



2019 Air Quality Annual Status Report (ASR)

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

June 2019

North Hertfordshire District Council

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Executive Summary: Air Quality in Our Area

Air Quality in North Hertfordshire District Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

Across the majority of the North Hertfordshire air quality is good, being below the Government's health based limits known as Air Quality Objectives (AQOs). There is also evidence of a continuing improvement in air quality.

There are no locations within the district where concentrations of particulate matter, whether PM₁₀, or the smaller PM_{2.5} fractions exceed the relevant AQOs according to the Government's national modelling. Furthermore, the real-time automatic monitoring equipment located at one of the busiest roads in North Hertfordshire that has residential receptors alongside it, has not measured particulate matter of either fraction size at concentrations above the relevant limits.

The situation is a little different for nitrogen dioxide because in two residential areas of the district the annual average AQO for nitrogen dioxide has been marginally, but regularly, exceeded. These two areas, Stevenage Road and the Payne's Park roundabout at Park Way, in the town of Hitchin are located alongside the same road, the A602. The main source of the pollution there is from the exhaust emissions of the diesel and petrol engine road vehicles travelling on the A602 through the areas.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Both of the areas are designated as Air Quality Management Areas (AQMA) because of the elevated nitrogen dioxide. The Stevenage Road AQMA was designated in 2012 and the Payne's Park AQMA was designated in 2017. The locations of the AQMAs can be found in Appendix D, the formal designations can be found at <http://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire> and the AQMAs are also included within the national list of AQMAs that can be found at <http://uk-air.defra.gov.uk/aqma/list>.

As a result of the designation of the 2017 AQMA, NHDC consulted on and published a joint Action Plan to identify measures that can be taken to attempt to reduce emissions of nitrogen dioxide and improve air quality at both of the AQMAs. The joint Action Plan can be found at <http://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire> but it is also discussed further in Section 2 of this report.

As a result of the major source of local air pollution originating from road vehicle emissions there is a need to work with other professionals to enhance our management of local air quality for the following reasons:

- many vehicles using North Hertfordshire's roads will not begin or end their journeys within this District.
- commercial expansion or contraction and housing growth in and around North Hertfordshire will impact upon the levels of road traffic.
- the road network within North Hertfordshire is managed either by Hertfordshire County Council (HCC) or Highways England.
- local air pollution has a direct public health impact and Hertfordshire County Council Public Health has a significant public health protection remit in Hertfordshire.

Therefore, NHDC Environmental Health actively engages with the following partners:

- Other environmental health professionals in Hertfordshire and Bedfordshire via a working group, the Hertfordshire and Bedfordshire Air Quality Forum, which meets quarterly. The Forum includes representatives from the planning profession and the public health profession, in addition to HCC transport professionals.

- Public health professionals in Hertfordshire via a task and finish group, which is activated as and when a specific project is identified either by Public Health or Environmental Health.
- Day to day working relationships with NHDC Transport Planning Officers, Strategic Planning Officers and Development Control Officers to ensure that air quality is appropriately considered within the planning regime.
- A combination of NHDC and HCC professionals from those disciplines within a North Hertfordshire specific Air Quality Management Area Steering Group.

The Council believes that a combination of the above partnership working and the positive impact of NHDC's Action Plan work since 2013 have contributed to the gradual improvement in air quality, as measured by reducing nitrogen dioxide concentrations, that has been observed across North Hertfordshire.

Where comparable monitoring locations have been available since 2012 or 2013, which was twenty-nine monitoring locations, an overall reduction in nitrogen dioxide concentrations has been observed in all of them (Appendix A – Table A.3).

Importantly this observed trend has been seen within the two designated AQMAs. Within the Stevenage Road AQMA, for the second time since its designation, none of the annual average concentrations of nitrogen dioxide measured were high enough to represent a breach of the AQO at a residential dwelling. Therefore, it is hoped that it will be possible to make a case to revoke the Stevenage Road AQMA if this trend can be maintained over a number of years.

There have not been any new major sources of emissions introduced in to North Hertfordshire during 2018, but the district needs to accommodate at least 14,000 new homes and the associated facilities and infrastructure to support them by 2031.

Neighbouring districts also need to accommodate similar levels of growth.

Additionally there is currently an Environmental Impact Assessment Scoping Report out for public consultation to support a Nationally Significant Infrastructure Project application for the expansion of London-Luton Airport (located on the western boundary of North Hertfordshire) from 18million passengers per annum (mppa) to approximately 32mppa by 2050. Therefore, the cumulative impact of this scale of development is likely to generate an increase in road traffic within and through North

Hertfordshire and so potentially increase the emission of air pollution. These planned developments represent the only currently foreseeable major future source of air pollution in the district and it has the potential to slow or reverse the recently observed improvement in air quality across North Hertfordshire.

Actions to Improve Air Quality

During 2018 NHDC consolidated and improved its partnership working that should, alongside the now established policies and guidance, enable practical actions to be implemented in future years to improve local air quality. Without such relationships, principles and documented approaches in place the likelihood of successfully introducing measures to positively impact local air quality will be reduced.

In addition to chairing the Hertfordshire and Bedfordshire Air Quality Forum, North Hertfordshire District Council's Environmental Protection Officer has been an active member on the Hertfordshire County Council Electric Vehicle (EV) Charging and Future Transport Working Group. This group has, as one of its aims, the intention to set up best practice approaches and frameworks to facilitate the establishment of electric vehicle charging infrastructure on public land and the highway; with a particular emphasis on the provision of residential on-street charging.

It is anticipated that the work undertaken and the experiences shared at this Working Group will enable specific projects to be developed for North Hertfordshire from 2019 onwards.

The Action Plan measure that was the focus of attention in 2018 was ***Measure 18: The provision of an Air Pollution Notification System for the public.***

By the end of 2018 the joint Hertfordshire and Bedfordshire procurement process, which was managed by North Hertfordshire District Council in partnership with Welwyn Hatfield District Council had been completed and the contract awarded. As of the 31st December 2018 the final adjustments to the Notification System were being implemented with the intention of the System going live in January 2019.

2018 also saw the NHDC Local Plan complete its Examination in Public. This was a process that included considerable public scrutiny of the need for, and form of, the Air

Quality Policy (Policy D4). This Policy was proposed by the Environmental Protection and Housing Team as being integral to the sustainable development of North Hertfordshire. Policy D4 was accepted with only minor modification and was identified as **Measure 21** within the Action Plan.

