

Examination of the North Hertfordshire Local Plan (2011-2031)

Examination hearing sessions

Matter 21 Statement of North Hertfordshire District Council on Air Quality

Purpose

1. This statement is prepared in response to the issues raised under Matter 17 in relation to Air Quality and includes the following:
 - An overview of air quality in the District of North Hertfordshire to support the Local Plan (Attached as Appendix A);
 - A general overview as to how the Local Plan seeks to address air quality issues, including proposed modification to Policy D4 as discussed under Matter 17 (Attached as Appendix B); and
 - A summary of how air quality has been addressed in the Sustainability Appraisal undertaken for the preparation of the Local Plan (LP4). (Attached as Appendix C).

Context

2. The submission Local Plan for North Hertfordshire covers the period to 2031 and contains land allocations for development along with detailed policies that will be used to determine planning applications.
3. The Plan contains a number of land allocations to meet the District's Objectively Assessed Needs (OAN) for housing and the need for employment provision, the majority of which is directed towards the towns and larger villages. The appropriateness of the Council's settlement hierarchy and spatial distribution for housing is discussed in the Council's statements on Matters 2 and 5. The NPPF (Paragraph 52) recognises that the supply of housing can sometimes be best achieved through planning for larger scale development, including extensions to existing towns and villages.
4. In broad terms, each allocation in the plan is justified by (see the Council's Statements on Matters 5, 7 and 9):
 - The need to seek to meet the Objectively Assessed Needs (OAN) for housing as far as is consistent with the policies set out in the NPPF in a district that is currently highly constrained by Green Belt and other considerations;
 - The 'presumption in favour of sustainable development' and plan-making requirements set out in Paragraph 14 of the NPPF. Potential adverse impacts and specific policies in the Framework which indicate development should be restricted have been properly considered. Mitigation measures have been identified to address key issues. A balanced planning judgement has been made on the benefits and impacts of each individual site.
 - The significant majority of the deliverable and developable sites identified in the SHLAA (HOU9) being required for allocation if the District is to be able to meet the OAN;
 - No preferable, deliverable alternative sites existing which would allow OAN to be met over the plan period in a substantively different way;

- There being no reasonable prospect of other authorities in shared housing market areas being in a position to assist under the Duty to Co-operate should North Hertfordshire have resolved not to meet its OAN in full.

Overview of Air Quality in the District

5. Concerns have been raised through the Matter 17 session that the quantum of new development proposed for the towns and larger villages could raise air pollution levels as a result of increased traffic. The likely future impacts of development upon the road network is therefore of particular importance in assessing potential future air quality issues.
6. Objectives set out in the Air Quality Regulations 2010 identify a level of pollutants that are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health. North Hertfordshire District Council monitors against these objectives and if exceeded, more detailed monitoring action would be required, which may highlight the need to take locally targeted action to improve the air quality. Air quality reports are published regularly on the Council website and have been included as Examination Documents for ease of reference.
7. The Report attached to this note at Appendix A provides a detailed technical overview of the local air quality in the District and how it is monitored. This covers the four towns of Baldock, Hitchin, Letchworth and Royston, the rural area to the south of the District covering the larger villages of Knebworth and Codicote and also the rural area east of Luton. It concludes that the only area of North Hertfordshire where an air quality objective has been exceeded, specifically the annual air quality objective for nitrogen dioxide, is in the south and south west of Hitchin where the A602 passes through the residential area of Hitchin. In these areas NHDC has taken the required action and declared two Air Quality Management Areas (AQMAs).

How the Local Plan seeks to address Air Quality Issues

8. The evidence base supporting the Local Plan includes transport modelling which assesses the likely impact of the proposed development sites in the plan on the road network in concert with anticipated background growth in traffic growth. This modelling does not identify any significant issues with the operation of the highway network which cannot be addressed through mitigation measures. The modelling undertaken in support of the plan is set out in more detail in the Local Plan Transport Technical Review paper (T13) and the NHDC Transport Strategy (ED14).
9. The NHDC Transport Strategy aims to reduce car traffic volumes below those informing the transport modelling and seeks to ensure that new developments have sustainable transport built in focusing on walking and cycling and other modes of sustainable transport. One of the principles of the Strategy is to seek to reduce carbon emissions and the impact of air quality management areas. The Strategy includes a number of policies that seek to deliver the principles of the Strategy. These are listed at Paragraph 5.14, p.51 of the Strategy and then discussed in more detail under Section 5 of ED14.

10. The Submission Local Plan contains a number of policy requirements aimed, either directly or indirectly, at ensuring air quality does not exceed relative objectives as a consequence of growth.
11. Policy D4 (LP1, p.105) sets out the Council's approach to air quality considerations. It states that development proposals will be required (as appropriate) to give consideration to air quality during both construction and final occupation and use; propose mitigation measures to minimise (the effects of) emissions; and carry out air pollution impact assessments. The Council's Matter 17 statement sets out the justification for this policy. Following discussion at the Matter 17 hearing session it was proposed to amend Policy D4 for effectiveness in regard to the refusal of planning permission on air quality grounds where an air quality assessment demonstrates the development unsuitable. This proposed modification is included in Appendix B attached to this statement.
12. A number of further policies or requirements are also of relevance to this issue, such as:
 - Policy SP1(LP1, p.31) on sustainable development requires the securing of any necessary mitigation measures that reduce the impact of development, including on climate change;
 - Policy SP6 (LP1, p.43) provides the District Council's overarching ambitions in relation to sustainable transport provision including the requirement for the early implementation of sustainable travel infrastructure on Strategic Housing Sites;
 - Policy SP7 (LP1, p. 44) establishes the approach to infrastructure provision and developer contributions;
 - Policies SP14 to SP19 (LP1, pp. 61,63, 65, 67, 69 and 71) for the strategic housing allocations sets out a range of site specific criteria in terms of access requirements, managing traffic impacts and providing for a range of sustainable transport measures;
 - Policy T1 (LP1, p.89) identifies that planning permission will be granted where development proposals are accompanied by appropriate transport assessments and the provision of public transport and safe, direct and convenient routes for pedestrians and cyclists; while
 - Policy HS1 (LP1, p.92) states that Local Housing Allocations as listed by parish and settlement in Chapter 13 of the Plan must address identified site-specific considerations, which for some allocations such as sites BA3 and BA4 in Baldock may include specific access requirements such as the provision of a southern link road for connecting Wallington Road to the B656 Royston Road.
13. Any future development proposals will need to demonstrate that the relevant policy requirements of the plan have been, or will be satisfied before permission can be granted.
14. Policies D4, SP6, SP7 and T1 have been the subject of discussion and justified in the Council's response to Matters 16 and 17. The site specific criteria for the Strategic and local housing allocation policies are addressed in the Council's statements for Matters 10 and 11.

How the Sustainability Appraisal assesses Air Quality

15. Air quality is one of the aspects of the environment which the SEA Regulations require a SEA to address. The Draft Sustainability appraisal of the Proposed Submission Local Plan (LP4)

includes relevant appraisal criteria to assess the options, policies and site allocations in the Plan. Significant criteria are also defined for assessing when the site is likely to have a significant effect on air quality and human health. How the effects of a housing site on an AQMA and the Local Plan on traffic congestion and associated air pollution have been assessed is further expanded upon in the paper attached at Appendix C.

Conclusions

16. The District Council has a statutory responsibility to review air quality and act where concentrations exceed national objectives.
17. This statement sets out the Council's approach to air quality management and provides a range of information relating to air quality across the District. It considers how predicted future traffic growth - as the main contributory factor to air quality in the district – has been assessed and the policy framework in the Submission Local Plan that will ensure these issues are appropriately addressed in the consideration of any future development proposals.

Appendices

Appendix A – An Overview of Local Air Quality in the District of North Hertfordshire: Statement to support the NHDC Local Plan 2011-2031: January 2018

Appendix B – Proposed Modification to Policy D4- Air Quality

Appendix C – Response by CAG Consultants on how air pollution is assessed in the Sustainability Appraisal: January 2018



An Overview of Local Air Quality in the District of North
Hertfordshire

Statement to Support the North Hertfordshire District
Council Local Plan 2011-2031

January 2018

DOCUMENT INFORMATION

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	v
1 INTRODUCTION	1
2 AIM AND OBJECTIVES	3
3 AIR QUALITY OBJECTIVES FOR ENGLAND	3
4 LOCAL AIR QUALITY MONITORING EQUIPMENT USED BY NHDC	6
4.1 OVERVIEW OF AIR QUALITY MONITORING EQUIPMENT	6
4.2 AUTOMATIC REAL-TIME ANALYSERS IN NORTH HERTFORDSHIRE	7
4.3 NON-AUTOMATIC ANALYSERS IN NORTH HERTFORDSHIRE.....	7
5 NHDC’S LOCAL AIR QUALITY MONITORING NETWORK	8
5.1 LOCAL AIR QUALITY MONITORING DATA IN THE HITCHIN AREA	8
5.2 LOCAL AIR QUALITY MONITORING DATA IN LETCHWORTH GARDEN CITY	18
5.3 LOCAL AIR QUALITY MONITORING DATA IN BALDOCK	21
5.4 LOCAL AIR QUALITY MONITORING DATA IN ROYSTON	25
5.5 LOCAL AIR QUALITY MONITORING DATA FOR SOUTHERN RURAL.....	28
5.6 LOCAL AIR QUALITY MONITORING DATA FOR EAST OF LUTON.....	31
6 SUMMARY	34
 APPENDICES	
Appendix 1: Air Quality (England) Regulations 2000	35
Appendix 2: Technical Information about the Real-time Analysers used in the NHDC Air Quality Monitoring Network	40
Appendix 3: Technical Information Diffusion Tubes used in the NHDC Air Quality Monitoring Network	41
Appendix 4: Methodology for Defra Modelled Background and Roadside Data	42
Appendix 5: Air Quality Monitoring Data from London-Luton Airport	43

FIGURES

Figure 1.1	North Hertfordshire District	1
Figure 1.2	Regional Areas of North Hertfordshire District for Local Plan Air Quality Purposes	2
Figure 5.1.1	NHDC Air Quality Monitoring Network (historical and current) in Hitchin	10
Figure 5.1.2	Boundary of Air Quality Management Area, Stevenage Road, Hitchin	15
Figure 5.1.3	Boundary of Air Quality Management Area, Payne's Park, Hitchin	16
Figure 5.2	NHDC Air Quality Monitoring Network (historical and current) in Letchworth Garden City	18
Figure 5.3	NHDC Air Quality Monitoring Network (historical and current) in Baldock	21
Figure 5.4	NHDC Air Quality Monitoring Network (historical and current) in Royston	25
Figure 5.5	NHDC Air Quality Monitoring Network (historical and current) for Southern Rural	28
Figure 5.6	NHDC Air Quality Monitoring Network (historical and current) for East of Luton	31

TABLES

Table 3.1	Air Quality Objectives for the Protection of Human Health included in Regulations for the purpose of Local Air Quality Management in England	4
Table 5.1.1	Results from the Active Air Quality Monitoring Network in Hitchin	11-12
Table 5.1.2	Nitrogen Dioxide Concentration at Residential Properties from Roadside Locations with Breaches of Air Quality Objectives	12
Table 5.1.3	Results from the Historical Air Quality Monitoring Network in Hitchin	13
Table 5.1.4	Results from the Defra Database of Modelled Air Quality for the Little Wymondley Area	13
Table 5.2.1	Results from the Historical Air Quality Monitoring Network in Letchworth Garden City	19
Table 5.3.1	Results from the Active Air Quality Monitoring Network in Baldock	22
Table 5.3.2	Results from the Historical Air Quality Monitoring Network in Baldock	22
Table 5.3.3	Results from the Defra Database of Modelled Air Quality for Baldock	23
Table 5.4.1	Results from the Active Air Quality Monitoring Network in Royston	26
Table 5.4.2	Results from the Historical Air Quality Monitoring Network in Royston	26
Table 5.5.1	Results from the Historical Air Quality Monitoring Network in Southern Rural	29

Table 5.5.2	Nitrogen Dioxide Concentration at Residential Properties from Roadside Locations with Breaches of Air Quality Objectives	29
Table 5.6.1	Results from the Historical Air Quality Monitoring Network for East of Luton	32
Table 5.6.2	Results from the Defra Database of Modelled Air Quality for East of Luton	32

Executive Summary

- i. 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.
- ii. Annually local authorities are required to report the findings of their review and assessment to the Department for Environment, Food and Rural Affairs (Defra). The NHDC reports on the local air quality for 2015, reported in the Air Quality Annual Status Report 2016 and for 2016, reported in the Air Quality Annual Status Report 2017, can be found at <https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-reports>
- iii. NHDC reports on the local air quality from 2008 onwards can be found at <http://www.airqualityengland.co.uk/local-authority/hnb-reports>
- iv. NHDC maintains a local air quality monitoring network that utilises a combination of automatic real-time analysers to monitor for particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide (NO₂) and a network of passive diffusion tubes to monitor for NO₂.
- v. The monitoring network is kept under review and at the end of each calendar year adjustments are made based on a combination of the findings of the monitoring network, local knowledge and any changes in local circumstances or new information coming to light about potential sources or receptors that might be considered to be at risk.
- vi. This year (2017) there are three automatic real-time analysers operating within the district, all of them located within the Stevenage Road, Hitchin, Air Quality Management Area (AQMA). A network of 42 diffusion tubes is present across the rest of the district.
- vii. This statement considers the data from NHDC's active monitoring network alongside historical monitoring results, the data available from the Defra Modelling via <https://uk-air.defra.gov.uk/data/gis-mapping> and the Air Quality Objectives (AQOs) for England.

- viii. The data are considered regionally within the district, with specific attention given to Baldock, Hitchin and the land to the east of Luton, as these were the regions of the district in which particular concern was raised during the Local Plan Examination of Matter 17 – Design (including air quality).
- ix. The data show that with the exception of the south and south west of Hitchin where the A602 passes through residential areas of Hitchin there is no evidence of the AQOs being exceeded. In these areas NHDC has taken the required action and declared two AQMA.
- x. NHDC will continue to meet its duty to review and assess air quality within its area and continue to report to Defra on the findings of this work.
- xi. NHDC will continue to work to implement the measures identified in its Action Plan to address the breach of the annual mean average AQO for NO₂ at its two AQMAs.
- xii. NHDC will continue to work with the Local Planning Authority both strategically to ensure the Local Plan is prepared with due regard to the issue of local air pollution and with the development control officers to ensure that local air pollution is addressed appropriately at the application and permission stages.

1 Introduction

1.1 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 Garden City, Baldock and Royston.

