



North Hertfordshire District Council

Progress Report 2013

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

May 2013

## DOCUMENT INFORMATION

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## Executive Summary

Part IV of the Environment Act 1995 places a statutory duty on Local Authorities to review and assess the air quality within their area and take account of the Government guidance when undertaking such work. This Progress Report is a requirement of the Fifth Round of the Local Authorities' Review and Assessment duties.

The Progress Report 2013 has been undertaken in accordance with Technical Guidance LAQM.TG(09) <sup>(1)</sup>.

The Progress Report 2013 provides an update on air quality issues for North Hertfordshire District Council after the 2012 Air Quality Updating and Screening Assessment Report completed in April 2012 <sup>(2)</sup>. It considers all new monitoring data and assesses the data against the Air Quality Objectives as well as considering any development changes that may have an impact on air quality, as well as updating on any relevant strategy and policy changes.

NHDC used automatic analysers to monitor for particulate matter (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>) in one location, Paynes Park/Upper Tilehouse Street (Hitchin Library) roundabout, Hitchin. It also used an automatic analyser to monitor NO<sub>2</sub> in another location, Hitchin Street, Baldock (Baldock Town Hall).

Accompanying the automatic analysers, NHDC has a network of 37 diffusion tubes to measure NO<sub>2</sub> across the district.

The mean annual average was exceeded at the following diffusion tube monitoring locations:

- **Baldock (B656 – formerly A505)** = (NH88) Church Street / Hitchin Street
- **Hitchin (A505/A602)** = (NH93), (NH82) Park Way / Upper Tilehouse Street (Payne's Park roundabout)
- **Hitchin (A602)** = (NH45), (NH92), (NH103), (NH105), (NH106) Stevenage Road (Hitchin Hill Roundabout)

There is sufficient diffusion tube and automatic monitoring data available from the Baldock area to be satisfied that there is currently no relevant public exposure to NO<sub>2</sub> at concentrations above the relevant air quality objectives.

The data obtained from the NH93 location were sufficient to require a Detailed Assessment to be undertaken in that area because of the potential for the annual mean average air quality objective for NO<sub>2</sub> of 40µg/m<sup>3</sup> to be exceeded at 41 Upper Tilehouse Street.

The data obtained from the Stevenage Road monitoring locations confirmed the need for a Stevenage Road Air Quality Management Area.

There was no evidence of the relevant air quality objectives for PM<sub>10</sub> being exceeded during 2012.

## 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 127,000 population (as estimated from the 2011 census) located in the four main centres of Hitchin, Letchworth, Baldock and Royston.

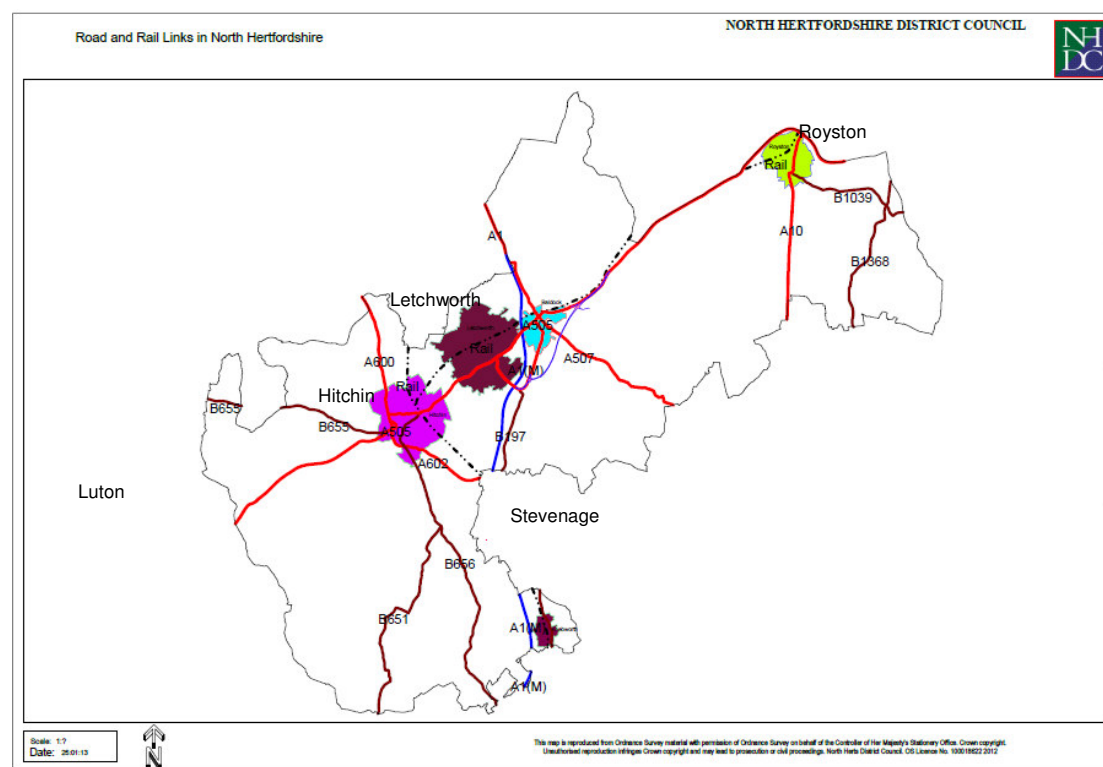


Figure 1: North Hertfordshire District

The main source of air pollution in the district is road traffic emissions from major roads notably the A1(M), A505, B656 and A602. In terms of traffic congestion the most significant locations are associated with the B656 (formerly 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 Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment (USA) Reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports. However, if the Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

### 1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) in **England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (for carbon monoxide the units used are milligrammes per cubic metre,  $\text{mg}/\text{m}^3$ ). Table 1.1 also includes the number of permitted exceedences in any year (where applicable).

**Table 1.1 – Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.**

Pollutant	Objective	Concentration measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	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 $\text{mg}/\text{m}^3$	maximum daily 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  Detailed Assessment   Progress Report	2006  2007   2008	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. 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. 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   Detailed Assessment  Progress Report  Detailed Assessment	2009   2010  2011  2011	Concluded that NO <sub>2</sub> data showed the annual AQO was exceeded at: <ul style="list-style-type: none"> <li>- Whitehorse St, (B656) 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. 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. 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. Concluded that there was relevant exposure above the annual AQO for NO <sub>2</sub> at properties on the south of Stevenage Road, Hitchin 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.

**Table 1.2 Summary of Previous Review and Assessments (continued)**

<b>Round / Reports</b>	<b>Date</b>	<b>Description / Outcomes</b>
<b>4<sup>th</sup> Round (continued)</b>	2011	In September 2011 DEFRA accepted the conclusions of the 2011 Detailed Assessment and advised NHDC to proceed with the process of designating an Air Quality Management Area at Stevenage Road.
<b>5<sup>th</sup> Round USA</b>	2012	Confirmed that there was relevant exposure above the annual AQO for NO <sub>2</sub> at properties on the south side of Stevenage Road (A602), Hitchin within the AQMA. Identified a location of relevant exposure above the annual AQO for NO <sub>2</sub> at Park Way (A602) on the Paynes Park roundabout, Hitchin; a location that had previously not been assessed as such.

In June 2012 NHDC formally designated the Air Quality Management Area at Stevenage Road in line with the recommendation of the 2011 Detailed Assessment. Appendix 1 shows the location and extent of the Stevenage Road AQMA. NHDC is currently preparing its Action Plan for consultation alongside the completion of a Further Assessment Report.

## **2. New Monitoring Data**

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

#### **2.1.1 Automatic Monitoring Sites**

NHDC had two automatic monitoring sites operating during 2012.

A NO<sub>2</sub> analyser was located at Hitchin Street, (B656 formerly the A505), Baldock (Figure 2). The analyser is a Horiba APNA360 and has been collecting data from October 2009. The analyser was turned off on the 11<sup>th</sup> September 2012, with the intention of focussing further resources on the A602 and A505 road network in Hitchin.

On a fortnightly basis NHDC staff carried out calibration visits and filter checks and changes of the APNA360 analyser at Baldock (NH5). The calibration readings are reported to Air Quality Data Management (AQDM) which is retained by NHDC to verify and ratify the data generated by the analyser. The ratification process is carried out to the Herts. and Beds. Air Quality Network (HBAQN) Standard, which is as per AURN recommended procedures. In addition Horiba was engaged to undertake two service and on-site calibration visits in a year, one minor service and one major service.

A Tapered Element Oscillating Measurement (TEOM) PM<sub>10</sub> analyser is located at the Paynes Park (Hitchin Library) roundabout, (Park Way-A602, Upper Tilehouse Street-A505) site (NH6). (Figure 3). The analyser has been collecting data at that location since March 2010 and is still monitoring at the time of completion of this report.

Calibration visits and filter checks and changes were undertaken on a fortnightly frequency by NHDC staff. In addition, Supporting U was 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 are reported to AQDM which is retained by NHDC 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 have been demonstrated as equal to the gravimetric equivalent.

There is also a NO<sub>2</sub> analyser located at the Paynes Park (Hitchin Library) roundabout site (NH6). (Figure 3). The analyser is an API M200 which was subject to calibration checks and filter checks and changes on a fortnightly basis by NHDC staff. In addition Supporting U was 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 AQDM which is 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 analyser operated for the whole year.

Additional Quality Assurance and Quality Control (QA/QC) information is included within Appendix 2.

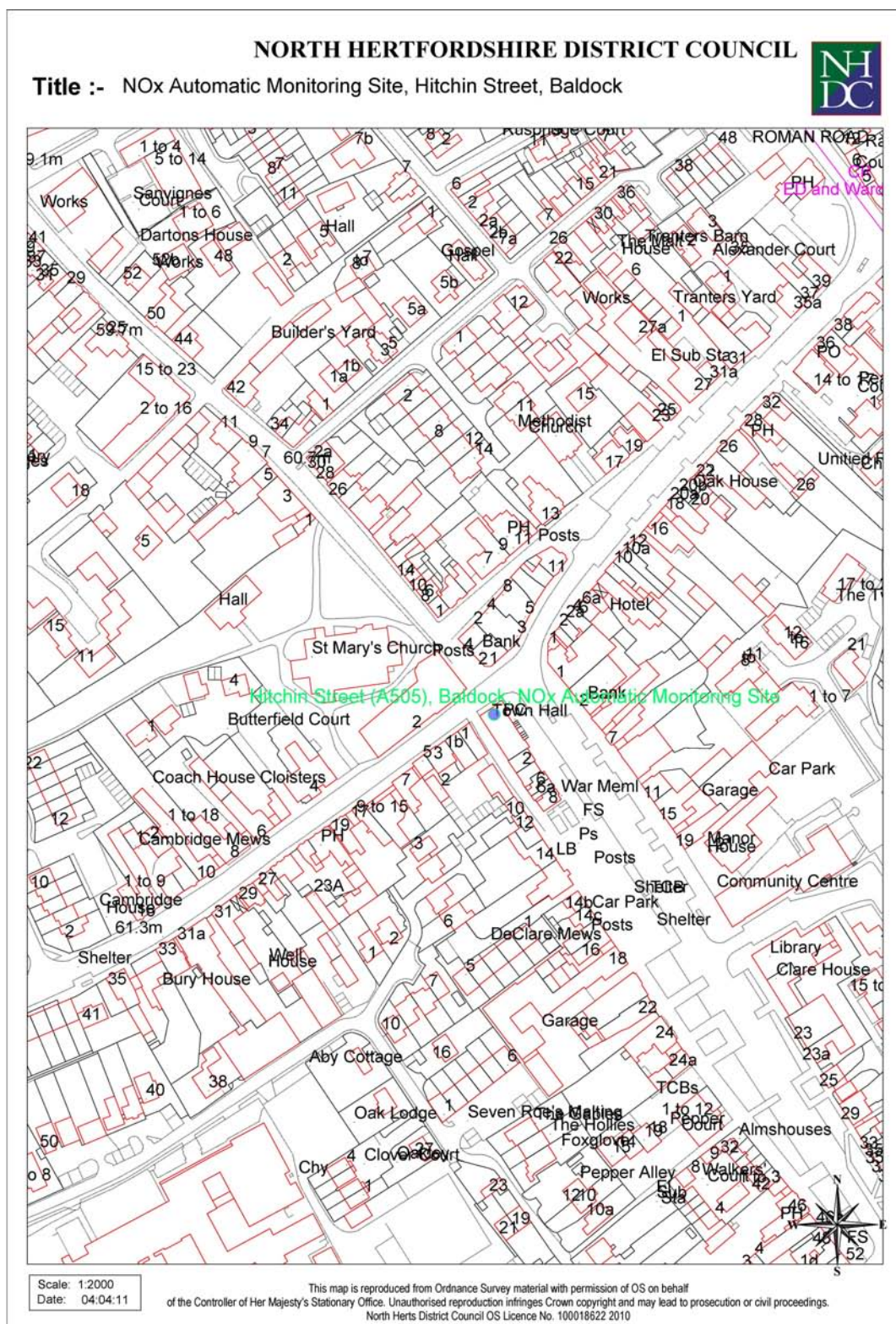


Figure 2: NO<sub>x</sub> Automatic Monitoring Site, Hitchin Street, Baldock (NH5)



