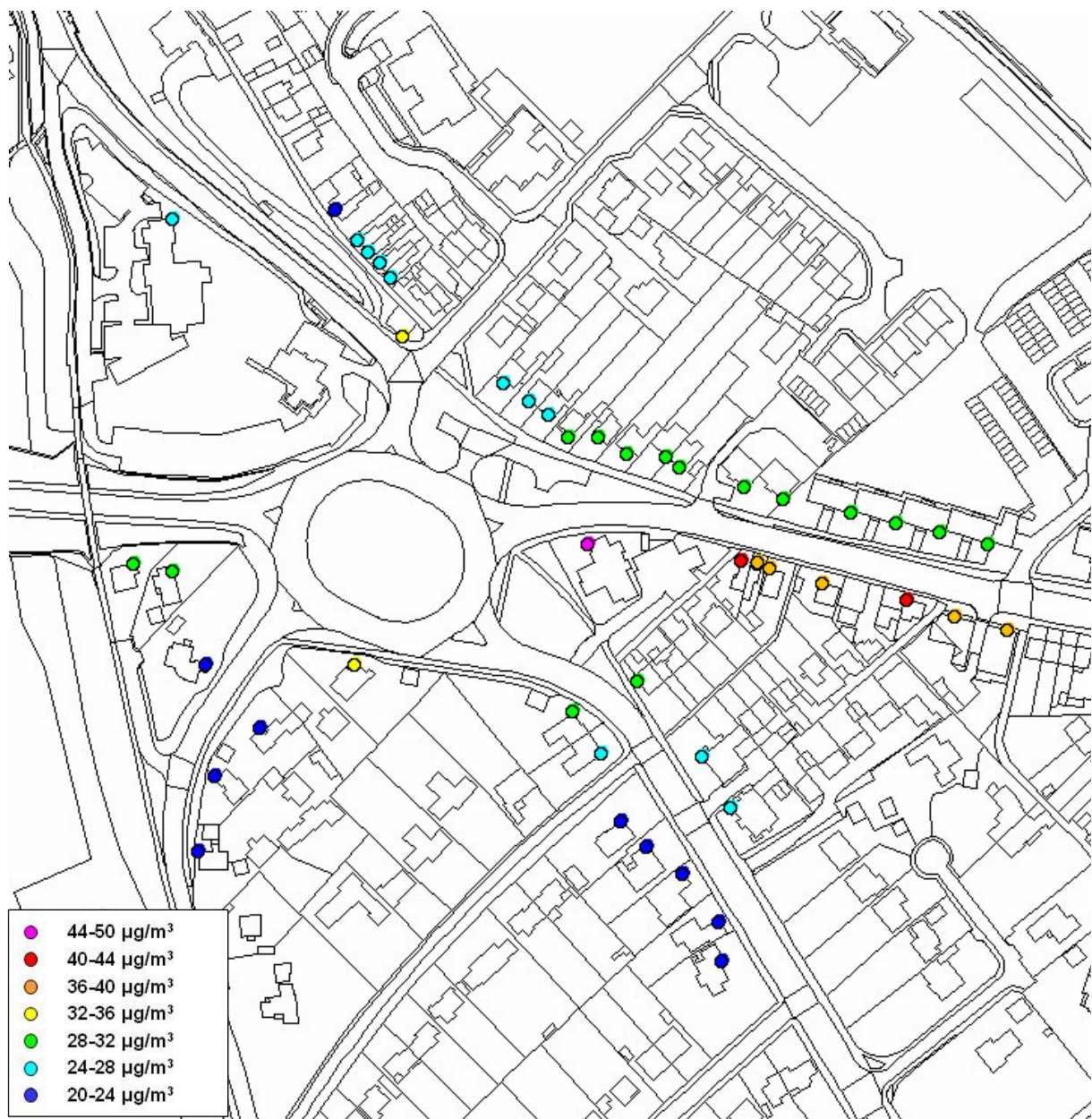
Table 1.2 summarises all previous local air quality management reports.

**Table 1.2 Summary of Previous Review and Assessments**

Round / Reports	Date	Description / Outcomes
<b>1<sup>st</sup> Round</b>	1999 – 2003	Assessments concluded that all pollutant levels complied with Air Quality Objectives (AQO).
<b>2<sup>nd</sup> Round:</b> USA Progress Reports	2003 2004 & 2005	AQO not exceeded. AQO not exceeded.
<b>3<sup>rd</sup> Round:</b> USA	2006	Diffusion tube data indicated the annual NO <sub>2</sub> AQO was exceeded at locations at Stevenage Road, Hitchin, Payne's Park, Hitchin & Whitehorse Street, Baldock.
Detailed Assessment	2007	Concluded that there was no evidence of a need for an Air Quality Management Area at the two Hitchin sites. But recommended enhancing the monitoring network in those areas. Concluded that NO <sub>2</sub> concentrations at Whitehorse Street, Baldock would exceed the annual AQO, but that because of the Baldock By-Pass being opened in 2006 the decision about an AQMA should be postponed until its impact could be assessed.
Progress Report	2008	Due to low data capture at the three areas of concern it was not possible to provide conclusive evidence about whether AQO were exceeded.
<b>4<sup>th</sup> Round:</b> USA	2009	Concluded that NO <sub>2</sub> data showed the annual AQO was exceeded at: <ul style="list-style-type: none"> <li>- Whitehorse St, (A505) Baldock</li> <li>- Payne's Park (A505) roundabout, Hitchin</li> <li>- Stevenage Road/Hitchin Hill (A602), Hitchin</li> <li>- Nightingale Road (A505), Hitchin</li> </ul> And that a Detailed Assessment was required for each area.
Detailed Assessment	2010	Concluded that the AQO was not being exceeded in any of the 4 areas. However, DEFRA considered that the data collected was not robust enough to be confident of the conclusion and required NHDC to undertake another Detailed Assessment in 2011.
Progress Report	2011	Concluded that no new areas were at risk of AQO being exceeded. But confirmed that there was justification for a Detailed Assessment of the 4 areas previously identified as being at risk.
Detailed Assessment	2011	Concluded that there was relevant exposure above the annual AQO for NO <sub>2</sub> at properties on the south of Stevenage Road, Hitchin ( <b>Figure 1.2</b> ) and that work to designate an AQMA should commence. Concluded that the AQO was not being exceeded at points of relevant exposure at Nightingale Road, Hitchin and the Payne's Park roundabout, Hitchin. Concluded that there was inconclusive evidence of the AQO being exceeded at Whitehorse Street, Baldock.

In September 2011 DEFRA accepted the conclusions of the 2011 Detailed Assessment and NHDC has commenced the process of designating an Air Quality Management Area at Stevenage Road, Hitchin. The AQMA will be declared during 2012 and followed up by a Further Assessment report and then an Action Plan containing options designed to bring about air quality improvements. The timescale for completing the reports is 12 months and 18 months respectively from AQMA designation.

Monitoring networks were maintained or extended in the other three areas considered by the 2011 Detailed Assessment and are to be reported in this USA report along with the data collected during 2011 from the rest of the district.



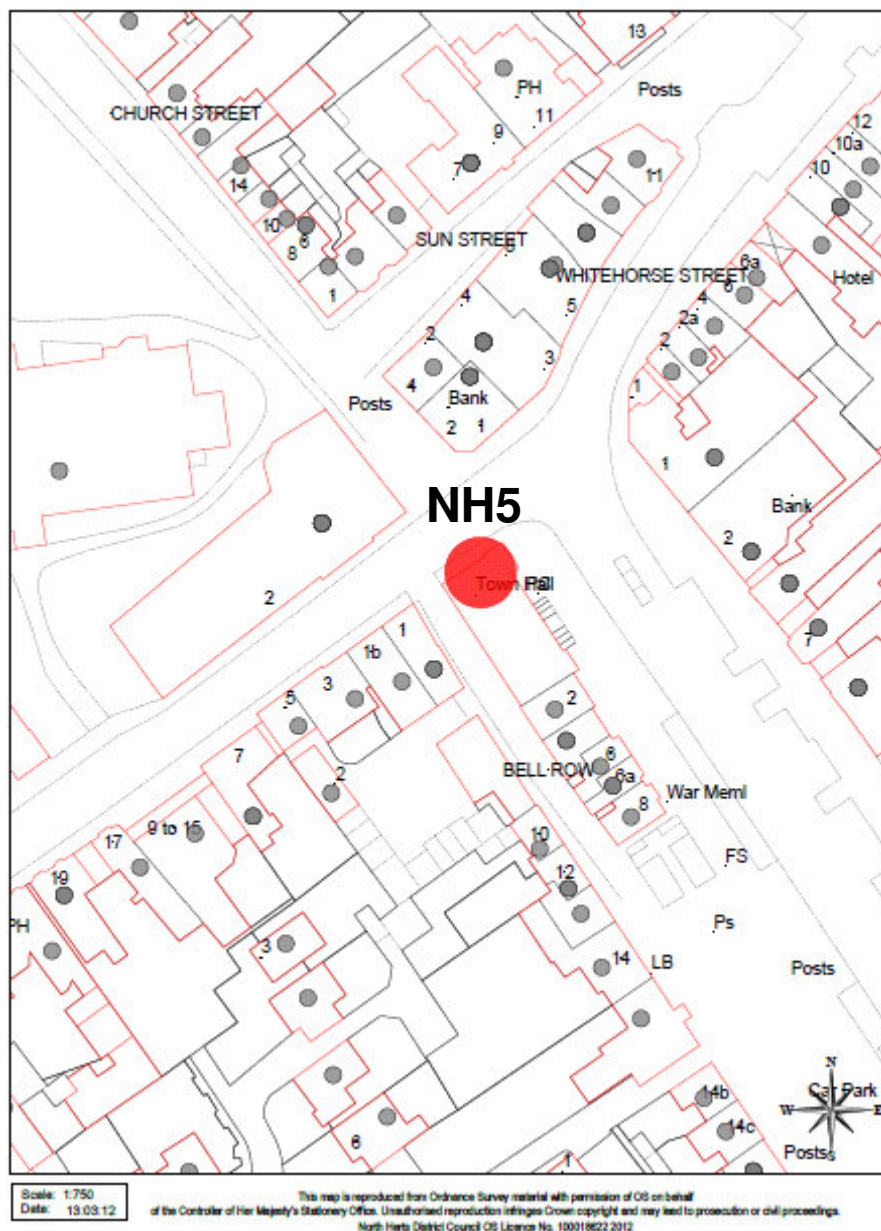
**Figure 1.2: Air Pollution Dispersion Modelling Results Map: Stevenage Road, Hitchin**

## 2 New Monitoring Data

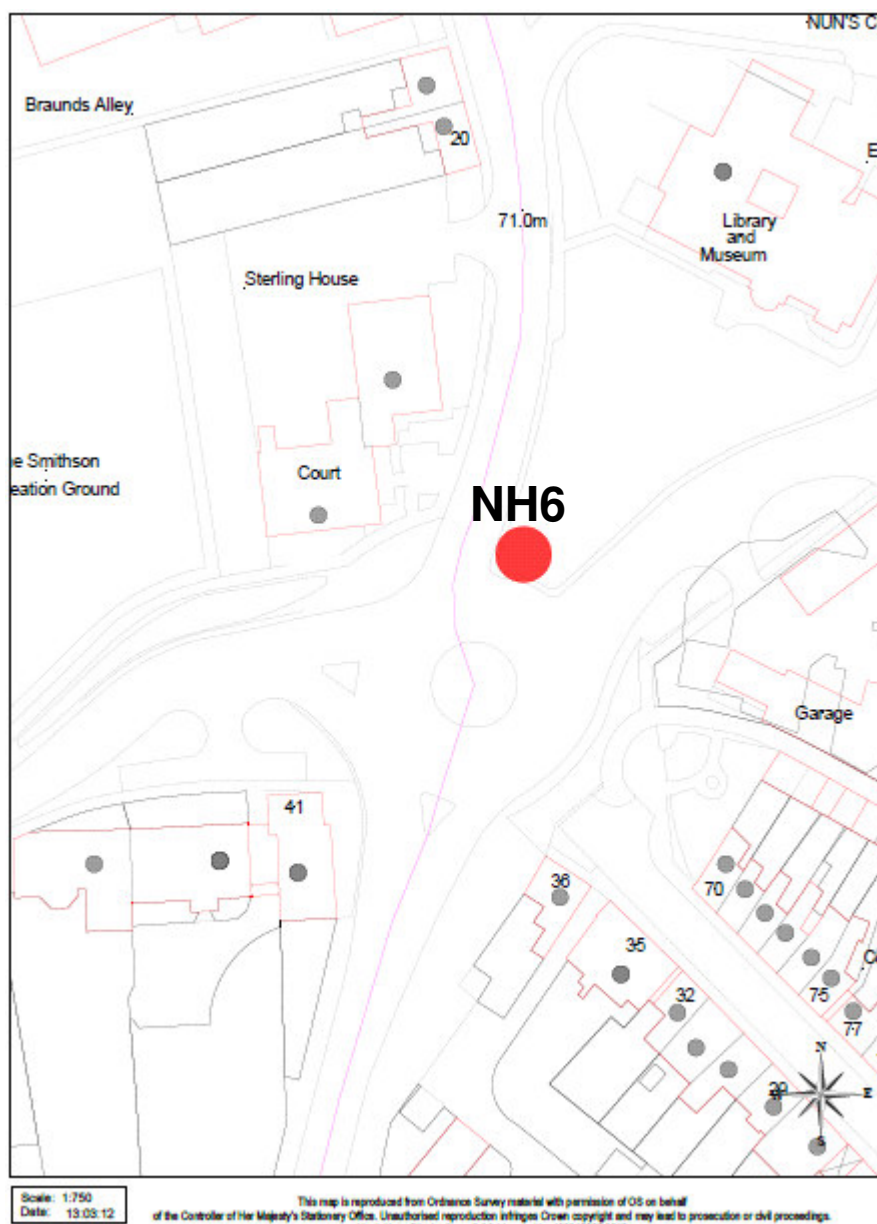
### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

North Hertfordshire District Council operated 4 automatic monitoring analysers at 3 monitoring sites during 2011. The locations of these monitoring sites are shown by Figures 2.1, 2.2 and 2.3 and the analyser and monitoring site details are summarised in Table 2.1.