Conclusions and Priorities

The medium-term (~ 7 year) trend in levels of local air pollution, as measured by nitrogen dioxide, continues to be on a downward trajectory, representing an improving air quality situation in North Hertfordshire. Also, for the second time since its designation as an AQMA, concentrations of nitrogen dioxide in the Stevenage Road area were not found to exceed the annual AQO at residential dwellings (Figure 3.2). However, because of the ongoing pressure for North Hertfordshire and its neighbours to accommodate housing growth, North Hertfordshire faces an air pollution problem that will present it with an ongoing challenge into the near future. Therefore, being able to implement a number of the priority measures identified in the joint Action Plan will be important, particularly those aimed at:

- ensuring that the planning process can be appropriately utilised. This is particularly important with the proposed Luton Airport expansion and the residential developments identified within the NHDC Local Plan.
- raising public awareness to promote changes in travel choices
- providing infrastructure to facilitate changes in travel choices
- reducing emissions from heavy duty vehicles, including public transport

Local Engagement and How to get Involved

The potential for the residents and businesses of North Hertfordshire to have a positive impact on air quality is considerable by choosing, where practical, to travel using:

- public transport
- car sharing / car clubs including e-car clubs
- more sustainable private modes of transport (i.e. not petrol or diesel engine vehicles)

North Hertfordshire District Council

- more modern models of petrol and diesel engine vehicles, which emit lower levels of pollution
- walking or cycling

Potentially useful sources of further information include:

<https://www.goultralow.com/> = Central Government website about low emission vehicles

<https://www.zap-map.com/live/> = Locations of EV charging points across UK

<http://www.hertsdirect.org/services/transtreets/ltp/live/> = HCC Local Transport Plan

In addition the Hertfordshire and Bedfordshire Air Pollution Notification System is now operational.

By signing up for free at <https://www.airqualityengland.co.uk/local-authority/knr-subscription> the public are notified in advance of periods of moderate, high or very high air pollution in North Hertfordshire. It is hoped that this will increase awareness and encourage behaviours that have a lower adverse impact on local air quality as well as enabling those that are particularly vulnerable to poor air quality to take measures to avoid or mitigate its negative impacts on their health.

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1 Local Air Quality Management

This report provides an overview of air quality in North Hertfordshire during 2018. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by North Hertfordshire District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMA) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMA declared by North Hertfordshire District Council (NHDC) can be found in Table 2.1. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at <https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire>. A full list of AQMA in England can be found at <https://uk-air.defra.gov.uk/aqma/list>.

Appendix D provides maps of the air quality monitoring locations and where relevant their locations in relation to the AQMA.

It should be noted that on the 9th January 2017 a new AQMA was declared on the basis of the annual mean average Air Quality Objective of 40mg/m³ being exceeded in the Payne's Park area of Hitchin. This declaration prompted the preparation of a joint Air Quality Action Plan that has the aim of addressing the nitrogen dioxide air pollution problem at both, the Stevenage Road, Hitchin AQMA and the nearby Payne's Park, Hitchin AQMA.

The joint Action Plan dated January 2018 supersedes the Stevenage Road, Hitchin, AQMA Action Plan dated September 2013. More detail on the January 2018 joint Action Plan is included within Section 2.2 of this Annual Status Report.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan
						At Declaration	Now	Name Date of Publication Link
AQMA Stevenage Road	29 th June 2012	NO ₂ Annual Mean	Hitchin	An area encompassing a number of residential properties fronting & located on the south side of Stevenage Road (A602)	NO	41.8µg/m ³	35.1µg/m ³	Joint Action Plan Stevenage Road & Payne's Park, Hitchin AQMAs January 2018 https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire
AQMA Payne's Park	9 th January 2017	NO ₂ Annual Mean	Hitchin	An area encompassing one residential property fronting & located on the west side of Park Way (A602) at the Payne's Park roundabout	NO	44.5µg/m ³	41.8µg/m ³	Joint Action Plan Stevenage Road & Payne's Park, Hitchin AQMAs January 2018 https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire

☒ North Hertfordshire District Council confirm the information on UK-Air regarding their AQMA(s) is up to date

2.2 Progress and Impact of Measures to address Air Quality in North Hertfordshire

Defra's appraisal of last year's ASR concluded that it was a very good and comprehensive report that provided the information specified in the Guidance. Additionally it stated that the Action Plan was fairly comprehensive with good discussion of progress and barriers to implementation. Defra's conclusion was that overall on the basis of the evidence the conclusions reached by NHDC were acceptable for all sources and pollutants.

In terms of advisories from Defra, they were:

- Maintain consistency between Tables and Appendices in terms of referencing the monitoring point locations within the AQMAs
- Highlight links to the Public Health Outcomes Framework
- To consider the relevance of the diffusion tube sites that have returned low concentrations for a number of years and consider deployment at new areas of potential concern.

NHDC is able to confirm that it has acted on the above advice in preparing this report (the 2019 ASR) and as part of its annual review of its diffusion tube network has made some changes in diffusion tube deployment.

North Hertfordshire District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress, or planned are set out in Table 2.2.

More detail on these measures can be found in the Action Plan <https://www.north-herts.gov.uk/home/environmental-health/pollution/air-quality/air-quality-management-areas-north-hertfordshire>. Key completed measures, which have been referenced against the Measure Numbers from the joint AQMA Action Plan dated January 2018, are:

- **Measure 21 – Local Plan Policy and Air Quality Planning Guidance**
Document: Policy D4 is the Air Quality Policy within the Local Plan. Work on this Measure has continued in the form of appearing at the Local Plan

Examination in Public day. An additional day was added to the Examination in Public specifically to consider the Air Quality Policy and the supporting Air Quality Planning Guidance Document in relation to the local air quality throughout North Hertfordshire and the preferred development sites identified within the Local Plan.

This work required considerable liaison and partnership working with strategic planning officers and addressing many concerns and questions raised by the public in relation to local air quality across North Hertfordshire. This further raised public awareness and understanding of the local air quality, pollution levels and the issues surrounding them.