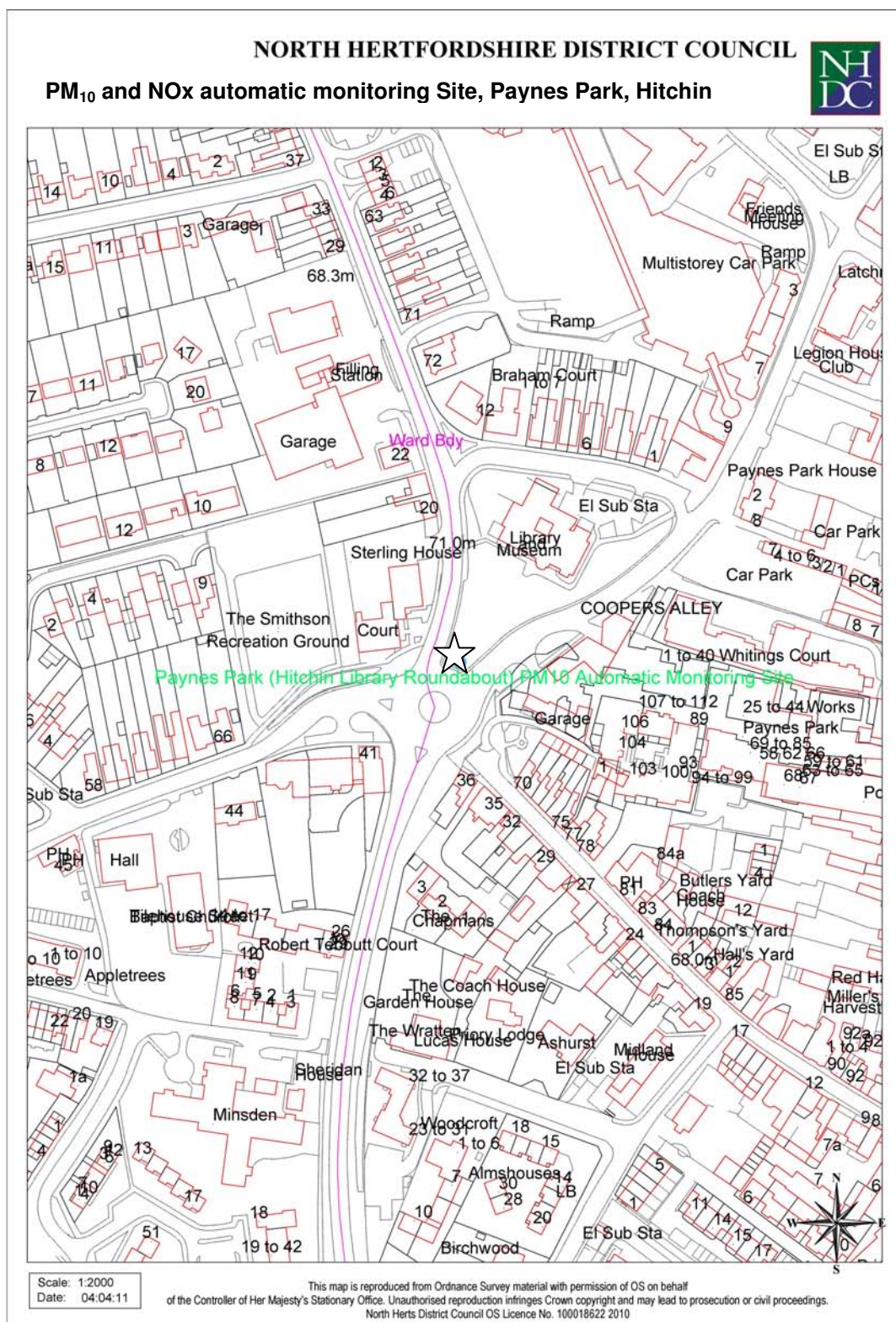


Figure 3: PM<sub>10</sub> and NO<sub>x</sub> Automatic Monitoring Site, Paynes Park (Hitchin Library), Hitchin (NH6)

**Table 2: Details of Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref.	Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case exposure
Paynes Park, Hitchin	Road -side	518161 229092	PM <sub>10</sub>	FDMS	No	Y (30m)	3m	N
			NO <sub>x</sub>	Chemiluminescence				
Hitchin Street, Baldock	Road -side	524456 233889	Nitrogen Dioxide	Chemiluminescence	No	Y (35m)	2m	Y

### 2.1.2 Non-Automatic Monitoring Sites

NHDC undertakes monitoring with non-automatic methods using nitrogen dioxide (NO<sub>2</sub>) diffusion tubes at a range of locations across the district. The diffusion tubes are 50% triethanolamine (TEA) in acetone and they are supplied and analysed by Environmental Services Group (ESG) at Harwell Scientific Services (HSS). 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 for the past five quarterly rounds received a Satisfactory rating in both old and new criteria.

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 2013 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/bias-adjustment.html>).

According to the above database the bias adjustment factor for Harwell Scientific Services in 2012 was 0.79.

During 2012 NHDC had a network of 37 diffusion tubes and they are detailed in Table 3, with site location maps provided in Appendix 3. This represents an increase of four diffusion tubes from 2011, when the network comprised 33 tubes.

Only one of the 2011 tube locations was closed. Tube NH76 located outside the boundary wall of Dower Court, Stevenage Road was removed and replaced with NH104, which was attached to the down-pipe on the façade of the Dower Court apartment block.

Of the four new tubes for 2012 all were located along Stevenage Road, Hitchin. The intention being to extend the monitoring network further along that road to the east and provide additional data for consideration alongside the Air Quality Management Area (AQMA).

One new tube (NH103, Westbrook Court) was located on the north side of Stevenage Road approximately 95m from the Stevenage Road (Hitchin Hill) roundabout.

Another new tube (NH105, 94-98 Stevenage Road) was located on the south side of Stevenage Road, approximately 325m to the east of the Stevenage Road (Hitchin Hill) roundabout.

Another new tube (NH106, Morello Gardens) was also located on the south side of Stevenage Road, approximately 525m to the east of the Stevenage Road (Hitchin Hill) roundabout.

The other new tube (NH107, Whitehill Road) was located on the north side of Stevenage Road, approximately 650m to the east of the Stevenage Road (Hitchin Hill) roundabout.

**Table 3: Details of Non-Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref.	Pollutants Monitored	In AQMA?	Relevant Exposure	Distance to kerb of nearest road	Worst-case exposure
Melbourn Rd, opp. Town Hall Royston (NH06)	Roadside	535906, 240794	Nitrogen Dioxide	No	Y (7m)	1.1m	N
The Brambles, Welwyn (NH100)	Roadside	524033, 217620	Nitrogen Dioxide	No	Y (8m)	20m	Y
Clothall Road, Baldock (NH59)	Roadside	524649, 234061	Nitrogen Dioxide	No	Y (11m)	3m	N
Hitchin St, nr Town Hall, Baldock (NH61)	Roadside	524428, 233882	Nitrogen Dioxide	No	Y (35m)	2m	Y
Hitchin St, nr Bus Stop, Baldock (NH70)	Roadside	524298, 233784	Nitrogen Dioxide	No	Y (1m)	3.5m	Y
Whitehorse St (nr Rose & Crown), Baldock (NH72)	Roadside	524502, 233948	Nitrogen Dioxide	No	Y (27m)	2m	Y
Church St, Baldock (NH88)	Kerbside	524448, 233898	Nitrogen Dioxide	No	Y (45m)	0.5m	Y
Wilbury Hills Road (Eldefield) Letchworth (NH101)	Roadside	520400, 233234	Nitrogen Dioxide	No	Y (15m)	1.7m	Y
Wilbury Hills Road (Romany) Letchworth (NH102)	Roadside	520299, 232841	Nitrogen Dioxide	No	Y (15m)	1.6m	Y
Willian Rd, Hitchin (NH60)	Roadside	519916, 230099	Nitrogen Dioxide	No	Y (29m)	1.1m	N
Cadwell Court, Hitchin (NH67)	Roadside	519225, 230553	Nitrogen Dioxide	No	Y (12m)	2m	Y
Grove Rd, Hitchin (NH69)	Roadside	518821, 229993	Nitrogen Dioxide	No	Y (5m)	2m	Y
Walsworth Rd, Hitchin (NH86)	Roadside	519278, 229691	Nitrogen Dioxide	No	Y (5m)	3m	Y
Cambridge Rd (Station A), Hitchin (NH83)	Roadside	519366, 229806	Nitrogen Dioxide	No	Y (20m)	1m	Y
Cambridge Rd (Station B), Hitchin (NH84)	Roadside	519328, 229752	Nitrogen Dioxide	No	Y (12m)	1.3m	Y
Walsworth Rd/Radcliffe Rd, Hitchin (NH98)	Roadside	519080, 229510	Nitrogen Dioxide	No	Y (4m)	1.5m	Y
Nightingale Rd, Hitchin (NH99)	Roadside	518953, 229786	Nitrogen Dioxide	No	Y (5m)	1.7m	Y
West Hill, Hitchin (NH78)	Roadside	518099, 229229	Nitrogen Dioxide	No	Y (4m)	2m	Y
Hitchin Library, Hitchin (NH63)	Roadside	518160, 229092	Nitrogen Dioxide	No	Y (30m)	3.5m	N
Upper Tilehouse St (crossing) Hitchin (NH77)	Roadside	518006, 229032	Nitrogen Dioxide	No	Y (5m)	1.5m	Y
Upper Tilehouse St (roundabout) Hitchin (NH82)	Roadside	518129, 229065	Nitrogen Dioxide	No	Y (7m)	1.5m	Y
Pirton Road, Hitchin (NH95)	Roadside	517886, 228975	Nitrogen Dioxide	No	Y (22m)	1.3m	Y
Offley Road, Hitchin (NH94)	Roadside	517915, 228967	Nitrogen Dioxide	No	Y (7m)	2.3m	Y
Park Way, Hitchin (NH93)	Roadside	518130, 229036	Nitrogen Dioxide	No	Y (3m)	1.6m	Y
Queen Street, Hitchin (NH97)	Roadside	518666, 229149	Nitrogen Dioxide	No	Y (4m)	1.7m	Y
Park Street, Hitchin (NH96)	Roadside	518417, 228624	Nitrogen Dioxide	No	Y (1m)	1.8m	Y
St John's Road, Hitchin (NH91)	Roadside	518656, 228406	Nitrogen Dioxide	No	Y (5m)	7.9m	Y
London Road, Hitchin (NH89)	Roadside	518706, 228293	Nitrogen Dioxide	No	Y (20m)	1.9m	Y
Gosmore Road, Hitchin (NH90)	Roadside	518593, 228304	Nitrogen Dioxide	No	Y (20m)	2.2m	Y
Stevenage Rd (A), Hitchin (NH45)	Roadside	518708, 228347	Nitrogen Dioxide	Yes	Y (19m)	2m	Y
<b>Dower Crt (A), Stevenage Rd, Hitchin (NH104)</b>	<b>Roadside</b>	<b>518757, 228334</b>	<b>Nitrogen Dioxide</b>	<b>Yes</b>	<b>Y (0m)</b>	<b>3.3m</b>	<b>Y</b>
11 Stevenage Rd, Hitchin (NH87)	Roadside	518731, 228362	Nitrogen Dioxide	No	Y (0m)	15m	Y
<b>Westbrook Court, Hitchin (NH103)</b>	<b>Roadside</b>	<b>518773, 228342</b>	<b>Nitrogen Dioxide</b>	<b>Yes</b>	<b>Y (10m)</b>	<b>2.4m</b>	<b>Y</b>
Stevenage Rd (Griffin Court), Hitchin (NH92)	Roadside	518872, 228305	Nitrogen Dioxide	Yes	Y (5m)	2m	Y
<b>94-98 Stevenage Road, Hitchin (NH105)</b>	<b>Roadside</b>	<b>519067, 228255</b>	<b>Nitrogen Dioxide</b>	<b>Yes</b>	<b>Y (7m)</b>	<b>3.5m</b>	<b>Y</b>
<b>Morello Gardens, Stevenage Rd, Hitchin (NH106)</b>	<b>Roadside</b>	<b>519250, 228218</b>	<b>Nitrogen Dioxide</b>	<b>No</b>	<b>Y (5m)</b>	<b>1.4m</b>	<b>Y</b>
<b>Whitehill Road, Hitchin (NH107)</b>	<b>Roadside</b>	<b>518720, 228335</b>	<b>Nitrogen Dioxide</b>	<b>No</b>	<b>Y (26m)</b>	<b>2.3m</b>	<b>N</b>



## 2.2 Comparison of Monitoring Results with Air Quality Objectives

NHDC monitors nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) and the monitoring data collected during 2012 is summarised in this Progress Report. More detailed consideration of the data for the Stevenage Road area of Hitchin is included within a Further Assessment Report that is being prepared to support the AQMA at Stevenage Road and the development of an Action Plan for that AQMA.

### 2.2.1 Nitrogen Dioxide

NHDC uses diffusion tubes (37 locations) to provide annual averaged (bias corrected) concentrations within the district and at two locations automatic (chemiluminescence) monitors were used.

Data from the following locations have confirmed potential public exposure to NO<sub>2</sub> above the relevant Air Quality Objectives (AQO) and these areas have been subject to some additional assessment later in this section.

- Baldock (B656 formerly A505) = (NH88) Hitchin St, Whitehorse St, Church St
- Hitchin (A505/A602) = (NH82), (NH93) Payne's Park, Upper Tilehouse St
- Hitchin (A602) = (NH45), (NH92), (NH103), (NH105), (NH106) Stevenage Road

### 2.2.2 Automatic Monitoring Data

An APNA 360 NO<sub>2</sub> analyser was located on Hitchin Street, (B656 formerly the A505) Baldock, housed within Baldock Town Hall. During the 2012 monitoring period the analyser was operating between 1<sup>st</sup> January 2012 and 11<sup>th</sup> September 2012. The monitoring site (NH5) was considered to be a roadside site and began collecting data from the site in October 2009. The data from NH5 were annualised to account for the absence of data from September 2012 through to December 2012.

An API M200 NO<sub>2</sub> analyser is located at the Payne's Park roundabout, (A505/A602), Hitchin, within a roadside enclosure. The monitoring site (NH6) is considered to be a roadside site and began collecting data for the duration of 2012, having first started collecting data in April 2011.

**Table 4: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>) and Hourly Mean Objective (200 µg/m<sup>3</sup>)**

Site ID	Site Location	In AQMA?	Relevant Exposure	Data capture for monitoring period <sup>a</sup> %	Data capture for full calendar year 2012 <sup>b</sup> %	Annual Mean Concentration <sup>c</sup> (µg/m <sup>3</sup> )	No. of Exceedences of hourly mean <sup>d</sup> (µg/m <sup>3</sup> )
NH5	Hitchin Street Baldock	No	Yes	97	67.3	39	1 (117µg/m <sup>3</sup> )
NH6	Hitchin Library Payne's Park	No	Yes	78	78	36	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 6 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 (only annualised if between 6 and 9 months data were collected)

<sup>d</sup> If the period of valid data is less than 90% of a full year, include the 99.8% percentile of hourly means in brackets.

Data capture was low at the Baldock site because a decision was taken to close the site down. Data capture was low at the Hitchin site because of problems with the analyser and service provision. As a result of the problems a new service provider has been engaged.

Table 4 indicates that the annual mean air quality objective of  $40\mu\text{g}/\text{m}^3$  was not being exceeded at either of the Baldock or Hitchin automatic monitoring sites.

Table 4 also shows that the 1hour mean  $\text{NO}_2$  concentration of  $200\mu\text{g}/\text{m}^3$  was not being exceeded at the Hitchin site and at Baldock it was only exceeded on one occasion. Because the capture rate for the calendar year was below 90% at Baldock it is not possible to state whether >18 permitted exceedences would have been recorded over the calendar year. For this reason, the 99.8<sup>th</sup> percentile ( $117\mu\text{g}/\text{m}^3$ ) is reported which is considerably below the  $200\mu\text{g}/\text{m}^3$  objective and so it is statistically unlikely that >18 exceedences would have been recorded over an entire year.

Table 5, summarises the annual mean  $\text{NO}_2$  concentrations measured at the automatic monitoring sites over a number of years and the data indicate that the air quality has consistently been below the relevant AQO.