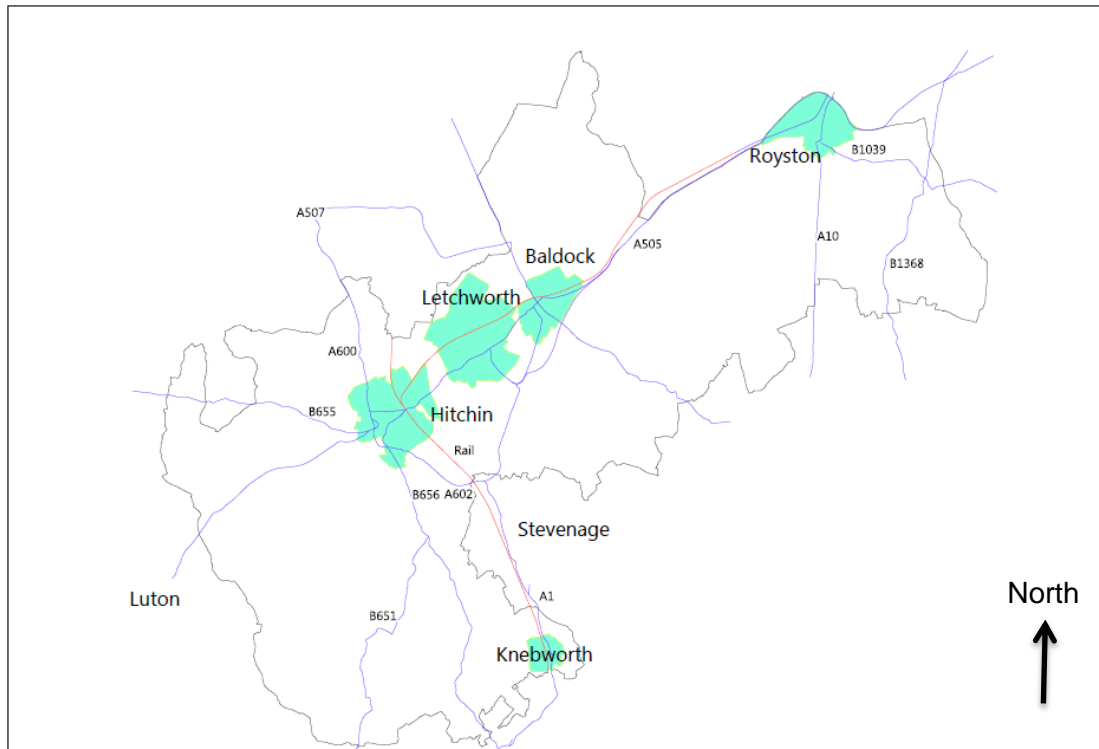


Figure 1.1: North Hertfordshire District

1.2 For ease of reference this statement considers the district of North Hertfordshire as six geographical areas. In addition to the four main centres of Hitchin (including Little Wymondley to the east), Letchworth Garden City, Baldock and Royston, two other areas will be considered (Figure 1.2). The area described as southern rural includes Knebworth and Codicote and the area described as east of Luton includes Breachwood Green and Cockernhoe. These two areas have been chosen because they are associated with other population centres and because the Local Plan proposes housing developments in these areas.

1.3 The significant source of local air pollution in the district is from the exhaust emissions of road vehicles and so this is the source that the local plan needs to be concerned about. The most significant types of local air pollutants emitted from vehicle exhausts are nitrogen dioxide (NO₂) and particulate matter (PM).

- 1.4 The locations at which these pollutants present the highest risk of harm to human health are where the traffic is in close proximity to residential areas. The highest levels of air pollutants are typically found in areas of higher traffic congestion and the greatest likelihood of public exposure is where homes are in close proximity to the roadside. The areas of most interest to NHDC, because of the potential for traffic congestion and proximity to residential properties, are the A602 and A505 through Hitchin and the B656 through Baldock.
- 1.5 Other pollution sources, including agriculture, business, industry and domestic premises will also contribute to the concentration of air pollutants, but on a much smaller scale. It is also the case that, where necessary, emissions to the atmosphere from industry are regulated by either the Local Authority or the Environment Agency pursuant to the Environmental Permitting Regulations 2010.

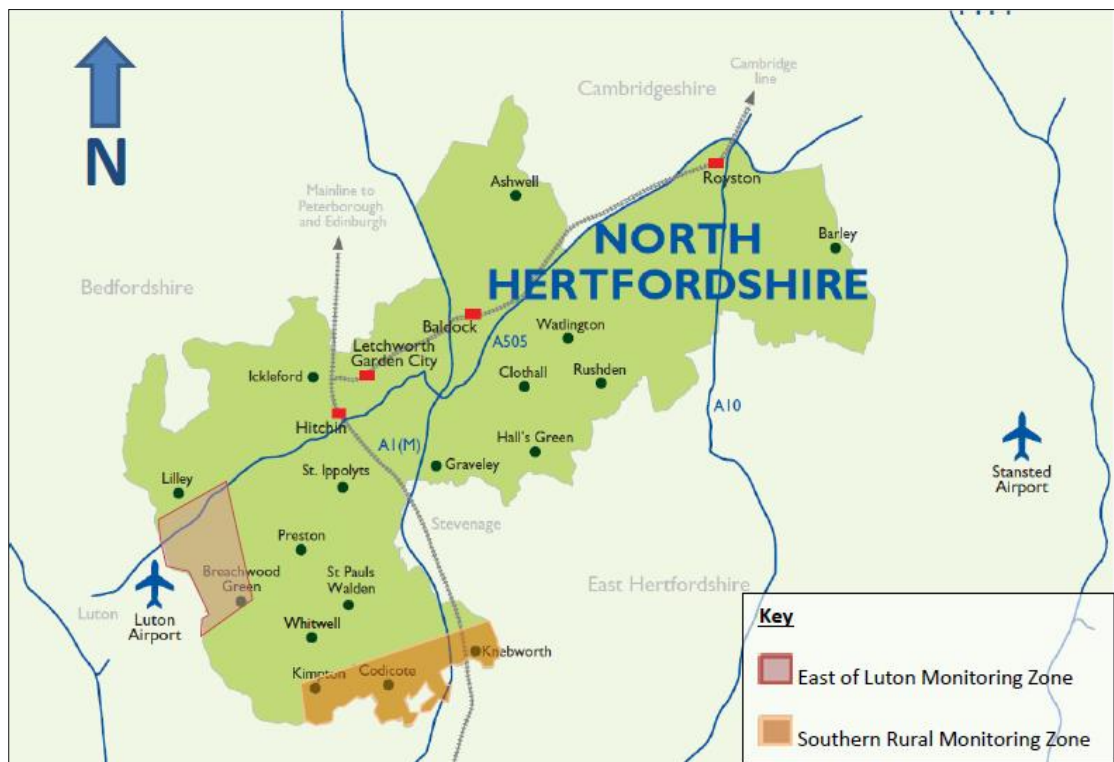


Figure 1.2 Regional Areas of North Hertfordshire District for Local Plan Air Quality Purposes

2 Aim and Objectives

2.1 This statement contains an overview of the local air quality in the district by considering the following:

- the Air Quality Objectives for England
- the type of equipment used by NHDC for its air quality monitoring network
- the geographical spread of the current and historical (back to and including 2000) local air quality monitoring network as managed by NHDC
- current and historical local air quality data as monitored by NHDC
- the local air quality data available from Defra via its national model (Appendix 1)
- how the local air quality data compares against the Air Quality Objectives for England

3 Air Quality Objectives for England

3.1 Air Quality Objectives are air quality thresholds that are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health. These thresholds are expressed in terms of a concentration value for an air pollutant and an averaging time over which it is to be measured. This means that an Air Quality Objective is exceeded when the threshold is exceeded at the end of the relevant averaging time, or when the number of days that the threshold is exceeded within the averaging period is greater than the number specified by the Air Quality Objective.

3.2 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), included within Appendix 1. These Air Quality Objectives underpin the duties of the local authorities detailed within Part IV of the Environment Act 1995. The Air Quality Objectives have originated from the Limit Values for air pollutants prescribed by the EU Ambient Air Quality Directive and fourth Daughter Directive.

3.3 Table 3.1 lists the Air Quality 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, mg/m³). Table 3.1 also includes the number of permitted exceedences in any year (where applicable). The air pollutants that NHDC monitor for are NO₂ and Particulate Matter (PM₁₀), which reflects the presence of a local source namely emissions from internal combustion engine road vehicles.

3.4 PM₁₀ is particulate matter with a diameter of 10 micro-meters (µm) or less.

Table 3.1 – Air Quality Objectives for the Protection of Human Health 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 µg/m ³	running annual mean	31.12.2003
	5.00 µg/m ³	annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m ³	running annual mean	31.12.2003
Carbon monoxide	10 mg/m ³	maximum daily running 8 hour mean	31.12.2003
Lead	0.5 µg/m ³	annual mean	31.12.2004
	0.25 µg/m ³	annual mean	31.12.2008
Nitrogen dioxide (NO ₂)	200 µg/m³, not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m³	annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 µg/m³, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m³	annual mean	31.12.2004
Sulphur dioxide	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

3.5 In considering Table 3.1 the following extract from Defra's Local Air Quality Management Technical Guidance (TG16) should be recognised. TG16 is guidance provided to local authorities by Defra to guide them as to how they should carry out their statutory duties.

- 3.6 Paragraph 1.12 of TG16 states that: *Reflecting feedback under the LAQM review process the UK Government has decided to retain benzene, 1,3-butadiene, carbon monoxide and lead in regulations for England. However, in recognition of the fact that all of the objectives for these pollutants have been met for several years and are well below limit values, local authorities in England do not have to report on these pollutants unless local circumstances indicate otherwise.*
- 3.7 Paragraph 1.12 means that there is recognised to be no likelihood of the relevant Air Quality Objectives being exceeded across the country; unless there are local and significant source(s) of those pollutants. There are no such pollutant sources in North Hertfordshire and so NHDC does not monitor for those pollutants.
- 3.8 The other air pollutant that NHDC does not monitor for, but for which there is an Air Quality Objective is sulphur dioxide. NHDC does not monitor for sulphur dioxide because of the absence of any significant local sources of sulphur dioxide emissions in the district. In 2015, 54% of sulphur dioxide emissions were from energy production and transformation and 21% from manufacturing industries (Defra National Statistics Release: Emissions of air pollutants in the UK, 1970 to 2015).
- 3.9 In addition to monitoring the local air quality for those pollutants with a local source for which there are Air Quality Objectives NHDC also monitors for particulate matter with a diameter of 2.5µm or less (PM_{2.5}). PM_{2.5} are essentially the same as PM₁₀ only smaller, however, the chemical properties of both will vary depending on the source of the particles. It is important to note that particulates are a classification of particles by size rather than by their chemical properties.
- 3.10 Paragraph 1.09 of TG16 does not require local authorities to monitor PM_{2.5} rather it states that *local authorities in England have a new flexible role in working towards reducing emissions and concentrations of particulates (PM_{2.5}).*
- 3.11 Although not required to do so, in recognition of the emerging public health concern about PM_{2.5} and the absence of any monitoring for PM_{2.5} in the district NHDC has worked with colleagues in Hertfordshire County Council Public

Health to fund a real-time analyser for the district. The analyser is located in the Stevenage Road area of Hitchin because it is an area known to be subject to elevated concentrations of NO₂ and so is likely to represent a worst case monitoring location within the district.

- 3.12 Although there is no Air Quality Objective for PM_{2.5}, there is the EU Target Value for PM_{2.5}, which has identified 25µg/m³ as an annual mean concentration. Also, the World Health Organisation has set an air quality guideline of 10µg/m³ as an annual mean for PM_{2.5}.
- 3.13 An Air Quality Objective has not been set for ozone because it is recognised to be a trans-boundary air pollutant and as such not a pollutant that local authorities cannot be expected to have any meaningful influence over.

4 Local Air Quality Monitoring Equipment Used by NHDC

4.1 Overview of Air Quality Monitoring Equipment

- 4.1 There are two broad categories of ambient air quality monitoring equipment that are available to local authorities and accepted by Defra as methods suitable to fulfil their statutory duty to review and assess air quality in their area.
- 4.2 Automatic (real-time analysers) monitoring continuously and actively samples the ambient air and so enables the continuous monitoring of air quality.
- 4.3 Non-automatic monitoring (passive diffusion tubes) relies on diffusion tubes being left exposed to the ambient air for a defined time period (typically one month) and enables the assessment of air quality over the exposure period.
- 4.4 Non-automatic monitoring is used to enable a geographically wide coverage of the district and to act as a method of screening out areas with no local air quality concerns and identifying areas of the district where local air quality is an issue and needs to be assessed in more detail.
- 4.5 Where problems are identified by the non-automatic monitoring network this can be used to justify the expenditure of time and money to establish and maintain real-time analysers at a location of concern. This is typically

necessary before a formal determination can be made as to whether an Air Quality Objective is exceeded at the location of a relevant receptor.

- 4.6 For Defra to accept a real-time analyser as suitable for use by local authorities in determination of a breach of an Air Quality Objective the analyser must achieve the MCERTS Performance Standards for Continuous Ambient Air Quality Monitoring Systems.
- 4.7 Furthermore, the data collected from the analyser must have gone through a quality assurance and quality control ratification process that meets the Automatic Urban and Rural Network (AURN) recommended procedures.
- 4.8 Integral to this process are regular (approximately monthly) maintenance and basic calibration visits, plus two full calibration visits that occur during a minor service and a subsequent major service visit.

4.2 Automatic Real-time Analysers in North Hertfordshire

- 4.9 Over the years NHDC has operated three different types of real-time analyser at various sites within the district. All three types of analyser are currently monitoring local air quality within the district and all three are currently located within the Air Quality Management Area at Stevenage Road, Hitchin.
- 4.10 The analysers are located at Stevenage Road, Hitchin because this is one of only two locations within North Hertfordshire where an Air Quality Objective is exceeded. Therefore, in addition to providing a worst case monitoring location for the district, the analysers provide a means of measuring whether any steps taken to reduce local air pollution in the area are having any success.
- 4.11 These analysers are described in more detail in Appendix 2 alongside a summary of the processes that are undertaken to ensure that the analysers and the data collected are compliant with the requirements set down by Defra.

4.3 Non-automatic Analysers in North Hertfordshire

- 4.12 Over the years NHDC has located diffusion tubes across the majority of the district in order to measure the concentration of NO₂ in the air. There are currently 42 diffusion tubes within the NHDC air quality monitoring network.

- 4.13 As previously mentioned diffusion tubes are a passive monitoring technique and are suited to provide an indicative screening level assessment of some air pollutants.
- 4.14 NHDC uses diffusion tubes to measure concentrations of NO₂ in the atmosphere.
- 4.15 Diffusion tubes are described in more detail in Appendix 4 alongside a summary of the processes that are undertaken to ensure that the tubes and the measurements made are compliant with the requirements set down by Defra.

5 NHDC's Local Air Quality Monitoring Network

- 5.1 This section considers the 'baseline' air quality data (with regards to the NHDC 2011-2031 Local Plan) that are available. It is provided in the context of the Air Quality Objectives for England and describes the extent of the current and historical air quality monitoring network across the six areas of the district (paragraph 1.2).
- 5.2 It will be apparent from the data that are presented that the NHDC air quality monitoring network is regularly adjusted to take account of a combination of factors, including the data from the monitoring network and changes in local circumstances or new information coming to light about potential sources or receptors that might be considered at risk.
- 5.3 It is these annual changes to the air quality monitoring network that are the reasons for the majority of the No Data (N.D) entries in the data tables.

5.1 Local Air Quality Monitoring Data in the Hitchin Area

- 5.4 Figure 5.1.1 shows the locations of the thirty-two diffusion tubes and three real-time analysers making up the air quality monitoring network in Hitchin. Also shown in Figure 5.1.1 are the locations of air quality monitoring points that were used in the past, but are no longer in use.
- 5.5 Within Table 5.1.1 the results from the currently active air quality monitoring points are displayed as mean annual averages for the pollutants. These are displayed alongside the relevant Air Quality Objective.