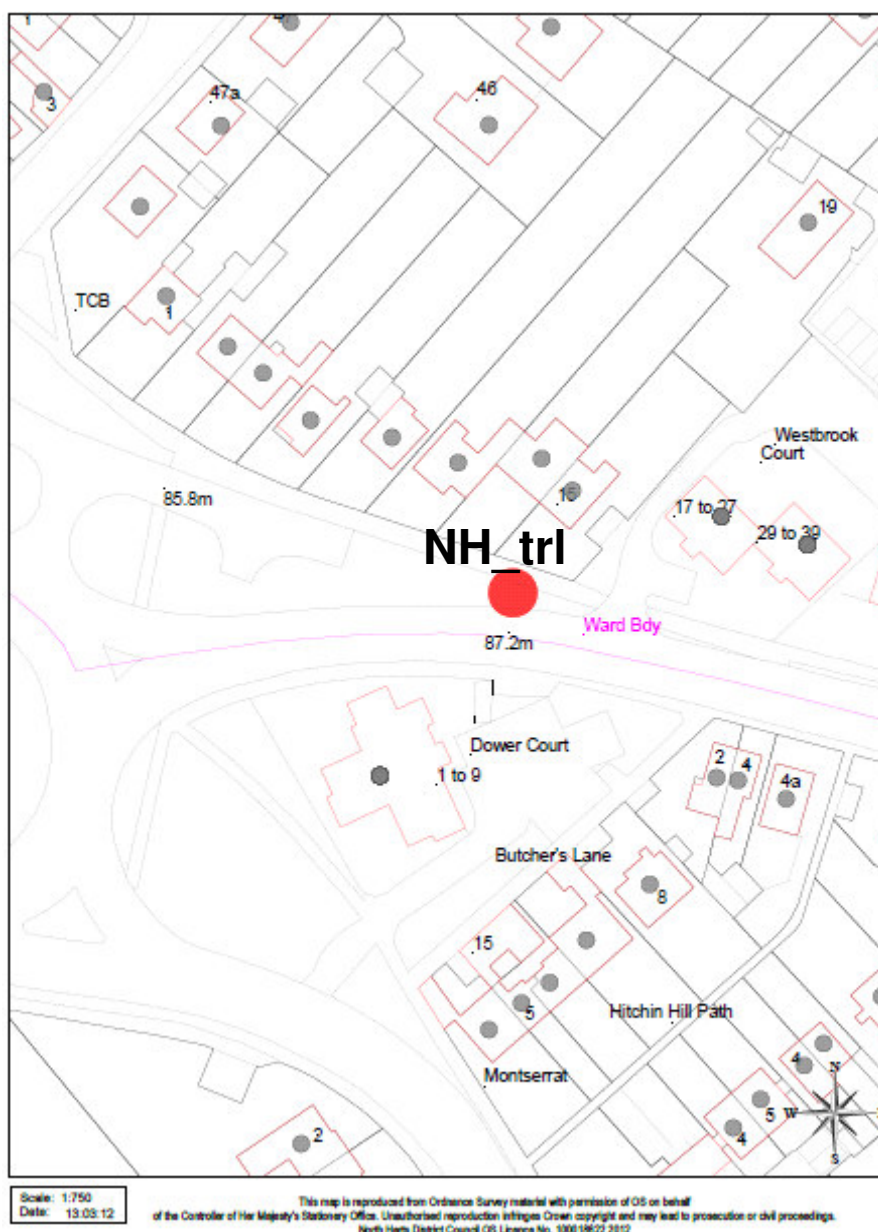


**Figure 2.1: Nitrogen Dioxide Automatic Monitoring Site: Hitchin Street, Baldock**



**Figure 2.2: Nitrogen Dioxide and Particulate Matter (PM<sub>10</sub>) Automatic Monitoring Site:  
Payne's Park Roundabout, Hitchin**





**Table 2.1 Details of Automatic Monitoring Sites**

<b>Site Name</b>	<b>Site Type</b>	<b>X OS GridRef</b>	<b>Y OS Grid Ref</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Monitoring Technique</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>
<b>NH5</b> Town Hall, Hitchin Street, Baldock	Roadside	524456	233889	NO <sub>2</sub>	N	NO <sub>2</sub> = APNA360 Chemilum- inescence	Y (35m)	2m	N
<b>NH6</b> Payne's Park Roundabout, Hitchin	Roadside	518161	229292	NO <sub>2</sub> & PM <sub>10</sub>	N	NO <sub>2</sub> = API M200 Chemilum- inescence PM <sub>10</sub> = TEOM FDMS	Y (27m)	3m	N
<b>NH_trl</b> Stevenage Road, Hitchin	Roadside	518737	228350	NO <sub>2</sub>	N	NO <sub>2</sub> = API 200A Chemilum- inescence	Y (15m)	3m	Y

The APNA360 analyser (NH5) has calibration checks and filter checks and changes undertaken on a fortnightly basis by NHDC staff. The calibration readings were reported to the Environmental Research Group (ERG) at Kings College until October 2011 and subsequently Air Quality Data Management (AQDM). These companies were/are retained by NHDC, as part of the larger Herts and Beds Air Quality Network, to verify and ratify the data generated by the analyser. The ratification process is carried out as per AURN recommended procedures. In addition Horiba is engaged to undertake two service and on-site calibration visits in a year, one minor service and one major service.

The API M200 analyser and the R&P 1400a Tapered Element Oscillating Measurement (TEOM) analyser (NH6) are subject to calibration checks and filter checks and changes on a fortnightly basis by NHDC staff. In addition Supporting U is employed to undertake an annual service/maintenance visit and to respond in the event of any maintenance issues encountered during daily operation. The calibration readings were reported to ERG and subsequently AQDM. These companies were/are retained by NHDC, as part of the larger Herts and Beds Air Quality Network, to verify and ratify the data generated by the analyser. This process includes the application of the volatile correction model (VCM) and the results of the data reported have had this applied and been demonstrated as equal to the gravimetric equivalent.

The API 200A analyser (NH\_trl) was visited for calibration and filter checks and changes on a fortnightly basis by TRL staff and they undertook any additional maintenance or servicing during those visits. TRL verified and ratified the data generated by the analyser. The data were logged as 15 minute mean data and on a weekly basis data were examined to establish data validity. Data was ratified as per AURN procedures.

### 2.1.2 Non-Automatic Monitoring Sites

North Hertfordshire District Council undertook non-automatic monitoring using nitrogen dioxide (NO<sub>2</sub>) diffusion tubes at 33 locations across the district during 2011. The locations of these monitoring points are shown by Figures 2.4 – 2.15 and the monitoring point details are summarised in Table 2.2.

The diffusion tubes are 50% triethanolamine (TEA) in acetone and are supplied and analysed by Environmental Services Group (ESG) at Harwell Scientific Services. ESG/HSS follows the procedures set out in the Harmonisation Practical Guidance. ESG/HSS also participates in the Workplace Analysis Scheme for Proficiency (WASP) and is currently ranked as a Category Good laboratory.

No co-location study has been undertaken in the district. Data from the diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location database. The bias adjustment factor has been taken from the March 2012 version of the Diffusion Tube Bias Adjustment Factors spreadsheet available from the Defra Review and Assessment website (<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

According to the above database the bias adjustment factor for Harwell Scientific Services in April 2012 was 0.84.



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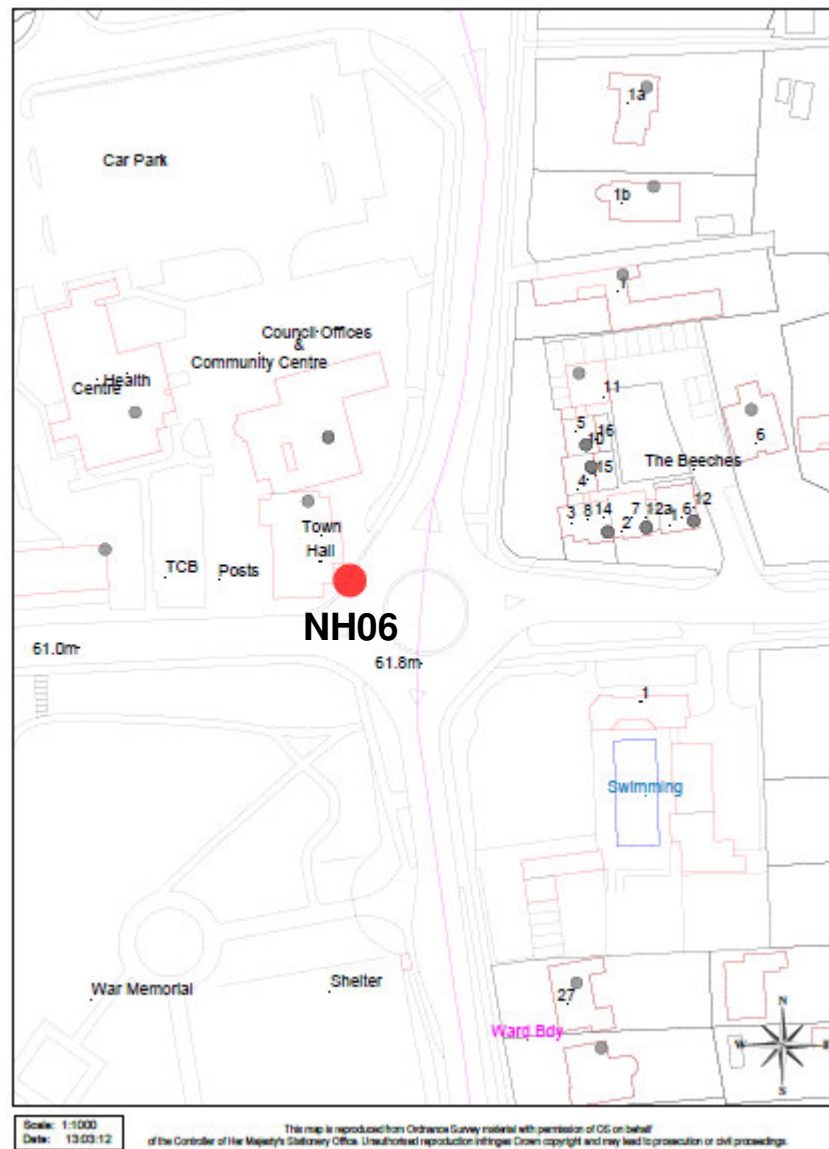