Associated to this is the fact that planning application consultations continue to be responded to from a local air quality perspective. This has resulted in the majority of planning permissions being granted with conditions that require the developers to provide air pollution mitigation. This also has a direct impact on the achievement of ***Measure 7: Increasing private availability of recharging infrastructure for Electric Vehicles.***

- ***Measure 6 - Increasing and improving publicly available recharging infrastructure for on-street EV:*** proactive engagement with Hertfordshire County Council and local authorities to establish frameworks and approaches to implement the provision of on-street EV charging points. Sharing of existing best practice and understanding of the requirements of the highways authority should enable NHDC to progress this measure in a meaningful way in 2019.
- ***Measure 7 - Increasing availability of recharging infrastructure for EV:*** All planning applications for new developments, whether residential or commercial/industrial, are responded to by the Environmental Protection & Housing Team, with conditions recommended to be added to require an appropriate level of EV charging infrastructure provision.
- ***Measure 9 - Dedicated and free parking bays for EVs at charging points:*** This principle has been established in Policy 16 of the NHDC Parking Strategy (published January 2019). That Policy and paragraph 6.46 of the Strategy also acknowledges the probable need for on-street EV charging. This provides the

necessary internal support to enable Measure 6 to be progressed where opportunities arise.

- **Measure 18 - Air Quality (Pollution) Notification System:** A contract was signed with Ricardo Energy and Environment to provide a text and email based air pollution notification system. The system is their Know and Respond product that is in use in other parts of the UK and it will commence in early 2019. The system aims to:
 - raise public awareness and understanding of the scale of the air pollution problem in Hertfordshire and Bedfordshire
 - provide vulnerable populations with sufficient notice of air pollution events to take avoiding or mitigating measures so that their health is not adversely impacted.

North Hertfordshire District Council expects the following measures to be completed over the course of the next reporting year (2019):

- **Measure 6 – Increasing/improving publicly available on street re-charging for EV:**

NHDC is anticipating considerable progress towards the provision of on-street EV charging infrastructure. It may not prove practical to have operational units on the ground by the end of 2019, but a realistic timetable and methodology to achieve this in future years should be in place.

- **Measure 8 – Dedicated and free parking bays for EVs at charging points:**

Continued provision of free parking for EVs that are using NHDC's EV charging points in public car parks.

- **Measure 17 – Participate in National Clean Air Day:**

NHDC will continue to contribute to and publicise Hertfordshire County Council's initiatives and projects leading up to and during National Clean Air Day. The opportunity will be taken to publicise the Herts and Beds Air Pollution Notification System.

- **Measure 19 - Reducing emissions from public transport:**

Meetings are being held with HCC to support a North Hertfordshire specific project to work with the bus and coach operators that run services through the two AQMAs. It is anticipated that this project will tie in with HCC's work in implementing an Enhanced Partnership approach to its work with the bus/coach companies. That opportunity being presented by the new powers conferred by the Bus Services Act 2017 the Enhanced Partnership. It is hoped that NHDC will also be able to incorporate an anti-idling advice aspect into the project.

Of the above measures North Hertfordshire District Council's priorities for the coming year (2019) are:

- **Measure 18 – Air Quality Notification System** because the project is almost complete at the end of 2018 and will need to be implemented and publicised within North Hertfordshire and the wider Hertfordshire and Bedfordshire area. It is also a project that has been encouraged by Hertfordshire County Council Public Health.
- **Measure 19 - Reducing emissions from public transport** because it should have synergies with the work that HCC is doing in relation to the Enhanced Partnership Work. Additionally, it is hoped that the establishment of baseline information and working relationships between HCC, NHDC and the bus companies will facilitate the utilisation of air quality damage costs from some of the Major Scale developments that are likely to progress over the next half dozen years.
- **Measure 6 – Increasing/improving publicly available on street re-charging for EV** because there is currently significant local councillor support for this measure and the promise of some seed funding to establish an EV Strategy for NHDC. It is also expected that the measure will progress as a result of the joint working and knowledge sharing occurring as a result of the HCC Future Transport Working Group.

The principal challenges and barriers to implementation that North Hertfordshire District Council anticipates facing are:

- the availability of funding whether from central government or from within NHDC's existing budget
- the amount of time available to the lead officer on local air quality, given the other work stream responsibilities. These include land contamination, local authority pollution prevention and control and the day to day local air quality management duties
- the need to engage with and raise the priority attributed to local air quality issues with colleagues in other teams within NHDC and other partner organisations, all of whom have existing work loads and responsibilities that are not focused on improving local air quality.

Progress on the following measures has been slower than expected:

- ***Measures 1 & 2 – ECO Stars scheme within the Hitchin Industrial Areas to attempt to reduce emissions from HGV and LGV traffic:***

The Defra bid was unsuccessful and sources of alternative funding have not been pursued.

- ***Measure 6 - Increasing/improving publicly available recharging for Electric Vehicles in car parks:***

Since the introduction of a fee for electricity use for the owners of EVs that are charging at NHDC's publicly available charging points in April 2018 there has been a marked drop off in demand. In 2017-2018 a total of 1,955 charging events were recorded across the 5 charging points. This compares to a total of 748 charging events recorded in 2018-2019. The use of the charging points is slowly increasing again, but it has been judged that there is currently insufficient demand to prioritise the provision of more charging points of this type.

- ***Measure 4 - Promotion of cycling and walking:*** Not progressed due to lack of time and other priorities.

- **Measure 20 - Engage with Schools to Raise Awareness of Air Pollution:**

Insufficient resourcing to meaningfully promote and support the education/teaching resource packages that are established and available for junior and senior schools.

- **Measure 9 - Review NHDC fleet with focus on replacing diesel with low emission vehicles:** No progress because no leases expired in 2018.

- **Measure 12 - Hitchin Industrial Estate Relief Road:** This scheme has yet to be formally proposed and there is currently no indication as to if it will be, or according to what timetable it will be.

- **Measure 19 – Reducing emissions from public transport:**

A joint bid, with other local authorities in Hertfordshire and with the support of Hertfordshire County Council, to DfT/Defra for grant to retrofit buses that travel through AQMA's with emission abatement technology was unsuccessful.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, North Hertfordshire District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve ongoing compliance within the Stevenage Road AQMA and to achieve compliance within the Payne's Park AQMA in Hitchin.

This reflects the possibility that the baseline source of air pollution, specifically the number of road vehicles, will increase over the next ten years due to the growth and development pressures on the area that were summarised on pages iii-iv.