- 5.6 Table 5.1.2 shows the mean annual averages for those locations that breached the Air Quality Objective (only NO₂ breached) and displays them alongside the calculated concentration of NO₂ at the façade of the nearest residential property. This is the location at which a breach of the Air Quality Objective must finally be judged. The calculations were undertaken using the approved Defra methodology for adjusting NO₂ concentrations with distance from the kerb <https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>
- 5.7 Within Table 5.1.3 the results from the historical air quality monitoring points are displayed as mean annual averages for the pollutants and are displayed alongside the relevant Air Quality Objective.
- 5.8 Table 5.1.4 displays the Defra modelled data for the Little Wymondley area to the east of Hitchin and the west of the A1(M).

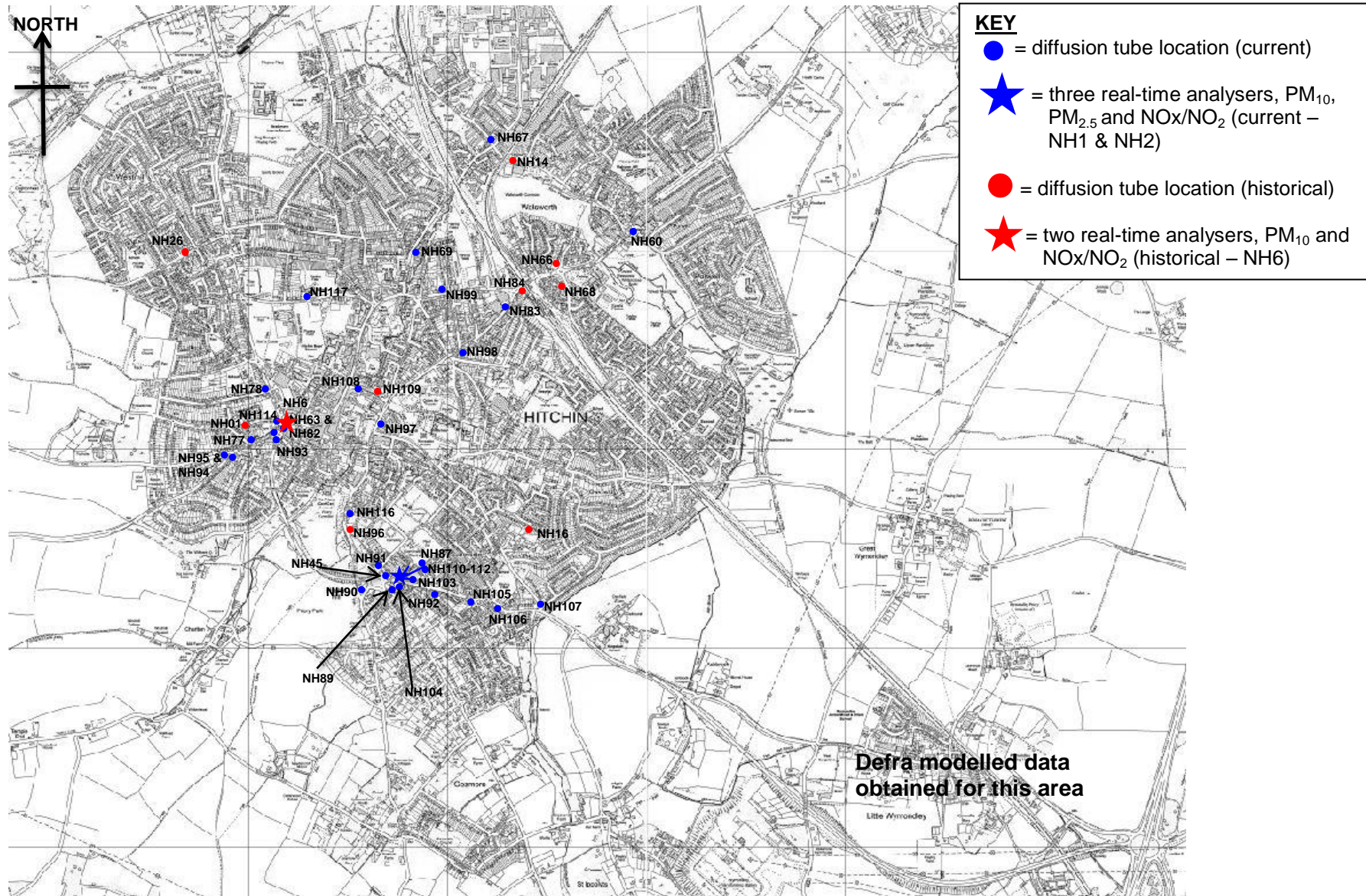


Figure 5.1.1 NHDC Air Quality Monitoring Network (**historical** and **current**) in Hitchin

Table 5.1.1 Results from the Active Air Quality Monitoring Network in Hitchin (Roadside sites unless stated)

Site ID	Site Location Analysers	Mean Annual Average Concentrations (µg/m ³) by year								Air Quality Objectives NO ₂		Air Quality Objectives PM		AQO Exceeded in 2016?
		2010	2011	2012	2013	2014	2015	2016	2017**	annual mean	1hr mean	Annual mean	24hr mean	
NH1	Stevenage Rd, NOx analyser	52.4 (7)	47.5 (3)	No Data	46 (1)	48 (1)	42 (0)	50 (10)	45 (4)	40	200 (>18 exceeds)	NA	NA	YES (annual)
NH2	Stevenage Rd PM10 analyser	No Data	No Data	No Data	No Data	No Data	20 (1)	20 (4)	19 (7)	NA	NA	40	50 (>35 exceeds)	NO
NH2	Stevenage Rd PM2.5 analyser	No Data	No Data	No Data	No Data	No Data	11	13	12	NA	NA	NA (25)	NA	NO
Site ID	Diffusion Tube Site	2010	2011	2012	2013	2014	2015	2016	2017**	annual mean	1hr mean	Annual mean	24hr mean	
NH45	Stevenage Rd A	49.1	48.9	46.3	42.0	46.6	42.3	45.2	44.1	40	NA	Not Applicable (NA)		YES
NH60	Willian Rd	37.9	30.7	30.0	31.5	29.0	29.5	29.9	30.4	40				NO
NH63	Library, Payne's Park	44.0	43.9	39.4	36.6	40.8	35.5	37.2	36.7	40				NO
NH67	Cadwell Court	33.4	33.5	29.8	28.9	26.6	25.3	27.2	29.4	40				NO
NH69	64 Grove Rd	38.3	37.7	31.9	32.2	28.8	26.9	28.3	28.5	40				NO
NH103	Westbrook Crt	N.D	N.D	43.6	41.7	40.8	39.1	39.8	39.8	40				NO
NH77	Upper Tilehouse St (traffic lights)	48.7	44.4	39.5	42.0	41.6	37.8	39.0	38.3	40				NO
NH78	Westhill	34.8	33.7	28.6	29.0	29.3	25.9	26.9	25.1	40				NO
NH82	Upper Tilehouse St (roundabout)	44.4	42.8	40.4	40.3	40.3	34.5	36.5	34.5	40				NO
NH83	Hitchin Station	N.D	35.5	32.7	32.9	34.1	30.4	32.4	32.2	40				NO
NH87	11 Stevenage Rd*	N.D	30.8	29.2	27.9	27.4	26.3	26.9	27.7	40				NO
NH89	London Rd	N.D	28.2	29.5	28.4	28.7	26.3	29.7	29.3	40				NO
NH90	Gosmore Rd	N.D	25.9	27.6	27.7	25.8	24.2	26.2	25.1	40				NO
NH91	St John's Rd	N.D	34.9	34.6	32.0	29.9	31.2	31.9	32.8	40				NO
NH92	Griffin Crt	N.D	53.5	51.1	47.6	48.1	45.8	46.1	44.6	40				YES
NH93	Park Way	N.D	53.1	54.8	52.1	54.1	45.5	49.0	46.9	40				YES
NH94	Offley Rd	N.D	35.6	36.5	36.0	36.3	33.8	34.1	35.3	40				NO
NH95	Pirton Rd	N.D	33.6	32.2	33.2	34.7	31.7	31.8	34.2	40				NO
NH97	Queen St	N.D	30.0	32.0	30.8	32.4	29.7	29.4	29.6	40				NO
NH98	Walsworth Rd	N.D	30.1	33.6	32.7	31.9	30.3	30.4	29.2	40				NO
NH99	Nightingale Rd	N.D	31.9	33.4	32.2	29.1	28.2	30.7	30.3	40	NO			

Table 5.1.1 Results from the Active Air Quality Monitoring Network in Hitchin (Roadside sites unless stated) Continued

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year								Air Quality Objectives NO ₂		Air Quality Objectives PM		AQO Exceeded in 2016?
		2010	2011	2012	2013	2014	2015	2016	2017**	annual mean	1hr mean	Annual mean	24hr mean	
NH108	Hermitage Rd	N.D	N.D	N.D	36.5	40.2	36.1	34.0	34.0	40	(NA)	Not Applicable (NA)	NO	
NH104	Dower Crt*	N.D	N.D	N.D	28.0	27.9	28.4	27.6	33.3	40			NO	
NH105	94-98 Stevenage Rd	N.D	N.D	45.8	47.0	51.4	46.2	46.0	45.1	40			YES	
NH106	Morello Gardens	N.D	N.D	43.5	44.6	42.7	36.1	37.7	37.2	40			NO	
NH107	Whitehill Rd	N.D	N.D	30.8	29.4	29.6	28.4	29.0	28.5	40			NO	
NH110	Stevenage Rd co-location 1	N.D	N.D	N.D	N.D	N.D	49.6	50.2	50.0	40			YES	
NH111	Stevenage Rd co-location 2	N.D	N.D	N.D	N.D	N.D	58.6	56.4	56.2	40			YES	
NH112	Stevenage Rd co-location 3	N.D	N.D	N.D	N.D	N.D	48.7	54.2	51.1	40			YES	
NH114	Old Park Road*	N.D	N.D	N.D	N.D	N.D	N.D	30.5	30.0	40			NO	
NH116	Horseshoe, Park St*	N.D	N.D	N.D	N.D	N.D	N.D	N.D	37.7	40			NA	
NH117	Fishponds Rd	N.D	N.D	N.D	N.D	N.D	N.D	N.D	29.0	40			NA	

* = diffusion tube attached to façade of residential property ** = diffusion tube data up to & including Nov. 2017 (not bias-adjusted) & analyser data for the whole of 2017 (not ratified)

Table 5.1.2 Nitrogen Dioxide Concentration at Residential Properties from Roadside Locations with Breaches of Air Quality Objectives

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year								Mean Annual Average Conc ($\mu\text{g}/\text{m}^3$) at nearest residence						AQO	AQO breach
		2010	2011	2012	2013	2014	2015	2016	2010	2011	2012	2013	2014	2015	2016		
NH1	Stevenage Rd, NOx analyser	52.4	47.5	N.D	46	48	42	50	37.4	34.5	N.D	33.6	34.8	31.2	36	40	NO
NH45	Stevenage Rd A	49.1	48.9	46.3	42.0	46.6	42.3	45.2	31.1	31.0	29.7	27.7	29.9	27.9	29.2	40	NO
NH92	Griffin Crt	N.D	53.5	51.1	47.6	48.1	45.8	46.1	N.D	45.2	43.3	40.6	41	39.2	39.4	40	NO
NH93	Park Way	N.D	53.1	54.8	52.1	54.1	45.5	49.0	N.D	48.0	49.5	47.2	48.9	41.5	44.5	40	YES
NH105	94-98 Stevenage Rd	N.D	N.D	45.8	47.0	51.4	46.2	46.0	N.D	N.D	40.0	41.0	44.6	40.4	40.2	40	YES
NH110	Stevenage Rd co-lo 1	N.D	N.D	N.D	N.D	N.D	49.6	50.2	N.D	N.D	N.D	N.D	N.D	35.7	36.1	40	NO
NH111	Stevenage Rd co-lo 2	N.D	N.D	N.D	N.D	N.D	58.6	56.4	N.D	N.D	N.D	N.D	N.D	41.2	39.8	40	NO
NH112	Stevenage Rd co-lo 3	N.D	N.D	N.D	N.D	N.D	48.7	54.2	N.D	N.D	N.D	N.D	N.D	35.2	38.5	40	NO

Table 5.1.3 Results from the Historical Air Quality Monitoring Network in Hitchin (Roadside sites unless stated)

Site ID	Site Location of analysers	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year							Air Quality Objectives NO ₂		Air Quality Objectives PM		AQO Exceeded in period?
		2009	2010	2011	2012	2013	2014	2015	annual mean	1hr mean	Annual mean	24hr mean	
NH6	Payne's Park, NOx analyser	No Data	No Data	35 (0)	36 (0)	35 (0)	No Data	No Data	40	200 (>18 exceeds)	NA	NA	NO
NH6	Payne's Park PM10 analyser	No Data	22 (0)	26 (19)	24 (13)	23 (6)	No Data	No Data	NA	NA	40	50 (>35 exceeds)	NO
Site ID	Diffusion Tube Site	2009	2010	2011	2012	2013	2014	2015	annual mean	1hr mean	Annual mean	24hr mean	AQO Exceeded in period?
NH96	Park St	N.D	N.D	31.7	32.1	34.5	32.6	29.2	40	N.A	Not Applicable (NA)		NO
NH109	26 Hermitage Rd	N.D	N.D	N.D	N.D	28.0	27.9	28.4	40				NO
NH84	Cambridge Rd	N.D	39.9	36.8	35.2	37.3	36.1	32.9	40				NO
Site ID	Diffusion Tube Site	2004	2005	2006	2007	2008	2009	2010	annual mean	1hr mean	Annual mean	24hr mean	AQO Exceeded in period?
NH66	Meadowbank	N.D	N.D	N.D	N.D	N.D	28	30.8	40	N.A	Not Applicable		NO
NH68	Byron Close	N.D	N.D	N.D	N.D	37	26	29.1	40				NO
Site ID	Diffusion Tube Site	2000	2001	2002	2003	2004	2005	2006	annual mean	1hr mean	Annual mean	24hr mean	AQO Exceeded in period?
NH1	Winston Close	26.7	26.2	25.4	24.6	23.9	23.3	N.D	40	NA	Not Applicable		NO
NH14	Woolgrove Rd	26.4	23.9	32.3	31.3	30.4	29.6	N.D	40				NO
NH26	Redhill Rd	N.D	N.D	N.D	N.D	17.3	20.8	18.5	40				NO

Table 5.1.4 Results from the Defra Database of Modelled Air Quality for the Little Wymondley Area

Pollutant	Annual Air Quality Objective ($\mu\text{g}/\text{m}^3$)	Shorter-term Air Quality Objectives ($\mu\text{g}/\text{m}^3$ unless stated)	Background Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	Roadside Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	AQO Exceeded?
Nitrogen Dioxide	40	not applicable	10-20	No data	NO
Particulate Matter (PM ₁₀)	40	not applicable	13-17	No data	NO
Particulate Matter (PM _{2.5})	25	not applicable	5-10	No data	NO
Ozone	not applicable	120 (>35 days exceeded)	≤ 5 days	No data	NO
Carbon Monoxide	not applicable	10 mg/m³	1.1–1.6 mg/m ³	No data	NO
Sulphur Dioxide	not applicable	125 (>3 days exceeded)	< 2	No data	NO
Benzene	5	not applicable	< 0.5	No data	NO

- 5.9 Table 5.1.1 shows that the Air Quality Objectives for PM₁₀ and the equivalent for PM_{2.5} are not being exceeded and it can therefore be concluded that there are no issues in respect of particulate matter in Hitchin.
- 5.10 The area of concern is NO₂. Table 5.1.1 also shows that at eight roadside monitoring locations the annual mean average Air Quality Objective for NO₂ were exceeded in 2016. Seven of these locations are on Stevenage Road, Hitchin, within the Stevenage Road Air Quality Management Area (AQMA) (Figure 5.1.2). The other location is on Park Way, within the Payne's Park AQMA (Figure 5.1.3).
- 5.11 Where an Air Quality Objective is exceeded at a relevant receptor, typically the façade of a residential building, the local authority has a statutory duty to declare an AQMA.
- 5.12 Once an AQMA is declared the local authority has a statutory duty to prepare an Air Quality Action Plan. This Action Plan must assess in more detail the source(s) of the locally emitted air pollutant that has caused the breach of the Air Quality Objective and identify measures that can be taken to reduce those emissions. The aim is to lower the concentrations of the air pollutant to a level below the Air Quality Objective.
- 5.13 NHDC has an Action Plan in place for the Stevenage Road AQMA (<https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire>) and is finalising a new Action Plan (<https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-action-plan-consultation>) with the aim of jointly addressing the Stevenage Road AQMA and the Payne's Park AQMA.
- 5.14 The Action Plans identify broad categories of actions that are available to NHDC to address local air quality problems. Within each category NHDC has identified measures that are considered of most relevance to the nature of the air pollution problem specific to the AQMAs.
- 5.15 As indicated in 5.11 a breach of an Air Quality Objective is only of relevance where there is a relevant receptor. For the annual mean average Air Quality Objective this is a residential property. Therefore, Table 5.1.2 is included to demonstrate how the concentration of NO₂ reduces with distance from the

roadside monitoring location to the façade of the nearest property. This reduces to two the number of locations where the Air Quality Objective is breached (NH93 Park Way and NH105 Stevenage Road).