**Table 5: Results of Automatic Monitoring for Nitrogen Dioxide since 2010: Comparison with Annual Mean Objective ( $40\mu\text{g}/\text{m}^3$ )**

Site ID	Site Location	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ )		
		2010	2011	2012
NH5	Hitchin Street, Baldock	32	32	39 <sup>a</sup>
NH6	Hitchin Library, Payne's Park	N/A	35	36

a = "annualised" mean in line with as in Box 3.2 of TG(09), because monitoring was not carried out for the full year (See Section 3. of Appendix 2. p.27)

The data collected at the Baldock site (NH5) have been below the air quality objective of  $40\mu\text{g}/\text{m}^3$  for the past three years of monitoring. The 2012 data was annualised to generate the value of  $39\mu\text{g}/\text{m}^3$  included in Table 5, with  $34\mu\text{g}/\text{m}^3$  the mean value measured between January and August 2012 inclusive.

For the two years that  $\text{NO}_2$  has monitored at the Hitchin Library (NH6) site the air quality objective has not been exceeded.

### **2.2.3 Non-automatic Monitoring Data**

Of the thirty-seven diffusion tube monitoring locations in use during 2012. The majority were positioned in areas of Hitchin (twenty-eight tubes) and five tubes were located in Baldock. Two tubes were located on a road in Letchworth that was designated as the main haul route for a large construction project (Hitchin Rail Curve). One tube was located on a main road in Royston and another tube located on a residential street located close to the A1(M).

Table 6 summarises those data. All data presented have been bias adjusted, but because of adequate tube collection there was no need for any of the data to be annualised. The bias adjustment factor for 2012 was 0.79.

The data summarised in Table 6 are fully reported in Appendix 4.

**Table 6: Results of Non-Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>)**

Site ID	Site Location	In AQMA?	Relevant Exposure	Data capture for 2012 monitoring period <sup>a</sup> %	Data capture full calendar yr 2012 <sup>b</sup> %	2012 Annual Mean Concentration <sup>c</sup> (µg/m <sup>3</sup> )
NH81	Melbourn Rd, Royston	No	Y (7m)	83	83	27.9
NH100	The Brambles, Welwyn	No	Y (8m)	100	100	32.7
NH59	Clothall Road, Baldock	No	Y (11m)	100	100	31.1
NH61	Hitchin St, nr Town Hall, Baldock	No	Y (35m)	92	92	36.3
NH70	Hitchin St, nr Bus Stop, Baldock	No	Y (1m)	100	100	28.2
NH72	Whitehorse St (nr. Rose & Crown), Baldock	No	Y (27m)	100	100	36.9
<b>NH88</b>	<b>Church St, Baldock</b>	<b>No</b>	<b>Y (45m)</b>	<b>100</b>	<b>100</b>	<b>44.4</b>
NH101	Wilbury Hills Rd (Eldefield) Letchworth	No	Y (15m)	100	100	26.5
NH102	Wilbury Hills Rd (Romany) Letchworth	No	Y (15m)	83	83	20.6
NH60	Willian Rd, Hitchin	No	Y (29m)	92	92	30.0
NH67	Cadwell Court, Hitchin	No	Y (12m)	100	100	29.8
NH69	(64) Grove Rd, Hitchin	No	Y (5m)	100	100	31.9
NH86	Walsworth Rd, Hitchin	No	Y (5m)	92	92	28.1
NH83	Cambridge Rd (Station A), Hitchin	No	Y (20m)	100	100	32.7
NH84	Cambridge Rd (Station B), Hitchin	No	Y (12m)	100	100	35.2
NH98	Walsworth/Radcliffe Rd, Hitchin	No	Y (4m)	92	92	33.6
NH99	Nightingale Rd, Hitchin	No	Y (5m)	92	92	33.4
NH78	West Hill, Hitchin	No	Y (4m)	92	92	28.6
NH63	Hitchin Library, Hitchin	No	Y (30m)	100	100	39.4
NH77	Upper Tilehouse St (crossing) Hitchin	No	Y (5m)	100	100	39.5
<b>NH82</b>	<b>Upper Tilehouse St (roundabout) Hitchin</b>	<b>No</b>	<b>Y (7m)</b>	<b>100</b>	<b>100</b>	<b>40.4</b>
NH95	Pirton Rd, Hitchin	No	Y (22m)	100	100	32.2
NH94	Offley Rd, Hitchin	No	Y (7m)	100	100	36.5
<b>NH93</b>	<b>Park Way, Hitchin</b>	<b>No</b>	<b>Y (3m)</b>	<b>100</b>	<b>100</b>	<b>54.8</b>
NH97	Queen St, Hitchin	No	Y (4m)	100	100	32.0
NH96	Park St, Hitchin	No	Y (1m)	100	100	32.1
NH91	St John's Rd, Hitchin	No	Y (5m)	100	100	34.6
NH89	London Rd, Hitchin	No	Y (20m)	100	100	29.5
NH90	Gosmore Rd, Hitchin	No	Y (20m)	92	92	27.6
<b>NH45</b>	<b>Stevenage Rd (A), Hitchin</b>	<b>Yes</b>	<b>Y (19m)</b>	<b>100</b>	<b>100</b>	<b>46.3</b>
NH104	Dower Crt (A) Stevenage Rd, Hitchin	Yes	Y (0m)	92	92	33.9
NH87	11 Stevenage Rd, Hitchin	No	Y (0m)	100	100	29.2
<b>NH103</b>	<b>Westbrook Court, Stevenage Rd, Hitchin</b>	<b>Yes</b>	<b>Y (10m)</b>	<b>100</b>	<b>100</b>	<b>43.6</b>
<b>NH92</b>	<b>Stevenage Rd (Griffin Court) Hitchin</b>	<b>Yes</b>	<b>Y (5m)</b>	<b>100</b>	<b>100</b>	<b>51.1</b>
<b>NH105</b>	<b>94-98 Stevenage Rd, Hitchin</b>	<b>Yes</b>	<b>Y (7m)</b>	<b>83</b>	<b>83</b>	<b>45.8</b>
<b>NH106</b>	<b>Morello Gardens, Stevenage Rd, Hitchin</b>	<b>No</b>	<b>Y (5m)</b>	<b>100</b>	<b>100</b>	<b>43.5</b>
NH107	Whitehill Rd, Hitchin	No	Y (26m)	100	100	30.8

<sup>a</sup> data capture for monitoring period, in cases where monitoring was only carried out for part of the year.<sup>b</sup> data capture for full calendar year (e.g. if monitoring was undertaken for 6 months max data capture 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 6 shows that there are eight locations across the district where the diffusion tube results demonstrated that the annual mean NO<sub>2</sub> concentrations exceeded the 40µg/m<sup>3</sup> air quality objective. These monitoring locations can be geographically grouped as below and a brief discussion about each area follows as does a summary of the trends in concentrations measured, where there are sufficient data.

- **Baldock (B656 formerly A505)** = (NH88) Hitchin Street/Church Street
- **Hitchin (A505/A602)**= (NH82), (NH93) Upper Tilehouse Street, Payne's Park/Park Way
- **Hitchin (A602)** = (NH45), (NH92), (NH103), (NH105), (NH106) Stevenage Road

**Baldock (B656 former A505)** Hitchin Street, Church Street (and Whitehorse Street)

Table 7 contains the data collected, over the past few years, from diffusion tubes located alongside the B656 where it passes through Baldock.

**Table 7: Results of Non-Automatic Monitoring for Nitrogen Dioxide in Baldock since 2010: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>)**

Site ID	Site Location	Annual Mean Concentration (µg/m <sup>3</sup> ) (bias adjusted)		
		2010	2011	2012
NH59	Clothall Road	32.2	31.7	31.1
NH72	Whitehorse Street (nr Rose & Crown)	<b>42.1</b>	38.2	36.9
NH61	Hitchin Street (nr Town Hall)	<b>43.6</b>	36.1	36.3
NH88	Church Street	<b>50.7</b>	<b>48.8</b>	<b>44.4</b>
NH70	Hitchin Street (nr bus stop)	30.9	30.0	28.2

2010 bias adjustment factor = 0.85  
2012 bias adjustment factor = 0.79

2011 bias adjustment factor = 0.84

The data in Table 7 show that the annual mean NO<sub>2</sub> concentrations have either been steady, or declining since 2010. The only monitoring location that has reported an annual average mean NO<sub>2</sub> concentration above the relevant air quality objective is classified as a kerbside monitoring location, rather than a roadside location.

**Hitchin (A505/A602)** Upper Tilehouse Street, Payne's Park and Park Way

Table 8 contains the data collected, over the past few years, from diffusion tubes located alongside the A505 and A602 in south west Hitchin.

**Table 8: Results of Non-Automatic Monitoring for Nitrogen Dioxide in south west Hitchin, since 2010: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>)**

Site ID	Site Location	Annual Mean Concentration (µg/m <sup>3</sup> ) (bias adjusted)		
		2010	2011	2012
NH63	Hitchin Library, Payne's Park	<b>44.0</b>	<b>43.9</b>	39.4
NH93	Park Way	no data	<b>53.1</b>	<b>54.8</b>
NH82	Upper Tilehouse Street (roundabout)	<b>44.4</b>	<b>42.8</b>	<b>40.4</b>
NH77	Upper Tilehouse Street (traffic light crossing)	<b>48.7</b>	<b>44.4</b>	39.5
NH94	Offley Road	no data	35.6	36.5
NH95	Pirton Road	no data	33.6	32.2

2010 bias adjustment factor = 0.85  
2012 bias adjustment factor = 0.79

2011 bias adjustment factor = 0.84

The data in Table 8, although limited, indicate that the annual mean NO<sub>2</sub> concentrations have been declining gradually since 2010. The exception is at the Park Way monitoring location (**NH93**) and Offley Road (NH94), but these are monitoring locations that have only been in use since 2011.

The highest annual mean average NO<sub>2</sub> concentration recorded in this area was **54.8µg/m<sup>3</sup>** from diffusion tube **NH93**. The tube is located 1.6m from the kerb on the western side of the A602 (Park Way), on the approach to the Payne's Park roundabout. The nearest receptor is 3m to the north of the diffusion tube.

The procedure specified in Box 2.3 of TG(09) has been applied to the 2012 annual mean of **54.8µg/m<sup>3</sup>** from **NH93** and results in an annual mean concentration of **46.3µg/m<sup>3</sup>** at the nearest relevant public receptor (Appendix 5). When the same procedure was run on the 2011 data from NH93, in the 2012 USA <sup>(2)</sup>, the annual mean concentration at the same receptor was 44.2µg/m<sup>3</sup>. The data would appear to demonstrate that the air quality objective for NO<sub>2</sub> as an annual average is being exceeded at one residential property in this area of Hitchin.

The NO<sub>2</sub> concentrations recorded at the other locations in that area of Hitchin did not warrant the application of the Box 2.3 procedure.

#### **Hitchin (A602) Stevenage Road (Hitchin Hill Roundabout)**

Table 9 contains the data collected, over the past few years, from diffusion tubes located alongside the A602 in south Hitchin.

**Table 9: Results of Non-Automatic Monitoring for Nitrogen Dioxide in south Hitchin, since 2010: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>)**

Site ID	Site Location	Annual Mean Concentration (µg/m <sup>3</sup> ) (bias adjusted)		
		2010	2011	2012
NH107	Whitehill Road	no data	no data	30.8
NH106	Morello Gardens, Stevenage Road	no data	no data	<b>43.5</b>
NH105	94-98 Stevenage Road	no data	no data	<b>45.8</b>
NH92	Stevenage Road (Griffin Court)	no data	<b>53.5</b>	<b>51.1</b>
NH103	Westbrook Court, Stevenage Road	no data	no data	<b>43.6</b>
NH87	11 Stevenage Road	no data	30.8	29.2
NH104	Dower Court (A), Stevenage Road	no data	no data	33.9
NH45	Stevenage Road (A)	<b>49.1</b>	<b>48.9</b>	<b>46.3</b>

2010 bias adjustment factor = 0.85

2012 bias adjustment factor = 0.79

2011 bias adjustment factor = 0.84

The data in Table 9 show a downward trend in the annual mean NO<sub>2</sub> concentrations measured since 2010, although the amount of data available is limited. 2012 data highlights the annual mean NO<sub>2</sub> air quality objective to be exceeded at five of the eight roadside monitoring locations.

The highest annual mean average NO<sub>2</sub> concentration recorded in this area was **51.1µg/m<sup>3</sup>** from diffusion tube **NH92**. The tube is located 2m from the kerb on the southern side of the A602 (Stevenage Road), on the approach to the Hitchin Hill roundabout. The nearest receptor is 5m to the south of the diffusion tube.

The procedure specified in Box 2.3 of TG(09) has been applied to the 2012 annual mean of **51.1µg/m<sup>3</sup>** from **NH92** and results in an annual mean concentration of

**43.7 $\mu\text{g}/\text{m}^3$**  at the nearest relevant receptor (Appendix 5). When the same procedure was run on the 2011 data from NH92, in the 2012 USA <sup>(2)</sup>, the annual mean concentration at the same receptor was 41.3 $\mu\text{g}/\text{m}^3$  (*note change in distance from diffusion tube to nearest receptor from 6m in 2012 to 5m in 2013*). The data would appear to demonstrate that the air quality objective for NO<sub>2</sub> as an annual average is being exceeded at residential properties in this area of Hitchin. This supports the designation of an Air Quality Management Area (AQMA) along the southern side of Stevenage Road, Hitchin.

The procedure specified in Box 2.3 of TG(09) was also applied to the data from the other diffusion tubes (NH105 and NH106) that recorded 2012 NO<sub>2</sub> concentrations above the relevant air quality objective and that were positioned further east along the southern side of Stevenage Road. The calculated drop off in NO<sub>2</sub> concentrations was such that concentrations of 37.1 $\mu\text{g}/\text{m}^3$  and 34.6 $\mu\text{g}/\text{m}^3$  would be expected at the nearest respective relevant receptor (Appendix 5).

The concentration measured by the diffusion tube (NH104) located on the down-pipe at the façade of Dower Court was 33.9 $\mu\text{g}/\text{m}^3$ , which suggests that the air quality objective is not being exceeded at properties immediately fronting the Hitchin Hill roundabout.

Data from NH45 and NH103, once the procedure specified in Box 2.3 of TG(09) has been applied, supports the decision not to extend the AQMA to include the properties on the northern side of Stevenage Road (Appendix 5). The diffusion tube (NH87) located on the down-pipe of 11 Stevenage Road also supports that decision.

#### **2.2.4 Particulate Matter (PM<sub>10</sub>)**

NHDC monitors PM<sub>10</sub> using a TEOM automatic monitor (reference NH6) that is located by the Hitchin Library (Payne's Park) A602/A505 roundabout. The data generated indicates that no relevant AQO is being exceeded in that area.

A Rupprecht and Patashnick 1400a TEOM is located in a roadside housing positioned in the grounds of Hitchin Library close to the A602/A505 roundabout. The site is a roadside site and began collecting data in March 2010.

**Table 10: Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective (40  $\mu\text{g}/\text{m}^3$ )**

Site ID	Site Location	In AQMA?	Relevant Exposure	Data capture for monitoring period <sup>a</sup> %	Data capture for full calendar year 2012 <sup>b</sup> %	Annual Mean Concentration <sup>c</sup> ( $\mu\text{g}/\text{m}^3$ )
NH6	Hitchin Library Roundabout	No	Yes	92.5	92.5	24

<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 6 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

The data in Table 10 shows that the annual mean concentration of PM<sub>10</sub> is less than the Air Quality Objective of 40 $\mu\text{g}/\text{m}^3$ .