However, it is hoped that the, 2018 calculated, average 2.9% yearly reduction in concentrations of nitrogen dioxide within the Stevenage Road AQMA will persist, or at least offset the anticipated negative impact of increased traffic flow through the AQMA. With an average 2% yearly reduction calculated in 2017; if these reductions can be maintained and accompanied by at least two of the next three years of monitoring without an AQO being exceeded NHDC will make a case for the revocation of the Stevenage Road AQMA. A 2.9% reduction in the concentration of $35.1\mu\text{g}/\text{m}^3$ as predicted at the nearest relevant receptor represents a further $1.0\mu\text{g}/\text{m}^3$ reduction in nitrogen dioxide.

Similarly, it is hoped that the average 1.8% reduction in concentrations of nitrogen dioxide observed within the Payne's Park AQMA will persist, or offset the anticipated negative impact of increased traffic flow through the AQMA. If such a reduction could be maintained it would in theory result in a $0.75\mu\text{g}/\text{m}^3$ reduction in the nitrogen dioxide concentrations predicted at the nearest relevant receptor and lead to that concentration of $41.8\mu\text{g}/\text{m}^3$ falling below the AQO of $40\mu\text{g}/\text{m}^3$ by 2022 (Figures 3.5 and 3.6).

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Intro to & uptake of ECO Stars scheme in Hitchin industrial estates	Freight & delivery management / Vehicle Fleet Efficiency	Delivery & Service Plans / Route Management Plans	Local Authority, Funding & Defra Air Quality Grant	2017	Postponed for the short-medium term	Number of companies signed up	Not defined	No further action taken	Not known due to need to source alternative means of funding	Requirement for funding means that implementation is unlikely to occur until at least 2020
2	Intro to & uptake of ECO Stars scheme in Hitchin Town Centre	Freight & delivery management / Vehicle Fleet Efficiency	Delivery & Service Plans / Route Management Plans	Local Authority, Funding & Defra Air Quality Grant	2018	Postponed for the short-medium term	Numbers of companies signed up	Not defined	No further action taken	Not known due to need to source alternative means of funding	Requirement for funding means that implementation is unlikely to occur until at least 2020
3	Engage with & promote school travel plans in 9 Hitchin schools	Promoting travel alternatives	School travel plans	Local Authority Environmental Protection & Hertfordshire County Council. Cost neutral relies on existing staff resources	2020	Not defined	Number of schools with updated Travel Plans & proactively engaging with travel planning	Reduction in private car journeys to school & associated reduction in vehicle emissions	None	Unknown – requires a project plan that reviews existing School Travel Plans & reinvigorates them to account for new technologies & links to school curriculum & teaching resources	Work with Modeshift Stars & TARS Active & Safer Travel Team & contractors & schools to optimise existing or introduce new plans Staff time at both HCC and NHDC Environmental Protection Team to prepare & then implement work programme.
4	Promotion of walking & cycling for commuting in North Hertfordshire	Promoting travel alternatives	Promotion of walking and cycling	North Hertfordshire Environmental Protection Team & Active Communities Team & HCC TARS Team. costs not known	Not defined	Not defined	Not defined	Not defined	None	Not defined	Work with NHDC Active Communities Team and HCC TARS to investigate initiatives to promote walking & cycling

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Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	Increasing / improving publicly available re-charging for Electric Vehicles (EV) in car parks	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	North Hertfordshire Environmental Protection Team	2018	Lack of current demand means no current implementation plans	EV ownership numbers in Hertfordshire & records of usage of available posts	Not defined	The service and maintenance provision and management of PAYG needs to be extended in 2019. It will need a full retender in 2020. No progress on increasing number of available charging points	2019 extend contract by one year 2020 re-tender the service	New provider is now in place and disruption to user of existing charging points has been reduced to a negligible level. Investigations ongoing about potential to increase numbers of charging points
6	Increasing / improving publicly available re-charging for on-street EV	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	North Hertfordshire Environmental Protection Team and Hertfordshire County Council	2019	2020	Presence of on-street EV charging infrastructure	Not defined	Member of the Future Transport & EV Charging working group chaired by Herts County Council & supported by the 10 Hertfordshire local authorities Local support from Councillors and now on NHDC Corporate agenda	2021	Significant barriers exist that require collaborative working & experience sharing to overcome. These include financial viability, civil engineering, accessibility & enforcement & health & safety issues
7	Increasing private availability of recharging infrastructure for Electric Vehicles	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	North Hertfordshire Environmental Protection Team	Completed	Ongoing	Number of Discharge of Condition Planning Cases referred to EP Team & number of EV re-charging points approved in a year	Not defined	Standard conditions available & supported by Local Plan Policy & guidance document. Planning permissions being granted with EV infrastructure conditions in place	Ongoing	Developments regularly being completed with infrastructure in place. Permissions routinely granted with EV recharging infrastructure conditions in place
8	Dedicated & free parking bays for EVs at charging points	Promoting Low Emission Transport	Priority Parking for LEVs	North Hertfordshire Environmental Protection Team	Completed	Ongoing	Principle of not charging for EV parking at charge points in Car Parking Strategy	Not defined	Principle of free parking is established	Ongoing – annual review of car parking tariffs	Will advocate continued support of this approach

North Hertfordshire District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
9	NHDC fleet review diesel to low emission vehicles	Promoting Low Emission Transport	Company vehicle procurement	North Hertfordshire Environmental Protection Team	2018	2019 & 2020	Presence in NHDC fleet of Low Emission Vehicles	Not defined	2015 study failed to make business case for EV uptake. Re-run study in 2019 when the first of the current leases expire	2019 & 2020 (expiry date of existing leases)	It is hoped that improved range & greater geographical spread of charging points will enable some EV uptake
10	Establish legal status of anti-idling provision (S.42 Road Traffic Act 1988) & application by NHDC	Traffic Management	Anti-idling enforcement	North Hertfordshire Environmental Protection Team	2019	Not defined	Statistics on prosecutions & frequency of occurrence	Not defined	Unlikely to take an enforcement route at this stage following Initial enquiry within NHDC to Legal Services and Parking Enforcement. Some basic surveying of main street in Hitchin for behaviour of buses and taxis	Not defined	Not currently set up for enforcement and limited appetite for it. Also, at this stage there is limited evidence of a problem in the AQMA areas
11	Review on-street parking designation & enforcement at Stevenage Road & Upper Tilehouse Street	Traffic Management	Parking Enforcement on Highway	North Hertfordshire Environmental Protection Team and Strategic Planning Team	2020	Not defined	Changes to parking controls & enforcement activity. Reduced queuing	Not defined	None	Not defined	Identified as a possible option at the Steering Group Meeting in 2017. Needs to align to priorities and existing work-loads with colleagues in Strategic Planning
12	Hitchin Industrial Estate Relief Road	Transport Planning & Infrastructure	Strategic Highway Improvement	Herts County Council	2017	Decision on whether implementation will happen is not imminent	Reduction in numbers of HGV passing through AQMAs	Not defined	Hertfordshire County Council is aware of findings of HGV movement survey & the associated AQ issues	Not known	Project dependant on HCC & associated financial, need & political issues. North Herts to be present at HCC Highways' quarterly Stevenage & NH Scheme Meetings