5.16 Table 5.1.3 shows the results from the historical Hitchin monitoring locations that are no longer active. It can be seen that at none of those locations were the concentrations measured exceeding the relevant Air Quality Objective.

5.17 Table 5.1.4 shows the data available from Defra for the Little Wymondley area, an area of the district where NHDC has no air quality monitoring equipment. The data demonstrate that there is no expectation of any Air Quality Objectives being exceeded.

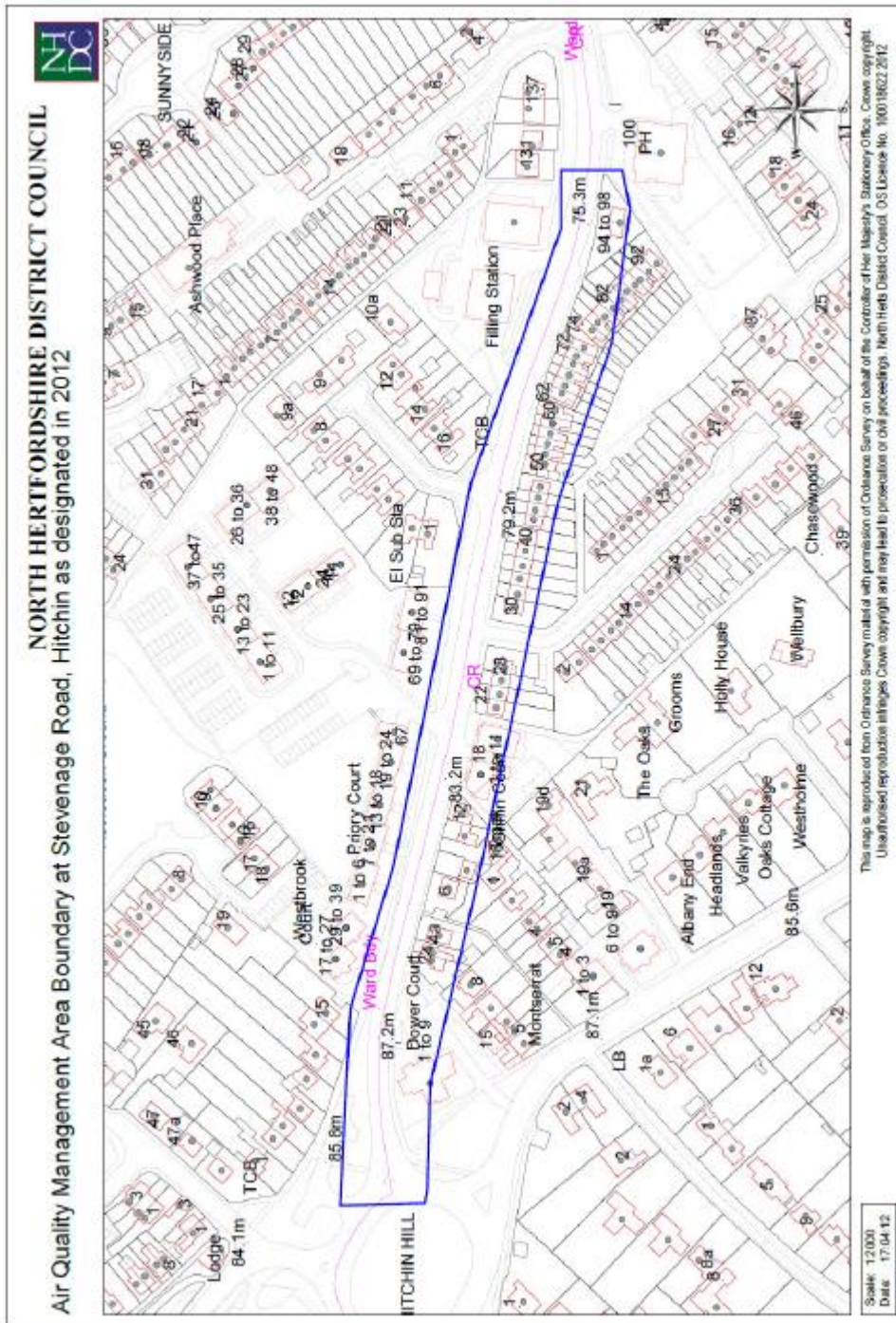


Figure 5.1.2 Boundary of Air Quality Management Area, Stevenage Road, Hitchin



Figure 5.1.3 Boundary of Air Quality Management Area, Payne's Park, Hitchin

5.2 Local Air Quality Monitoring Data in Letchworth Garden City

5.16 There is currently no monitoring of air quality within Letchworth Garden City. Historically there were seven monitoring locations, all of which were diffusion tubes. The locations of air quality monitoring points are shown in Figure 5.2.

5.17 Within Table 5.2.1 the results from the historical air quality monitoring locations are displayed as mean annual averages for NO₂ and are displayed alongside the relevant Air Quality Objective.

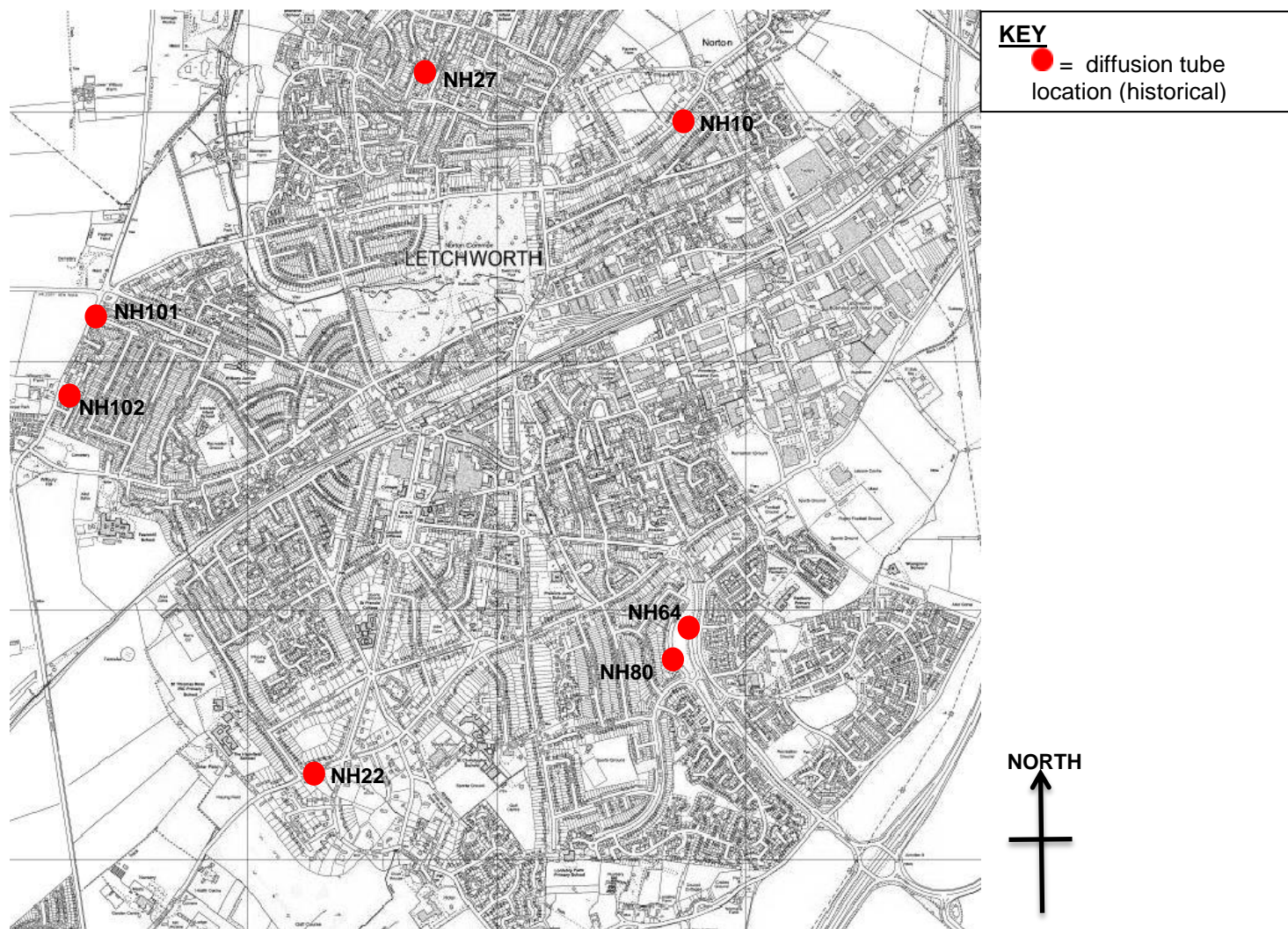


Figure 5.2 NHDC Air Quality Monitoring Network (**historical** and **current**) in Letchworth Garden City

Table 5.2.1 Results from the Historical Air Quality Monitoring Network in Letchworth Garden City

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year													Air Quality Objectives NO_2 annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceeded in period?
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		
NH10	Norton Rd	33.2	34.8	32.9	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	40	NO
NH22	Baldock Rd	N.D	N.D	N.D	N.D	N.D	31.5	28.5	21.0	27	N.D	N.D	N.D	N.D	40	NO
NH27	Caslon Way	N.D	N.D	N.D	N.D	N.D	23.1	16.9	N.D	N.D	N.D	N.D	N.D	40	NO	
NH64	Letchworth Gate	25.8	32.5	34.0	N.D	N.D	39.3	38.3	37.4	41	N.D	40.4	N.D	40	YES	
NH80	Waysbrook	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	23.5	N.D	N.D	40	NO
NH101	Edlefield	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	28.7	26.5	40	NO
NH102	Romany	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	28.5	20.6	40	NO

5.17 The data from Table 5.2.1 shows that with the exception of NH64 at Letchworth Gate there were no monitoring locations where the mean average annual Air Quality Objective was exceeded. NH64 was located on the side of the A6141 (Letchworth Gate) a busy road providing access to and crossing over the A1(M) at junction 9. However, the nearest receptor to this location is housing on Waysbrook, 74m to the west and diffusion tube NH80 was located only 15m away from the nearest house on Waysbrook. This diffusion tube location measured an annual mean of $23.5\mu\text{g}/\text{m}^3$, which indicated a substantial reduction in NO_2 with distance from the A6141. Therefore, there was judged to be no likelihood of relevant public exposure above the relevant AQO at those Letchworth locations and monitoring was discontinued.

5.3 Local Air Quality Monitoring Data in Baldock

- 5.18 Figure 5.3 shows the locations of the five diffusion tubes making up the air quality monitoring network in Baldock. Also shown in Figure 5.3 are the locations of air quality monitoring points that were used in the past, but are no longer in use.
- 5.19 Within Table 5.3.1 the results from the currently active air quality monitoring points are displayed as mean annual averages for the pollutants for each year. These are displayed alongside the relevant Air Quality Objective.
- 5.20 Within Table 5.3.2 the results from the historical air quality monitoring points are displayed as mean annual averages for the pollutants and are displayed alongside the relevant Air Quality Objective.
- 5.21 Table 5.3.3 displays the Defra modelled data for the southern part of Baldock.
- 5.22 The data displayed demonstrate that there have been intermittent exceedances of the annual mean average Air Quality Objective at a combination of roadside and kerbside monitoring locations. However, such exceedances have not been consistent and none were measured in 2015 and 2016. Furthermore, it should be noted that because the monitoring locations with exceedances are roadside or kerbside locations the results are not directly comparable to the Air Quality Objective.