**Table 11: Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-Hour Mean Objective (50 µg/m<sup>3</sup>)**

Site ID	Site Location	In AQMA?	Relevant Exposure	Data capture for monitoring period <sup>a</sup> %	Data capture for full calendar year 2012 <sup>b</sup> %	Number of exceedences of daily mean objective (50µg/m <sup>3</sup> ) If data capture <90% include the 90%ile of daily mean in brackets
NH6	Hitchin Library Roundabout	No	Yes	92.5	92.5	13

<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 6 months the maximum data capture for the full calendar year would be 50%)

The data in Table 11 shows that there were no exceedences of the daily mean objective of 50µg/m<sup>3</sup>. There were 13 instances of the daily mean objective having been exceeded but the objective allows for up to 35 such occasions over a year.

Tables 12 and 13 display the PM<sub>10</sub> data collected between 2010 and 2012 from the NH6 sampling location.

**Table 12: Results of Automatic Monitoring for Particulate Matter (PM<sub>10</sub>) since 2010: Comparison with Annual Mean Objective (40 µg/m<sup>3</sup>)**

Site ID	Site Location	Annual Mean Concentration (µg/m <sup>3</sup> ) (bias adjusted)		
		2010	2011	2012
NH6	Hitchin Library, Payne's Park	22	26	24

**Table 13: Results of Automatic Monitoring for Particulate Matter (PM<sub>10</sub>) since 2010: Number of Days on which the Daily Mean Objective (50 µg/m<sup>3</sup>) was exceeded**

Site ID	Site Location	Annual Mean Concentration (µg/m <sup>3</sup> ) (bias adjusted)		
		2010	2011	2012
NH6	Hitchin Library, Payne's Park	0	19	13

The data show a consistent situation with regard to concentrations of PM<sub>10</sub> and the absence of a breach of either of the air quality objectives.

The volatile correction model (VCM) has been applied to all results obtained from the TEOM. This model 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. AQDM has applied the VCM to all PM<sub>10</sub> data listed in this document.

### **2.2.5 Sulphur Dioxide**

NHDC does not monitor sulphur dioxide.

### **2.2.6 Benzene**

NHDC does not monitor benzene.

### **2.2.7 Other Pollutants**

NHDC does not monitor any other air pollutants.

### **2.2.8 Summary of Compliance with Air Quality Strategy Objectives**

NHDC has measured concentrations of NO<sub>2</sub> above the annual mean objective at relevant locations in the following areas.

- **Payne's Park Roundabout, Hitchin (A505/A602) (Tube NH93)**

This location was highlighted in the 2012 USA <sup>(2)</sup> as a potential air pollution area, based on the 2011 data from the NH93 tubes. However, it was decided not to recommend a Detailed Assessment on the basis of one year of data, but to review the situation within the 2013 Progress Report. The concentrations of NO<sub>2</sub> measured in 2012 from the same location proved to be consistent with those measured in 2011, so a stronger case now exists for carrying out a Detailed Assessment for this area of Hitchin.

- **Stevenage Road, Hitchin (A602) (Tubes NH92)**

This location is within the AQMA that was designated along the southern side of Stevenage Road in July 2012. The data confirms the decision to designate the AQMA, although data collected from tubes at locations NH104 and NH105 in 2012 suggests that the AQMA has been extended too far to the east and west along Stevenage Road. It should be recognised that the NH104 and NH105 tube locations were new in 2012.

## **3. New Local Developments**

### **3.1 Road Traffic Sources**

NHDC has not identified any of the following since the last Review and Assessment Report, which was the 2012 Updating and Screening Assessment (USA):

- Narrow congested streets with residential properties close to the kerb.
- Busy Streets where people spend one hour or more close to traffic
- New Junctions
- New Roads constructed or proposed
- Roads with significantly changed traffic flows
- Bus or coach stations

However, for 2013 it has been decided to place diffusion tubes at two locations (NH108 and NH109) on a well established road, Hermitage Road, in Hitchin town centre. This decision was taken because of an absence of monitoring in the mixed residential and retail town centre environment of Hitchin.

### **3.2 Other Transport Sources**

NHDC has not identified any of the following since the 2012 USA.

- Airports (**See Section 5**)
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential relevant exposure within 15m
- Locations with a large number of movements of diesel locomotives and potential for long-term exposure within 30m
- Ports for shipping



### **3.3 Industrial Sources**

NHDC has not identified any of the following since the 2012 USA.

- Industrial installations: new or proposed for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- Major fuel storage depots storing petrol
- Petrol stations
- Poultry farms

### **3.4 Commercial and Domestic Sources**

NHDC has not identified any new commercial or domestic sources since the 2012 USA.

### **3.5 New Developments with Fugitive or Uncontrolled Sources**

NHDC has not identified any new fugitive or uncontrolled sources since the 2012 USA.

## **4. Local Air Quality Strategy**

NHDC is a member of the Hertfordshire and Bedfordshire Air Quality Network <http://www.hertsbedsair.net>.

NHDC does not have a Local Air Quality Strategy.

## **5. Planning Applications**

There have been no recently permitted sites that have been significant enough developments to require air quality assessments.

There are no developments that are currently underway that were required to be supported by air quality assessments.

The Hitchin Rail Curve development, which was identified in the 2012 USA and which warranted the positioning of diffusion tubes at two locations (NH101 and NH102) on the proposed haul road (Wilbury Hills Road, Letchworth) was completed in 2012. However, the proposed source of the construction materials was changed from an off-site location, which would have resulted in considerable lorry movements along the proposed haul road, to an “on-site” source that removed the need for road haulage. As a result of this change locations NH101 and NH102 were discontinued at the end of 2012 having returned annual mean NO<sub>2</sub> concentrations of 26.5µg/m<sup>3</sup> (NH101) and 20.6µg/m<sup>3</sup> (NH102).

The only other planning application that has been deemed worthy of mention in this report is that for an expansion of Luton Airport, which NHDC was consulted on as a neighbouring authority by the local planning authority at Luton Borough Council.

Luton Airport is located within 1,500m of the village of Breachwood Green in the south west of the district of North Hertfordshire and currently has a capacity of 10million passengers per annum. The main road access to the airport is identified by

Luton Airport as the M1 and, from the east, the A602 and A505 road network, which passes through the south of the district of North Hertfordshire, including Hitchin.

The planning application is for an expansion of the airport to accommodate an increase in capacity to 18million passengers per annum by 2028.

An Environmental Statement was completed by the applicants in support of their application and that document included a traffic assessment and an air quality assessment. However, neither assessment considered the impact of the proposed development on the district of North Hertfordshire. For this reason, alongside a number of technical planning considerations, the Local Planning Authority at NHDC responded to the consultation with an objection.

It will be necessary for NHDC to maintain a close watching brief on the status of this planning application because the A505/A602 road network through the south of Hitchin, which includes the Stevenage Road AQMA, has been identified within the planning application as a main route of road traffic access to Luton Airport, second only to the M1.

## **6. Air Quality Planning Policies**

NHDC has adopted its District Local Plan No. 2 with alterations in 1996. This was in the process of being replaced with a Local Development Framework (LDF) which is a series of documents setting out the statutory development and planning framework for the NHDC. The Development Policies document within this framework proposes a “Protecting Amenity” development policy that is worded as follows:

“We will permit development proposals which do not cause unacceptable harm to the amenity of existing residents, occupiers and surrounding land. Such harm may arise from many sources, including (but not limited to):

1. traffic generation
2. noise
3. overlooking
4. pollution (including light pollution) and
5. overbearing

Where such harm would be caused, we may permit development if measures are included to mitigate the harm to an acceptable level. Where amenity of proposed developments would be affected by an existing use, the development will need to incorporate measures to mitigate the harm to an acceptable level.”

The Development Policies document also proposes a “Transport hierarchy of users” policy that is worded as follows:

“Development that is designed and located to promote fewer and shorter distance journeys, provides quality spaces for people and to accommodate the needs of all modes of travel in accordance with the following priority ordered user hierarchy will be supported:

1. Pedestrians, especially the mobility impaired
2. Cyclists and where appropriate horse riders
3. Passenger transport
4. All forms of other motor vehicles

This hierarchy does not suggest that transport modes lower down the list of priority will be ignored when development is designed, rather it requires the needs of those further up the list must be considered first.”

Currently a Local Plan for the period 2011-2031 is being developed by NHDC Local Planning Authority. To ensure that air quality is appropriately considered within this plan the Environmental Protection Team is in the process of drafting a background paper to act as an evidence base for inclusion of a Air Quality Policy within the Development Plan; which in turn would link to either a Supplementary Planning Document on air quality, or another form of air quality planning guidance document.

## **7. Local Transport Plans and Strategies**

Hertfordshire County Council has recently published its new Local Transport Plan (LTP3) for 2011-2031, which sets out the transport strategy for Hertfordshire (over the next 20 years). The Plan covers all modes of transport including walking, cycling, public transport, car based travel and freight and takes account of the effect of transport on wider aspects including the economy, environment, climate change and social inclusion.

Within NHDC the Hitchin Urban Transport Plan 2011 has recently been adopted and consultation is currently underway on the Letchworth and Baldock Urban Transport Plan 2011.

## **8. Climate Change Strategies**

NHDC published its Climate Change Strategy in June 2009 and it is available on the Council's website.

## **9. Implementation of Action Plans**

In June 2012 an Air Quality Management Area was designated along the southern side of a stretch of the Stevenage Road (A602) Hitchin (Appendix 1). A draft Action Plan for this AQMA was developed alongside Further Assessment work for the area in question. The draft Action Plan was agreed as suitable for public consultation by Council in March 2013. At the time of the completion of this report a consultation strategy, which will include an online questionnaire, was being finalised in order to prepare for the formal public consultation to take place between May-Aug 2013.

## **10. Conclusions and Proposed Actions**

### ***10.1 Conclusions from New Monitoring Data***

#### **Stevenage Road, Hitchin (A602)**

The monitoring data for 2012 has confirmed the need for the AQMA along a stretch of the Stevenage Road (A602) in Hitchin. There is new monitoring data from 2012 which suggests that the area included within the AQMA might be reduced, so as not to extend quite so far to the east and west along Stevenage Road as it does currently. However, for the following two reasons there is currently no intention to alter the extent of the Stevenage Road AQMA.

- Only one year worth of data has been collected from the two diffusion tube sites (NH104 and NH105) in question.

- It is acknowledged <sup>(3)</sup> that setting the boundary of an AQMA involves an element of judgement and that it may be administratively simpler to designate a wider area than attempting to be too precise.

### **Payne's Park Roundabout, Hitchin (A505/A602)**

The monitoring data for 2012 from Park Way, Hitchin (NH93) has confirmed that there is potential public exposure at 41 Upper Tilehouse Street to an annual mean average NO<sub>2</sub> concentration that is above the 40µg/m<sup>3</sup> objective. This was first identified as a potential problem location by the data collected from NH93 in 2011, which was reported in the 2012 USA <sup>(2)</sup>.

On the basis that for two years running a public exposure issue has been identified at the Park Way and Upper Tilehouse Street junction of the Payne's Park roundabout it is considered appropriate to recommend that a Detailed Assessment of air quality is undertaken in this particular area of Hitchin.

## **10.2 Conclusions relating to New Local Developments**

It will be necessary for NHDC to maintain a close watching brief on the status of the planning application to expand passenger capacity at Luton Airport from 10million per annum to 18million per annum. This is because the A505/A602 road network through the south of Hitchin, which includes the Stevenage Road AQMA, has been identified within the planning application as a main route of road traffic access to Luton Airport, second only to the M1. It is acknowledged, however, that this is not likely to be a planning application that will be decided and implemented over a short timescale.

## **10.3 Proposed Actions**

NHDC will commission a Detailed Assessment report for the Payne's Park area of Hitchin to determine if there is sufficient justification for the designation of an AQMA in the area.

NHDC will complete its Further Assessment and following public consultation, finalise its Action Plan for the existing AQMA at Stevenage Road, Hitchin.

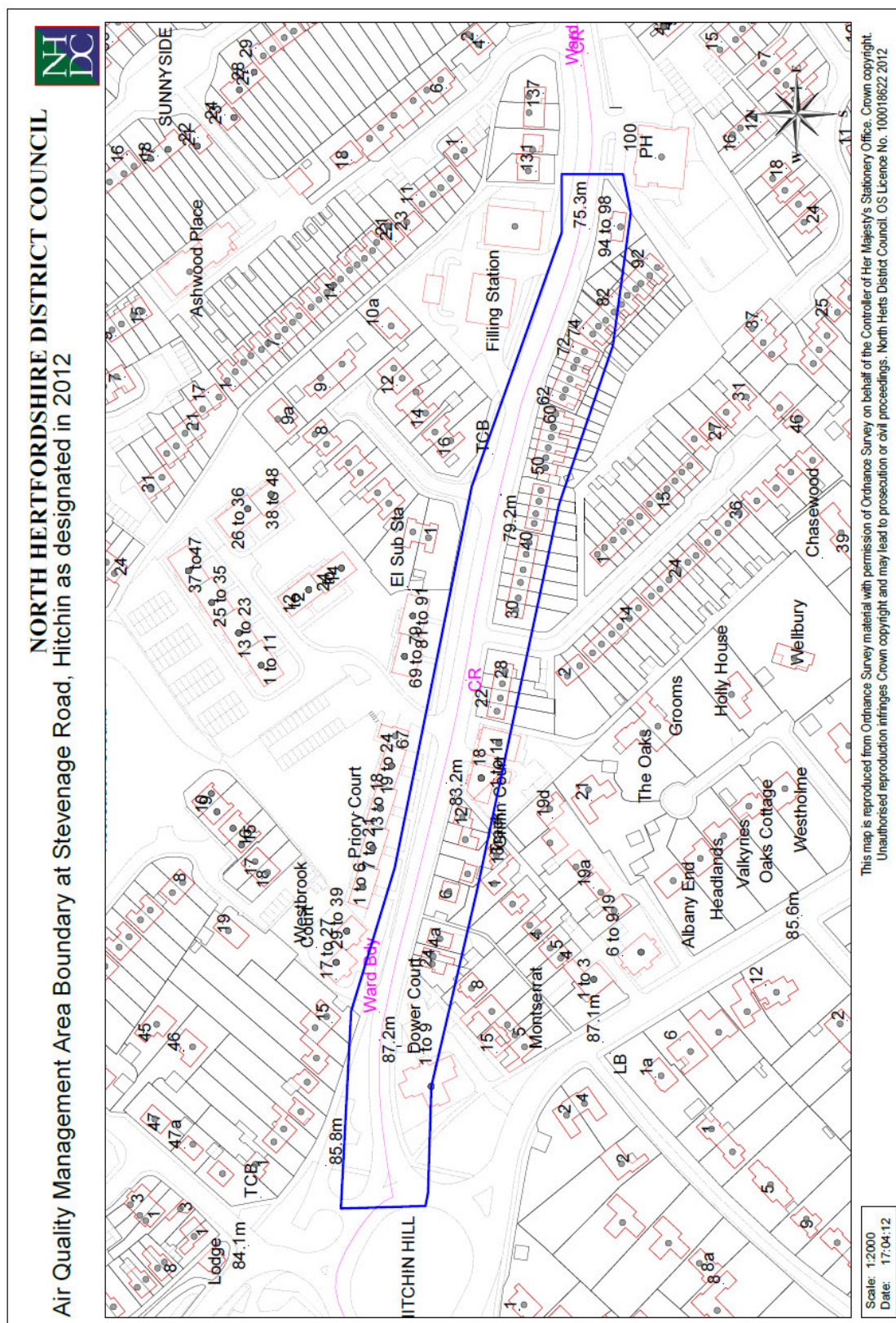
To support the ongoing monitoring of air quality in the Stevenage Road area of Hitchin an automatic roadside analyser was located in the area in February 2013. It is intended to retain it in that location for the foreseeable future.