North Hertfordshire District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
13	Engage with Herts CC on development of LTP4 & Local Growth & Transport Plan	Traffic Management & Transport Planning & Infrastructure	Strategic Highway Improvement	North Hertfordshire Environmental Protection Team via Hertfordshire County Council	2017	LTP = 2018/19 GTP = 2019	Inclusion of Air Quality as consideration for prioritising projects for North Herts	Not defined	Consultation responses have strengthened presence of Air Quality as an issue in the LTP. North & Central Hertfordshire area GTP out for consultation in Summer 2019	Completed responses to both public consultations on the LTP4. Will engage in development of Local Growth & Transport Plan	NHDC is only able to influence decision making by way of representation and provision of data.
14	Baseline survey – state of cycling provision in Hitchin	Transport Planning & Infrastructure	Cycle network	North Hertfordshire Environmental Protection Team & Hertfordshire County Council	2018	2020+	Thorough understanding of the current situation & identification of future options	Not defined	None	Not defined	Barrier is staff resource to dedicate to the measure
15	Workplace & School based car sharing including consideration of preferential parking	Alternatives to private car use	Car and lift sharing schemes	North Hertfordshire Environmental Protection with Hertfordshire County Council Travel Planning Team	2019	Not defined	Engagement by schools and businesses	Not defined	None	Not defined	Linked directly to Measure 3 and also 1 & 2 as hoped that this may be an additional outcome. Herts Liftshare
16	Car clubs for new developments	Alternatives to private car use	Car and lift sharing schemes	North Hertfordshire Environmental Protection with Hertfordshire County Council Travel Planning Team	completed	Ongoing - Planning application specific	Prevalence of car clubs in North Herts & number of Travel Plans with Car Clubs specified by condition	Not defined	Standard conditions available & supported by Local Plan Policy & guidance document. Planning permissions being granted with Travel Plans in place	Ongoing and dependant on planning permissions	None
17	Participate in National Clean Air Day	Public Information	Internet and electronic media	Hertfordshire County Council and North Hertfordshire District Council	Ongoing	June 2019 and annually thereafter. 2019 will focus on the Air Pollution Notification System	Publicity generated. Increased uptake of the Air Pollution Notification System	Not defined	Contributing to the working group & Communications Team re-tweeting etc	June 2019 and annually thereafter	None

North Hertfordshire District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
18	Air Quality Notification System	Public Information	Air Pollution Alert	North Hertfordshire DC, other Herts local authorities & Herts County Council Public Health	2018	2019	Numbers of members of the Notification System	Not defined	Contract signed. Notification System to launch in 2019	February 2019	Ability to get sign up will depend on access to vulnerable and interested groups and therefore publicity and support from partners
19	Reducing emissions from public transport	Vehicle fleet efficiency	Vehicle retrofitting programmes	North Hertfordshire District Council & Herts CC and bus companies	2019	2020	Number of buses retrofitted	NO ₂ reduction of 0.009g/km per Euro 5 bus	Draft project plan agreed with HCC	2020 onwards	Planning Obligations from Major Scale Developments
20	Engage with schools to raise awareness of air pollution	Public Information	Other mechanisms	North Hertfordshire in liaison with Herts CC TARS Active & Safer Travel Team	2018	2020 onwards	Number of schools in Hitchin utilising the Air Pollution teaching toolkit	Not defined	Air Quality for Schools Toolkit Resources are upload to the Herts Grid for learning	Not defined	Toolkit is available needs to be effectively publicised within North Hertfordshire and need to have funding available to encourage its uptake
21	Local Plan Policy and Air Quality Planning Guidance Document	Policy Guidance & Development Control	Air quality & planning guidance & local plan policy	North Hertfordshire's Environmental Protection and Planning Teams	Complete	Ongoing – being updated as policy, legislation and best practice changes	Acceptance of the Air Quality Policy within the Local Plan	Not defined	The Inspector of the Local Plan has accepted the need & form of the Local Plan Air Quality Policy	Planning Guidance Document updated in 2018. Local Plan Policy completed 2018	Planning consultations need to be continually responded to, to ensure developments are appropriate and mitigation is implemented
22	Herts & Beds Air Quality Forum including Public Health, Transport Planners & Development Control representation	Policy Guidance & Development Control	Regional groups co-ordinating programmes and strategies	North Hertfordshire's Environmental Protection Officer is Chairman of group	Complete	Ongoing	County-wide initiatives and joint working on bids and projects	Not defined	Active & well-established Forum	Completed but work ongoing	Consider TARS representation on the group

North Hertfordshire District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
23	Green Wall	Other	Other	North Hertfordshire District Council Environmental Protection Team	on hold	not defined	Green Wall in place on west side of Park Way approaching Payne's Park roundabout	Not defined	None	not defined	Will need funding via planning obligation

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

North Hertfordshire District Council is taking the following measures to address PM_{2.5}:

- Continuation of the effective partnership working arrangements with Hertfordshire County Council Public Health that have been in place since 2014/15. This has occurred as a result of three key drivers:
 - Increased evidence and awareness of the harm from exposure to PM_{2.5}
 - The transfer of central government funding from a central public health body to County Councils
 - The existence of the Public Health Outcome Indicator (PHOI) for the fraction of mortality attributable to particulate air pollution measured as fine particulate matter PM_{2.5} (PHOI 3.01).