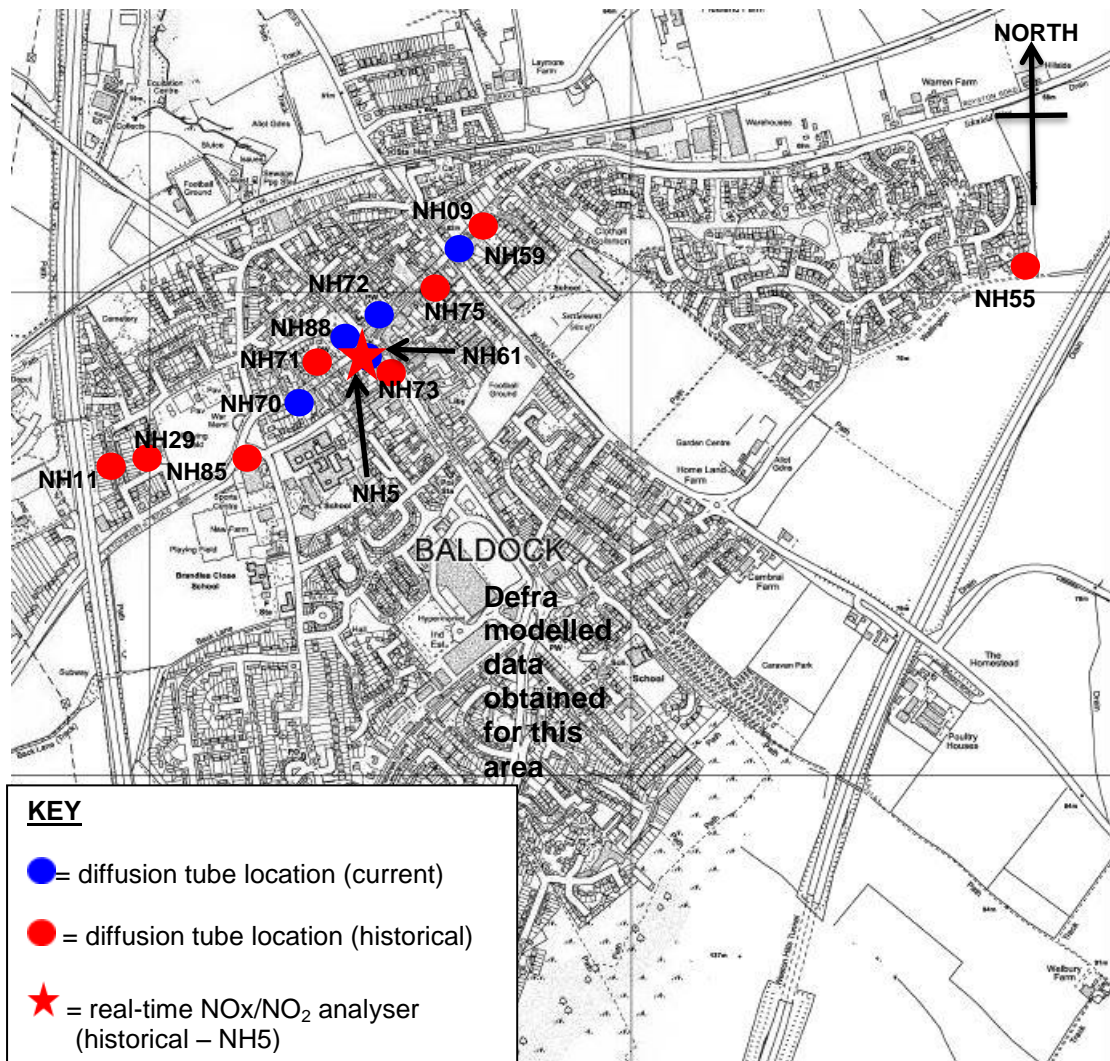


Figure 5.3 NHDC Air Quality Monitoring Network (historical and current) in Baldock

Table 5.3.1 Results from the Current Air Quality Monitoring Network in Baldock

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year																Air Quality Objectives NO ₂ annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceed -ed
		2000	2001	2002	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017**		
NH59	Clothall Rd	37.2	37.1	41.3	23.0	28	24	N.D	N.D	32.2	31.7	31.1	30.6	29.1	26.4	27.8	27.1	40	NO
NH61	Hitchin St (Town Hall)	N.D	N.D	N.D	N.D	51	59	N.D	50	43.6	36.1	36.3	35.1	33.5	29.2	30.4	28.7	40	NO
NH70	Hitchin St	N.D	N.D	N.D	N.D	N.D	N.D	N.D	30	30.9	30.0	28.2	27.4	28.2	25.3	27.3	27.0	40	NO
NH72	Whitehorse St	N.D	N.D	N.D	N.D	N.D	N.D	N.D	36	42.1	38.2	36.9	31.8	32.7	30.4	32.1	31.8	40	NO
NH88	Church St*	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	47.7	44.4	38.4	42.4	39.0	39.9	41.2	40	NO

* = located within 0.5m of the kerb

** = data up to & including November 2017 & not bias adjusted

2003 & 2005 = no monitoring data available

Table 5.3.2 Results from the Historical Air Quality Monitoring Network in Baldock

Site ID	Site Location of analysers	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year												Air Quality Objectives NO ₂		AQO Exceeded in period?		
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	annual mean	1hr mean				
NH5	Hitchin St, NOx analyser	No Data	No Data	No Data	No Data	No Data	32 (0)	32 (0)	39 (1)	No Data	No Data	No Data	40	200 (>18 exceeds)	NO			
		Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year														AQO Exceeded in period?		
Site ID	Diffusion Tube Site	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	annual mean	N.A		AQO Exceeded in period?		
NH09	Grosvenor Rd	35.9	26.2	38.8	N.D	N.D	29.1	26	23	26	N.D	29.4	40			NO		
NH73	High St	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	31	29.1	40			NO		
NH75	Whitehorse St (church)	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	31	34.7	40			NO		
NH71	Hitchin St (nursery)	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	30	30.7	40			NO		
		Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year																AQO Exceeded in period?
Site ID	Diffusion Tube Site	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	annual mean					AQO Exceeded in period?
NH29	Hopewell Rd (gardens)	36.5	28.3	37.1	N.D	24.0	28.8	22	30	36	N.D	N.D	40					NO
NH11	Hopewell Rd	38.8	34.8	33.0	N.D	22.9	28.0	N.D	N.D	N.D	N.D	N.D	40			NO		
NH55	Merchants Walk	N.D	N.D	N.D	N.D	N.D	19.2	N.D	N.D	N.D	N.D	N.D	40			NO		
NH85	Weston Rd	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	33.9	N.D	N.D	40			NO		

Table 5.3.3 Results from the Defra Database of Modelled Air Quality for Baldock

Pollutant	Annual Air Quality Objective ($\mu\text{g}/\text{m}^3$)	Shorter-term Air Quality Objectives ($\mu\text{g}/\text{m}^3$ unless stated)	Background Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	Roadside Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	AQO Exceeded?
Nitrogen Dioxide	40	not applicable	10-20	10-20	NO
Particulate Matter (PM_{10})	40	not applicable	13-17	13-17	NO
Particulate Matter ($\text{PM}_{2.5}$)	25	not applicable	5-10	10-12.5	NO
Ozone	not applicable	120 (>35 days exceeded)	< 5 days	No data	NO
Carbon Monoxide	not applicable	10 mg/m^3	0.2-0.4 mg/m^3	0.2-0.3 mg/m^3	NO
Sulphur Dioxide	not applicable	125 (>3 days exceeded)	2-4	No data	NO
Benzene	5	not applicable	<0.5	<0.5	NO

5.4 Local Air Quality Monitoring Data in Royston

- 5.23 Figure 5.4 shows the locations of the two diffusion tubes making up the air quality monitoring network in Royston. Also shown in Figure 5.4 are the locations of air quality monitoring points that were used in the past, but are no longer in use.
- 5.24 Within Table 5.4.1 the results from the currently active air quality monitoring points are displayed as mean annual averages for the pollutants for each year. These are displayed alongside the relevant Air Quality Objective.
- 5.25 Within Table 5.4.2 the results from the historical air quality monitoring points are displayed as mean annual averages for the pollutants and are displayed alongside the relevant Air Quality Objective.
- 5.26 The data contained within the Tables show that the air quality in Royston does not exceed the relevant Air Quality Objective.

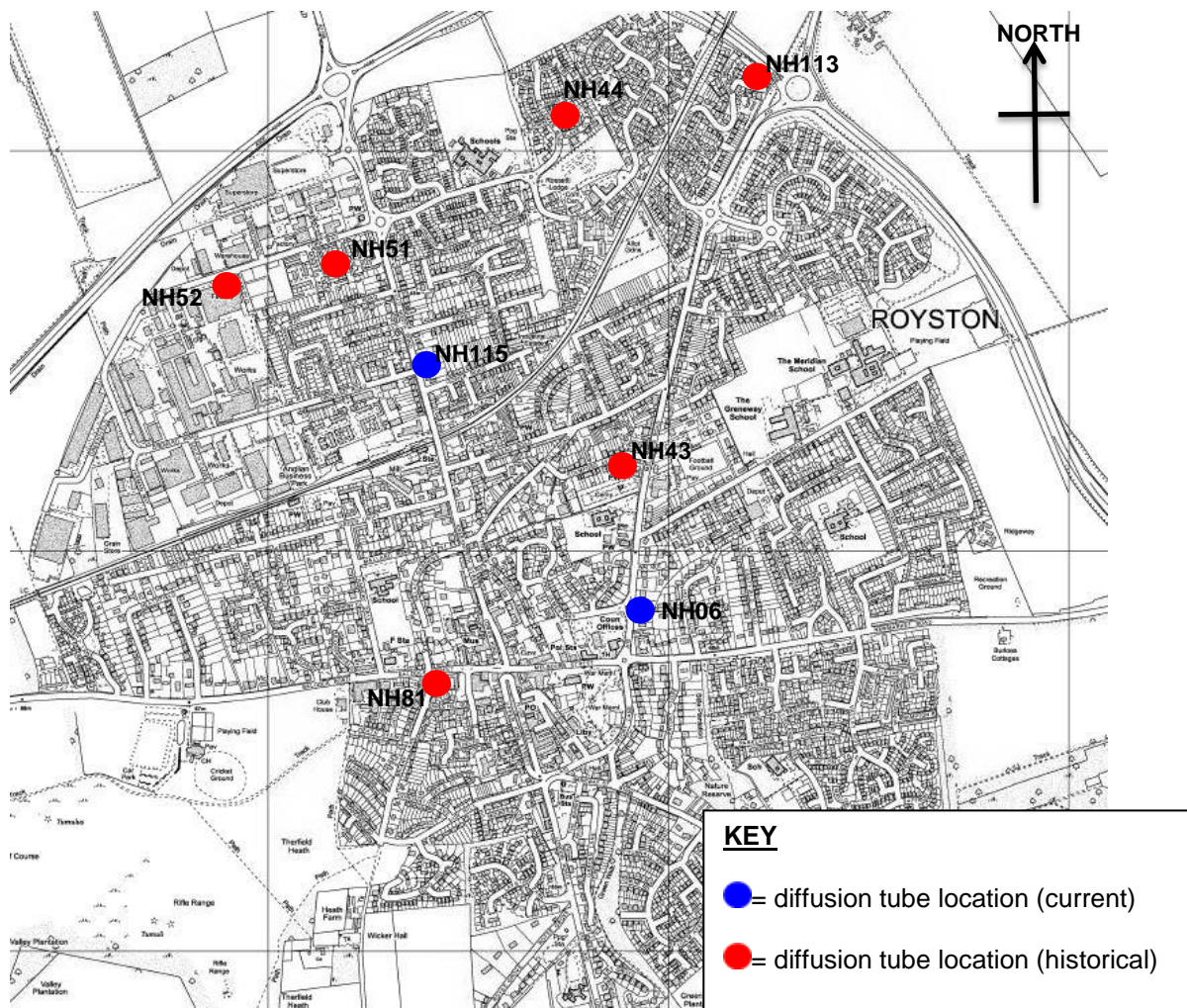


Figure 5.4 NHDC Air Quality Monitoring Network (**historical** and **current**) in Royston

Table 5.4.1 Results from the Current Air Quality Monitoring Network in Royston

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year													Air Quality Objectives NO ₂ annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceeded in period?
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
NH06	Melbourn Rd (Town Hall)	39.2	28.7	N.D	47	N.D	N.D	33.8	27.9	29.7	29.3	26.8	25.9	27.2*	40	NO
NH115	Old North Rd	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	27.9*	40	NA

* = data up to and including November 2017 and not bias adjusted

Table 5.4.2 Results from the Historical Air Quality Monitoring Network in Royston

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year													Air Quality Objectives NO ₂ annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceeded in period?
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 - 2015	2016		
NH43	Stamford Ave	27.3	23.9	24.6	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	40	NO
NH44	Masefield Wy	34.2	24.4	24.8	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	40	NO
NH51	Minster Rd	N.D	N.D	N.D	N.D	26.6	29.1	27.5	24.4	29	N.D	N.D	N.D	N.D	40	NO
NH52	York Way	N.D	N.D	N.D	N.D	19.9	26.1	22.4	20.0	N.D	N.D	N.D	N.D	N.D	40	NO
NH81	Baldock St	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	28.5	N.D	N.D	40	NO
NH113	Browning Cls	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	18.6	40	NO

5.5 Local Air Quality Monitoring Data for Southern Rural

- 5.27 Figure 5.5 shows the location of the one diffusion tube making up the air quality monitoring network in the southern rural part of the district. Also shown in Figure 5.5 are the locations of air quality monitoring points that were used in the past, but are no longer in use.
- 5.28 The diffusion tube that is currently in place in this part of the district was established in January 2017 at a location outside of 125 High Street, Codicote. The un-bias adjusted mean average for the eleven months of monitoring for which data is currently available is $26.9\mu\text{g}/\text{m}^3$.
- 5.29 Within Table 5.5.1 the results from the historical air quality monitoring points are displayed as mean annual averages for the pollutants and are displayed alongside the relevant Air Quality Objective.
- 5.30 Table 5.5.1 shows that there was a breach of the Air Quality Objective at NH34 (Gwynfa Close), however, it should be recognised that a breach of an Air Quality Objective is only of relevance where there is a relevant receptor. For the annual mean average Air Quality Objective this is a residential property. Therefore, Table 5.5.2 is included to demonstrate how the concentration of NO_2 reduces with distance from the roadside monitoring location to the façade of the nearest property. This demonstrates that there is no relevant breach of the Air Quality Objective.
- 5.31 The data detailed above and contained within Tables 5.5.1 – 5.5.2 shows that the air quality in this part of the district does not exceed the relevant Air Quality Objective.

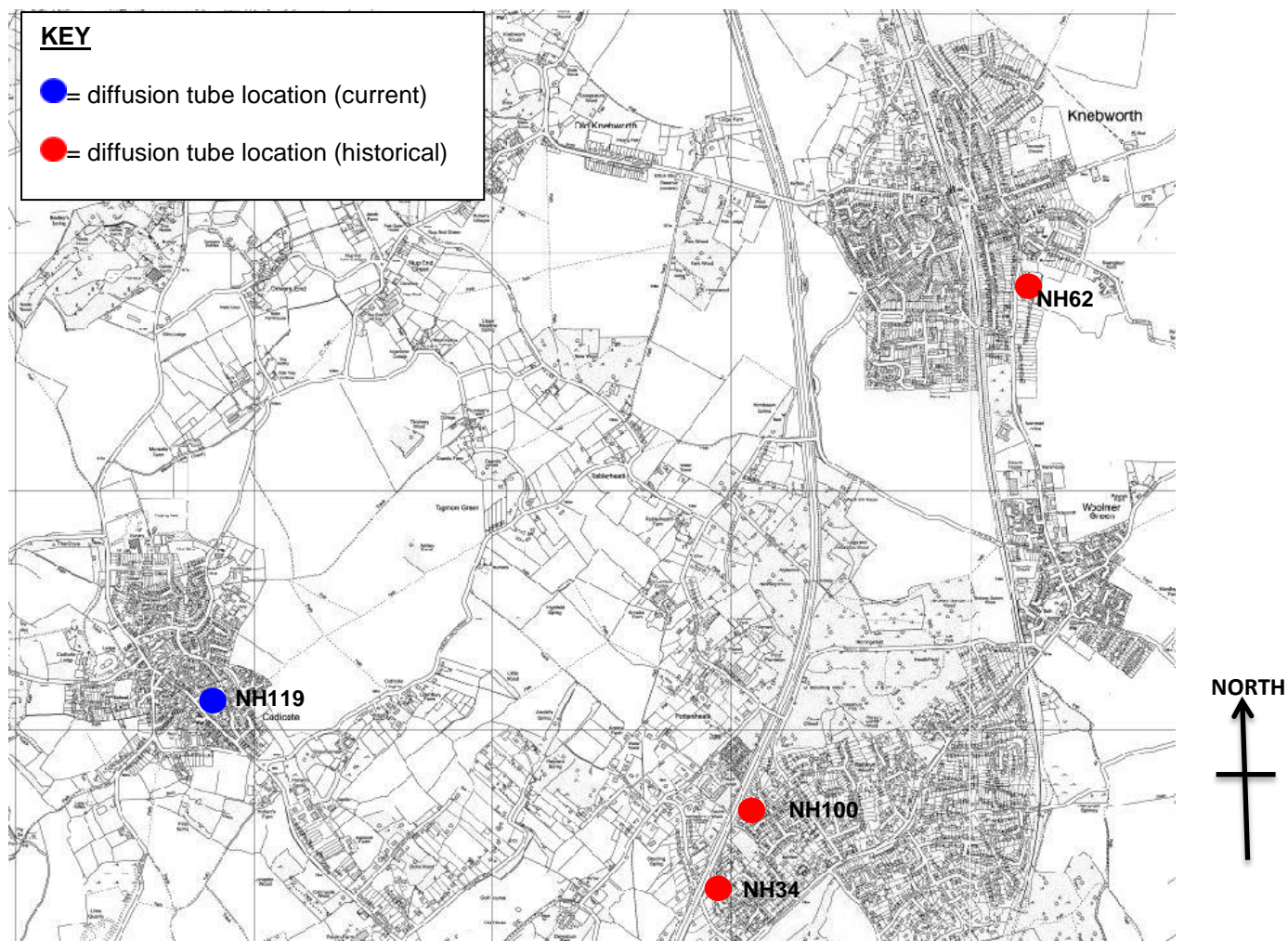


Figure 5.5 NHDC Air Quality Monitoring Network (**historical** and **current**) in the Southern Rural part of the District