Figure 2.5: Nitrogen Dioxide Diffusion Tube Location in Royston

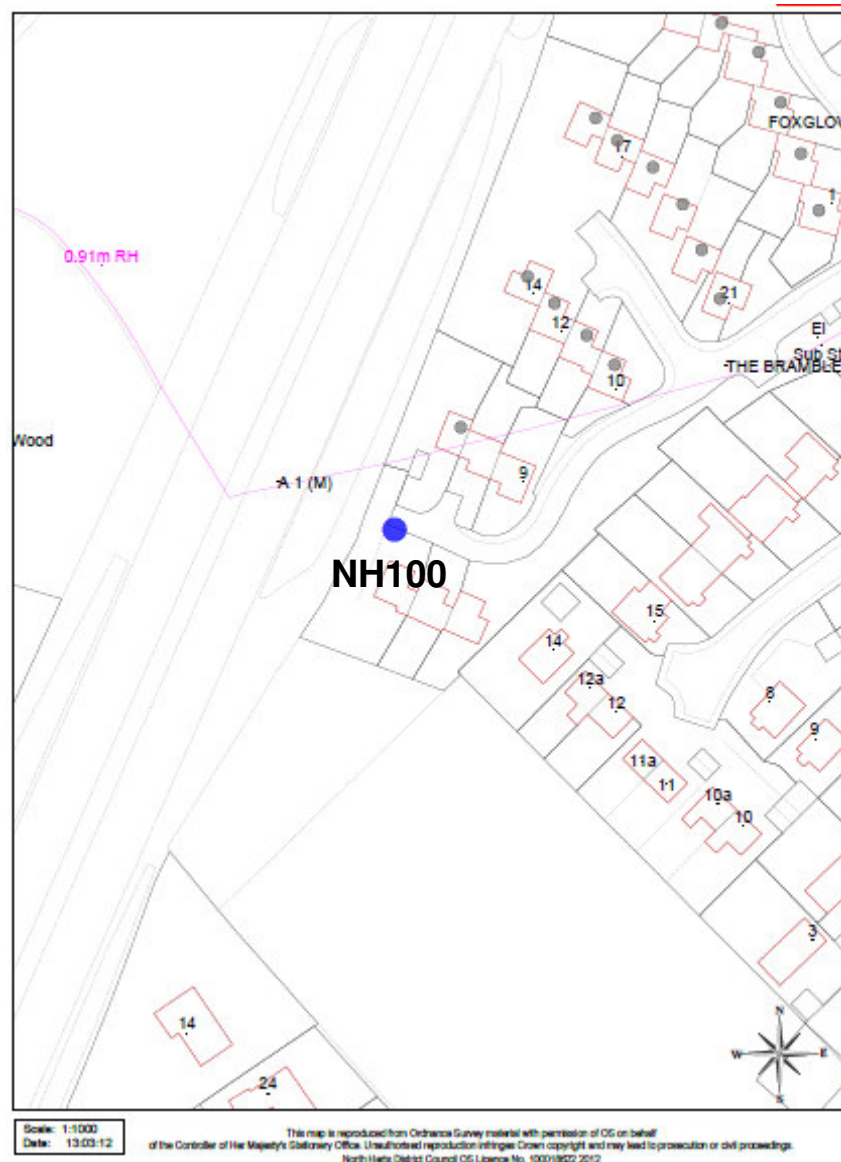


Figure 2.6: Nitrogen Dioxide Diffusion Tube Location in Welwyn

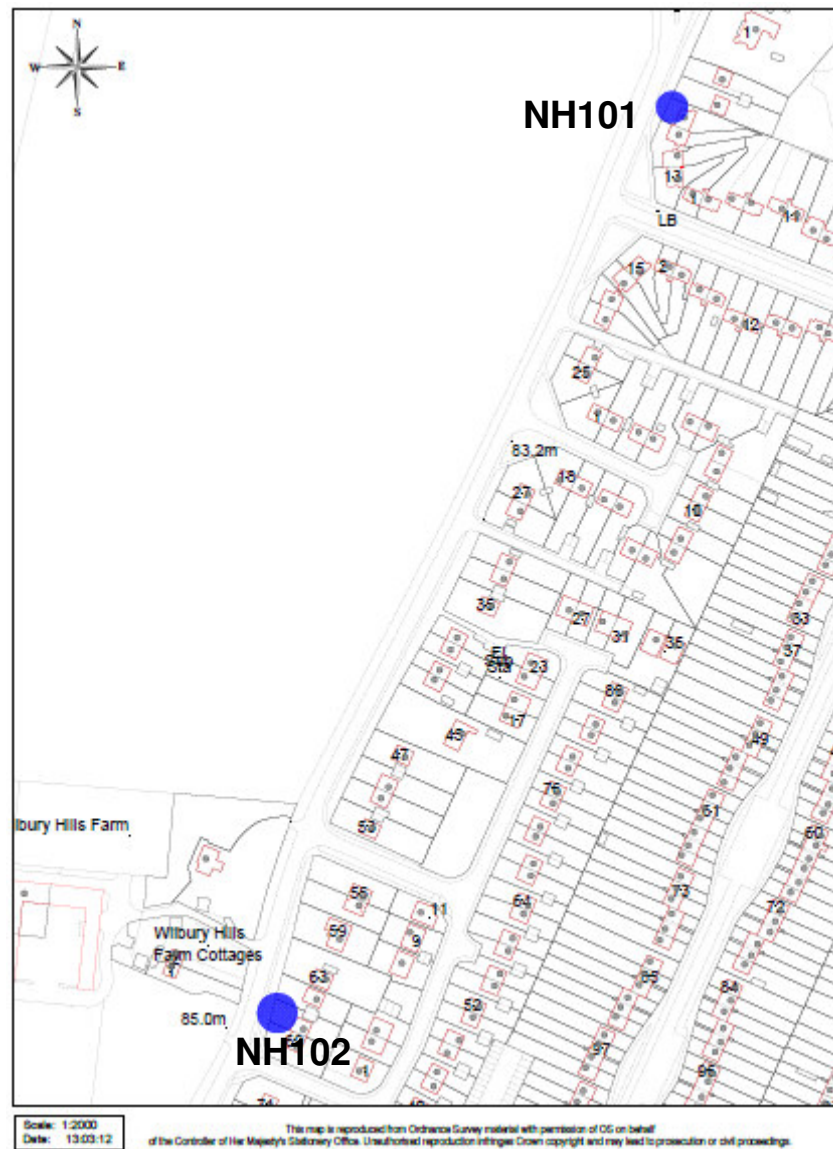


Figure 2.7: Nitrogen Dioxide Diffusion Tube Locations in Letchworth



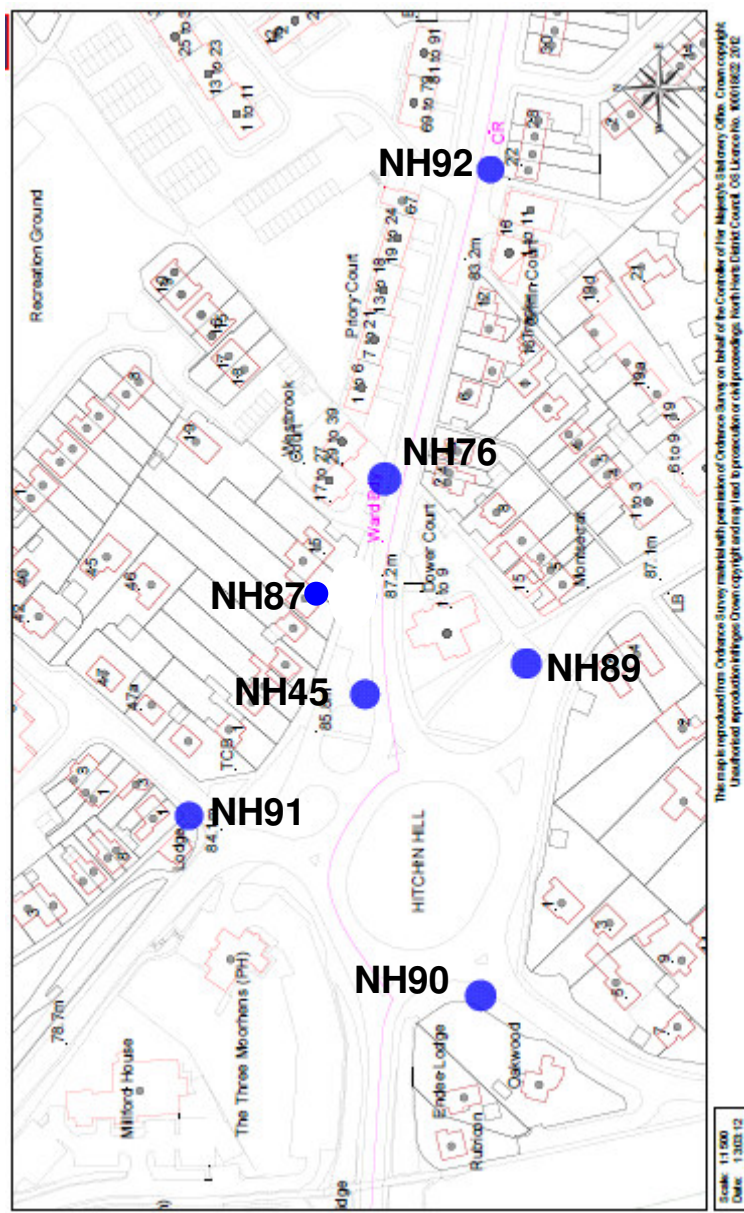
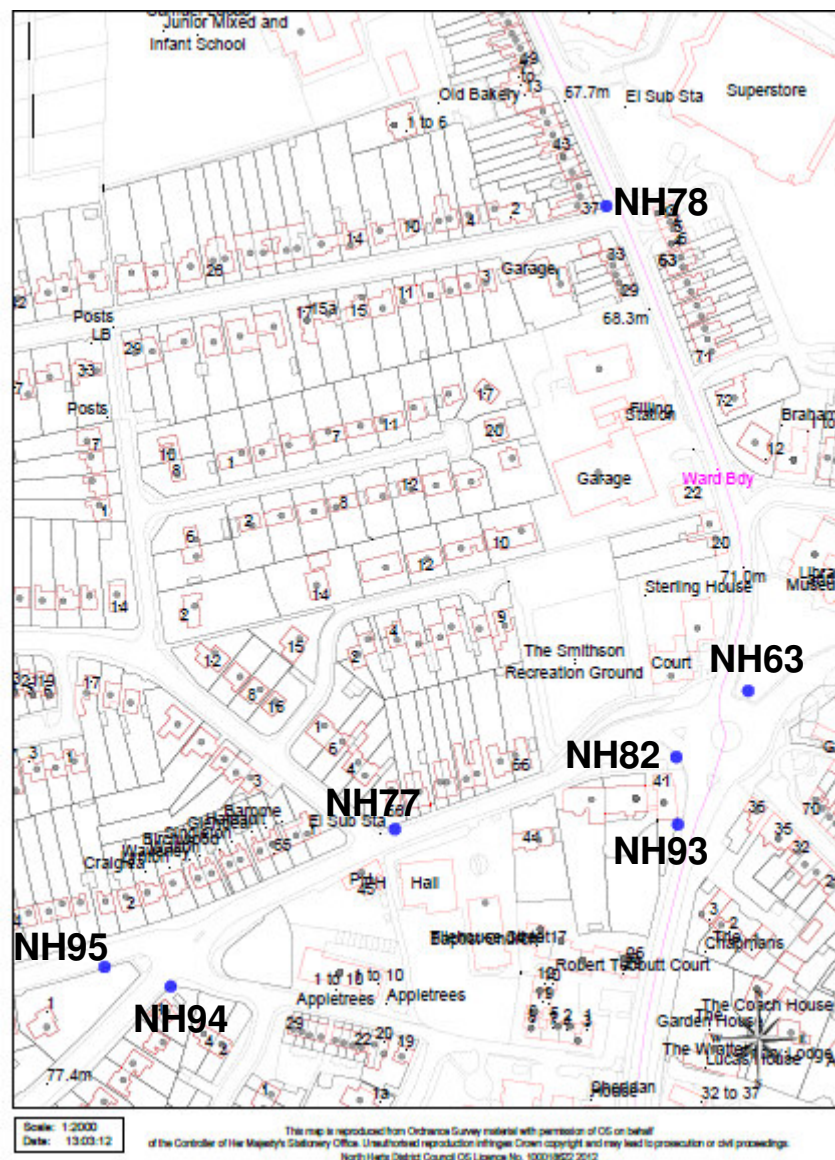