The outcomes of this work resulted in the formation of an Air Quality (Public Health) Planning Group. The group now operates as a task and finish group for particular air quality projects with the routine engagement and information sharing taking place within the meetings of the Hertfordshire and Bedfordshire Air Quality Forum.

- Access to Public Health funding for each of the ten Hertfordshire Local Authorities enabled North Hertfordshire District Council to purchase and establish a PM_{2.5} Beta Attenuation Measurement (BAM) Real-Time Analyser in its area. The analyser is located within the Stevenage Road, Hitchin Air Quality Management Area in the expectation that this location represents a worst case measurement of PM_{2.5} concentrations within North Hertfordshire.

2018 represents the third full year of PM_{2.5} monitoring within North Hertfordshire and the data are included within this report.

The provision of monitoring equipment was considered a priority because it was identified that there was no actual baseline data available within Hertfordshire. So the validity of the modelled value for the PHOI for Hertfordshire and its Local Authorities could not be judged nor subsequent changes measured.

- The North Hertfordshire District Council Environmental Protection Officer is responsible for preparing an annual report on PM_{2.5} monitoring across Hertfordshire for Hertfordshire County Council's Public Health. The report based on the 2017 data is published at <http://www.airqualityengland.co.uk/local-authority/hnb-reports>

North Hertfordshire District Council has not yet identified any measures targeted specifically at reducing PM_{2.5} and it is considered unlikely that any such measures will be identified over the coming years. Instead and in line with Technical Guidance LAQM.TG16 it is anticipated that:

- Measures to reduce emissions of NO_x by encouraging a move away from internal combustion engine vehicles to ultra low emission vehicles (ULEV) will reduce PM_{2.5} emissions from exhausts
- Measures to reduce road travel altogether will reduce PM_{2.5} emissions from brake and tyre wear and dust re-suspension.

The above is considered the most pragmatic and viable approach and it has also taken into account how North Hertfordshire ranks in terms of PHOI alongside other areas of Hertfordshire and Bedfordshire (Table 2.3).

North Hertfordshire District Council has Smoke Control Areas designated in Letchworth Garden City, which date from the 1960s.

Table 2.3 – PHOI 3.01 Values for Hertfordshire and Bedfordshire (2018)

Local Area	PHOI 3.01	Local Area	PHOI 3.01	Local Area	PHOI 3.01
North Herts	5.6	Stevenage	5.7	Three Rivers	5.9
East Herts	5.6	St Albans	5.8	Watford	6.0
Dacorum	5.6	Welwyn Hatfield	5.9	Luton	6.2
Central Beds	5.6	Hertsmere	5.9	<i>HERTFORDSHIRE</i>	<i>5.8</i>
Bedford	5.6	Broxbourne	5.9	<i>EAST of ENGLAND</i>	<i>5.5</i>

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

North Hertfordshire District Council undertook automatic (continuous) monitoring at two closely located sites during 2018. Both of the monitoring sites are on Stevenage Road, Hitchin and were operating throughout 2018. One measures for oxides of nitrogen, including nitrogen dioxide and has been at that location since 2013. The other measures particulate matter (PM₁₀ and PM_{2.5}) and has been at that location since 2015.

Table A.1 in Appendix A shows the details of the sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. Local circumstances in North Hertfordshire are such that there is no justification to monitor or report on those pollutants. National monitoring results are available at <https://uk-air.defra.gov.uk/networks/network-info?view=aurn>.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

North Hertfordshire District Council undertook non- automatic (passive) monitoring of NO₂ at 43 sites (one site comprises 3 co-located diffusion tubes) during 2018. Table A.2 in Appendix A shows the details of the sites. This reflects an overall increase in 3 monitoring sites compared to 2017 and is represented by the following changes:

Diffusion Tube Locations Discontinued at the end of 2017:

- Hitchin Street, Baldock (NH70) – discontinued because of annual mean averages of below 30µg/m³ since 2011 and because of the presence of three other monitoring locations in that area of Baldock.

- Gosmore Road, Hitchin (NH90) discontinued because of annual mean averages of below $28\mu\text{g}/\text{m}^3$ since 2011 and because of other monitoring locations around the same roundabout.
- Queen Street, Hitchin (NH97) discontinued because of annual mean averages of below $32\mu\text{g}/\text{m}^3$ since 2011 and because it was originally located to be close to a proposed redevelopment of Hitchin Market/Town Centre that included provision of significantly increased car parking capacity. The proposed redevelopment has not materialised and is not imminent.

Diffusion Tube Locations Added at the start of 2018:

- Hadrian Way, Baldock (NH121) because it is located immediately to the west of the A1(M) motorway and also north-north east of an eleven engine gas-fired standby electricity generation (STOR) site.
- Hopewell Road, Baldock (NH122) because it is located to east of and within 50m of the A1(M) motorway. This location was also requested by a local resident and had been historically monitored between 2000 and 2005.
- Dunkerley Court, Letchworth Garden City (NH123) because there has been a gradual encroachment of residential developments into the edges of the industrial estate and there has been no previous monitoring of the area due to an absence of residential receptors.
- Bedford Road, Letchworth Garden City (NH124) because there is a JMI school on the road, which is a relatively busy route through the north of Letchworth Garden City. It was also a location requested by a member of the public.
- Luton Road, Cockernhoe (NH125) because it was an area identified as lacking monitoring during the examination of the Local Plan. It was identified as being of relevance because it is located close to the Luton Airport and an area proposed to accommodate over 2000 homes and associated community infrastructure. It should, however, be noted that this area of the district is rural and accessible only via B-Roads, so it was also chosen as a location to establish a rural background site on the western edge of the district.

- Taylor Court, Little Wymondley (NH126) because of a request from the public and concern about the lack of monitoring within this village in the past. Additionally there is a planning application for a STOR gas engine electricity plant and Local Plan housing allocation sites in and around the village. The village is also located between Stevenage and Hitchin.