Table 5.5.1 Results from the Historical Air Quality Monitoring Network in the Southern Rural part of the District

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year												Air Quality Objectives NO_2 annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceeded in period?
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
NH100	The Brambles	N.D	N.D	N.D	N.D	N.D	N.D	N.D	29.6	32.7	28.0	27.5	28.1	40	NO
Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year												Air Quality Objectives NO_2 annual mean ($\mu\text{g}/\text{m}^3$)	AQO Exceeded in period?
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011		
NH34	Gwynfa Cls	37.2	33.8	34.8	N.D	N.D	36.8	31	34	41	N.D	41.2	N.D	40	YES
NH62	Haygarth	N.D	N.D	N.D	N.D	N.D	45.0	40	27	28	N.D	25.5	N.D	40	NO

Table 5.5.2 Nitrogen Dioxide Concentration at Residential Properties from Roadside Locations with Breaches of Air Quality Objectives

Site ID	Diffusion Tube Site	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year				Mean Annual Average Conc ($\mu\text{g}/\text{m}^3$) at nearest residence				AQO	AQO breached
		2007	2008	2009	2010	2007	2008	2009	2010		
NH34	Gwynfa Cls	34	41	N.D	41.2	not needed	19.0	N.D	19.1	40	NO

5.6 Local Air Quality Monitoring Data for East of Luton

- 5.32 There is currently no monitoring of air quality in the area of the district identified as the East of Luton. Historically there were eight monitoring locations, of which seven were diffusion tubes and one was a site comprising two real-time analysers. The locations of the air quality monitoring points are shown in Figure 5.6.
- 5.33 The monitoring points were located immediately to the east of the Luton Airport runway so as to represent a worst case air quality location with regards to the impact of aircraft emissions.
- 5.34 Within Table 5.6.1 the results from the historical air quality monitoring locations are displayed alongside the relevant Air Quality Objectives.
- 5.35 Table 5.6.2 contains the Defra modelled data for the East of Luton area.
- 5.36 The data from the 'worst case' monitoring locations contained within the Tables show that the air quality to the East of Luton does not breach the relevant Air Quality Objective. Therefore, because of the absence of any other potentially significant sources of nitrogen dioxide and particulate matter in the area it was judged to be unnecessary to monitor for local air pollutants elsewhere in the area east of Luton.
- 5.37 Appendix 5 contains the air quality monitoring data that is collected by London-Luton Airport within the boundary of its airport.
- 5.38 The data show that the Air Quality Objectives for PM₁₀ particulate matter have not been exceeded from the first year of monitoring (2004 first full year of data) to date.
- 5.39 The data show that the annual mean average Air Quality Objective for nitrogen dioxide was not exceeded at a relevant receptor in 2016. This is the only recent data published by Luton Borough Council. The only two marginal exceedances were measured at an airside location and a kerbside location within the airport boundary and so a relevant receptor is not exposed nor is there a likelihood of exposure because of the absence of housing or an equivalent receptor within the airport boundary.

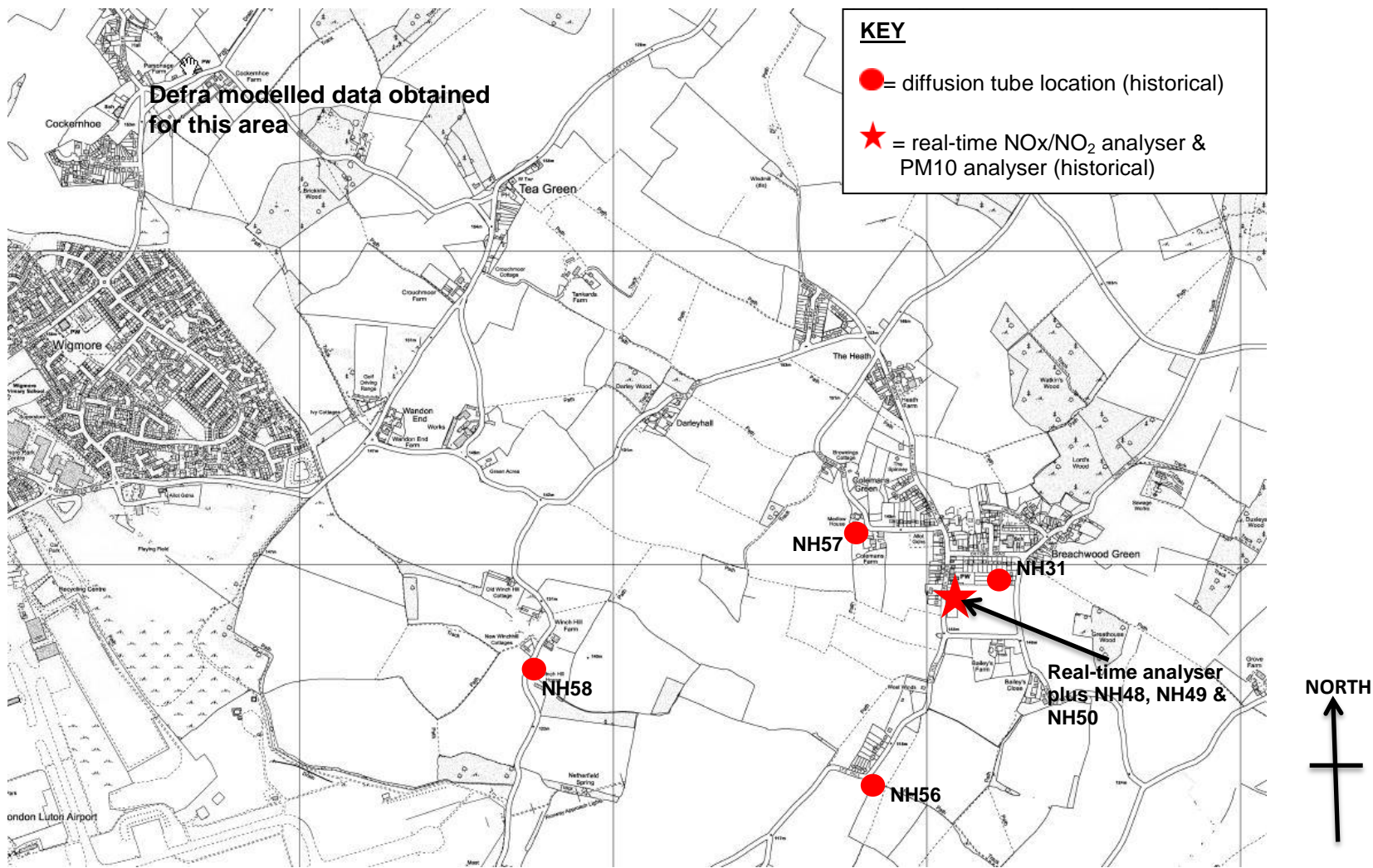


Figure 5.6 NHDC Air Quality Monitoring Network (historical and current) to the East of Luton

Table 5.6.1 Results from the Historical Air Quality Monitoring Network for the East of Luton

Site ID	Site Location of analysers	Mean Annual Average Concentrations ($\mu\text{g}/\text{m}^3$) by year									Air Quality Objectives NO_2		Air Quality Objectives PM		AQO Exceeded in period?
		2000	2001	2002	2003	2004	2005	2006	2007	2008	Annual mean	1hr mean	Annual mean	24hr mean	
NHBG	Breachwood Grn NOx analyser	N.D	N.D	N.D	18 (0)	18.5 (0)	17.7 (0)	16.5 (0)	18 (0)	19 (0)	40	200 (>18 exceeds)	NA	NA	NO
NHBG	Breachwood Grn PM10 analyser	N.D	N.D	N.D	20 (7)	18 (1)	19 (0)	20 (4)	19 (5)	17 (1)	NA	NA	40	50 (>35 exceeds)	NO
NH31	Breachwood Grn – playing fields	28.5	26.4	46.2	20.8	20.8	18.6	20	15	20	40	N.A	Not Applicable (NA)	NO	
NH48	Breachwood Grn Analyser Co-Lo 1	N.D	N.D	N.D	18.2	18.2	14.3	19	17	17	40			NO	
NH49	Breachwood Grn Analyser Co-Lo 2	N.D	N.D	N.D	17.6	17.6	13.9	N.D	11	18	40			NO	
NH50	Breachwood Grn Analyser Co-Lo 3	N.D	N.D	N.D	13.4	13.4	20.6	N.D	N.D	19	40			NO	
NH56	Lye Hill	N.D	N.D	N.D	N.D	N.D	19.9	18	18	16	40			NO	
NH57	Medlow Hse	N.D	N.D	N.D	N.D	N.D	22.7	18	18	24	40			NO	
NH58	Darley Rd	N.D	N.D	N.D	N.D	N.D	23.8	N.D	N.D	N.D	40			NO	

Table 5.6.2 Results from the Defra Database of Modelled Air Quality for East of Luton

Pollutant	Annual Air Quality Objective ($\mu\text{g}/\text{m}^3$)	Shorter-term Air Quality Objectives ($\mu\text{g}/\text{m}^3$ unless stated)	Background Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	Roadside Concentration ($\mu\text{g}/\text{m}^3$ unless stated)	AQO Exceeded?
Nitrogen Dioxide	40	not applicable	10-20	No Data	NO
Particulate Matter (PM_{10})	40	not applicable	13-17	No Data	NO
Particulate Matter ($\text{PM}_{2.5}$)	25	not applicable	5-10	No Data	NO
Ozone	not applicable	120 (>35 days exceeded)	≤ 5 days	No Data	NO
Carbon Monoxide	not applicable	10 mg/m^3	0.2-0.4 mg/m^3	No Data	NO
Sulphur Dioxide	not applicable	125 (>3 days exceeded)	<2	No Data	NO
Benzene	5	not applicable	<0.5	No Data	NO

6 Summary

- 6.1 The only area of North Hertfordshire where an Air Quality Objective has been exceeded at relevant receptors is in Hitchin. Within Hitchin the air quality monitoring network has provided NHDC with sufficient evidence to declare an Air Quality Management Area (AQMA) along a length of the A602 at Stevenage Road and along the A602 and A505 at Payne's Park. The AQMAs were declared as a result of a persistent breach of the annual mean average Air Quality Objective for nitrogen dioxide.
- 6.2 Decisions on where to locate air quality monitoring equipment within the district are based on a number of factors and these are listed below.
- Knowledge of the district in terms of the sources of emission of air pollution and the vicinity of relevant receptors to those sources
 - Historical and current air quality monitoring data collected from the NHDC air quality monitoring network
 - Defra modelled background air quality data
- 6.3 The NHDC air quality monitoring network is reviewed and therefore subject to change on an annual basis. Where a decision is taken to discontinue monitoring at any location it is based on the data demonstrating that there is no likelihood of an Air Quality Objective being exceeded.

Appendix 1: Air Quality (England) Regulations 2000

STATUTORY INSTRUMENTS

2000 No. 928

ENVIRONMENTAL PROTECTION, ENGLAND

The Air Quality (England) Regulations 2000

Made - - - - 30th March 2000

Coming into force 6th April 2000

The Secretary of State, in exercise of the powers conferred on him by section 87(1) and (2) and 91(1)(a) of the Environment Act 1995(b) ("the 1995 Act") and of all other powers enabling him in that behalf, having, in accordance with section 87(7) of the 1995 Act, consulted the Environment Agency, such bodies or persons appearing to him to be representative of the interests of local government and of industry as he considers appropriate, and such other bodies or persons as he considers appropriate, hereby makes the following Regulations, a draft of which has, in accordance with section 87(8) of the 1995 Act, been laid before, and approved by a resolution of, each House of Parliament:

Citation, commencement and extent

1.—(1) These Regulations may be cited as the Air Quality (England) Regulations 2000 and shall come into force on the seventh day after the day on which they are made.

(2) These Regulations extend to England only.

Interpretation

2.—(1) In these Regulations, "the 1995 Act" means the Environment Act 1995.

(2) The provisions of the Schedule to these Regulations which follow the Table in that Schedule shall have effect for the purpose of the interpretation of that Schedule.

Relevant periods

3.—(1) The relevant period for the purposes of section 86(3) of the 1995 Act shall be, in relation to the preparation of an action plan to which that section applies, the period of 9 months beginning with the date on which the district council preparing the action plan first consults the relevant county council in relation to the plan pursuant to paragraph 1(2)(c) of Schedule 11 to the 1995 Act.

(2) The relevant period for the purposes of any other provision of Part IV of the 1995 Act(c) shall be, in relation to an air quality objective, the period beginning with the date on which these Regulations come into force and ending on the date set out in the third column of the Table in the Schedule which relates to that objective.

(a) See the definition of "prescribed", "regulations" and "relevant period".

(b) 1995 c. 25. The Secretary of State can exercise these powers only in relation to England; see article 2 of and Schedule 1 to the National Assembly for Wales (Transfer of Functions) Order 1999 (S.I. 1999/672) and section 53 of the Scotland Act 1998 (c. 46).

(c) See sections 82 to 85 and 86(6) of the 1995 Act.

[DETR 1825]

Air quality objectives

4.—(1) It is an air quality objective for each substance listed in the first column of the Table in the Schedule to these Regulations that the level at which that substance is present in the air is restricted to a level set out in the second column of that Table for that substance by no later than the date set out in the third column of that Table for that substance and level.

(2) The achievement or likely achievement of an air quality objective prescribed by paragraph (1) shall be determined by reference to the quality of air at locations—

- (a) which are situated outside of buildings or other natural or man-made structures above or below ground; and
- (b) where members of the public are regularly present.