The diffusion tube network has been altered to provide monitoring data from a mixed residential and retail town centre location in Hitchin. This has been achieved by the removal of the two diffusion tube locations in Letchworth that were established to monitor the impact of road haulage traffic associated with the Hitchin Rail Curve development that was completed in 2012.

## **11. References**

1. Defra. 2009. Local Air Quality Management Technical Guidance LAQM.TG(09)
2. NHDC. April 2012. LAQM Updating and Screening Assessment Report 2012
3. Defra. 2009. Local Air Quality Management Policy Guidance LAQM.PG(09)

## Appendix 1: Stevenage Road Air Quality Management Area (2012)



## **Appendix 2: Quality Assurance / Quality Control (QA/QC)**

### **1.1 PM<sub>10</sub> 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).

LAQM.TG (09) sets out the calculation required for TEOM results using the VCM to estimate gravimetric equivalent. This replaces the use of the previous 1.3 factor. Data for 2012 has been corrected using the VCM model by AQDM.

### **1.2 QA/QC of automatic monitoring (including Calibration and Rescaling)**

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 Air Quality Data Management (AQDM). This company is 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 was 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 AQDM. This company is 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.

As with most accurate measurement equipment, the APNA 360 and AP1 M200 must be calibrated to determine its function. Calibration is simply the testing of equipment against a known quantity to determine whether it produces expected results. In the case of both nitrogen dioxide analysers, calibration takes the form of two routines:

- a) The response of the analyser to high concentrations of nitric oxide is assessed by a “span calibration”. Simply, a nitric oxide (at a known high concentration) is passed into the analyser and the result produced by it is noted.
- b) The response of the analyser to sample containing no oxides of nitrogen (NO<sub>x</sub>) is assessed by passing air which has been “scrubbed” clean of NO<sub>x</sub> (“zero air”) into the analyser and thus conduct a “zero calibration” and the analysed result noted.

The analyser should produce a result, which is close to the absolute concentration at both ends of the scale - the span range.

Span and zero calibrations are conducted regularly by the NO<sub>x</sub> analyser automatically and stored in the datalogger for periodic inspection. To ensure a consistently high quality assurance standard, the NO<sub>x</sub> analyser is calibrated, for both zero and span, every 10 - 14 days and the result used for validation.



For a host of reasons, analysers such as the APNA 360 do not always produce calibration results that are exactly in line with the anticipated levels during both the span and zero calibration operation. This does not mean that the data produced must be discarded because it is not accurate. “Calibration drift” is common and can be compensated by the use of a scaling calculation; any under/over reading by the analyser is distributed over the span range so that the data produced routinely is altered to reflect any inaccuracy.

The result of rescaling is to ensure that data from the analyser is accurate at the concentrations encountered routinely. Rescaling is not conducted by North Hertfordshire District Council, but is undertaken by AQMA under contract at both sites. Rescaling takes place after every manual calibration to ensure a robust data set.

## **2. Diffusion Tubes**

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

North Hertfordshire District Council undertakes no co-location studies.

### **2.2 Laboratory Analysis**

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 Satisfactory laboratory. This information was used in selecting the below bias adjustment factor.

### **2.3 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>).

According to the above database the bias adjustment factor for Harwell Scientific Services in 2012 was 0.79.

## **3. Short-term to Long-term Data Adjustment (Annualisation) for Automatic and Non-Automatic Monitoring**

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 2012.

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 Baldock Town Hall (NH5) Automatic****Analyser***Monitoring Period – January – August 2012 (inclusive)*

Site	Site Type	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Period Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
Stevenage (Lytton Way)	Roadside	28.65	24.83	1.154
Luton (Chalney)	Roadside	28.65	22.92	1.250
Sawbridgeworth	Roadside	40.11	40.11	1.000
Sawbridgeworth	Background	11.46	9.55	1.2
			Average of ratios R(a)	<b>1.151</b>

## Appendix 3: Site Location Maps for Diffusion Tube Network

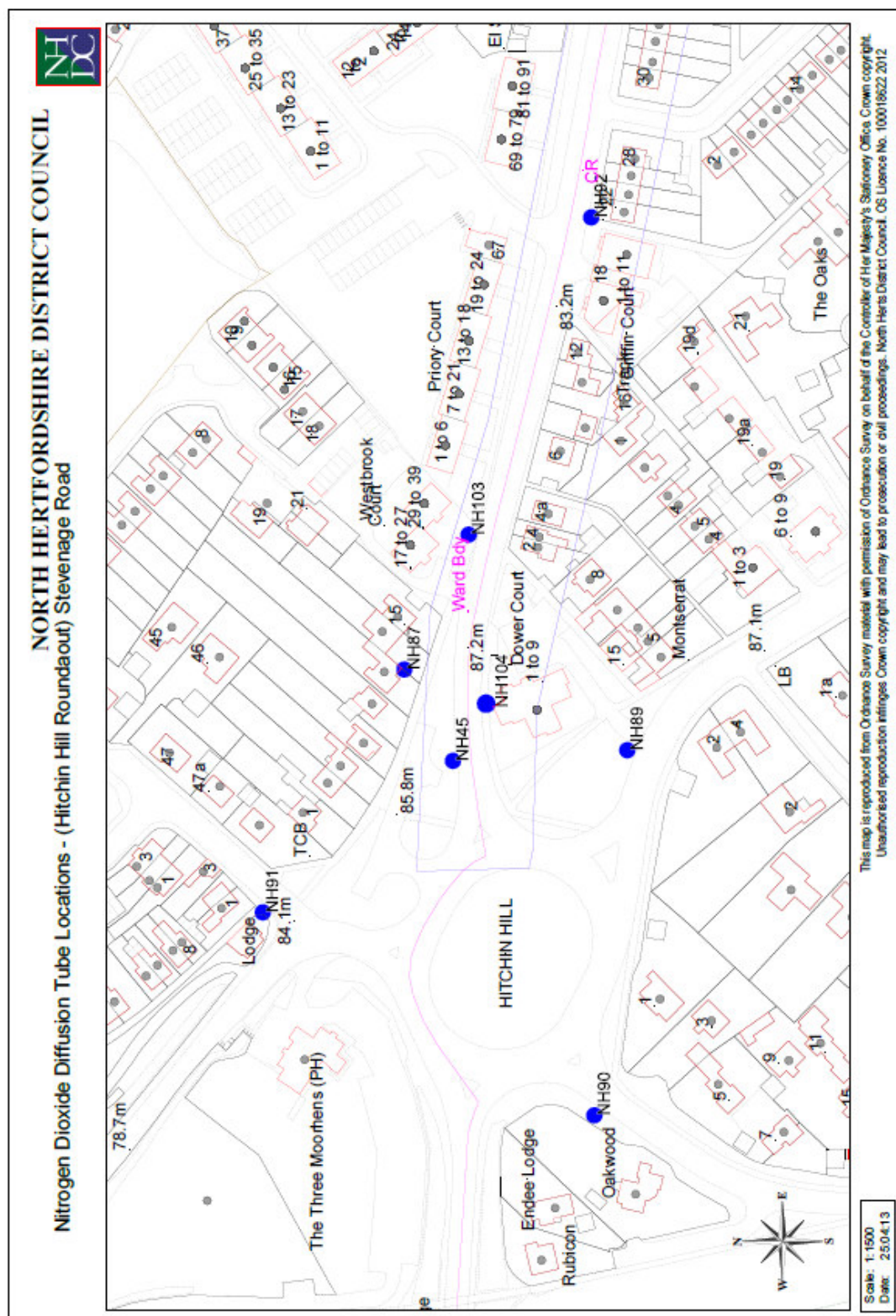


Figure A3.1 Diffusion Tube Locations 2012 – Hitchin Hill Roundabout, Stevenage Road, Hitchin