Figure 2.8: Nitrogen Dioxide Diffusion Tube Locations, Stevenage Road, Hitchin



**Figure 2.9: Nitrogen Dioxide Diffusion Tube Locations, Payne's Park, Hitchin**

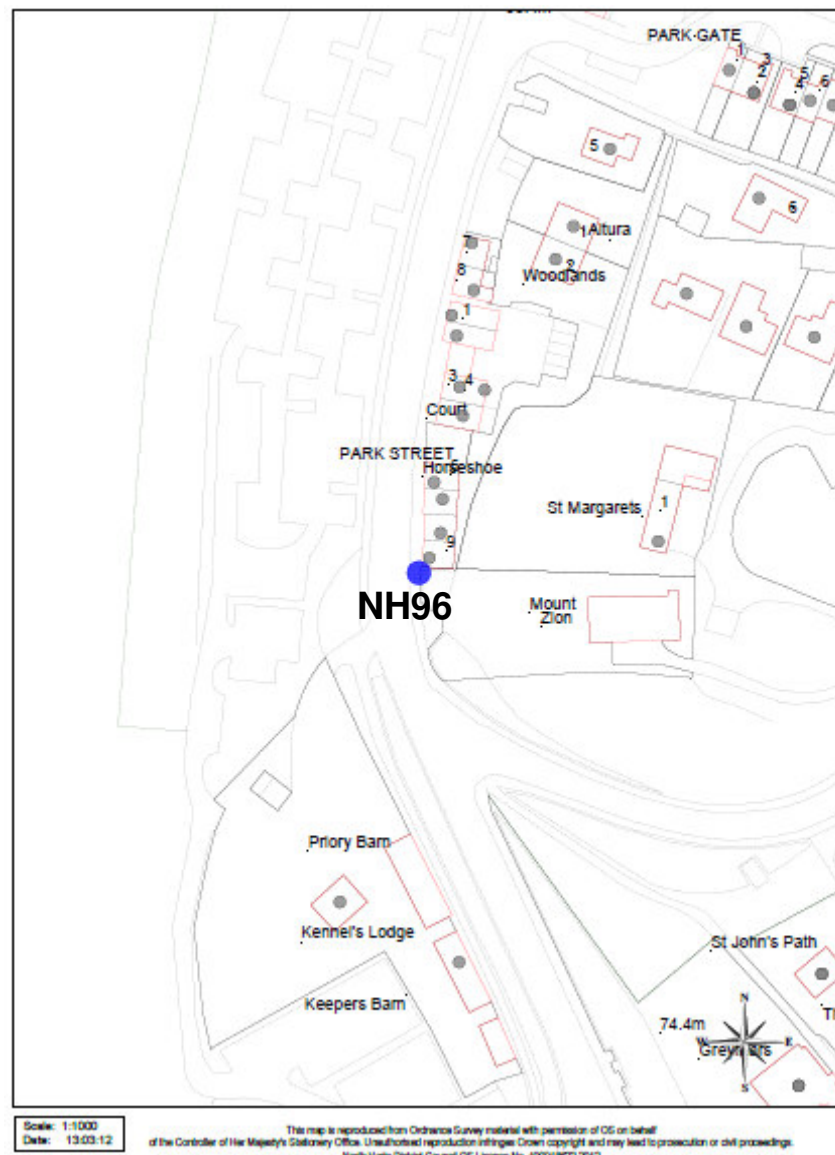


Figure 2.10: Nitrogen Dioxide Diffusion Tube Location, Park Street, Hitchin

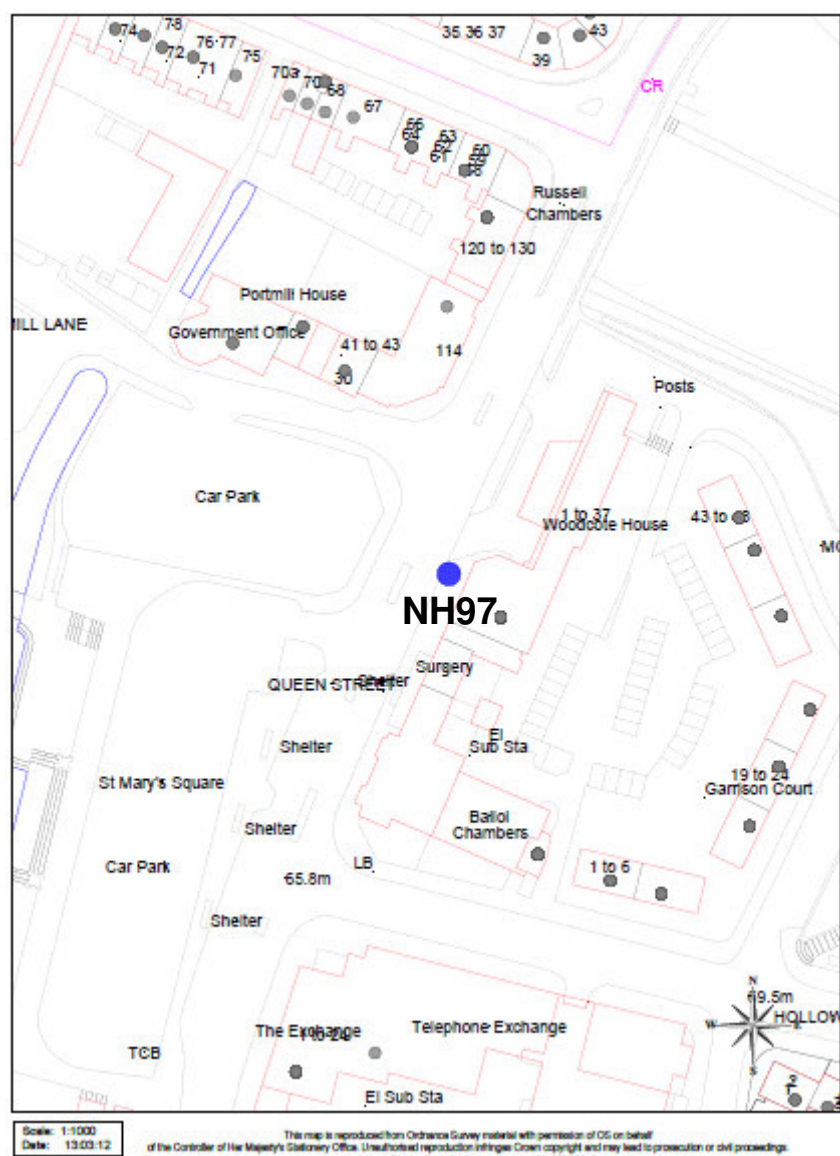


Figure 2.11: Nitrogen Dioxide Diffusion Tube Location, Queen Street, Hitchin



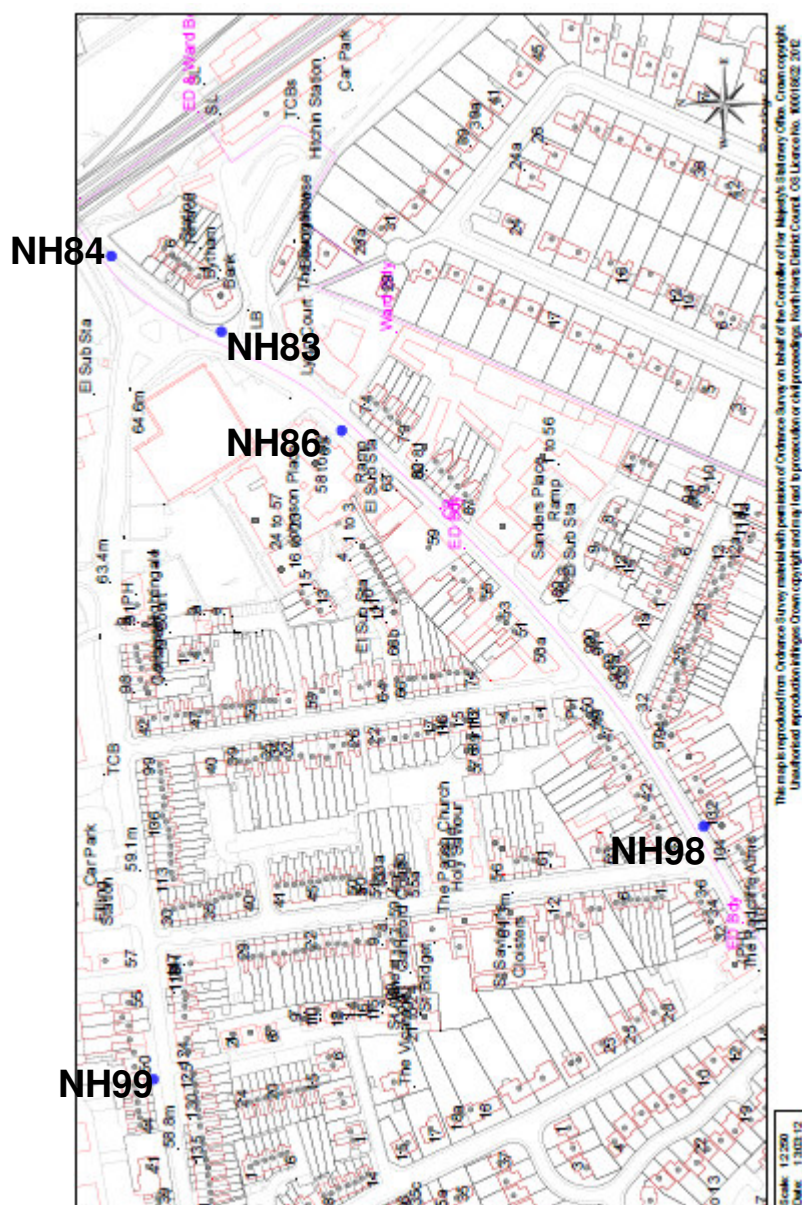


Figure 2.12: Nitrogen Dioxide Diffusion Tube Locations, Walsworth Road Area, Hitchin