Revocation

5. The Air Quality Regulations 1997(a) are hereby revoked in so far as they extend to England.

Signed by authority of the Secretary of State for
the Environment, Transport and the Regions

Keith Hill
Parliamentary Under-Secretary of State,
Department of the Environment,
Transport and the Regions

30th March 2000

AIR QUALITY OBJECTIVES

TABLE

Substance	Air quality objective levels	Air quality objective dates
Benzene	16.25 micrograms per cubic metre or less, when expressed as a running annual mean	31st December 2003
1,3-Butadiene	2.25 micrograms per cubic metre or less, when expressed as a running annual mean	31st December 2003
Carbon monoxide	11.6 milligrams per cubic metre or less, when expressed as a running 8 hour mean	31st December 2003
Lead	0.5 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2004
	0.25 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2008
Nitrogen dioxide	200 micrograms per cubic metre, when expressed as an hourly mean, not to be exceeded more than 18 times a year	31st December 2005
	40 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2005
PM ₁₀	50 micrograms per cubic metre or less, when expressed as a 24 hour mean, not to be exceeded more than 35 times a year	31st December 2004
	40 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2004
Sulphur dioxide	125 micrograms per cubic metre or less, when expressed as a 24 hour mean, not to be exceeded more than 3 times a year	31st December 2004
	350 micrograms per cubic metre or less, when expressed as an hourly mean, not to be exceeded more than 24 times a year	31st December 2004
	266 micrograms per cubic metre or less, when expressed as a 15 minute mean, not to be exceeded more than 35 times a year	31st December 2005

Interpretation

For the purposes of this Schedule:

1. "PM₁₀" means particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10µm aerodynamic diameter.

2.—(1) A running annual mean is a mean which is calculated on an hourly basis, yielding one running annual mean per hour. The running annual mean for a particular substance at a particular location for a particular hour is the mean of the hourly levels for that substance at that location for that hour and the preceding 8759 hours.

(2) For the purpose of the calculation of a running annual mean, the hourly level for a particular substance at a particular location is either:

- (a) the level at which that substance is recorded as being present in the air at that location during the hour on the basis of a continuous sample of air taken during that hour for at least 30 minutes; or
- (b) the mean of the levels recorded at that location on the basis of 2 or more samples of air taken during the hour for an aggregate period of at least 30 minutes.

3. A running 8 hour mean is a mean which is calculated on an hourly basis, yielding one running 8 hour mean per hour. The running 8 hour mean for a particular substance at a particular location for a particular hour is the mean of the hourly means for that substance at that location for that hour and the preceding 7 hours.

4.—(1) An annual mean is a mean which is calculated on a yearly basis, yielding one annual mean per calendar year. The annual mean for a particular substance at a particular location for a particular calendar year is:

- (a) in the case of lead, the mean of the daily levels for that year;
- (b) in the case of nitrogen dioxide, the mean of the hourly means for that year;
- (c) in the case of PM₁₀, the mean of the 24 hour means for that year.

(2) For the purpose of the calculation of the annual mean for lead, the daily level for lead at a particular location for a particular day is the level at which lead is recorded as being present in the air at that location during the week in which the day occurs on the basis of a continuous sample of air taken throughout that week (each day in that week therefore being attributed with the same daily level).

(3) For the purpose of sub-paragraph (2) "week" means a complete week beginning on a Monday, except that it also includes any period of less than seven days from the beginning of the calendar year until the first Monday in that year or from the beginning of the last Monday in the calendar year to the end of that year.

5. An hourly mean is a mean calculated every hour. The hourly mean for a particular substance at a particular location for a particular hour is the mean of the levels recorded, at a frequency of not less than once every 10 seconds, for that substance at that location during that hour.

6. A 24 hour mean is a mean calculated every 24 hours. The 24 hour mean for a particular substance at a particular location for a particular 24 hour period is the level at which that substance is recorded as being present in the air at that location on the basis of a continuous sample of air taken throughout the period.

7. A 15 minute mean is a mean calculated every 15 minutes. The 15 minute mean for a particular substance at a particular location for a particular 15 minutes is the mean of the levels recorded, at a frequency of not less than once every 10 seconds, for that substance at that location during that 15 minutes.

4

8. The reference to a number of micrograms or milligrams per cubic metre of a substance is a reference to the number of micrograms or milligrams per cubic metre of that substance when measured with the volume standardised at a temperature of 293K and at a pressure of 101.3 kPa.

EXPLANATORY NOTE

(This note is not part of the Regulations)

Part IV of the Environment Act 1995 requires local authorities to review the quality of air within their area. The reviews have to consider the air quality for the time being and the likely future air quality during the "relevant period" (a period to be prescribed by regulations). Such reviews have to be accompanied by an assessment of whether any prescribed air quality standards or objectives are being achieved or are likely to be achieved within the relevant period.

These Regulations prescribe the relevant period referred to above (regulation 3(2)) and set out the air quality objectives to be achieved by the end of that period (regulation 4 and the Schedule). The objectives are the same as those set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (CM4548, January 2000), published by the Secretary of State in accordance with section 80 of the 1995 Act.

Where any of the prescribed objectives are not likely to be achieved within any part of a local authority's area within the relevant period, the authority concerned will have to designate that part of its area as an air quality management area (section 83(1) of the 1995 Act). An action plan covering the designated area will then have to be prepared setting out how the authority intends to exercise its powers in relation to the designated area in pursuit of the achievement of the prescribed objectives (section 84(2) of the 1995 Act). The Regulations prescribe the period within which a county council will have to submit proposals to a district council which is preparing an action plan within the county council's area (regulation 3(1)).

These Regulations replace the provisions of the Air Quality Regulations 1997 in relation to England. The 1997 Regulations are therefore revoked to the extent that they apply to England.

Appendix 2: Real-time Analysers used in the NHDC Air Quality Monitoring Network

Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀) is measured by a R&P 1400a Tapered Element Oscillating Measurement (TEOM) analyser. The analyser is subject to basic calibration check and filter change visits on a monthly basis by NHDC staff. Additionally two full calibrations and service/maintenance visits are undertaken by specialist suppliers and service providers of real-time instrumentation for the measurement of air pollution. Currently this work is contracted to Enviro-Technology Services Limited (ET).

Particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5}) is measured by a Met-One Smart Heated BAM 1020 PM_{2.5} analyser. The analyser requires a tape change every six weeks and is subject to two full calibrations and service/maintenance visits undertaken by a specialist contractor, currently ET.

Nitrogen oxides, including nitrogen dioxide (NO₂) are measured by a chemiluminescence analyser; currently a Teledyne-API T200A is used. The analyser is subject to a basic calibration check and filter change visit on a monthly basis by NHDC staff. Additionally two full calibrations and service/maintenance visits are undertaken by a specialist contractor, currently ET.

All of the data collected during the calibration and service visits to all of the analysers are reported to a company that is contracted to verify and ratify the automatically and remotely collected air quality measurements against the calibration data. This is done in accordance with the requirements of AURN. Currently this work is contracted to Ricardo Energy and Environment. For the TEOM 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.

The ratification work is carried out periodically during the year but fully ratified data is only available at the end of the calendar. With this in mind it must be recognised that the data from 2017 included within this statement have not been ratified and are unlikely to be available until March or April 2018.

Nonetheless the data have been included to demonstrate that air quality monitoring is still occurring within North Hertfordshire and because it is judged that there is sufficient historical data to enable the un-ratified 2017 data to be considered in an appropriate context.

Appendix 3: Diffusion Tubes used in the NHDC Air Quality Monitoring Network

Diffusion tubes work on the principle of molecular diffusion and comprise two stainless steel grids coated in an absorbent located in the polyethylene cap of a small open ended polypropylene tube. The open end of the tube is exposed to the air at the monitoring location and the molecules of NO₂ that move by diffusion into the tube are absorbed to the chemically coated stainless steel grid.

After the requisite period of exposure to ambient air the diffusion tubes are collected, capped and returned to a laboratory for analysis. For reasons of quality the manufacture and analysis of NO₂ diffusion tubes should be UKAS compliant, the method of analysis should meet the requirement of Defra's 'diffusion tubes for ambient NO₂ monitoring practical guidance' and the laboratory to have taken part and achieved an appropriate standard of performance in the Workplace Analysis Scheme for Proficiency (WASP).

NHDC has always used diffusion tubes that are prepared with a 50% acetone and 50% triethanolamine absorbent and which are supplied and analysed by a contractor that has met the above quality assurance criteria. Historically the contractors have varied but it is currently Gradko International Limited.

Before reporting diffusion tube data on an annual basis, in the format of 12 monthly results for each location, it is necessary to bias correct the results obtained by a factor that is specific to the laboratory used to analysis the tubes. The bias adjustment factor is obtained from a UK wide co-location database that is made available by Defra and is typically applied to the data that has been collected at the end of a calendar year.

With this in mind it must be recognised that the diffusion tube data reported for 2017 have not been bias adjusted. Nonetheless the data have been included to demonstrate that air quality monitoring is still occurring within North Hertfordshire and because it is judged that there is sufficient historical data to enable the un-ratified 2017 data to be considered in an appropriate context.

Appendix 4: Methodology for Defra Modelled Background and Roadside Data

(source: <https://uk-air.defra.gov.uk/research/air-quality-modelling?view=modelling>)

Currently Defra and the Devolved Administrations use a suite of models to assess a range of pollutants at different spatial scales, from local to hemispheric, to meet a number of requirements. The main models currently used by Defra and the Devolved Administrations are outlined below:

Pollution Climate Mapping (PCM)

The Pollution Climate Mapping (PCM) model is a collection of models designed to fulfil part of the UK's EU Directive (2008/50/EC) requirements to report on the concentrations of particular pollutants in the atmosphere. These models are run by Ricardo Energy & Environment on behalf of Defra. There is one model per pollutant (NO_x, NO₂, PM₁₀, PM_{2.5}, SO₂, CO, benzene, ozone, As, Cd, Ni, Pb and B[a]p) each with two parts: a base year model and a projections model. The PCM provides outputs on a 1x1 km grid of background conditions plus around 9,000 representative road side values. PCM is also used for scenario assessment and population exposure calculations to assist policy developments and also provides model runs to support the writing of Time Extension Notification (TEN) applications for PM₁₀ and NO_x.

The Pollution Climate Mapping Model is used to produce background maps, 1x1 km grids of pollutant concentrations, for the UK.

Other models

Defra also uses a number of other models to either to provide input data or validation data for its models. These include but are not limited to: ELMO (Edinburgh-Lancaster Model for Ozone), NAME (Numerical Atmospheric-dispersion Modelling Environment), PTM (Photochemical Trajectory Model) and TRACK (TRajjectory model with Atmospheric Chemical Kinetics). Reports and outputs from these models can be found in the [Library](#) section of this website. Data outputs from a number of these models can be downloaded from Defra's [modelling data page](#).

Page last modified: 26 October 2015

Appendix 5: Air Quality Monitoring Data from London-Luton Airport

Table A: Data from Real-Time Analyser (BAM Analyser)

Site ID	Site Location Analysers	Mean Annual Average Concentrations Particulate Matter (PM ₁₀) µg/m ³														Air Quality Objectives PM		AQO Exceeded in 2016?
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017**	Annual mean µg/m ³	24hr Mean µg/m ³	
HB 006	Luton Airport	32 (32)	31 (28)	28 (15)	23 (10)	21 (4)	20 (14)	14 (0)	17 (2)	15 (2)	21 (4)	18 (6)	15 (0)	18 (1)	18 (1)	40	50 (>35 exceeds)	NO

Table B: 2016 Nitrogen Dioxide Data (µg/m³) from London-Luton Airport Diffusion Tubes (Annual Mean Ave. AQO = 40µg/m³)

Tube Id	Type	Location	Easting	Northing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave	Adjusted
LLA 1	other	Terminal Patio	511847	221336	44.96	31.79	27.26	29.05			29.40	15.07	32.09	27.80		35.30	30.3	30.6
LLA 2	roadside	Airport Approach Rd	511586	220978		42.57	32.62	34.35	44.65	42.84	39.89	21.51	38.36	40.02	44.41	47.71	39.0	39.4
LLA 3	other	Runway Threshold West	511156	220437	29	23.31	21.17	24.98	19.01	18.37	15.11	7.96	24.93	24.19	32.00	36.71	23.1	23.3
LLA 4	other	Runway Threshold East	513634	221198	26.84	16.12	13.03	15.09	11.63	12.98	15.27	6.95	18.00	13.36	22.47	31.81	17.0	17.1
LLA 5	other	Airside St.5	511703	221320	47.95	40.14	35.50	43.28	41.17	46.46	44.20	19.52	44.16	43.56	46.13	50.25	41.9	42.3
LLA 6	roadside	President Way Jct	511645	221679	43.51	31.17	29.92	35.23	32.80	28.75	29.18	16.80	37.06	26.07	38.67	43.91	32.8	33.1
LLA 7	other	Terminal Car Park	512181	221352	38.17	27.79	23.31	27.11	26.91	29.34	32.81	27.78	51.20	33.22	49.86	54.56	35.2	35.5
LLA 8	other	BAM CoLocator	511871	221142	36.03	30.64	33.81	29.31	28.95	30.71	31.65	14.98	35.68	33.61	49.72	43.28	33.2	33.5
LLA 9	rural	Stagenhoe Bottom Farm	517637	222554	17.48	10.49	8.03	8.29	6.90	6.43	5.78	3.16	9.60	9.59	13.79	18.92	9.9	10.0
LLA 10	rural	Grove Farm Slip End	507623	217724	16.18	11.9	11.12	10.91	9.42	9.17	6.23	3.58	11.24	12.72	15.26	17.48	11.3	11.4
LLA 11	kerbside	Dane Street	513125	220664	21.58	16.48	14.52	13.90	12.67	10.12	9.47	4.49	15.03	14.27	17.32	19.21	14.1	14.2
LLA 12	roadside	Stand 61 Luton Airport	511861	221579	46.43	36.43	35.70	41.07	30.19	34.86	42.18	20.71	40.54	38.87	42.52	47.42	38.1	38.5
LLA 13	roadside	Eaton Green Road	511899	222051	34.83	28.06	23.80	26.26	22.21	21.18	19.15	9.44	28.29	25.80	33.67	39.93	26.1	26.3
LLA 14	kerbside	Set Down Area	511954	221313	58.51	44.38	33.43	39.91	39.92		44.18	22.27	39.64	34.45	40.42	41.96	39.9	40.3