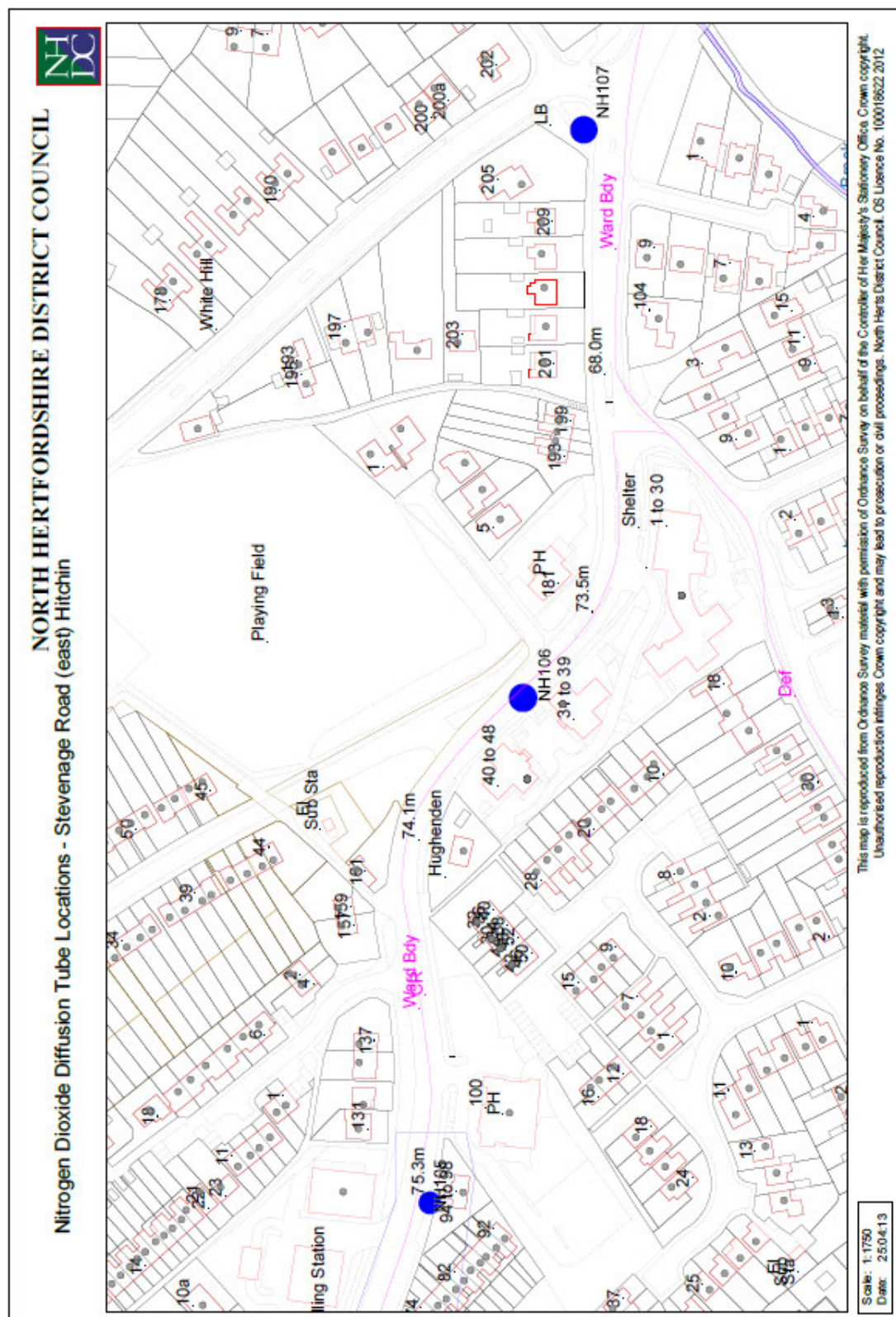


Figure A3.2 Diffusion Tube Locations 2012 – Stevenage Road (east), Hitchin



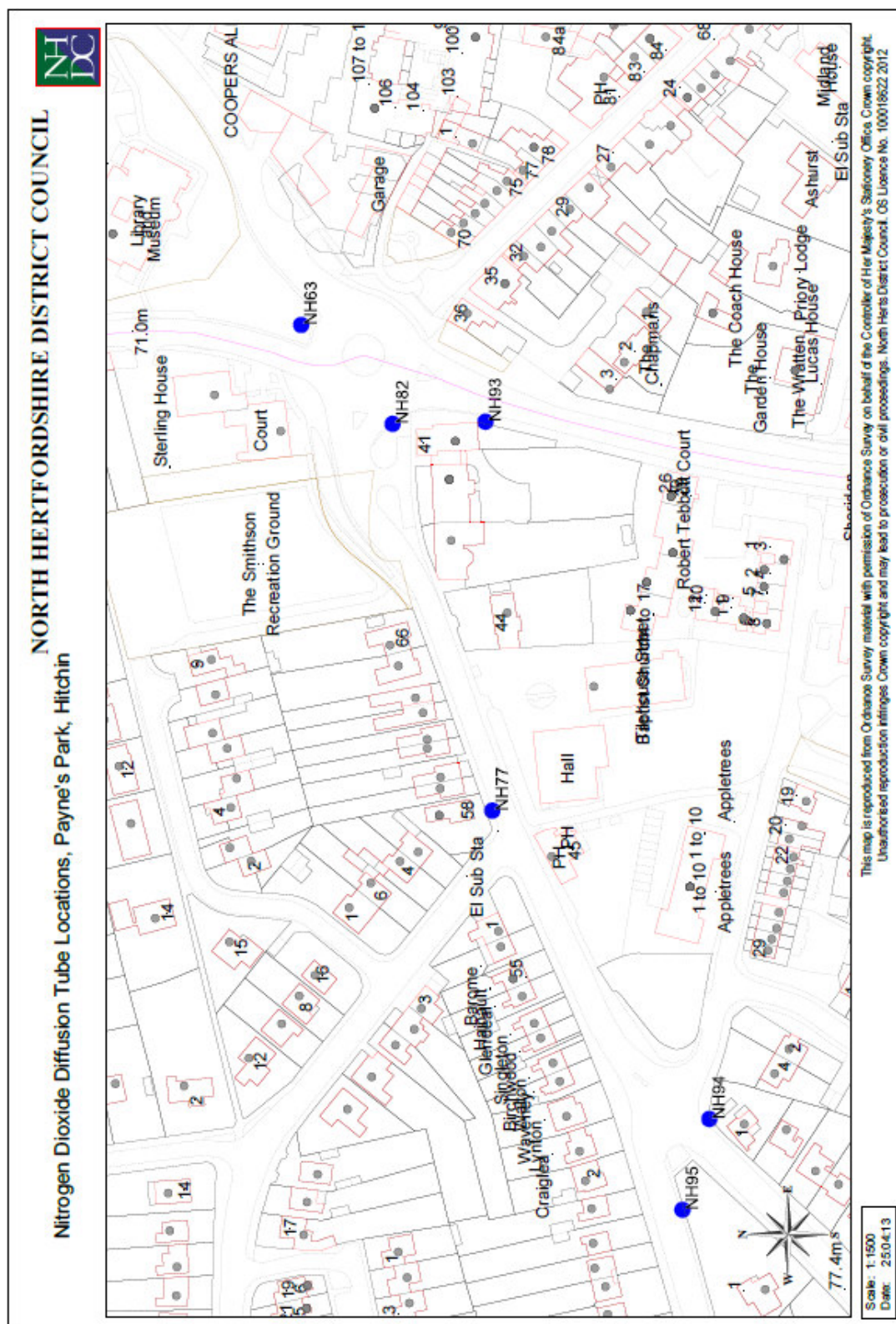


Figure A3.3 Diffusion Tube Locations 2012 – Stevenage Road (east), Hitchin

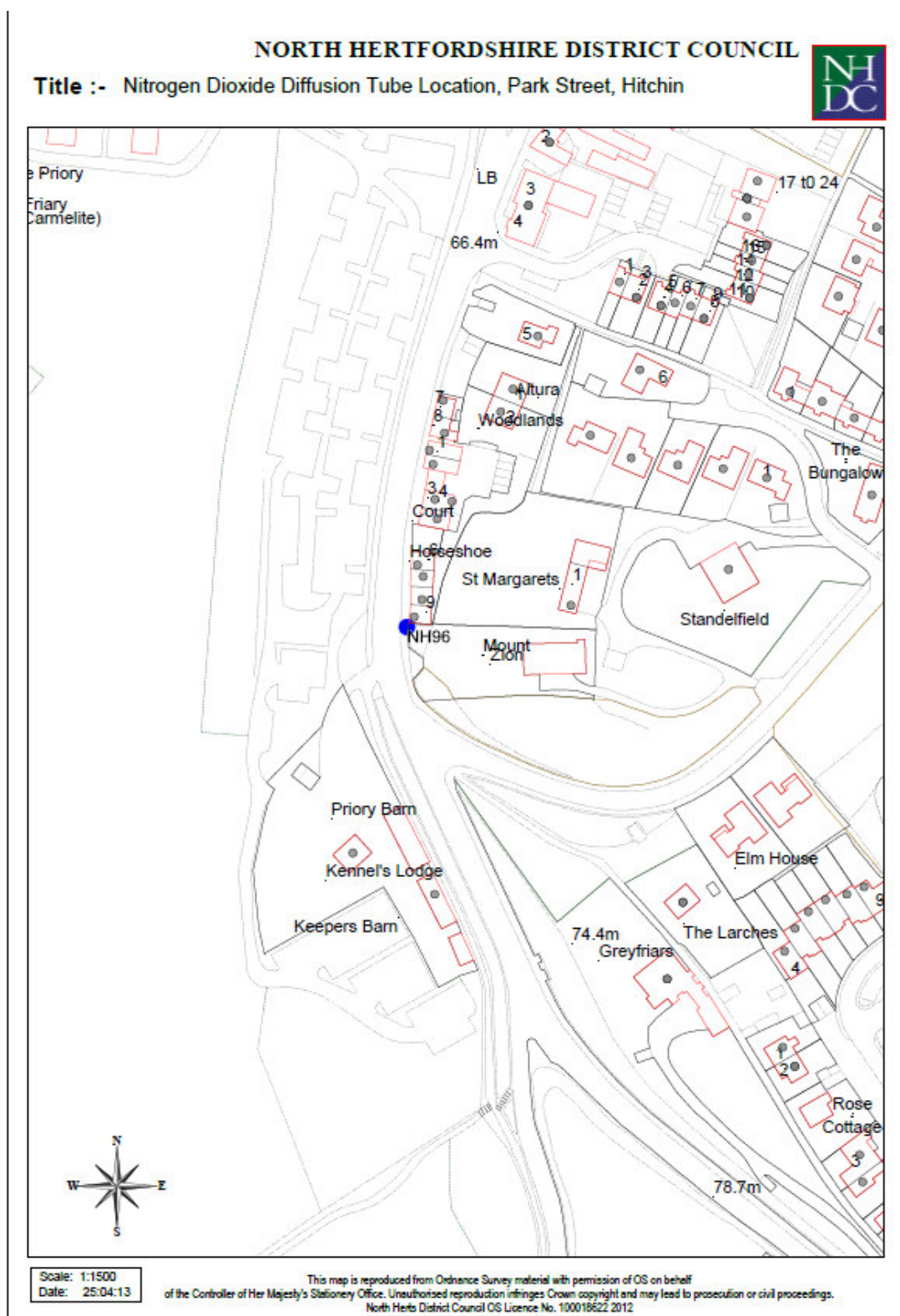


Figure A3.4 Diffusion Tube Location 2012 – Park Street, Hitchin



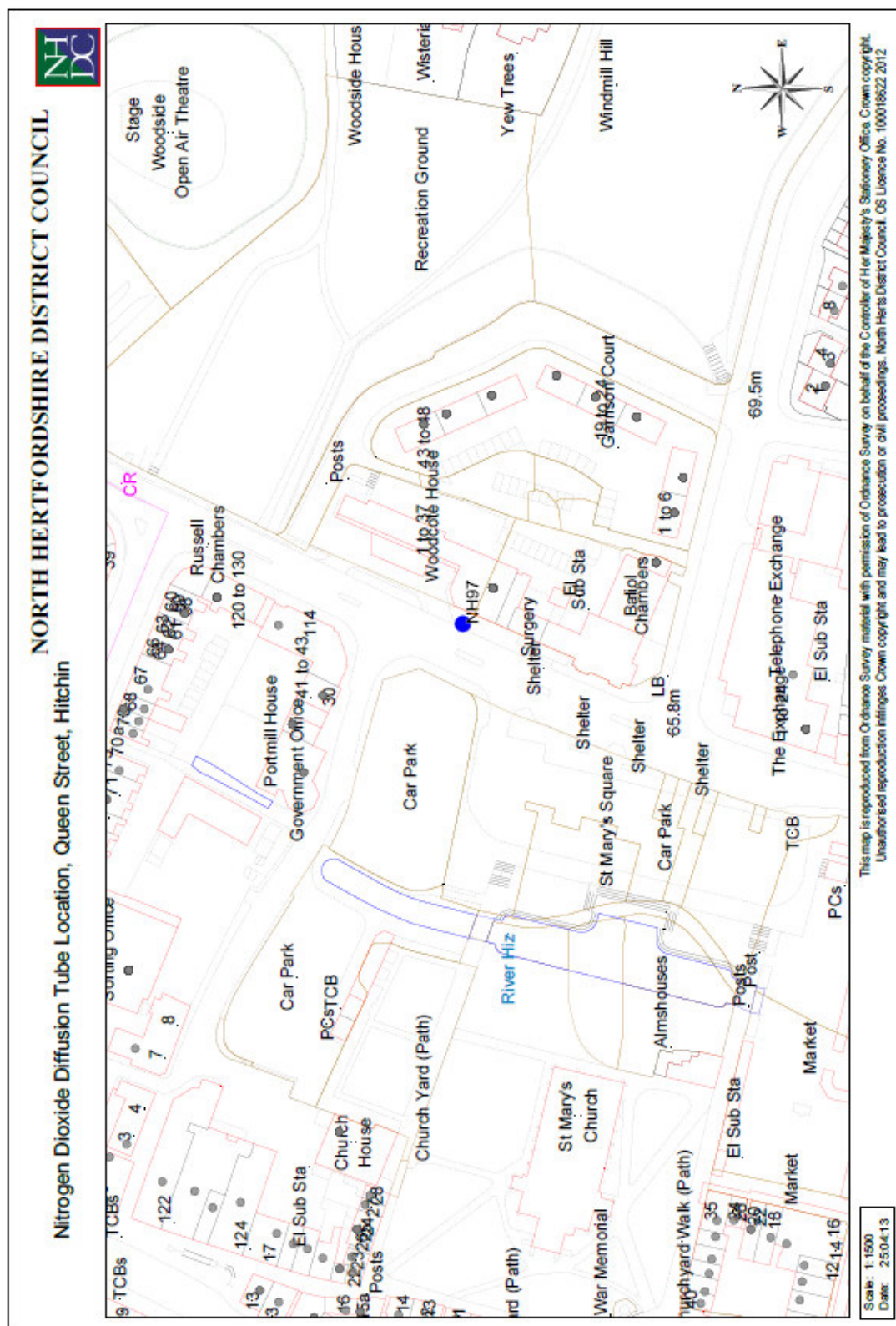


Figure A3.5 Diffusion Tube Location 2012 – Queen Street, Hitchin

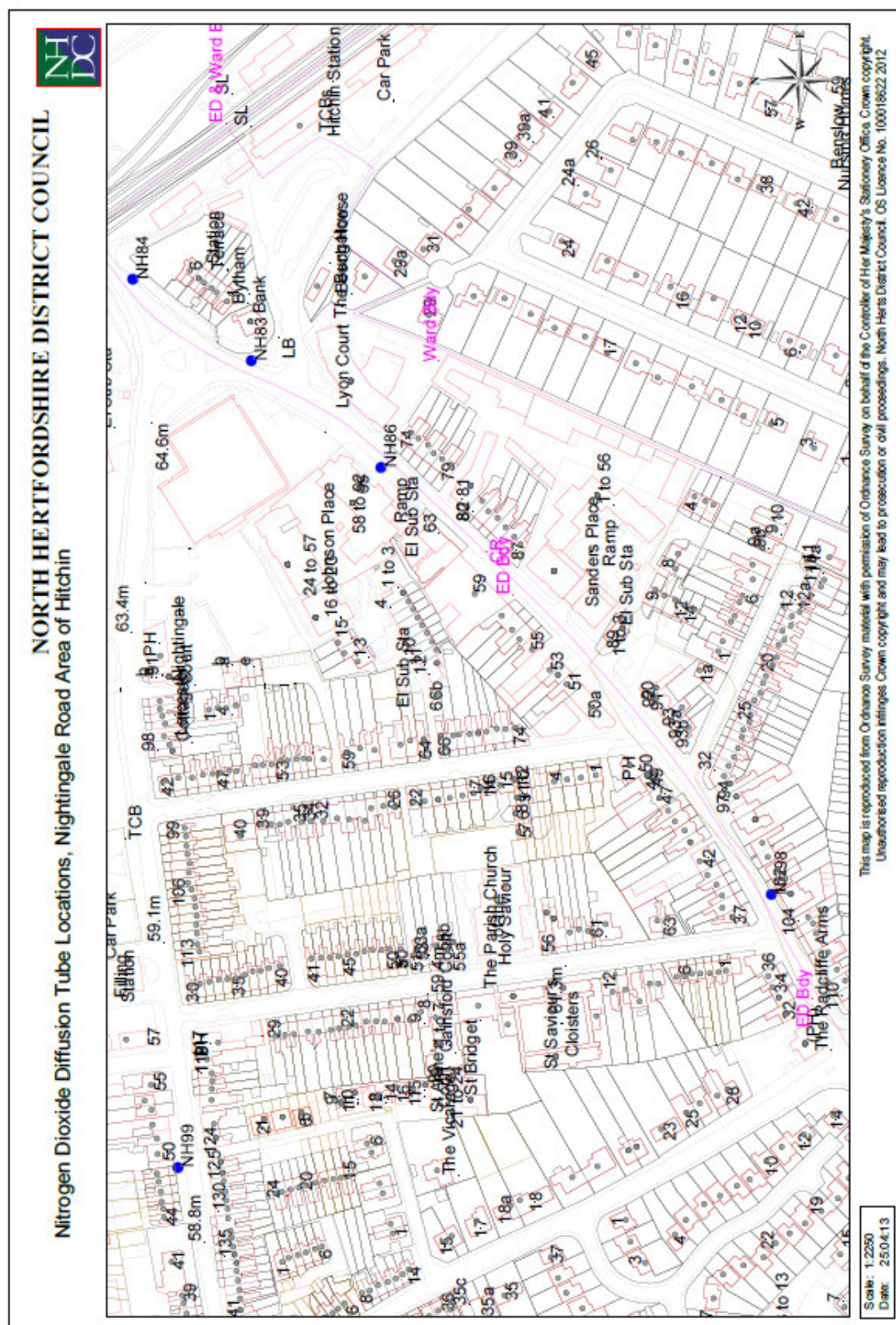


Figure A3.6 Diffusion Tube Location 2012 – Walsworth Road and Nightingale Road, Hitchin