The only other change to the monitoring network was the relocation of the Grove Road diffusion tube from a sign-post close to the roadside to a downpipe on the wall of a dwelling on Grove Road. This change has been reflected by the discontinuation of diffusion tube NH69 and introduction of diffusion tube NH127.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

In each of 2013 and 2014 there was only 1 exceedence recorded of the hourly mean and none in 2015. However, 2016 represented a significant change with 10 occasions, spread across 7 days, when the hourly mean was exceeded. This represented a significant worsening of short term air quality within the Stevenage Road AQMA. The data from 2017 and from 2018 suggests that 2016 was an anomalous year because in 2017 there were only 4 occasions, spread over 3 days, when the hourly mean was exceeded and no such occasions in 2018.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B. It should be noted that only the annual mean values that exceeded the AQO at the monitoring location have been corrected to provide a value representative of exposure at the nearest relevant receptor. Figures are included below that show the trends within the two Hitchin AQMAs.

Figure 3.1 displays the NO₂ annual mean concentrations measured at the AQMA at Stevenage Road, Hitchin, in relation to the Air Quality Objective (AQO). All of the monitoring points are within the boundary of the AQMA and in 2018 as in 2017 all of the monitoring locations recorded a decrease in nitrogen dioxide concentrations in relation to the previous year. This represents a continued reversal of the increase seen between 2015 and 2016 and reinforces why the assessment of air pollution levels and any subsequent decision making is based on medium term trends in air pollutants.

An assessment of the longer term trends in the concentrations of NO₂ measured within the Stevenage Road AQMA indicate that there has been a consistent reduction in the concentrations being measured since 2010, with only occasional 'outlier' years such as 2014 and 2016 where concentrations rise in relation to that broader downward trend. Averaged across the seven monitoring locations displayed in Figure 3.1 the average yearly percentage reduction in NO₂ concentrations is 2.9%.

The mean annual average of 40µg/m³ measured at NH105 in 2018 represents 35.1µg/m³ at the point of public exposure at 94-98 Stevenage Road. This is now the second year, following on from 2017, since monitoring commenced there in 2012 that the AQO was not exceeded at the point of public exposure.

Similarly the mean annual average of 38.8µg/m³ measured at NH92 in 2018 is now the third time in consecutive years that the AQO has not been breached at the nearest residential receptor (22 Stevenage Road).

This means that for the second year in a row there are assessed to be no exceedances of the AQO at any of the relevant receptors within the Stevenage Road AQMA. However, there is still no intention to revoke the designation of the AQMA because 2018 represents only the second year since 2010 that this has been the case.

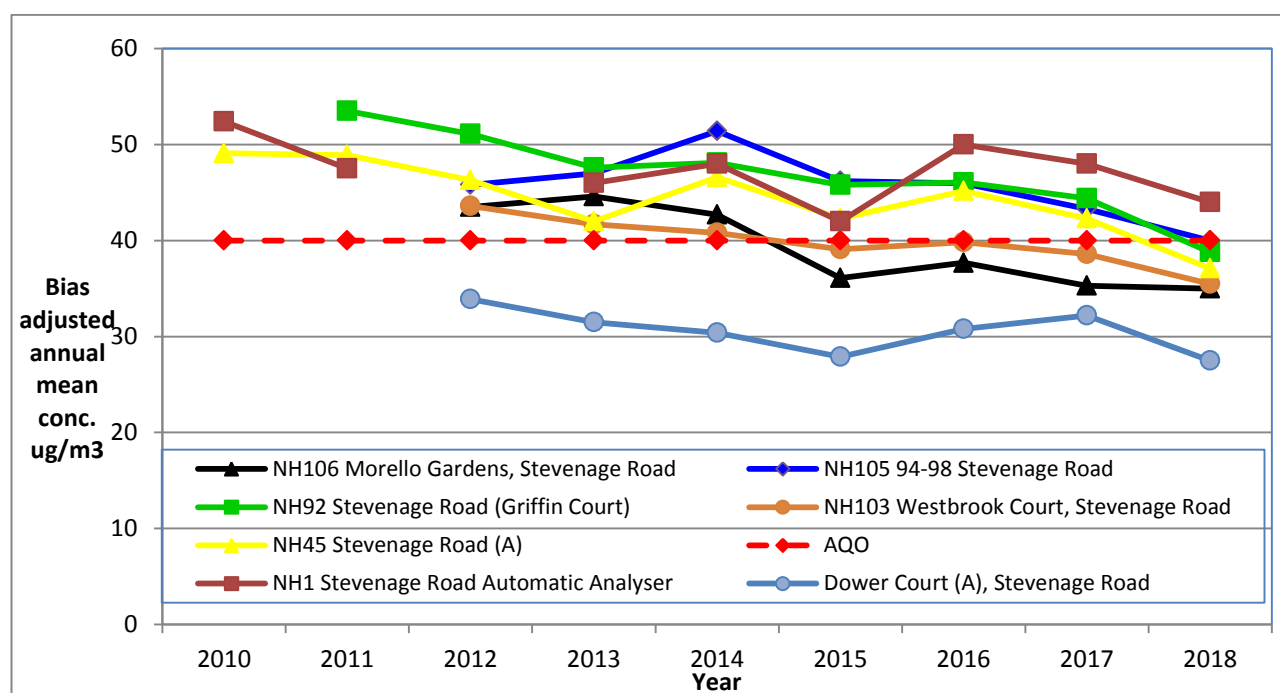


Figure 3.1: Trends in NO₂ concentrations at monitoring sites (all except NH106) located within the AQMA at Stevenage Road, Hitchin

The status of the Stevenage Road AQMA will be kept under review by continuing to monitor the air quality within and around the AQMA and annually assessing the trends in the measured concentrations.

Figure 3.2 illustrates this continuing improvement in local air quality at Stevenage Road, Hitchin, extrapolated to the nearest relevant receptor for the two monitoring locations that in recent years had been representative of an exceedance of the annual AQO at a relevant receptor.