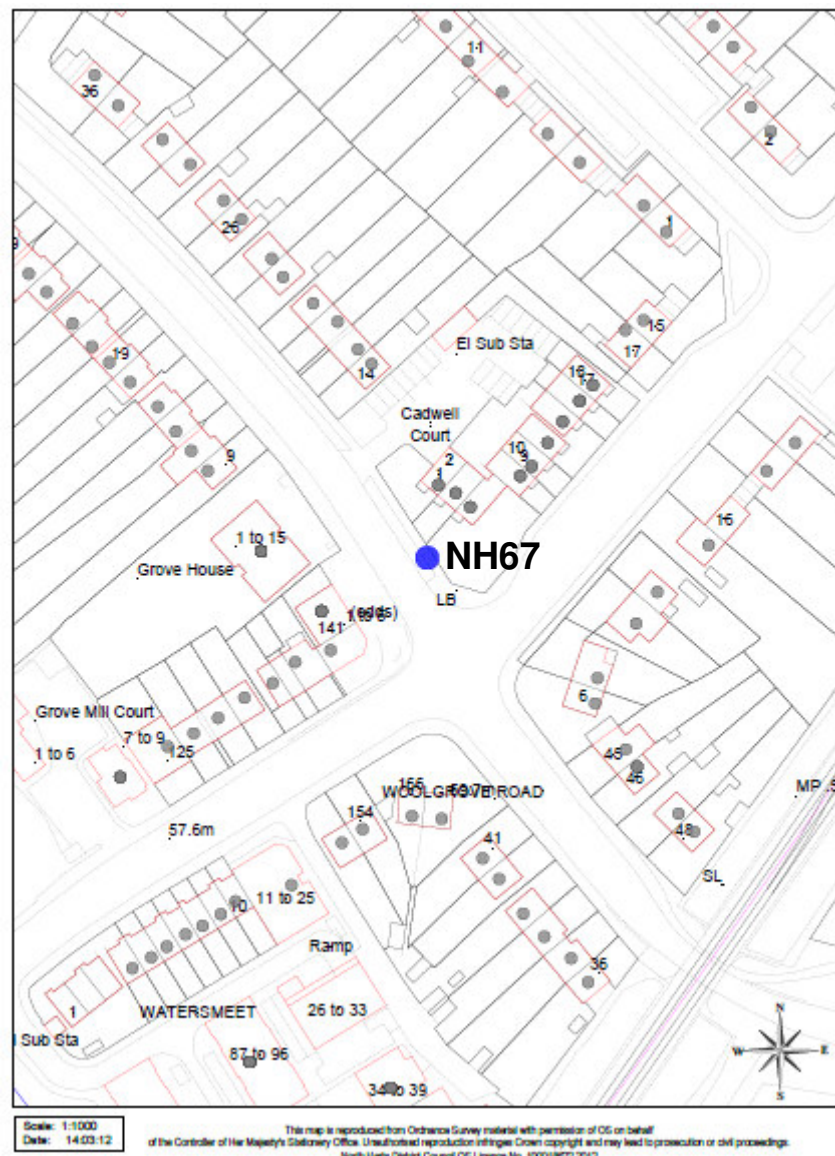


Figure 2.13: Nitrogen Dioxide Diffusion Tube Locations, Cadwell Court, Hitchin

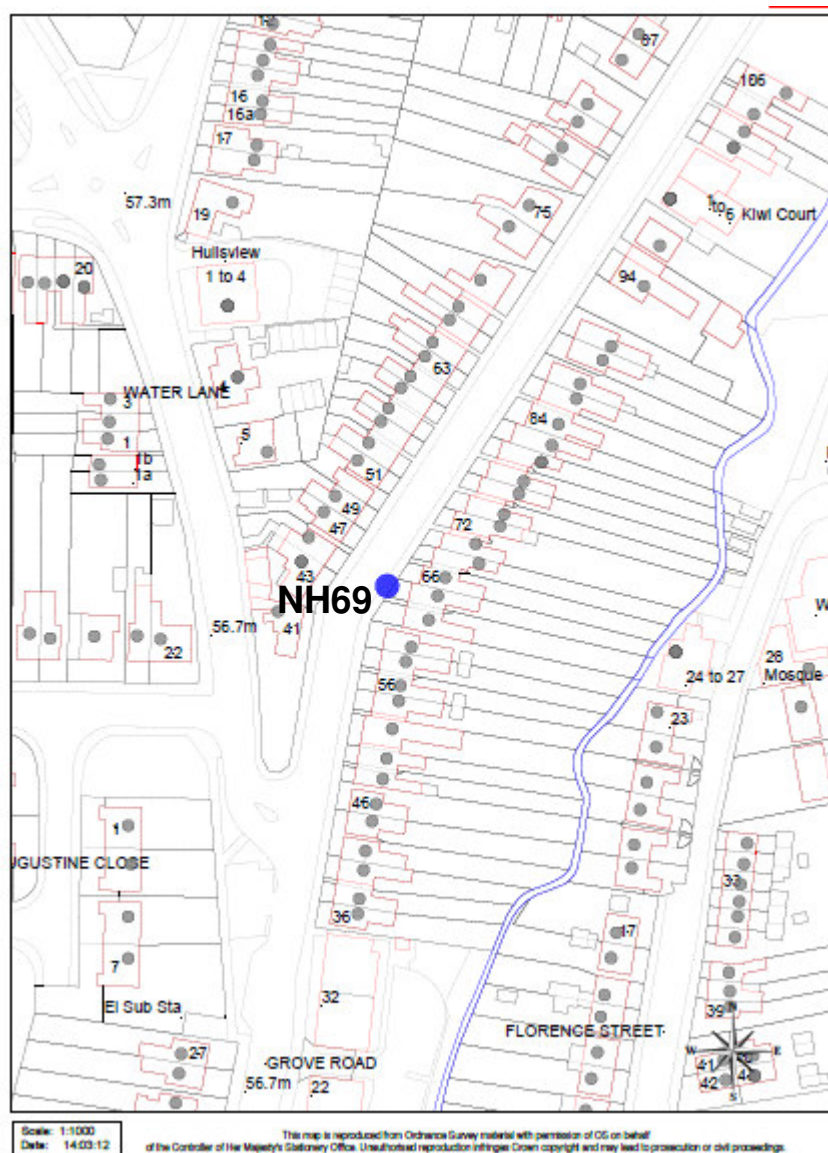


Figure 2.14: Nitrogen Dioxide Diffusion Tube Locations, Grove Road, Hitchin



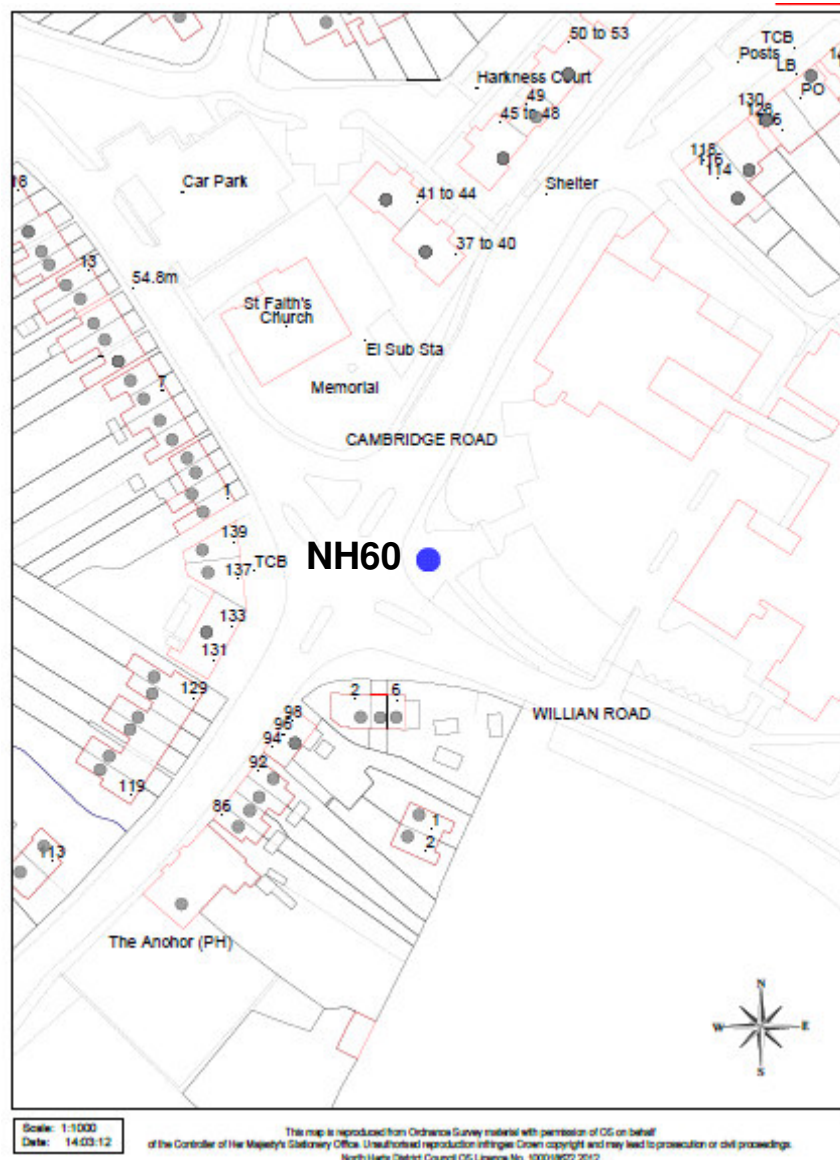


Figure 2.15: Nitrogen Dioxide Diffusion Tube Locations, Willian Road, Hitchin

Table 2.2 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref.	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser	Relevant Exposure?	Distance to kerb of nearest road	Worst-case exposure?
Town Hall, Melbourn Rd, Royston (NH06)	Roadside	535867, 240730	NO <sub>2</sub>	N	N	Y (55m)	1.1m	N
The Brambles, Welwyn (NH100)	Roadside	524033, 217620	NO <sub>2</sub>	N	N	Y (8m)	20m	Y
Wilbury Hills Rd(Edlefield) Letchworth(NH101)	Roadside	520400, 233234	NO <sub>2</sub>	N	N	Y (20m)	1.7m	Y
Wilbury Hills Rd(Romany) Letchworth(NH102)	Roadside	520299, 232841	NO <sub>2</sub>	N	N	Y (15m)	1.6m	Y
Clothall Road, Baldock (NH59)	Roadside	524649, 234061	NO <sub>2</sub>	N	N	Y (11m)	3m	Y
Whitehorse St , Baldock (NH72)	Roadside	524502, 233948	NO <sub>2</sub>	N	N	Y (27m)	2m	Y
Church St, (opp. Town Hall), Baldock (NH88)	Kerbside	524448, 233898	NO <sub>2</sub>	N	N	Y (45m)	0.5m	Y
Hitchin St, Town Hall, Baldock (NH61)	Roadside	524428, 233882	NO <sub>2</sub>	N	N	Y (35m)	2m	Y
Hitchin St (near bus stop) Baldock (NH70)	Roadside	524298, 233784	NO <sub>2</sub>	N	N	Y (1m)	3.5m	Y
Willian Road, Hitchin (NH60)	Roadside	519916, 230099	NO <sub>2</sub>	N	N	Y (29m)	1.1m	Y
Cadwell Court, Hitchin (NH67)	Roadside	519225, 230553	NO <sub>2</sub>	N	N	Y (12m)	2m	Y
Grove Road, Hitchin (NH69)	Roadside	518821, 229993	NO <sub>2</sub>	N	N	Y (5m)	2m	Y
West Hill, Hitchin (NH78)	Roadside	518099, 229229	NO <sub>2</sub>	N	N	Y (4m)	2m	Y
Hitchin Library, Hitchin (NH63)	Roadside	518160, 229095	NO <sub>2</sub>	N	N	Y (30m)	3.5m	N
Park Way, Hitchin (NH93)	Roadside	518130, 229036	NO <sub>2</sub>	N	N	Y (3m)	1.6m	Y
Upper TilehouseSt(roundabout)Hitchin(NH82)	Roadside	518129, 229065	NO <sub>2</sub>	N	N	Y (7m)	1.5m	Y
Upper Tilehouse St (crossing) Hitchin (NH77)	Roadside	518006, 229032	NO <sub>2</sub>	N	N	Y (5m)	1.5m	Y
Pirton Road, Hitchin (NH95)	Roadside	517886, 228975	NO <sub>2</sub>	N	N	Y (22m)	1.3m	Y
Offley Road, Hitchin (NH94)	Roadside	517915, 228967	NO <sub>2</sub>	N	N	Y (7m)	2.3m	Y
Queen Street, Hitchin (NH97)	Roadside	518666, 229149	NO <sub>2</sub>	N	N	Y (4m)	1.7m	Y
Park Street, Hitchin (NH96)	Roadside	518417, 228624	NO <sub>2</sub>	N	N	Y (1m)	1.8m	Y
St John's Road, Hitchin (NH91)	Roadside	518656, 228406	NO <sub>2</sub>	N	N	Y (5m)	7.9m	Y
Stevenage Road (A) Hitchin (NH45)	Roadside	518708, 228347	NO <sub>2</sub>	N	N	Y (19m)	2m	Y
11 Stevenage Road Hitchin (NH87)	Roadside	518731, 228362	NO <sub>2</sub>	N	N	Y (0m)	15m	Y
Opp. Dower Crt Stevenage Rd Hitchin (NH76)	Roadside	518773, 228342	NO <sub>2</sub>	N	N	Y (10m)	2.4m	Y
London Road, Hitchin (NH89)	Roadside	518706, 228293	NO <sub>2</sub>	N	N	Y (20m)	1.9m	Y
Gosmore Road, Hitchin (NH90)	Roadside	518593, 228304	NO <sub>2</sub>	N	N	Y (20m)	2.2m	Y
Stevenage Rd, Griffin Court, Hitchin (NH92)	Roadside	518872, 228305	NO <sub>2</sub>	N	N	Y (6m)	2.1m	Y
Cambridge Rd (Station A) Hitchin (NH84)	Roadside	519366, 229806	NO <sub>2</sub>	N	N	Y (20m)	1.1m	Y
Cambridge Rd (Station B) Hitchin (NH83)	Roadside	519328, 229752	NO <sub>2</sub>	N	N	Y (12m)	1.3m	Y
Walsworth Rd (nr Station) Hitchin (NH86)	Roadside	519278, 229691	NO <sub>2</sub>	N	N	Y (5m)	3m	Y
Walsworth Rd/Radcliffe Rd, Hitchin (NH98)	Roadside	519080, 229510	NO <sub>2</sub>	N	N	Y (4m)	1.5m	Y
Nightingale Rd, Hitchin (NH99)	Roadside	518953, 229786	NO <sub>2</sub>	N	N	Y (5m)	1.7m	Y

## 2.2 Comparison of Monitoring Results with AQ Objectives

North Hertfordshire District Council monitors for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) and the results of the monitoring are reported in comparison to relevant Air Quality Objectives (AQO) in Sections 2.2.1 and 2.2.2.

### 2.2.1 Nitrogen Dioxide

NHDC operated three automatic monitoring sites during 2011 and managed a network of 33 diffusion tubes.

#### Automatic Monitoring Data

The analyser at the Hitchin Street, Baldock (**NH5**) site has been collecting data since October 2009, so annual data have been available from the site for full years in both 2010 and 2011. Table 2.3 shows that at this site no AQO were exceeded and that data capture rates were appropriate.

The analyser at the Payne's Park, Hitchin (**NH6** – Hitchin Library) site was operating from the 18<sup>th</sup> April 2011, with the first full day of data collection the 19<sup>th</sup> April 2011. Table 2.3 shows that at this site no AQO were exceeded but that the data capture as a percentage of the calendar year was 70%. Therefore, the result reported in Table 2.3 has been adjusted in line with the method recommended in Box 3.2 of TG (09). (Appendix 1).

The analyser at the Stevenage Road, Hitchin (NH\_trl) site was operating from the 13<sup>th</sup> April 2010 until the 12<sup>th</sup> September 2011, so annualised data have been available from the site for both 2010 and 2011. Table 2.3 shows that the annual mean AQO was exceeded in both years. For reference, data capture for the 2010 monitoring period was 96% and for the 2010 annual period 68%.

The Stevenage Road site is a roadside site located on the north side of Stevenage Road. It is within 15m of the nearest residential receptor, 15 Stevenage Road. According to the method in Box 2.3 of TG (09) the predicted concentration at the nearest receptor in 2011 is calculated to be 31.5µg/m<sup>3</sup>. (Appendix 2). The AQC modelling for the 2011 Detailed Assessment using 2010 data predicted a NO<sub>2</sub> concentration of 30.9µg/m<sup>3</sup> at the façade of 15 Stevenage Road. This indicates a degree of confidence in the modelling for the north of Stevenage Road and that relevant public exposure to NO<sub>2</sub> above an AQO is not an issue to the north of Stevenage Road.

**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 $\mu\text{g}/\text{m}^3$				
					2007* <sup>c</sup>	2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011 <sup>c</sup>
<b>NH5</b> Town Hall, Hitchin Street, Baldock	Roadside	N	95.7	95.7	N.A	N.A	N.A	32	32
<b>NH6</b> Payne's Park Roundabout, Hitchin	Roadside	N	99	70	N.A	N.A	N.A	N.A	35
<b>NH_tr1</b> Stevenage Road, Hitchin	Roadside	N	99	70	N.A	N.A	N.A	<b>52.4</b>	<b>47.5</b>

<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> Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

\*Annual mean concentrations for previous years are optional.

**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 ( $200 \mu\text{g}/\text{m}^3$ )				
					2007* <sup>c</sup>	2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011 <sup>c</sup>
<b>NH5</b> Town Hall, Hitchin Street, Baldock	Roadside	N	95.7	95.7	N.A	N.A	N.A	0	0
<b>NH6</b> Payne's Park Roundabout, Hitchin	Roadside	N	99	70	N.A	N.A	N.A	N.A	0
<b>NH_tr1</b> Stevenage Road, Hitchin	Roadside	N	99	70	N.A	N.A	N.A	7 (168.3)	3 (85.9)

<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> If the period of valid data is less than 90%, include the 99.8<sup>th</sup> percentile of hourly means in brackets

\* Number of exceedences for previous years are optional.

## Diffusion Tube Monitoring Data

Eight of the thirty-three diffusion tubes returned annual mean averages that exceeded the AQO of  $40\mu\text{g}/\text{m}^3$ . Those eight tubes were located in three areas of the district, two in Hitchin and one in Baldock. All of the results have been bias adjusted using the March 2012 version of the National Diffusion Tube Bias Adjustment Spreadsheet for Harwell Scientific Services.

One of the five diffusion tubes in **Baldock** returned an exceedance of the annual AQO (Table 2.5). The tube is located at a kerbside site (**NH88**) at the end of Church Street, on Hitchin Street opposite the Town Hall building. The 2011 capture rate was 91.6% and the bias adjusted annual average was  $47.7\mu\text{g}/\text{m}^3$ . However, diffusion tube **NH61** located on the opposite side of Hitchin Street to NH88 at a roadside location immediately outside the Town Hall, returned a result of  $36.1\mu\text{g}/\text{m}^3$  in 2011. Combined with the fact that the real-time analyser (**NH5**) located in the Town Hall throughout 2010 and 2011 returned annual means of  $32\mu\text{g}/\text{m}^3$  (Table 2.3) this indicates that there is no relevant exposure to  $\text{NO}_2$  concentrations that are above any AQO. Further evidence in support of this is that the annual average concentrations measured by all of the Baldock tubes in 2011 had declined in comparison to 2010 (Table 2.6). Also the buildings immediately around the Hitchin Street, Church Street, Whitehorse Street and High Street roundabout, which is the focus of the monitoring, are either vacant or in retail use.

A network of seven diffusion tubes were located at, or on roads feeding into, the **Payne's Park roundabout area of Hitchin**. Four of those tubes, all roadside locations, returned annual mean averages that exceeded the AQO (Table 2.5). The Hitchin Library tube (**NH63**), and the Upper Tilehouse Street tubes (**NH82**) and (**NH77**) had 100% capture rates and measured  $43.9\mu\text{g}/\text{m}^3$ ,  $42.8\mu\text{g}/\text{m}^3$  and  $44.4\mu\text{g}/\text{m}^3$  respectively. These three tubes also recorded comparable exceedances of the AQO in 2010 (Table 2.6). The other tube to record an exceedance of the AQO was a new addition to the network in 2011, namely Park Way (**NH93**). Data capture for this roadside tube was 100% for its monitoring period from March to December 2011 inclusive and the result returned was  $53.1\mu\text{g}/\text{m}^3$ .

Modelling of the area around the Payne's Park roundabout by AQC for the 2011 Detailed Assessment, which used the diffusion tube data from 2010 did not indicate that any AQO would be exceeded at residential properties. The only significant change in available information since that modelling is the annual result from **NH93**, which is located 3m from 41 Upper Tilehouse Street. According to the method in Box 2.3 of TG (09) the predicted



concentration at 41 Upper Tilehouse Street in 2011 is calculated to be **44.2µg/m<sup>3</sup>** (Appendix 2), which compares to the result of the dispersion modelling of 38.2µg/m<sup>3</sup>. This result raises the possibility of relevant public exposure to NO<sub>2</sub> above the annual AQO at 41 Upper Tilehouse Street.

A network of seven diffusion tubes were located at, or on roads; including the **Stevenage Road**; feeding into, the **Hitchin Hill roundabout area of Hitchin**. The diffusion tubes located on three of the roads with residential receptors on them did not record elevated NO<sub>2</sub> in relation to the AQO (Table 2.5), **NH91** on St John's Road, **NH89** on London Road and **NH90** on Gosmore Road.

The other four tubes are located along Stevenage Road, three on the north side and one on the south.

**NH45** is a roadside tube positioned 19m from flats to the south of Stevenage Road and 23m from houses to the north. The tube had a 100% data capture rate in 2011 and returned an annual average of **48.9µg/m<sup>3</sup>**, which compared to **49.1µg/m<sup>3</sup>** in 2010.

**NH87** was moved to the façade of 11 Stevenage Road, a property on the north side of the road for May 2011. The capture rate for the monitoring period was 100% but for 2011 as a whole was 66.6% and so the result of 31.5 µg/m<sup>3</sup> has been bias adjusted and annualised (Appendices 1 and 2). The AQC modelling for the 2011 Detailed Assessment using 2010 data predicted a NO<sub>2</sub> concentration of 30.5µg/m<sup>3</sup> at the façade of 11 Stevenage Road. This indicates that relevant public exposure to NO<sub>2</sub> above an AQO is not an issue to the north of Stevenage Road.