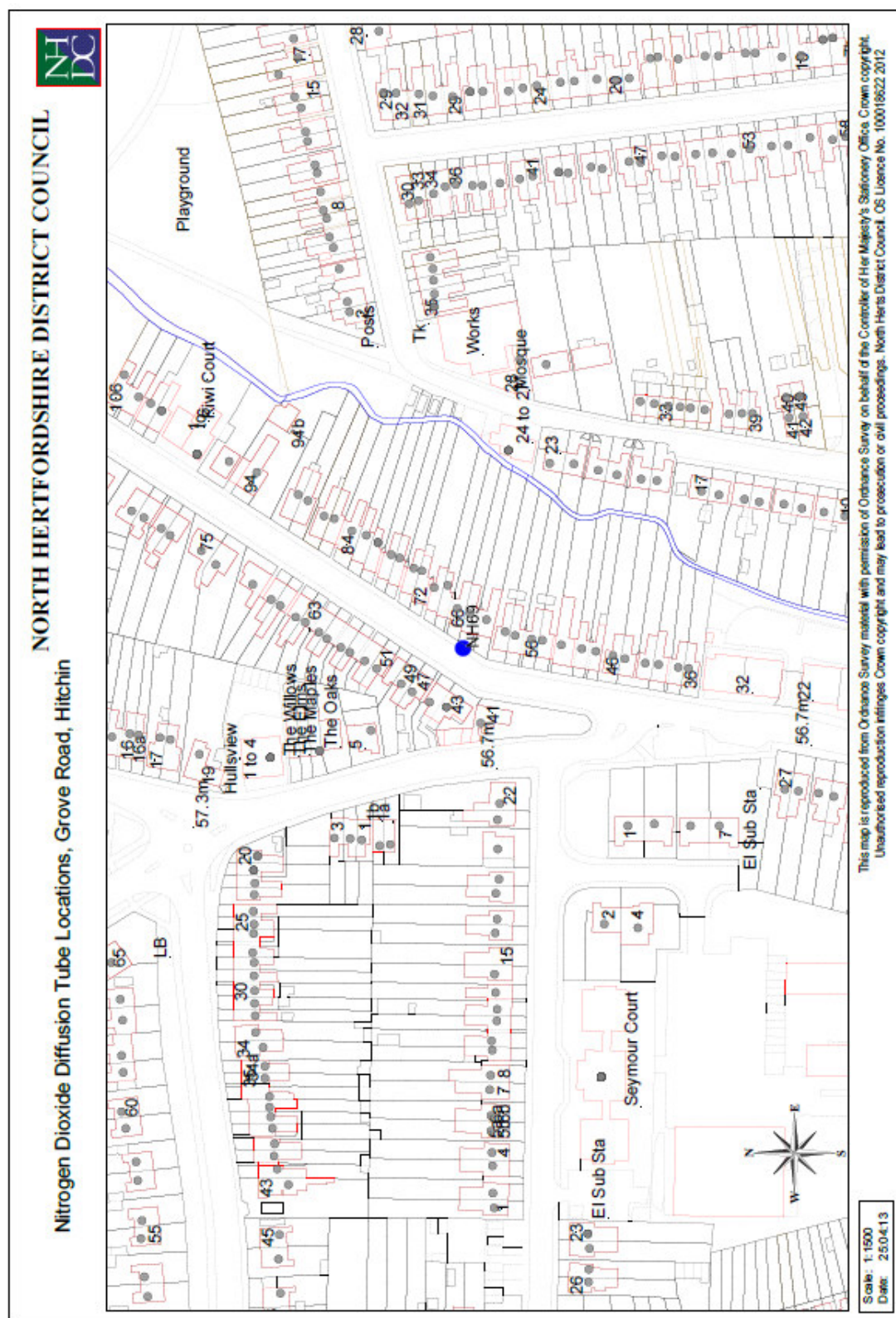


Figure A3.7 Diffusion Tube Location 2012 – Grove Road, Hitchin



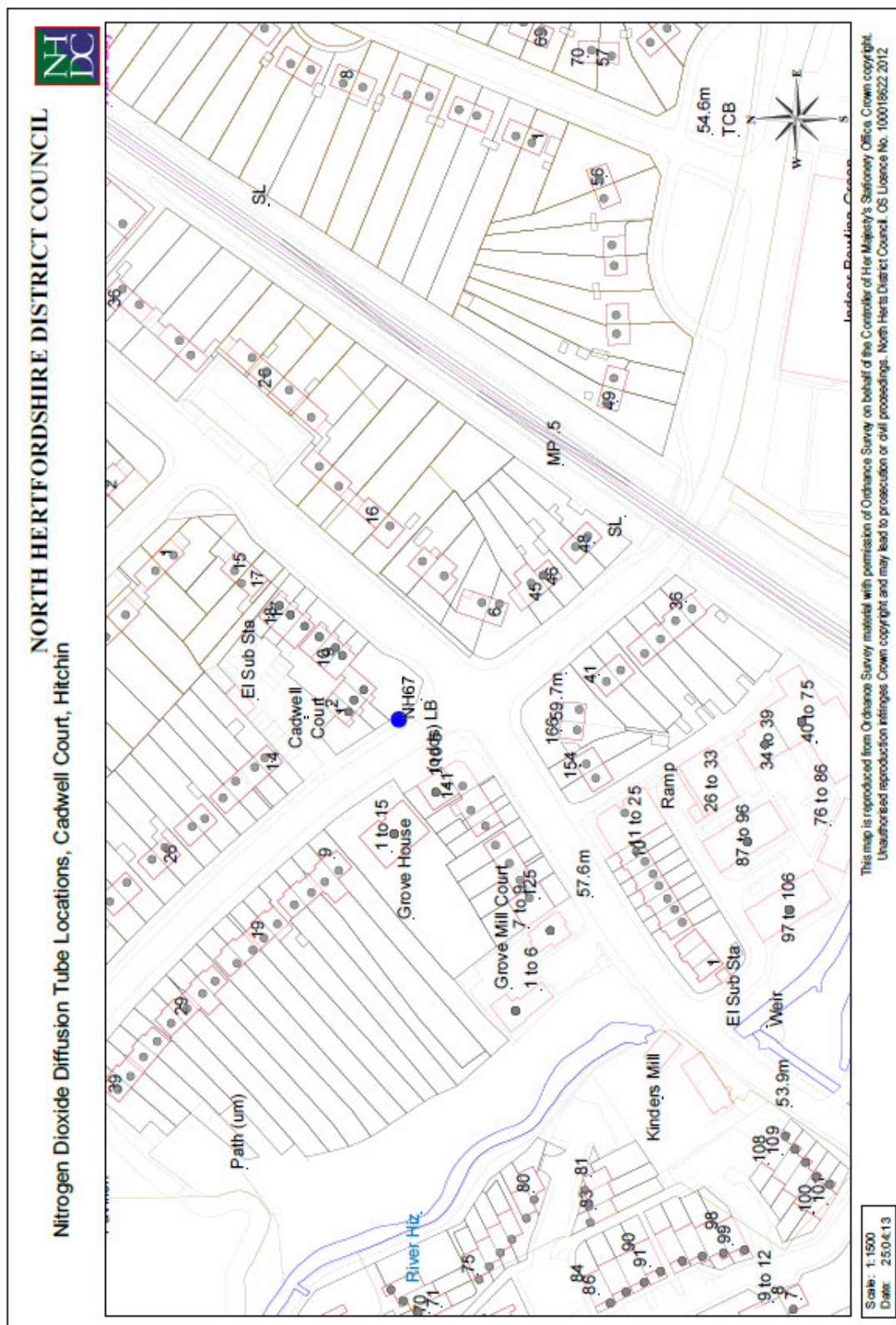


Figure A3.8 Diffusion Tube Location 2012 – Cadwell Court, Hitchin

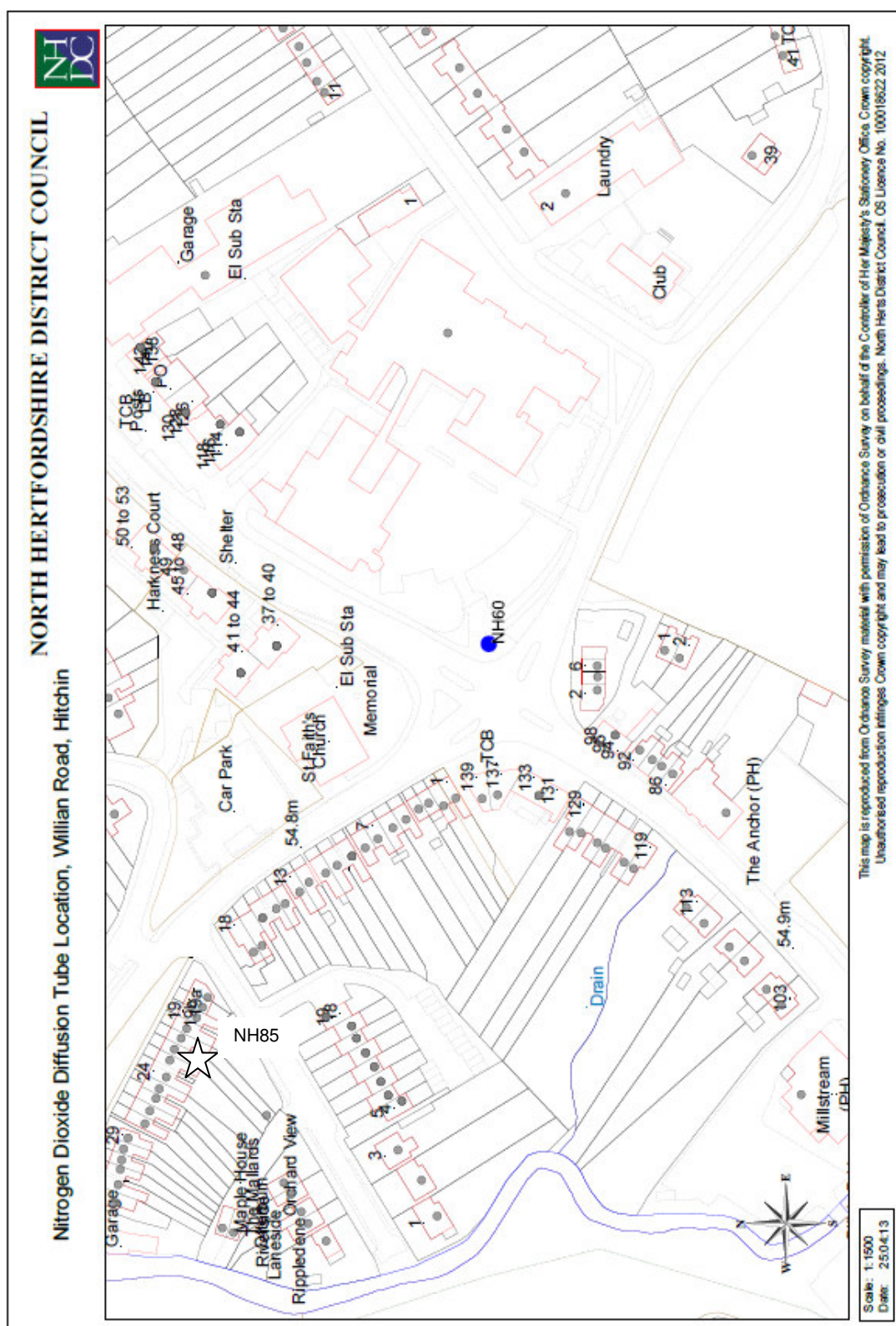


Figure A3.9 Diffusion Tube Location 2012 – Willian Road, Hitchin



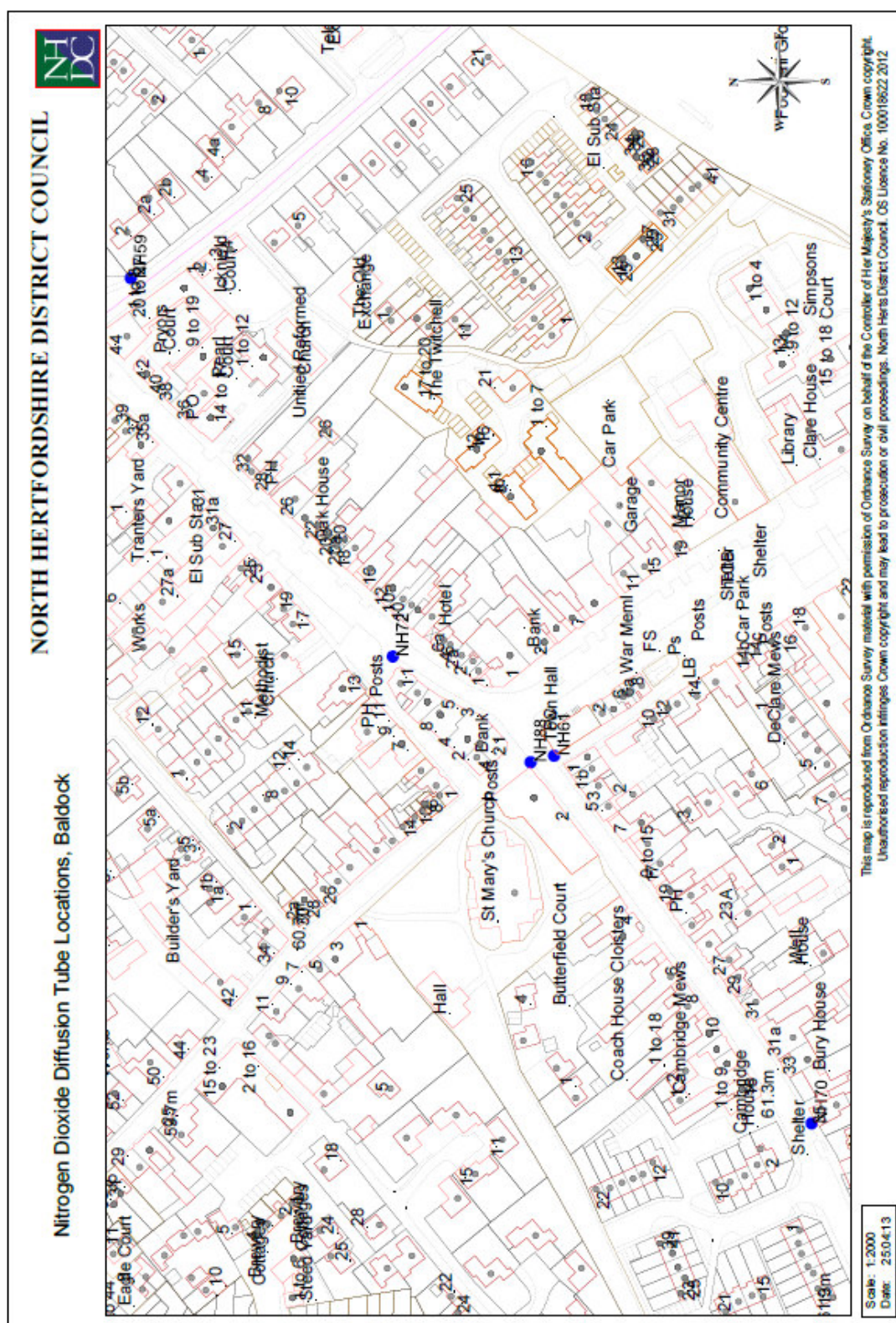


Figure A3.10 Diffusion Tube Location 2012 – Hitchin Street and Whitehorse Street, Baldock