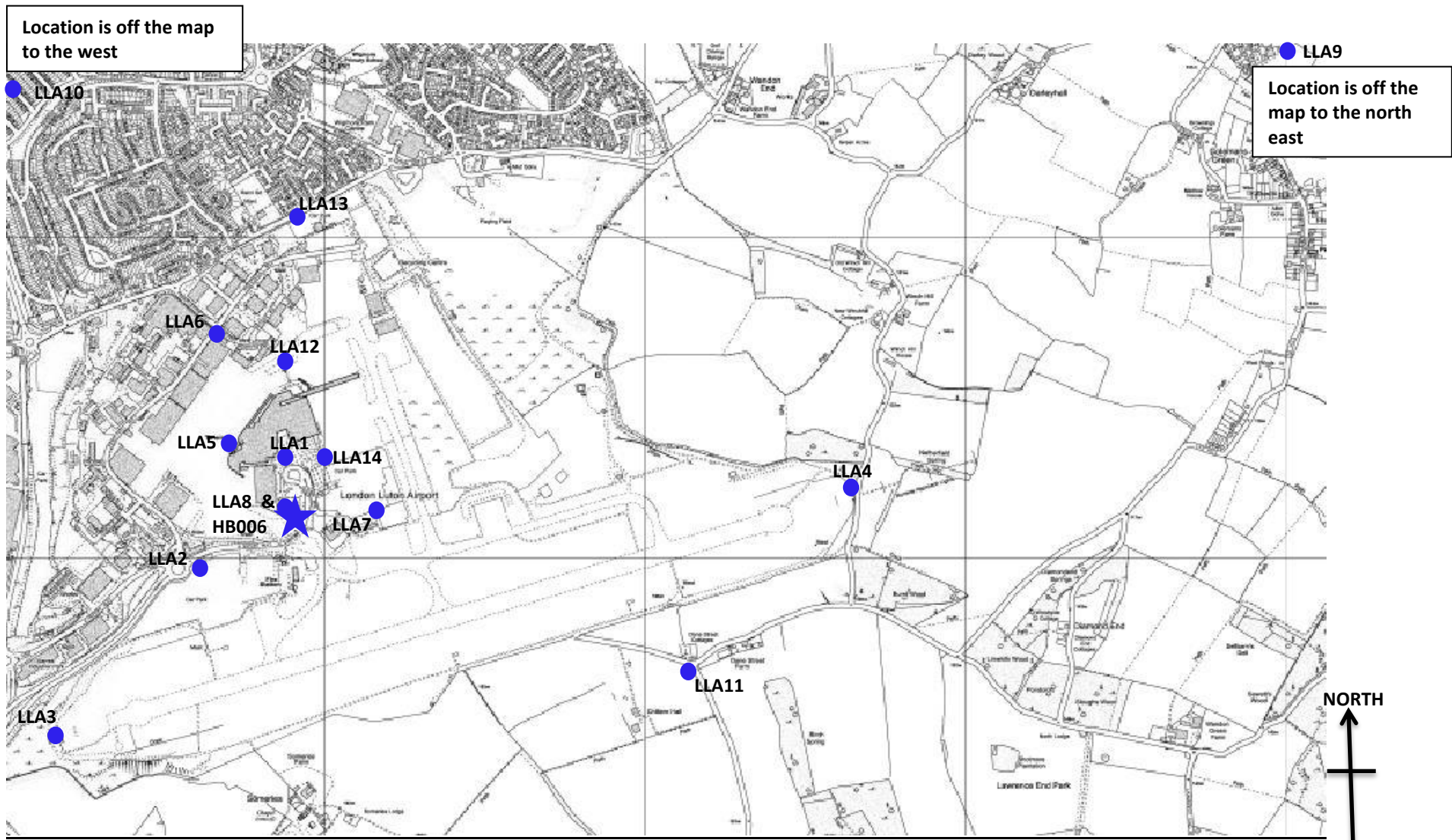


Figure A: Locations of London-Luton Airport Air Quality Monitoring Network

Appendix B. Proposed modification to Policy D4 following discussion under Matter 17 at the EiP hearing session held on 29 November 2017

Design Policy D4: Air quality

Planning permission will be granted **provided that** where development proposals:

- a. give consideration to the potential or actual impact on local air quality, both during the demolition/ construction phase and as a result of its final occupation and use;
- b. propose appropriate levels of mitigation to minimise emissions to the atmosphere and their potential effects upon health and the local environment; and
- c. carry out air pollution impact assessments, where required, to determine the impact on local air quality of the development, otherwise the development may be refused.

Where an air quality impact assessment demonstrates that a development is unsustainable from a local air quality perspective the development will be refused.

Where air pollution impact assessments are not required there will still be a requirement on developers to provide appropriate levels of mitigation to address emissions of pollutants to the atmosphere.

- 9.24 This policy supports Policy D3: Protecting living conditions but also encourages sustainable development, in particular sustainable transport (Policy SP6: Sustainable Transport). The District will be accommodating a significant amount of development during the plan period which will undoubtedly generate additional road traffic and put added pressure on existing road networks. Therefore, because the major source of local air pollution in the District originates from road traffic emissions it is important for this plan to deal with the implications for air quality of the anticipated development.
- 9.25 The outcome of the air pollution impact assessment will be used to determine the nature and scale of the steps that should be taken to remove or reduce the scale of those concerns. Ideally this will occur at the design, planning and/or development stage, but may in certain circumstances rely on post development mitigation measures. ~~It is conceivable that in certain circumstances the outcome of an air quality impact assessment may demonstrate that a development is unsustainable from a local air quality perspective and may be refused.~~
- 9.26 Two of the main roads that cross the District do so on a north – south axis: the A1(M) and A10. Another main road is the A505 that traverses the District on a southwest – northeast axis. It is the A505 that is currently directly associated with air quality concerns because it passes through the four main population centres of the District namely Hitchin, Letchworth Garden City, Baldock and Royston. Of particular concern is the area in the south of Hitchin. Notably Stevenage Road (A602) near the Hitchin Hill roundabout, which has been designated an Air Quality Management Area (AQMA) and the Payne’s Park roundabout at the A602 junction with the A505 which is to be designated an AQMA in 2016.

- 9.27 The NPPF¹ states that air pollution is a material planning consideration and more specifically that planning policies should sustain compliance with and contribute towards national objectives for air pollutants and the presence of AQMAs and their Action Plans. Furthermore, it states that the effects (including cumulative effects) of pollution on health should be taken into account. Therefore, because each local authority will have its own unique causes and contributing factors to elevated levels of air pollution it is vital that local development documents include policies to appropriately influence the District's specific development demands.
- 9.28 The policy addresses the protection of the health of the residents of proposed developments, as well as the protection of the residents of existing properties particularly, although not exclusively, those that live in close proximity to the District's roads. In addition to the air quality problems identified in Hitchin that are associated with elevated nitrogen dioxide (NO₂), levels of NO₂ are close to exceeding a national air quality objective around the A505 in the Hitchin Street / Whitehorse Street area of Baldock. Furthermore, particulate matter air pollution is a public health concern, which is reflected by the presence of a national air quality objective and a public health outcome indicator.
- 9.29 The policy will allow the Council to achieve a consistent and transparent approach to the development of land where air quality concerns are relevant. It will also help to influence the nature of such developments so as to minimise or remove the potential for adverse impacts on air quality. Or where appropriate, identify and justify the need for and nature of measures to help to mitigate any otherwise unavoidable adverse air quality impacts from permitted developments.
- 9.30 The following are types of developments for which the Council would expect consideration to be given to the submission of an air quality impact assessment:
- 9.31 Within, or adjacent to an AQMA, applications for:
- housing;
 - biomass or other forms of combustion boiler;
 - industrial developments;
 - car parks; and
 - any other development likely to significantly increase vehicle movements
- 9.32 Anywhere else in the District, applications that are considered to be 'major' in scale for example:
- significantly increase car parking facilities;
 - significantly increase vehicle movements, particularly heavy duty vehicles;
 - introduce biomass or other combustion boilers and industrial processes of a particular scale;
- 9.33 Or that:
- introduce humans to an area where air pollution is an issue, but where humans were previously not present
- 9.34 For other types of developments an air quality impact assessment will not be required but there will be an expectation for the developer to negotiate and agree air quality mitigation measures that are proportionate to the scale of the proposed development.

¹ Paragraph 124 of the NPPF.

- 9.35 A more detailed description of the type of air pollution mitigation required for developments and those developments considered to be 'major' can be found in the NHDC Air Quality Planning Guidance Document².
- 9.36 Methods available to mitigate the impact of developments on air quality may fall into a number of categories and will be considered against other relevant policies in the Plan:
- appropriate parking standards
 - accommodating infrastructure to support the use of low emission vehicles
 - appropriate location and design of buildings
 - incentives to support initiatives for public transport, car sharing and using alternative modes of travel
 - contributions to improve road and traffic management, infrastructure to support alternative modes of travel and air quality monitoring
- 9.37 This is not an exhaustive list and more detail will be found in the NHDC supplementary Air Quality Planning Guidance Document.

² North Herts Air Quality Planning Guidance Document (2016)

Appendix C: Note Prepared by CAG consultants.

How air pollution is addressed in the SA

Air quality is one of the aspects of the environment which the SEA Regulations require a SEA to address. The Draft Sustainability Appraisal of the Proposed Submission Local Plan (LP4) meets this requirement as follows:

- The appraisal framework used to assess the options, policies and sites in the Plan includes two relevant appraisal criteria¹:
 - 3(d) Reduce pollution from any source – sub objective Achieve good air quality
 - 5(f) Improve conditions and services that engender good health and reduce health inequalities.
- In using these criteria to test sites, significance criteria are also defined for assessing when the site is likely to have a significant effect on air quality and human health. This is outlined in Appendix 5², where it noted that a housing site within or impacting on a AQMA will be assessed as having a significant negative effect. This criteria is also applied to the cumulative effect of a number of housing sites.
- The baseline review in Appendix 2 reports on data available on air quality. Against the indicator “Number of Air Quality Management Areas” it notes³: *“The pollutant that is in exceedance in Hertfordshire is Nitrogen Dioxide (NO2), which has a national standard of 40µg/m3 or 21 ppb (parts per billion)”*.
- Drawing on this data, the review of key sustainability issues comments⁴: *“Although data is limited, air quality issues could become more significant with continued growth in development and traffic”*.
- In the review of other policies, plans and programmes⁵, *“Ensure that air quality is maintained or improved and that air pollutants are minimised”* is identified as a key message.
- The SA report notes a potential residual effect of the Local Plan on traffic congestion and associated pollution. It comments: *“The effect is trans-boundary, impacting on neighbouring areas, and is a cumulative effect of Plans in Central Bedfordshire, St Albans and North Hertfordshire. It is of medium probability as it depends on a number of factors including the actual amount of development and the effectiveness of mitigation, e.g. improvements in public transport”*.

¹ 51 NHDC page number

² 498 NHDC page number

³ 206 NHDC page number

⁴ 181 NHDC page number. This statement was produced for an earlier iteration of the SA, and it is now proposed that it be updated to reflect the change in arrangement for monitoring air quality in the District.

⁵ 14, 46 and 181 NHDC page number

Matter 17 - Response to representation 13237

The following comments relate to Appendix 1 of the representation.

Para	Representation	Response
103	However it seems that the Appraisal has had no input from an air quality specialist as there are many errors in it. The minor errors include the wrong year given for the Air Quality Strategy; indicators not clearly expressed (e.g. the relevant pollutants is not mentioned); and an incorrect target year given.	The representor refers to the baseline review included in Appendix 2. This review considers a wide range of data on each of the sustainability criteria. It would not be practical for this data to be prepared by an expert on each of the subjects. The SEA Guidance ⁶ notes that “ An SEA need not be done in any more detail or using more resources, than is useful for its purpose”. In this case, the baseline data provided sufficient information to identify relevant air pollution issues that needed to be considered in the SA/SEA process. The minor errors pointed to will be rectified in the final version of the document.
104	Table 34 on inter-plan cumulative effects states that “ <i>Cumulative effects will be positive since the LTP and supporting strategies should help to facilitate the delivery of the housing and economic growth in the Local Plan in a way which limits some of the negative effects of this growth, e.g. in terms of traffic congestion, carbon emissions, noise and air quality</i> ”. There is no evidence that this is true in relation to air quality.	The representor refers to an assessment of the cumulative effects of the Local Transport Plan (LTP) and the Local Plan. This assessment suggests that the Local Transport Plan will assist in limiting the effects of housing and economic growth in terms of air quality. In coming to this conclusion the SA drew on the fact that the LTP includes specific aims to address air quality ⁷
105 and 106	Under minimising pollution (Appendix 3) it gives one option for air quality “ <i>Consider how to deal with problems of air quality, perhaps through the encouragement of mixed-use development as a means of reducing the need to travel thereby decreasing air pollution</i> ” and concludes: • “ <i>The major air pollutant in North Hertfordshire is ozone which derives from traffic emissions, although air pollution is not considered a key sustainability issue for</i>	The representor refers to the assessment of strategic options for addressing pollution. It is accepted that it is an error to say that ozone is a major air pollutant in North Hertfordshire, and this will be rectified in the final SA document ⁸ . However, other parts of the SA, particularly the baseline review and the significance criteria are clear that NO2 is a major pollutant in North Herts and has led to the declaration of AQMAs. This error

⁶ Office of the Deputy Prime Minister, A Practical Guide to the Strategic Environmental Assessment Directive, September 2005

⁷ Challenge 3.2, p 14

⁸ The error arose as the SA mistakenly used outdated data regarding exceedences of National Standards for air quality. Although data in Appendix 2 was updated in 2016, due to an oversight the reference to ozone in Appendix 2 and in the quote referred to by the representor was not updated from an earlier iteration of the Plan. The data correct data and reference will be used in the final SA.

	<p><i>Hertfordshire</i></p> <ul style="list-style-type: none"> • <i>Traffic related air pollution needs to be tackled by a range of transport and location measures, for which mixed use developments is only one.</i> <p><i>Recommendations for changes to this option</i></p> <ul style="list-style-type: none"> • <i>None.</i>" <p>Ozone is not considered to be the major air pollutant in North Hertfordshire.</p>	<p>only related to the appraisal of this single policy option for dealing with air pollution. It has not affected the overall approach to air pollution within the SA process. Furthermore, the relevance local air quality to the Local Plan has been specifically addressed by the inclusion of an Air Quality Policy (D4) within the Local Plan.</p>
107	<p>A Sustainability Appraisal Supplementary Paper (Document LP8) is included in the examination library. A search of the term 'air quality' failed to find a match.</p>	<p>Document LP8 outlines the consultation comments received on the Draft Sustainability Appraisal of the Submission Local Plan (LP4), and responses to these comments. In fact one representation⁹ did refer to air pollution, and this comment is responded to in LP8.</p>
108	<p>In summary the sustainability appraisal is grossly inadequate with regard to its assessment of the potential air quality impacts of the NHLP.</p>	<p>As outlined in the previous section, the SA has dealt appropriately with air quality. The errors referred to have not impacted on the overall judgements made, and will be rectified in the final version of the SA.</p>

Proposed amendments to the SA

Cumulative effects

Drawing on the data produced by NHDC (ref Air Quality in NHDC Overview Paper for Local Plan¹⁰) it is recognised that the uncertainty of the impacts of development on the AQMAs in Hitchin need to be recognised by the SA. Therefore it is proposed to add the following to Table 31 (Localised cumulative effects):

Cumulative effect	Affected receptor	Sites contributing to the cumulative effect	SA objectives affected	Recommendations/mitigation	Residual effects
Air pollution	Air quality in Hitchin	EL1,EL2,EL3, NS1, GA1, GA2,WY1	5(c) Improve conditions and services that engender good health and reduce health inequalities	Policy D4 (supported by the North Herts Air Quality Planning Guidance Document) requires developments to propose mitigation measures to minimise (the effects of) emissions; and carry out air pollution impact	Uncertain

⁹ Representation 5525

¹⁰ It is also proposed to reference this report in the final SA report

Cumulative effect	Affected receptor	Sites contributing to the cumulative effect	SA objectives affected	Recommendations/mitigation	Residual effects
				assessments. Policy SP6 requires the early implementation of sustainable transport infrastructure on strategic housing sites.	

Baseline data and key issues

It is proposed to make the following changes to the baseline data in Appendix 2¹¹ of the SA report:

- Reference the second AQMA in Hitchin, which was not declared when the report was published.
- Rewrite and update the Indicator on number of days per year any parameter exceeds its national standard using data from the NHDC 2016 (2015 data) and 2017 (2016 data) Annual Status Reports submitted to Defra and available on line.
- Remove the incorrect reference to there being no monitoring sites in the District conforming to the standards required.
- Correct any other minor errors.

It is proposed to make the following change to the Key Sustainability Issues in Appendix 2¹² and in the main SA report¹³

- Amend the statement on air quality to remove reference to lack of data

¹¹ 206 NHDC page number

¹² 181 NHDC page number

¹³ 14 and 46 NHDC page number