The third tube on the north side of Stevenage Road was the 2010 Dower Court tube (**NH76**), which was relocated to a lamp-post immediately opposite it's former location. Ideally the tube would have been located to a position close to Dower Court on the south side of Stevenage Road but this was not achieved in 2011. It has since been remedied and was in place for the start of 2012. The annual average reported by the tube was **44.0µg/m<sup>3</sup>** and so may be considered comparable to the results from **NH45** and **NH87**.

Diffusion tube **NH92** was located on the south side of Stevenage Road, near Griffin Court, from March 2011 and had a 100% capture rate between then and the end of 2011 (83.3%

overall). The annual average measured at the roadside location was **53.5µg/m<sup>3</sup>**. The tube is 2.1m from Stevenage Road and 6m from both 22 Stevenage Road and Griffin Court.

According to the method in Box 2.3 of TG (09) the predicted concentration at Griffin Court in 2011 is calculated to be **41.3µg/m<sup>3</sup>** (Appendix 2). This compares to the result of the AQC air pollution dispersion modelling of 36.7µg/m<sup>3</sup>. This result raises the possibility that the levels of NO<sub>2</sub> are slightly higher along the south of Stevenage Road than predicted by the AQC modelling undertaken using the 2010 data and so supports the conclusion of the 2011 Detailed Assessment that there is relevant public exposure to NO<sub>2</sub> above the annual AQO at properties on the south of Stevenage Road.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Data Capture		Annual mean conc. 2011 ( $\mu\text{g}/\text{m}^3$ ) (bias adjusted)
				Monitoring Period (%)	2011 (%)	
NH106	Town Hall, Melbourn Rd, Royston	Roadside	N	83.3	83.3	33.8
NH100	The Brambles, Welwyn	Roadside	N	100	83.3	29.6
NH101	Wilbury Hills Rd(Edlefield) Letchworth	Roadside	N	88.9	66.7	28.7 [annualised]
NH102	Wilbury Hills Rd(Romany) Letchworth	Roadside	N	88.9	66.7	20.5 [annualised]
NH59	Clothall Road, Baldock	Roadside	N	100	100	31.7
NH72	Whitehorse St, Baldock	Roadside	N	100	100	38.2
NH88	Church St, (opp. Town Hall), Baldock	Kerbside	N	91.6	91.6	<b>47.7</b>
NH61	Hitchin St, Town Hall, Baldock	Roadside	N	100	100	36.1
NH70	Hitchin St (near bus stop) Baldock	Roadside	N	100	100	30.0
NH60	Willian Road, Hitchin	Roadside	N	91.6	91.6	30.7
NH67	Cadwell Court, Hitchin	Roadside	N	75	75	33.5
NH69	Grove Road, Hitchin	Roadside	N	75	75	37.7
NH78	West Hill, Hitchin	Roadside	N	100	100	33.7
NH63	Hitchin Library, Hitchin	Roadside	N	100	100	<b>43.9</b>
NH93	Park Way, Hitchin	Roadside	N	100	83.3	<b>53.1</b>
NH82	Upper TilehouseSt(roundabout)Hitchin	Roadside	N	100	100	<b>42.8</b>
NH77	Upper Tilehouse St (crossing) Hitchin	Roadside	N	100	100	<b>44.4</b>
NH95	Pirton Road, Hitchin	Roadside	N	100	83.3	33.6
NH94	Offley Road, Hitchin	Roadside	N	100	83.3	35.6
NH97	Queen Street, Hitchin	Roadside	N	88.9	75	30.0
NH96	Park Street, Hitchin	Roadside	N	100	83.3	31.7
NH91	St John's Road, Hitchin	Roadside	N	90	75	34.9
NH45	Stevenage Road (A) Hitchin	Roadside	N	100	100	<b>48.9</b>
NH87	11 Stevenage Road Hitchin	Roadside	N	100	66.6	30.8 [annualised]
NH76	Opp. Dower Crt Stevenage Rd Hitchin	Roadside	N	100	100	<b>44.0</b>
NH89	London Road, Hitchin	Roadside	N	100	83.3	28.2
NH90	Gosmore Road, Hitchin	Roadside	N	100	83.3	25.9
NH92	Stevenage Rd, Griffin Court, Hitchin	Roadside	N	100	83.3	<b>53.5</b>
NH84	Cambridge Rd (Station A) Hitchin	Roadside	N	75	75	36.8
NH83	Cambridge Rd (Station B) Hitchin	Roadside	N	83.3	83.3	35.5
NH86	Walsworth Rd (nr Station) Hitchin	Roadside	N	75	75	26.7
NH98	Walsworth Rd/Radcliffe Rd, Hitchin	Roadside	N	100	83.3	30.1
NH99	Nightingale Rd, Hitchin	Roadside	N	90	75	31.9

<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> Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes where present in both 2010 to 2011

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$	
			2010 (Bias Adjusted)	2011 (Bias Adjusted)
NH59	Clothall Road, Baldock	N	32.2	31.7
NH72	Whitehorse St , Baldock	N	42.1	38.2
NH88	Church St, (opp. Town Hall), Baldock	N	50.7	48.8
NH61	Hitchin St, Town Hall, Baldock	N	43.6	36.1
NH70	Hitchin St (near bus stop) Baldock	N	30.9	30.0
NH60	Willian Road, Hitchin	N	37.9	30.7
NH67	Cadwell Court, Hitchin	N	33.4	33.5
NH69	Grove Road, Hitchin	N	38.3	37.7
NH78	West Hill, Hitchin	N	34.8	33.7
NH63	Hitchin Library, Hitchin	N	44.0	43.9
NH82	Upper Tilehouse St (roundabout) Hitchin	N	44.4	42.8
NH77	Upper Tilehouse St (crossing) Hitchin	N	48.7	44.4
NH45	Stevenage Road (A) Hitchin	N	49.1	48.9
NH76	Opp. Dower Crt Stevenage Rd Hitchin	N	42.2	44.0
NH84	Cambridge Rd (Station A) Hitchin	N	48.8	36.8
NH83	Cambridge Rd (Station B) Hitchin	N	39.9	35.5
NH86	Walsworth Rd (nr Station) Hitchin	N	34.8	26.7

2010 bias adjustment factor = 0.85

2011 bias adjustment factor = 0.84

### 2.2.2 PM<sub>10</sub>

NHDC only had one monitoring site for particulate matter in 2011 from where an TEOM automatic analyser operated.

The monitoring site is at Payne's Park, Hitchin (**NH6** – Hitchin Library) and the TEOM has been operating from there since March 2010. Table 2.7 shows that at this site no AQO were exceeded and that the data capture as a percentage of the calendar year was 98.3%.

AQDM has run the volatile correction model (VCM) on the 2011 data, which allows the correction of TEOM measurements for the loss of volatile components of particulate matter that occur due to the high sampling temperatures employed by the instrument. The resulting corrected measurements have been demonstrated as equal to the gravimetric equivalent and applied to all PM<sub>10</sub> data listed in this document.

The reported annual average mean of 26µg/m<sup>3</sup> with 19 exceedences of the daily mean of 50µg/m<sup>3</sup> does not demonstrate any breaches of AQO in the area. The results are however higher than recorded at the same site in 2010, albeit that data capture for the year 2010 was only 75% (Tables 2.7 and 2.8).

**Table 2.7 Results of Automatic Monitoring of PM<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2011 % <sup>b</sup>	Confirm Gravimetric Equivalent	Annual Mean Concentration µg/m <sup>3</sup>				
						2007 <sup>c</sup>	2008 <sup>c</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>	2011 <sup>c</sup>
NH6	Roadside	N	98.3	98.3	Y	N.A	N.A	N.A	22.0	26.0

<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> Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

**Table 2.8 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2011 % <sup>b</sup>	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m <sup>3</sup> )				
						2007	2008	2009	2010	2011
NH6	Roadside	N	98.3	98.3	Y	N.A	N.A	N.A	0	19

<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> if data capture is less than 90%, include the 90<sup>th</sup> percentile of 24-hour means in brackets

### **2.2.3 Sulphur Dioxide**

Sulphur dioxide is not monitored within North Hertfordshire.

### **2.2.4 Benzene**

Benzene is not monitored within North Hertfordshire.

### **2.2.5 Other pollutants monitored**

No other pollutants are monitored within North Hertfordshire.

### **2.2.6 Summary of Compliance with AQS Objectives**

North Hertfordshire District Council has measured concentrations of nitrogen dioxide above the annual mean objective at relevant locations at Stevenage Road, Hitchin. This is an area that was identified by the 2011 Detailed Assessment as needing to be designated as an AQMA. The designation of the AQMA will be completed during 2012.

North Hertfordshire District Council has measured concentrations of nitrogen dioxide above the annual mean objective relevant locations at Upper Tilehouse Street, Hitchin. This is an area that was subject to a detailed assessment in 2011 but not identified as needing to be designated as an AQMA. The need for an updated detailed assessment of this area will be reconsidered on completion of a further year of monitoring in the 2013 Progress Report.

### 3 Road Traffic Sources

NHDC has obtained traffic count information from Hertfordshire County Council (2008-2011) for roads in its district and these are included as Appendix 4 along with a map identifying count locations. 2005-2007 data was taken from the NHDC 2009 USA Report and also originated from HCC. The data of relevance to the areas that have been identified as being a concern in previous reports have been extracted and are presented below.

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

The narrowest of NHDC's congested streets is Hitchin Street leading into Whitehorse Street (**A505**) in **Baldock**. Annual Average Weekday (AAWD) traffic counts from two locations along this road in Baldock are included in Table 3.1. The data illustrate a trend of a gradual decline in usage since completion of the Baldock By-Pass in 2006. Appendix 4 shows that Bypass usage has increased year on year since 2008.

**Table 3.1 AAWD Traffic Flows on the A505 through Baldock (2005 – 2011)**

Location	AAWD Traffic Flows						
	2011	2010	2009	2008	2007	2006	2005
<b>Letchworth Rd, Baldock (712)</b>	14,251	14,174	15,041	15,620	16,706	17,492	14,728
<b>Whitehorse St, Baldock (700)</b>	10,708	10,509	11,624	11,808	11,727	13,449	19,065

SOURCE: Hertfordshire County Council

The **Nightingale Road (A505)** area of **Hitchin** in the vicinity of the Hitchin Railway Station was identified in the 2009 USA as another narrow congested street and traffic data is presented for Cambridge Road (A505) in that area in Table 3.2.

**Table 3.2 AAWD Traffic Flows on Cambridge Road (A505) Hitchin (2005 – 2011)**

Location	AAWD Traffic Flows						
	2011	2010	2009	2008	2007	2006	2005
<b>Cambridge Road, Hitchin (121123)</b>	19,397	17,888	19,461	19,769	20,155	21,310	20,871

SOURCE: Hertfordshire County Council

Road traffic data for the **Payne's Park roundabout** area of **Hitchin (A505, B656, A602)** is available for Moormead Hill (**A505**) and Park Way (**A602**). (Table 3.3).

**Table 3.3 AAWD Traffic Flows in the Payne's Park area of Hitchin (2008 – 2011)**

Location	AAWD Traffic Flows			
	2011	2010	2009	2008
<b>Moormead Hill, Hitchin (232)</b>	21,971	22,148	22,153	21,140
<b>Park Way, Hitchin (675)</b>	27,972	27,744	27,281	28,491

SOURCE: Hertfordshire County Council



Road traffic data for **Stevenage Road, Hitchin (A602)** is shown in Table 3.4 and the trend is indicating a gradual increase in usage since 2008.

**Table 3.4 AAWD Traffic Flow on Stevenage Road, Hitchin (2008 – 2011)**

Location	AAWD Traffic Flows			
	2011	2010	2009	2008
<b>Stevenage Road, Hitchin (205470)</b>	32,251	32,048	31,549	31,656

SOURCE: Hertfordshire County Council

North Hertfordshire District 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

North Hertfordshire District 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 Hitchin Rail Curve construction project requires a considerable volume of earth and construction material to be imported to the site located on the north east edge of Hitchin. It is currently the intention to use Wilbury Hills Road, Letchworth to import earth and construction materials to the site during 2012. The peak construction period being anticipated for between June and August 2012. Wilbury Hills Road has housing along its eastern side and a residential caravan park on its western side.

There is, however, currently an alternative approach to the importation of material that involves sourcing it locally that would minimise HGV movements. This alternative scheme has been submitted as a planning application but has not yet been decided. Tables 3.5 and 3.6 indicate Network Rail's estimation of the increase in traffic flows, which would predominantly be made up of HGVs, along Wilbury Hills Road based on the need to import all construction materials.

**Table 3.5 Summary of AADT & AAWD Traffic Flows on Wilbury Hills Road, Letchworth**

Location	2008 survey		Adjusted to 2012	
	AADT	AAWT	AADT	AAWT
<b>Wilbury Hills Road, Letchworth</b>	6921	7474	7243	7800

SOURCE: Hitchin Alliance (Network Rail) Construction Traffic Management Plan

**Table 3.6 Summary of Peak Traffic Flows on Wilbury Hills Road, Letchworth**

Location	2008 survey		Adjusted to 2012	
	AM	PM	AM	PM
<b>Wilbury Hills Road, Letchworth</b>	786	689	820	720

SOURCE: Hitchin Alliance (Network Rail) Construction Traffic Management Plan

Additionally DMRB methodology was used by Network Rail to assess the impact of the construction phase on sensitive receptors at Wilbury Hills Road. A 6% increase was estimated for nitrogen dioxide and a negligible increase for particulate matter, neither of which would result in annual average concentrations getting to within 50% of the relevant air quality objectives.

Working on the worst case assumption that all construction material will need to be imported to site NHDC has positioned two diffusion tubes along the road to monitor the impact of the increased HGV traffic during 2012.

North Hertfordshire District Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

### 3.4 Junctions

North Hertfordshire District 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

North Hertfordshire District Council confirms that there are no new/proposed roads.

### 3.6 Roads with Significantly Changed Traffic Flows

North Hertfordshire District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

### 3.7 Bus and Coach Stations

North Hertfordshire District Council confirms that there are no relevant bus stations in the Local Authority area.