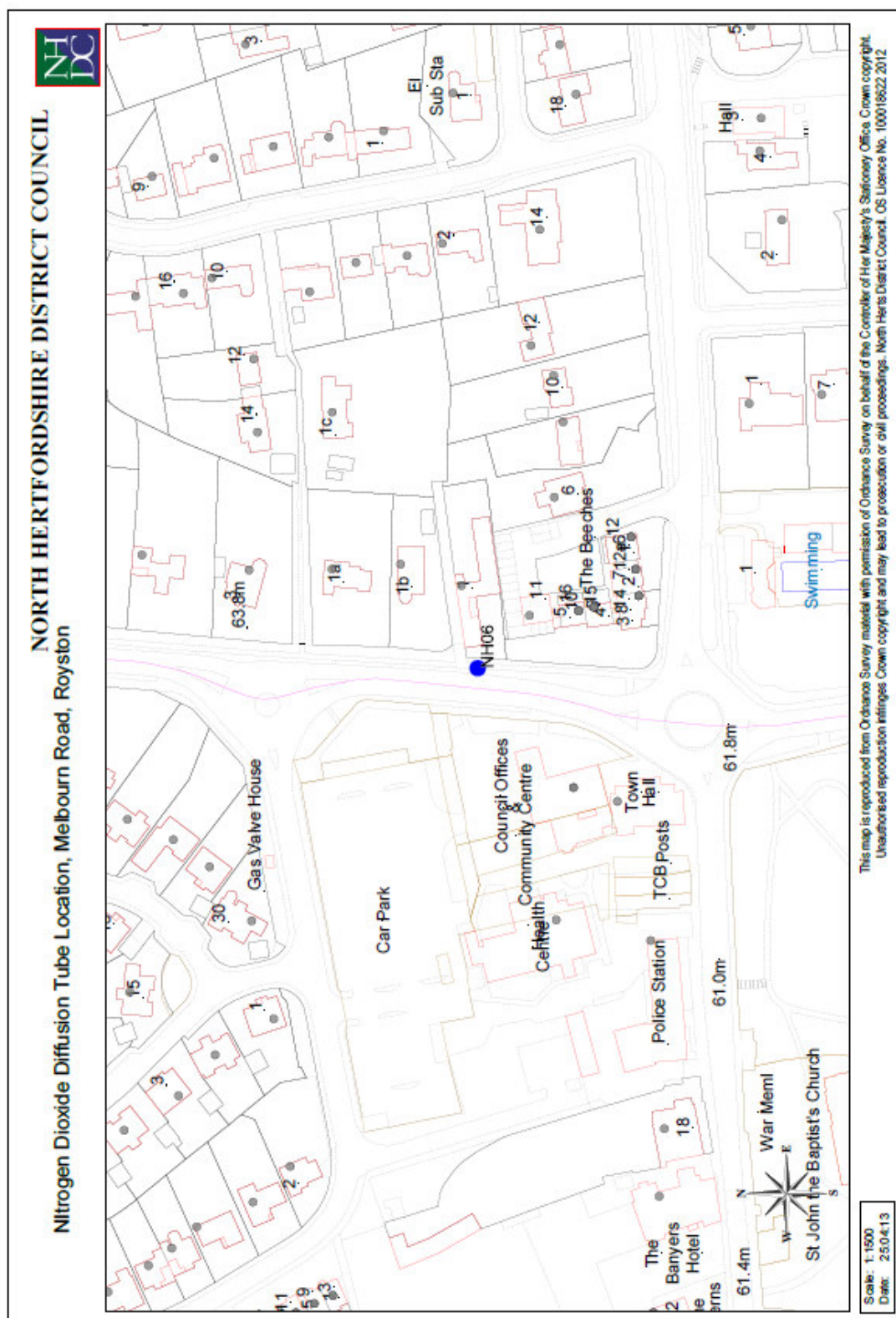


Figure A3.11 Diffusion Tube Location 2012 – Melbourn Road, Royston



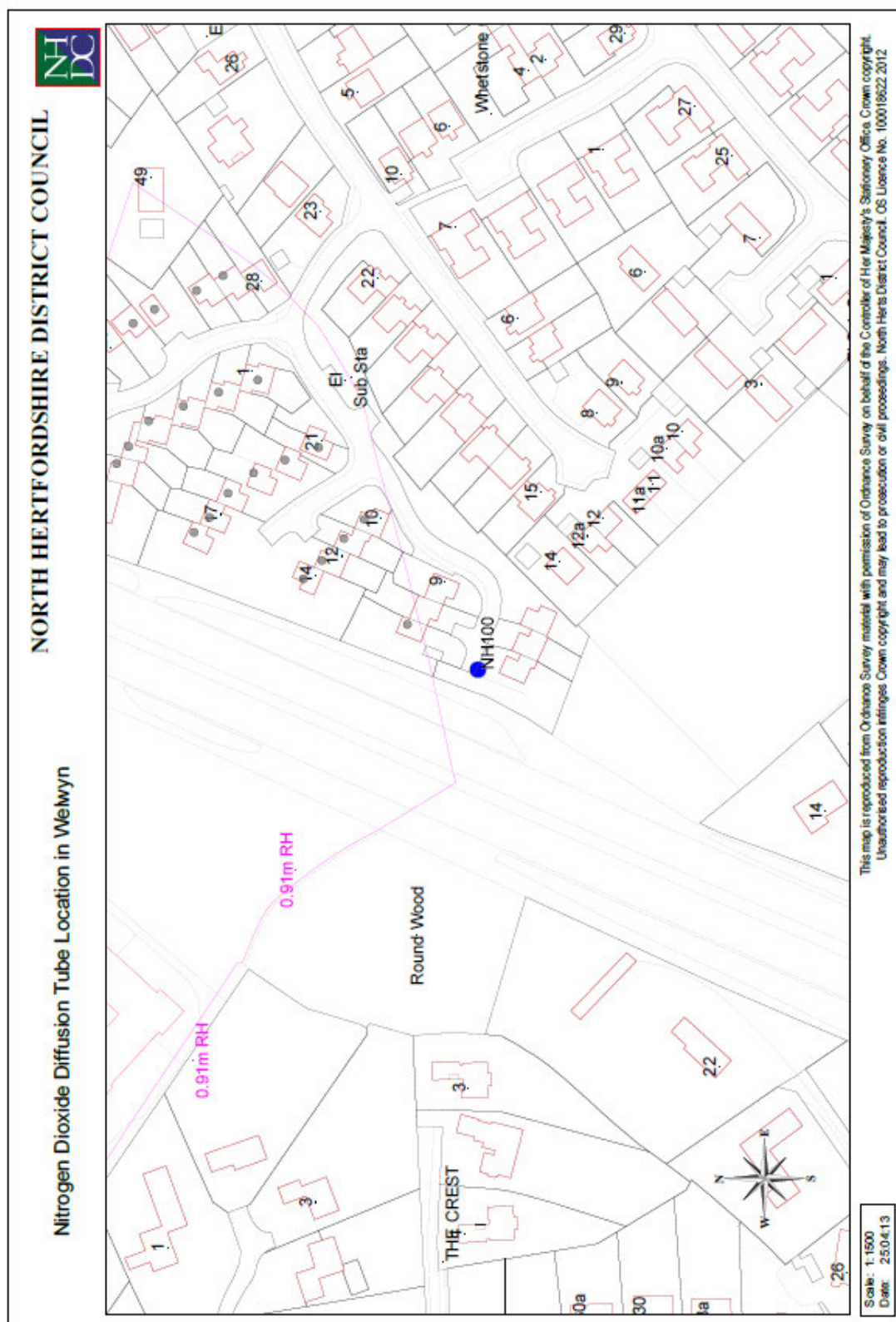


Figure A3.12 Diffusion Tube Location 2012 – Welwyn, alongside A1(M)

**Appendix 4: Diffusion Tube Data**

NH Code	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Bias
NH06	Melbourn Road, Opposite Town Hall, Royston			49.4	33.7	34.1	30.4	35.5	34.1	35.7	35.4	29	35.9	35.3	27.9
NH45	Stevenage Road A, Hitchin	73.7	71.2	73.2	49.4	44.3	48.3	45	51.2	53.1	57.3	71.4	65.6	58.6	46.3
NH59	(NH04a) Clothall Road, Baldock	48.8	48.4	51.1	39.1	34.6	27.5	29.4	28.3	34.4	42.9	46.6	41.6	39.4	31.1
NH60	(NH13a) Willian Road, Hitchin	50.7		45.4	43.1	33.5	29.8	28.3	31.4	37.2	37.6	45.9	34.9	38.0	30.0
NH61	(NH53a) Whitehorse Street, Baldock (nr town hall)	48.8	54.1	53.5	45.1		35.2	39.7	45.7	37.1	46	54.1	45.7	45.9	36.3
NH63	(NH02a) Library Hitchin	43.9	62.2	61	48.8	38.1	39.6	43.5	43.3	49.2	46.3	63.1	59.9	49.9	39.4
NH67	Cadwell Court, Hitchin	41.6	37.1	44.5	24.3	32.1	31.3	32.3	31.8	31.7	43.7	61.8	39.8	37.7	29.8
NH69	64 Grove Road, Hitchin	48.7	45	46.8	30.1	32.9	32.4	37.9	33.5	33.7	46.3	54.8	42.1	40.4	31.9
NH70	Nr Bus Stop Hitchin Street Baldock	35.6	42.8	45.3	34.3	27.8	24.9	33.1	36.8	33.6	36.9	43.7	33	35.7	28.2
NH72	Opp Rose Crown, Whitehorse Street, Baldock	56.3	55.2	55	47	35.2	32.8	38.4	45	46.6	49.4	57.1	42.5	46.7	36.9
NH103	Westbrook Court, Hitchin	65.5	70.9	57.9	53.9	45.6	37.6	43.6	45.4	47.2	49.7	76.9	68.1	55.2	43.6
NH77	Upper Tilehouse Street, Hitchin (traffic lights)	65.1	60.1	63.2	52.9	50.4	26.7	45.6	45.3	42.8	55.9	48.2	44.1	50.0	39.5
NH78	West Hill, Hitchin	41.2		47	31	35.3	36.9	27.5	30.6	28.7	44.1	41	35.2	36.2	28.6
NH82	Upper Tilehouse Street, Nr Roundabout	60.5	61.1	59.6	43.4	47.6	53.6	47.5	46.7	45.3	53.5	60.7	34.5	51.2	40.4
NH83	Hitchin Station, Roundabout A	44.5	56.4	50.3	36.2	32.8	38.6	28.1	36.4	34	39.6	52.5	47.5	41.4	32.7
NH84	Hitchin Station, Roundabout B	51.2	40.4	53.8	42.9	44.1	39.6	35.9	40.1	40.7	48	50.7	47.8	44.6	35.2
NH86	Walsworth Rd, Hitchin (Nr Station)		47.8	45.8	36.7	31.2	22.8	26.2	29.5	34.4	36.9	40.6	39.1	35.5	28.1
NH87	11 Stevenage Road, Hitchin	39.6	46.7	44.4	33.8	27.7	25.9	31.3	33.9	34.8	42	45	38.5	37.0	29.2
NH88	Church St, Baldock (Opp. Town Hall)	66.4	75.8	61.6	55.1	34.5	40.7	47.8	51.5	61.3	47.8	71.6	60.7	56.2	44.4
NH89	London Road, Hitchin	46	52.3	47.8	36.3	29.4	23.9	27.5	30.2	33.5	35.5	45.8	39.5	37.3	29.5
NH90	Gosmore Road, Hitchin	41.4	46.6	46.1		34.9	29.4	22.2	24.9	31.6	40.6	35.2	31.6	35.0	27.6
NH91	St John's Road, Hitchin	55.7	55.4	49	36.8	33.9	34.1	37.6	32.6	42.6	41.7	61.6	45.2	43.9	34.6
NH92	Stevenage Road (Griffin), Hitchin	80.2	76.4	67.4	61.8	51.7	52.3	57.8	56.8	60.6	70.8	75.2	64.9	64.7	51.1
NH93	Park Way, Hitchin	71	78.6	78.7	66.6	67.7	57.6	70.2	61.8	84	79	66.2	51.6	69.4	54.8
NH94	Offley Road, Hitchin	54.8	62.4	51	48.5	37.1	35.6	36.9	41.4	43.3	51.6	42.4	49.2	46.2	36.5
NH95	Pirton Road, Hitchin	38.1	49.4	48	38.8	37.6	33.1	37	39.2	37.9	39.7	47.3	43.1	40.8	32.2
NH96	Park Street, Hitchin	41	48.1	47.9	42.4	42.6	33	50.2	34.5	36.9	43	31.6	35.9	40.6	32.1
NH97	Queen Street, Hitchin	41.2	48.3	48.7	37.4	38.6	38.1	33.1	37.6	32.4	41.7	46.6	42.7	40.5	32.0
NH98	Walsworth/Radcliffe Road, Hitchin	49.9	54.1	52.2		31.3	38	33.9	35.4	35.5	44.3	52.2	41.6	42.6	33.6
NH99	Nightingale Road, Hitchin	54.1	55.5	55.8		34.4	29.8	31.3	33.8	37.9	46.3	43	42.5	42.2	33.4
NH100	Foxglove Way, Welwyn	50.2	53.5	47	40.4	26.4	28.6	35.5	34.3	37.6	36.5	43	64	41.4	32.7
NH101	Wilbury Hills Road (Eldefield) Letchworth	41.6	44.2	41.9	30.4	27.8	24	24.3	24.9	28.8	36.3	36.7	41.8	33.6	26.5
NH102	Wilbury Hills Road (Romany) Letchworth	33.1	36.3		25	22.8		17.1	19.5	21.1	26.2	27.9	32.1	26.1	20.6
NH104	Dower Court (A), Stevenage Road, Hitchin	48.4	50.4		37.8	34.2	30.1	57.6	33.4	41.5	35.7	47.5	55.8	42.9	33.9
NH105	94-98 Stevenage Road, Hitchin	70.7		66.7	60.4	53.6	43.9	50.6	46.6	57.3		67.3	63	58.0	45.8
NH106	Morello Gardens, Stevenage Road, Hitchin	59.8	64.2	69.9	56.4	42.7	39.5	44.1	48.5	49.5	60.9	72.3	53.3	55.1	43.5
NH107	Whitehill Road, Hitchin	43.4	50.9	49.1	32	31.3	31.5	27.4	30	37.2	42.4	44.2	48.7	39.0	30.8

## Appendix 5: Fall off in Nitrogen Dioxide Concentrations with Distance from Road

### Stevenage Road (A), Hitchin – NH45

Step 1	How far from the KERB was your measurement made (in metres)?	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	21	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	16.50603	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	46.3	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	29.9	µg/m <sup>3</sup>

### Upper Tilehouse Street (Roundabout), Hitchin – NH82

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	8.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	18.63881	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	40.4	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	32.1	µg/m <sup>3</sup>

### Stevenage Road (Griffin Court), Hitchin – NH92

Step 1	How far from the KERB was your measurement made (in metres)?	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	16.50603	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	51.1	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	43.7	µg/m <sup>3</sup>

Park Way, Hitchin – NH93

Step 1	How far from the KERB was your measurement made (in metres)?	1.6	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.6	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	18.63881	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	54.8	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	46.3	µg/m <sup>3</sup>

Westbrook Court, Stevenage Road, Hitchin – NH103

Step 1	How far from the KERB was your measurement made (in metres)?	2.4	metres
Step 2	How far from the KERB is your receptor (in metres)?	12.4	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	16.50603	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	43.6	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	32.7	µg/m <sup>3</sup>

94-98 Stevenage Road, Hitchin – NH105

Step 1	How far from the KERB was your measurement made (in metres)?	3.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	10.5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	16.481	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	45.8	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	37.1	µg/m <sup>3</sup>



Morello Gardens, Stevenage Road, Hitchin – NH106

<b>Step 1</b>	<b>How far from the KERB was your measurement made (in metres)?</b>	<b>1.4</b>	metres
<b>Step 2</b>	<b>How far from the KERB is your receptor (in metres)?</b>	<b>6.4</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>	<b>16.481</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>	<b>43.5</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>	<b>34.6</b>	µg/m <sup>3</sup>