## **4 Other Transport Sources**

### **4.1 Airports**

There are no airports within the Local Authority area, although Luton Airport's runway is within 1,500m of the village of Breachwood Green in the south west of the District. Since 2003 automatic and passive air quality monitoring was undertaken at a location in Breachwood Green directly under a flight path into Luton Airport. The monitoring never identified a breach of air quality monitoring objectives for nitrogen dioxide or particulate matter and so the monitoring station was decommissioned in 2009.

North Hertfordshire District Council confirms that there are no airports in the Local Authority area.

### **4.2 Railways (Diesel and Steam Trains)**

#### **4.2.1 Stationary Trains**

North Hertfordshire District 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**

North Hertfordshire District 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)**

North Hertfordshire District 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**

North Hertfordshire District 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.

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

North Hertfordshire District 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**

North Hertfordshire District 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**

North Hertfordshire District Council confirms that there are no petrol stations meeting the specified criteria.

### **5.4 Poultry Farms**

North Hertfordshire District Council confirms that there are no poultry farms meeting the specified criteria.

## **6 Commercial and Domestic Sources**

### **6.1 Biomass Combustion – Individual Installations**

North Hertfordshire District Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.2 Biomass Combustion – Combined Impacts**

North Hertfordshire District Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.3 Domestic Solid-Fuel Burning**

North Hertfordshire District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

## **7 Fugitive or Uncontrolled Sources**

North Hertfordshire District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## 8 Conclusions and Proposed Actions

### 8.1 Conclusions from New Monitoring Data

The new monitoring data have shown that no new areas of exceedences of AQO have been identified. The new data for the four areas of the district that were considered by the 2011 Detailed Assessment have made it possible to arrive at the following conclusions.

The real-time monitoring data from along the **A505 through Baldock** were consistent with the equivalent data from 2010 and returned an annual average below the relevant AQO. This combined with the following:

- traffic flow trends showing a gradual decline in traffic passing the area of concern
- a general absence of residential receptors in the area of concern
- a marginal decline in the concentrations measured by the diffusion tubes

allows the conclusion to be reached that the area is unlikely to exceed the AQO and that no detailed assessment is required.

The diffusion tube monitoring data from the **Cambridge Road/Nightingale Road/Walsworth Road** area of **Hitchin (A505/B656)** all returned results below the AQO. The three tubes (NH83, NH84, NH86) that were also present in 2010 all returned declines in nitrogen dioxide concentrations in 2011 compared to 2010 (Table 2.6). Therefore, it is concluded that the area does not exceed the AQO and that no detailed assessment is required.

The real-time monitoring data from the **Payne's Park** roundabout area of **Hitchin (A505/A602)** did not identify any exceedences of the relevant AQO. The 2011 data from the diffusion tubes in the area that were also present in 2010 (NH78, NH63, NH77, NH82) returned annual mean concentrations very similar to 2010 (Table 2.6). On the basis that the 2010 diffusion tube results did not result in any AQO exceedences when used in an air pollution dispersion model for the 2011 Detailed Assessment it is concluded that AQO will still not be exceeded at relevant receptors. The only data in conflict with that conclusion is that the new tube (NH93) at Park Way (**A602**) returned an annual mean of  $53.1\mu\text{g}/\text{m}^3$  with a calculated drop off to  $44.2\mu\text{g}/\text{m}^3$  at the nearest receptor, 41 Tilehouse Street, which represents a theoretical AQO exceedence.

The real-time monitoring data from the **Stevenage Road** area of **Hitchin (A602)** identified an exceedence of the relevant AQO in 2011 as it did in 2010. Also the diffusion tube data for



2011 were comparable to 2010 and so are supportive of the conclusions of the 2011 Detailed Assessment that the relevant AQO will be exceeded at receptors on the south of the Stevenage Road. Additionally a new tube (**NH92**) located on the south side of Stevenage Road returned an annual mean that suggested that the air pollution dispersion modelling based on 2010 data underestimated the predicted nitrogen dioxide concentration at that location.

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

There have been no new likely sources of emissions to air which are likely to lead to further detailed assessments. The major roads in the district have not shown increases in traffic flows compared to equivalent data reported in the 2009 USA.

## **8.3 Proposed Actions**

The Updating and Screening Assessment has not identified the need to proceed to a detailed assessment.

However, it has confirmed that an AQMA is needed at Stevenage Road, Hitchin because of an exceedence of the annual mean AQO for nitrogen dioxide. As such the designation of an AQMA will be completed during 2012 to be followed by a Further Assessment and Action Plan in accordance with the timetable specified by Section 84(1) of the Environmental Act 1995. The resulting documents will be forwarded to Defra.

To support the work associated with the AQMA designation along Stevenage Road the diffusion tube network has been adjusted and extended for 2012 to cover a greater length of the road and to monitor at a façade of a residential property on the south side of the road. Consideration will also be given to the relocation of the automatic nitrogen dioxide analyser currently in Baldock to a site at Stevenage Road, Hitchin.

A Progress Report will be submitted to Defra in 2013. Particular attention will be paid to the results from the Payne's Park roundabout area and the need for a Detailed Assessment if the 2011 results are replicated in 2012.

## 9 References

NHDC. April 2011. *Progress Report 2011.*

NHDC. July 2011. *Detailed Assessment Report 2011.*

DEFRA. September 2011. *Diffusion Tube Bias Adjustment Factors.*

(<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>)

DEFRA. 2009. *Local Air Quality Management Technical Guidance (LAQM. TG(09)).*

Hitchin Alliance (Network Rail). 2011. *Hitchin Rail Curve Construction Management Plan.*

## **Appendices**

**Appendix 1:** Quality Assurance / Quality Control (QA/QC) Data

**Appendix 2:** Calculations of Reduction for Nitrogen Dioxide with Distance from the  
Kerb

**Appendix 3:** Nitrogen Dioxide Diffusion Tube Results 2011

## **Appendix 1:Quality Assurance/Quality Control Data**

### **Factor from Local Co-location Studies (if available)**

North Hertfordshire District Council undertakes no co-location studies.

### **Diffusion Tube Bias Adjustment Factors**

Data from the diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location database. The bias adjustment factor has been taken from the September 2011 version of the Diffusion Tube Bias Adjustment Factors spreadsheet available from the Defra Review and Assessment website (<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

The diffusion tubes are 50% triethanolamine (TEA) in acetone and are supplied and analysed by Environmental Services Group (ESG) at Harwell Scientific Services. ESG/HSS follows the procedures set out in the Harmonisation Practical Guidance. ESG/HSS also participates in the Workplace Analysis Scheme for Proficiency (WASP) and is currently ranked as a Category Good laboratory. This information was used in selecting the below bias adjustment factor.

According to the above database the bias adjustment factor for Harwell Scientific Services in 2011 was 0.84.

### **PM Monitoring Adjustment**

The analyser is Tapering Element Oscillating Microbalance (TEOM) continuous PM<sub>10</sub> analyser. The analyser has a heated manifold to prevent condensation of water vapour, which may lead to a loss of volatile particles. The measured concentrations of these analysers have been corrected using the Volatile Correction Model (VCM).

### **Short-term to Long-term Data adjustment (Annualisation)**

Where it has only been possible to carry out monitoring at a location, whether automatic or non-automatic, at a site for less than 12 months the results need to be adjusted to enable an estimate of the annual mean for that location to be calculated.

It should be noted that a minimum 6 month period is necessary for this process to be valid. There were no monitoring locations where less than 6 months data were collected during 2011.

## North Hertfordshire District Council

The annualisation process is described in Box 3.2 of TG(09) and NHDC's application for each of the relevant monitoring locations of it is summarised below.

### **Annualisation Factor Calculation for Payne's Park (NH6) Automatic Analyser.**

*Monitoring Period – April – December 2011 (inclusive)*

Site	Site Type	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Period Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
Sandy	Roadside	35	33.6	1.04167
Market Harborough	Roadside	9.3	8.8	1.05682
Harwell	Roadside	10.2	8.3	1.22892
Average of ratios R(a)				<b>1.10913</b>

### **Annualisation Factor Calculation for Stevenage Road (NH trl) Automatic Analyser.**

*Monitoring Period – January – September 2011 (inclusive)*

Site	Site Type	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Period Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
Sandy	Roadside	35	34.1	1.02639
Market Harborough	Roadside	9.3	8.3	1.12048
Harwell	Roadside	10.2	10.5	0.97143
Average of ratios R(a)				<b>1.03943</b>

### **Annualisation Factor Calculation for the 11 Stevenage Road (NH87), Wilbury Hills Road (Eldefield) (NH101) and Wilbury Hills Road (Romany) (NH102) Diffusion Tubes.**

*Monitoring Period – May – December 2011 (inclusive)*

Site	Site Type	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Period Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
Sandy	Roadside	35	34	1.02941
Market Harborough	Roadside	9.3	8.8	1.05682
Harwell	Roadside	10.2	7.9	1.29114
Average of ratios R(a)				<b>1.12579</b>

### **QA/QC of automatic monitoring**

The APNA360 analyser (NH5) has calibration checks and filter checks and changes undertaken on a fortnightly basis by NHDC staff. The calibration readings were reported to the Environmental Research Group (ERG) at Kings College until October 2011 and subsequently Air Quality Data Management (AQDM). These companies were/are retained by NHDC, as part of the larger Herts and Beds Air Quality Network, to verify and ratify the data generated by the analyser. The ratification process is carried out as per AURN recommended procedures. In addition Horiba is engaged to undertake two service and on-site calibration visits in a year, one minor service and one major service.

The API M200 analyser and the R&P 1400a Tapered Element Oscillating Measurement (TEOM) analyser (NH6) are subject to calibration checks and filter checks and changes on a

fortnightly basis by NHDC staff. In addition Supporting U is employed to undertake an annual service/maintenance visit and to respond in the event of any maintenance issues encountered during daily operation. The calibration readings were reported to ERG and subsequently AQDM. These companies were/are retained by NHDC, as part of the larger Herts and Beds Air Quality Network, to verify and ratify the data generated by the analyser. This process includes the application of the volatile correction model (VCM) and the results of the data reported have had this applied and been demonstrated as equal to the gravimetric equivalent.

The API 200A analyser (NH\_trl) was visited for calibration and filter checks and changes on a fortnightly basis by TRL staff and they undertook any additional maintenance or servicing during those visits. TRL verified and ratified the data generated by the analyser. The data were logged as 15 minute mean data and on a weekly basis data were examined to establish data validity. Data was ratified as per AURN procedures.

### **QA/QC of diffusion tube monitoring**

The diffusion tubes are 50% triethanolamine (TEA) in acetone and are supplied and analysed by Environmental Services Group (ESG) at Harwell Scientific Services. ESG/HSS follows the procedures set out in the Harmonisation Practical Guidance. ESG/HSS also participates in the Workplace Analysis Scheme for Proficiency (WASP) and is currently ranked as a Category Good laboratory.

## Appendix 2: Calculations for Reduction of Nitrogen Dioxide with Distance from Kerb

The calculation of the reduction of nitrogen dioxide with distance from the kerb was undertaken in line with Box 2.3 of TG(09). In all cases local background concentrations were derived from 2008 mapping (the most current available at the time of completion of the report) sourced from <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

### Diffusion Tube (NH92) Stevenage Road (Griffin Court) Hitchin

This calculator allows you to predict the annual mean NO<sub>2</sub> concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.



<b>Step 1</b>	<b>How far from the KERB was your measurement made (in metres)?</b> (Note 1)	<b>2.1</b>	metres
<b>Step 2</b>	<b>How far from the KERB is your receptor (in metres)?</b> (Note 1)	<b>8.1</b>	metres
<b>Step 3</b>	<b>What is the local annual mean background NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b> (Note 2)	<b>15.29621</b>	µg/m <sup>3</sup>
<b>Step 4</b>	<b>What is your measured annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b> (Note 2)	<b>53.5</b>	µg/m <sup>3</sup>
<b>Result</b>	<b>The predicted annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>) at your receptor</b> (Note 3)	<b>41.3</b>	µg/m <sup>3</sup>

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at <http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm> for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at [www.airquality.co.uk](http://www.airquality.co.uk), or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Diffusion Tube (NH93) Park Way, Hitchin

This calculator allows you to predict the annual mean NO<sub>2</sub> concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.



<b>Step 1</b>	<b>How far from the KERB was your measurement made (in metres)?</b>	(Note 1)	<b>1.6</b>	metres
<b>Step 2</b>	<b>How far from the KERB is your receptor (in metres)?</b>	(Note 1)	<b>4.6</b>	metres
<b>Step 3</b>	<b>What is the local annual mean background NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b>	(Note 2)	<b>15.29621</b>	µg/m <sup>3</sup>
<b>Step 4</b>	<b>What is your measured annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b>	(Note 2)	<b>53.1</b>	µg/m <sup>3</sup>
<b>Result</b>	<b>The predicted annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>) at your receptor</b>	(Note 3)	<b>44.2</b>	µg/m <sup>3</sup>

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at <http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm> for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at [www.airquality.co.uk](http://www.airquality.co.uk), or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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**Automatic Analyser (NH trl) Stevenage Road, Hitchin**

This calculator allows you to predict the annual mean NO<sub>2</sub> concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.



<b>Step 1</b>	<b>How far from the KERB was your measurement made (in metres)?</b>	(Note 1)	<b>3</b>	metres
<b>Step 2</b>	<b>How far from the KERB is your receptor (in metres)?</b>	(Note 1)	<b>18</b>	metres
<b>Step 3</b>	<b>What is the local annual mean background NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b>	(Note 2)	<b>13.084744</b>	µg/m <sup>3</sup>
<b>Step 4</b>	<b>What is your measured annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>)?</b>	(Note 2)	<b>47.5</b>	µg/m <sup>3</sup>
<b>Result</b>	<b>The predicted annual mean NO<sub>2</sub> concentration (in µg/m<sup>3</sup>) at your receptor</b>	(Note 3)	<b>31.5</b>	µg/m <sup>3</sup>

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at <http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm> for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at [www.airquality.co.uk](http://www.airquality.co.uk), or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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## Appendix 3: Nitrogen Dioxide Diffusion Tube Results 2011

NH Code	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave	Bias	Annualised
NH06	Town Hall, Royston	55.5	43.9	42.1	39.3	33.3	39.2	24.9	35.6	36.8	51.3			40	33.8	not required
NH45	Stevenage Road A, Hitchin	74.8	66.1	64.7	57.1	43.5	50.9	35.0	46.5	55.2	70.9	74.0	59.9	58	48.9	not required
NH59	(NH04a) Clothall Road, Baldock	53.6	45.5	38.0	39.6	27.2	32.5	29.4	30.8	29.3	39.2	48.8	38.4	38	31.7	not required
NH60	(NH13a) Willian Road, Hitchin	59.7	43.4	33.9	29.5	22.6	33.1	29.3	30.6	34.0		44.1	41.9	37	30.7	not required
NH61	(NH53a) Whitehorse St, Baldock (nr town hall)	53.3	54.5	47.4	46.4	38.3	36.1	32.9	28.0	34.9	53.7	60.4	29.2	43	36.1	not required
NH63	(NH02a) Library Hitchin	71.5	58.5	58.5	47.3	41.3	38.8	39.7	45.1	41.3	63.2	70.4	51.5	52	43.9	not required
NH67	Cadwell Court, Hitchin	53.3	53.1	42.8				20.6	25.2	29.2	46.4	57.1	31.3	40	33.5	not required
NH69	64 Grove Road, Hitchin	52.8	54.9	66.3		31.1			25.8	33.3	46.4	56.3	37.4	45	37.7	not required
NH70	Nr Bus Stop Hitchin Street Baldock	51.9				28.4	33.3	24.7	23.4	35.6	40.5	48.2	35.1	36	30.0	not required
NH72	Opp Rose Crown, Whitehorse Street, Baldock	59.6	56.3	49.2	43.2	34.0	44.0	30.5	38.0	44.4	44.0	55.1	46.8	45	38.2	not required
NH76	Dower Court, Hitchin	67.6	60.9	61.1	53.0	40.3	34.0	34.5	43.1	48.1	57.7	69.7	59.1	52	44.0	not required
NH77	Upper Tilehouse Street, Hitchin (traffic lights)	74.2	66.9	62.4	49.4	40.4	46.3	34.5	41.9	50.8	50.8	71.8	44.7	53	44.4	not required
NH78	West Hill, Hitchin	56.1	55.0	52.4	36.5	22.1	30.9	28.8	21.8	27.4	54.1	65.2	30.7	40	33.7	not required
NH82	Upper Tilehouse Street, Nr Roundabout	41.0	62.9	65.1	54.3	38.6	48.3	40.8	39.3	50.8	60.7	60.6	48.9	51	42.8	not required
NH83	Hitchin Station, Roundabout A	70.8		39.6	32.0	25.1	37.1	29.3		38.5	47.9	59.8	42.7	42	35.5	not required
NH84	Hitchin Station, Roundabout B	63.4	59.3	43.4		24.5			29.0	35.9	51.0	54.6	33.6	44	36.8	not required
NH86	Walsworth Rd, Hitchin (Nr Station)	51.2	28.3		33.1		25.4	23.8	21.9		34.6	40.6	27.4	32	26.7	not required
NH87	11 Stevenage Road, Hitchin **	x	x	x	x	27.7	30.6	21.8	26.1	32.1	45.6	52.3	24.6	33	27.4	30.8
NH88	Church St, Baldock (Opp. Town Hall)	76.5	67.7	53.5	51.4	47.7	53.1	33.0	47.9		66.7	58.4	68.5	57	47.7	not required
NH89	London Road, Hitchin	x	x	44.8	33.1	21.9	26.9	18.1	23.6	27.4	45.2	54.4	40.1	34	28.2	not required
NH90	Gosmore Road, Hitchin	x	x	45.7	34.2	22.2	25.2	21.4	23.4	26.5	35.5	49.0	25.8	31	25.9	not required
NH91	St John's Road, Hitchin	x	x	49.3	39.0		35.6	26.5	31.4	37.9	54.6	57.6	41.8	42	34.9	not required
NH92	Stevenage Road (Griffin), Hitchin	x	x	81.3	75.1	51.3	56.7	51.1	54.9	54.4	68.5	78.0	65.6	64	53.5	not required
NH93	Park Way, Hitchin	x	x	68.8	75.7	54.7	69.9	57.9	62.7	64.5	58.7	75.0	43.8	63	53.1	not required
NH94	Offley Road, Hitchin	x	x	48.7	42.9	33.5	40.8	32.0	38.8	40.2	49.8	52.5	44.1	42	35.6	not required
NH95	Pirton Road, Hitchin	x	x	43.4	44.3	35.4	38.3	29.1	35.1	37.5	46.2	51.6	39.6	40	33.6	not required
NH96	Park Street, Hitchin	x	x	48.8	42.6	33.4	34.6	37.2	31.6	32.4	41.5	51.7	23.9	38	31.7	not required
NH97	Queen Street, Hitchin	x	x	40.8	35.1	28.9		27.6	24.1	35.6	38.7	59.9	31.1	36	30.0	not required
NH98	Walsworth/Radcliffe Road, Hitchin	x	x	39.0	30.0	27.8	32.9	26.4	22.8	33.2	48.7	58.2	39.9	36	30.1	not required
NH99	Nightingale Road, Hitchin	x	x	41.4		28.4	32.1	24.1	34.7	35.3	45.0	72.7	27.8	38	31.9	not required
NH100	Foxglove Way, Welwyn	x	x	37.9	37.1	26.2	36.3	24.8	34.2	27.2	40.3	43.3	45.1	35	29.6	not required
NH101	Wilbury Hills Road (Eldefield) Letchworth **	x	x	x		20.4	27.4	21.0	25.9	25.4	38.8	47.1	36.4	30	25.5	28.7
NH102	Wilbury Hills Road (Romany) Letchworth **	x	x	x	23.9	11.0	19.5	14.9	17.3	19.0		42.6	24.9	22	18.2	20.5

Bias (as per Sept 2011 Harwell (50%TEA) factor) = 0.86. R(a) (needed if < 9 months date). x=no tubes designated in that location. blank=tube missing when due for collection

## Appendix 4: Hertfordshire County Council Road Traffic Data (2008 - 2011)

Data Source	HCC Site Ref	Grid Ref	Road	Location	Town	X	Y	%HDV	AADT 2008	AAWD 2008	AAWD 2009	AAWD 2010	AAWD 2011	AAWD % change from 08 to 11
HA	107	435528	A1(M)	JUNCTION 6-7	KNEBWORTH	524280	219870			81263	78575	79472	79137	-2.6%
HA	109	213481	A1(M)	JUNCTION 8-9	GRAVELEY	522810	228180			77725	77016	62944	69292	-10.8%
HA	110	124489	A1(M)	JUNCTION 9-10	LETCHWORTH	523830	233920			47214	45012	45582	45592	-3.4%
HCC	145	081582	A10	LONDON ROAD	ROYSTON	535797	238214			8,603	8,312	8,306	8,301	-3.5%
HCC	146	042218	A10	MELBOURN ROAD	ROYSTON	536145	241931			13,365	13,281	13,080	13,116	-1.9%
HCC	167	041234	C167	OLD NORTH ROAD	ROYSTON	535318	241618			14,096	13,733	13,432	13,487	-4.3%
HCC	232	203425	A505	MOORMEAD HILL	HITCHIN	517107	228571			21,140	22,153	22,148	21,971	3.9%
HCC	233/M25	121123	A505	CAMBRIDGE ROAD	HITCHIN	520255	230425			19,769		17,888	19,397	-1.9%
HCC	235	071467	A505	BALDOCK ROAD	ODSEY	530459	238639			26,485	26,062	27,444	27,992	5.7%
HCC	236	042178	C165	NEWMARKET ROAD	ROYSTON	536760	240827			2,791	2,693	2,795	2,898	3.8%
HCC	237	133287	A507	CLOTHALL ROAD	CLOTHALL	527946	231616			6,326	6,374	6,720	6,713	6.1%
HCC	239	433325	B656	CODICOTE ROAD	CODICOTE	522071	217820			10,042	8,443	8,903	8,849	-11.9%
HCC	240	205263	B656	LONDON ROAD	ST IPPOLYTS	519604	226391			8,181	7,449	7,514	8,259	1.0%
HCC	241	113281	A600	BEDFORD ROAD	ICKLEFORD	517836	230966		14,174	14,119	14,180	13,905	13,816	-2.1%
HCC	254	124214	A505	LETCHWORTH GATE	LETCHWORTH	523050	231450	18.3	26,988	26,941	26,879	27,230	26,176	-2.8%
HCC	255	125340	B197	LONDON ROAD	BALDOCK	524523	232294		9,750	9,783	9,965	9,938	9,873	0.9%
HCC	256	131463	A505	BYPASS	BALDOCK	525629	233371		19,848	19,864	20,899	21,122	21,927	10.4%
HCC	257	125518	A507	NORTH ROAD	BALDOCK	524363	234517		10,799	10,821	10,427	10,642	10,191	-5.8%
HCC	274	213330	A602	BYPASS	WYMONDLEY	521682	226818		31,387	31,100	31,435	30,981	30,442	-2.1%
HCC	312	434289	B197	GREAT NORTH ROAD	MARDLEY HEATH	523905	216967		16,533	17,176	16,176	16,716	16,834	-2.0%
HCC	331	284292	B651	WHITWELL	WHITWELL	519177	221589	19.4	1,802	1,919	1,824	1,797	1,802	-6.1%
HCC	336	201574	B655	HEXTON ROAD	OLD WELLBURY	514337	230040	21.1	5,933	6,662	6,053	6,181	5,905	-11.4%
HCC	342	083586	B1039	ROYSTON ROAD	BARLEY	539741	239300		1,642	1,728	1,632	1,614	1,660	-3.9%
HCC	376	091456	B1039	CHISHILL ROAD	BARLEY	540729	238718		1,282	1,343	1,289	1,302	1,208	-10.1%
HCC	377	091500	B1368	CAMBRIDGE ROAD	BARLEY	540092	239191		1,854	1,993	2,209	1,974	2,032	2.0%
HCC	428	121220	C109	STOTFOLD ROAD	LETCHWORTH	520094	232634		7,127	7,311	7,108	6,493	7,357	0.6%
HCC	430	053153	C89	NORTON ROAD	LETCHWORTH	522442	235580		9,292	9,607	9,635	9,793	10,047	4.6%
HCC	433	122276	A505	BALDOCK ROAD	LETCHWORTH	521789	231687	16.1	13,598	13,802	13,471	13,388	12,733	-7.7%
HCC	578	113443	A600	BEDFORD ROAD	ICKLEFORD	517469	233424			11,431	11,212	11,372	11,068	-3.2%
HCC	579	113282	C21	TURNPIKE LANE	ICKLEFORD	517800	231200			7,490	7,630	7,447	6,974	-6.9%
HCC	581	121444	C109	STOTFOLD ROAD	LETCHWORTH	520475	233448			8,874	9,147	9,671	9,968	12.3%
HCC	675	204425	A602	PARK WAY	HITCHIN	518213	228572	17.8	28,129	28,491	27,281	27,744	27,972	-1.8%
HCC	683	041374	A505	BYPASS CENTRAL	ROYSTON	535639	242399		30,678	30,155	30,063	30,633	30,523	1.2%
HCC	700	125459	B656	WHITEHORSE STREET	BALDOCK	524506	233987		11,507	11,808		10,509	10,780	-8.7%

# North Hertfordshire District Council

Data Source	HCC Site Ref	Grid Ref	Road	Location	Town	X	Y	%HDV	AADT 2008	AAWD 2008	AAWD 2009	AAWD 2010	AAWD 2011	AAWD % change from 08 to 11
HCC	711	205332	B656	LONDON ROAD	ST IPPOLYTS	519238	227372		9,555	10,739	7,955	7,877	7,900	-26.4%
HCC	712	124472	B656	LETCHWORTH ROAD	BALDOCK	523806	233352		15,260	15,620	15,041	14,174	14,251	-8.8%
HCC	M23	113186	A600	BEDFORD ROAD	HITCHIN	517873	230625			13,524	14,233	13,934	14,545	7.5%
HCC	M25	121123	A505	CAMBRIDGE ROAD	HITCHIN	520248	230417			19,784	20,441	20,865	11,294	-42.9%
HCC	M28	125470	B197	LONDON ROAD	BALDOCK	524753	233022			10,612	10,956	11,195	10,167	-4.2%
HCC	M30	205470	A602	STEVENAGE ROAD	HITCHIN	519738	228010			31656	31549	32048	32251	1.9%
HCC	M45	215146	U131	GRACE WAY	STEVENAGE	524403	225589			13393	12869	13151	15040	12.3%
HCC	S11/12	124325	B656	BALDOCK ROAD	LETCHWORTH	523215	232565			17468	17807	17713	16509	-5.5%
HCC	S13	123340	A505	BALDOCK ROAD	LETCHWORTH	522359	232003				12604	12544	9375	#DIV/0!
HCC	S14	122223	A505	HITCHIN ROAD	LETCHWORTH	521277	231363				16708	16108	10050	-39.8%
HCC	S31 N/E	065472	A505	ROYSTON ROAD NE BOUND	ASHWELL	529796	238227				14220	14377	14421	#DIV/0!
HCC	S31 S/W	065472	A505	ROYSTON ROAD SW BOUND	ASHWELL	529796	238227				13712	13775	13848	#DIV/0!
HCC	S32 N/E	072584	A505	ROYSTON ROAD NE BOUND	ROYSTON	531838	239448				14029	14146	14177	#DIV/0!
HCC	S32 S/W	072584	A505	ROYSTON ROAD SW BOUND	ROYSTON	531838	239448				13714	13850	13900	#DIV/0!

## Appendix 4: Hertfordshire County Council Road Traffic Data Survey Location Map