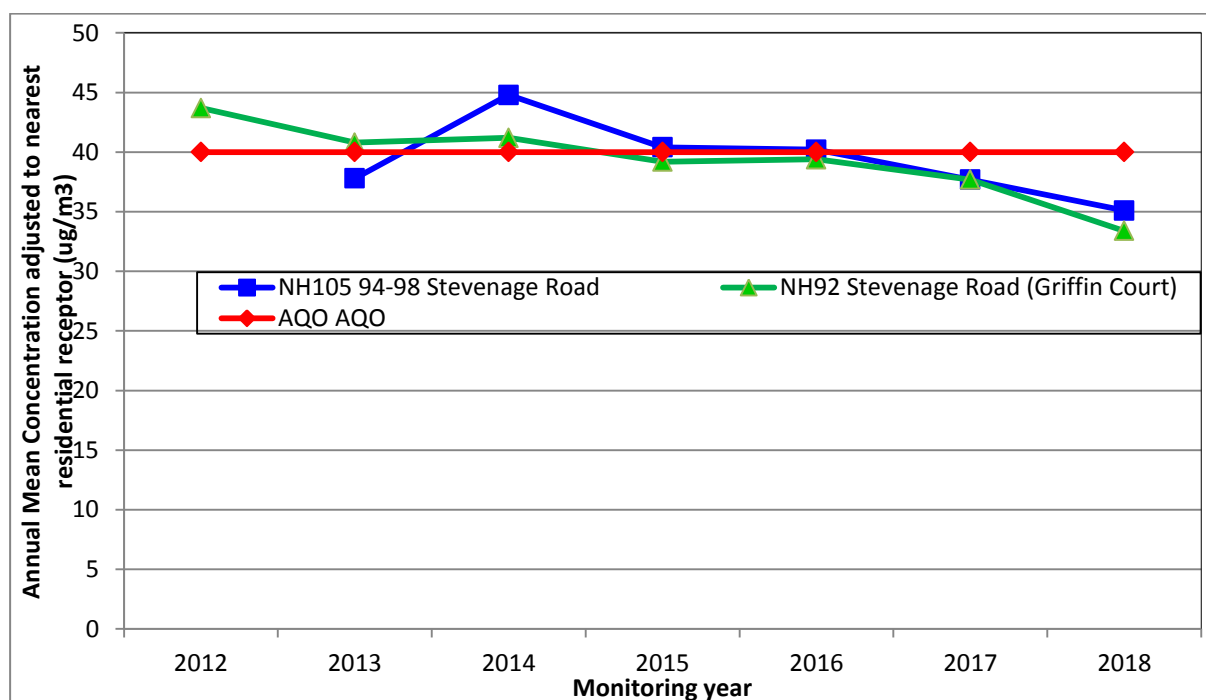


Figure 3.2: Trends in NO₂ concentrations monitored at NH105 and NH92 adjusted to be relevant to the nearest residential receptors

Figure 3.3 displays the NO₂ annual mean average concentrations, in relation to the Air Quality Objective (AQO), from inside and neighbouring the AQMA in the Payne's Park area of Hitchin). On the basis of six consecutive years of the annual mean average AQO for NO₂ being exceeded an AQMA at Payne's Park was declared in January 2017. The AQMA boundary, (Appendix D), encompasses one residential property, 41 Upper Tilehouse Street.

Figure 3.3 shows that in 2018 the measured NO₂ concentration increased fractionally in one monitoring location (NH93) in relation to 2017, but remained below the 2016 level and equally significantly was below the concentrations that were measured between 2011 and 2014. However, the fractional increase has meant that despite the broad improvement in air quality since 2011 there is still one location, NH93, where the AQO is exceeded.

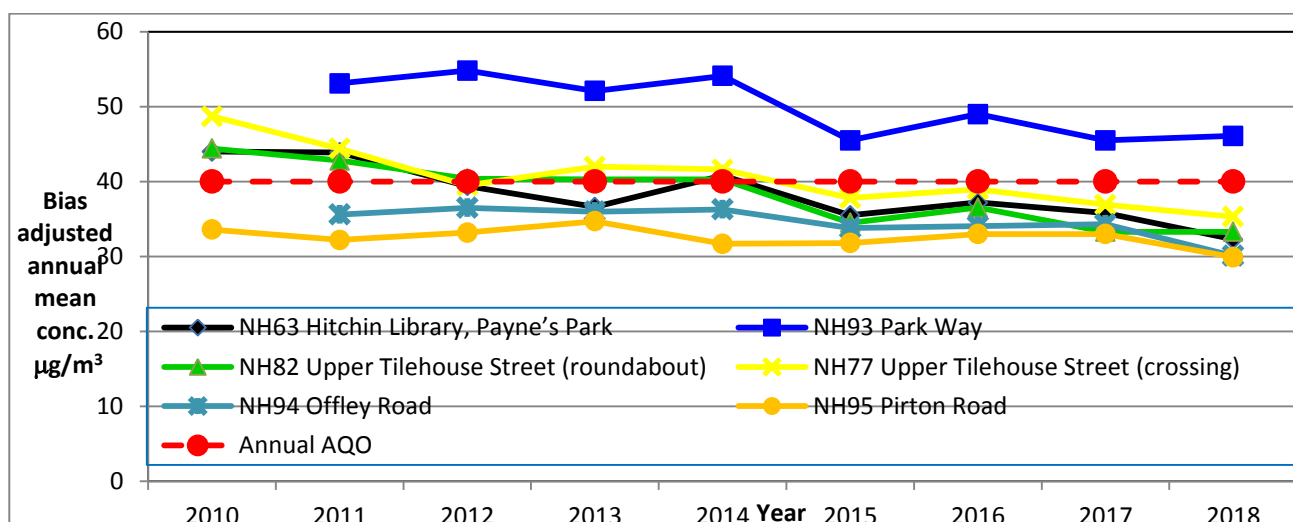


Figure 3.3: Trends in NO₂ concentrations at monitoring sites at Payne's Park, Hitchin

The NH93 annual mean average concentrations measured between 2011 and 2017 were above the 40µg/m³ AQO when adjusted to the nearest residential receptor (41 Upper Tilehouse Street). The same fall off calculation was undertaken for the NH93 result for 2018 and demonstrates that the measured 46.1µg/m³ is representative of 41.8µg/m³ at 41 Upper Tilehouse Street. This exceeds the AQO of 40µg/m³ and validates the decision taken in 2017 to declare the AQMA at Payne's Park, Hitchin.

An assessment of the longer term trends in the concentrations of NO₂ measured within and close to the Payne's Park AQMA indicates that there has been a gradual improvement in air quality since 2010. Averaged across the six monitoring locations displayed in Figure 3.3 the average yearly percentage reduction in NO₂ concentrations was 2.2% as calculated in 2018. This is comparable to the average yearly percentage reduction in NO₂ concentrations of 2.9% within and in the vicinity of the Stevenage Road AQMA, also as calculated in 2018.

Figure 3.4 illustrates this gradual decline in NO₂ at the relevant receptor, 41 Upper Tilehouse Street, compared against the annual mean average AQO.

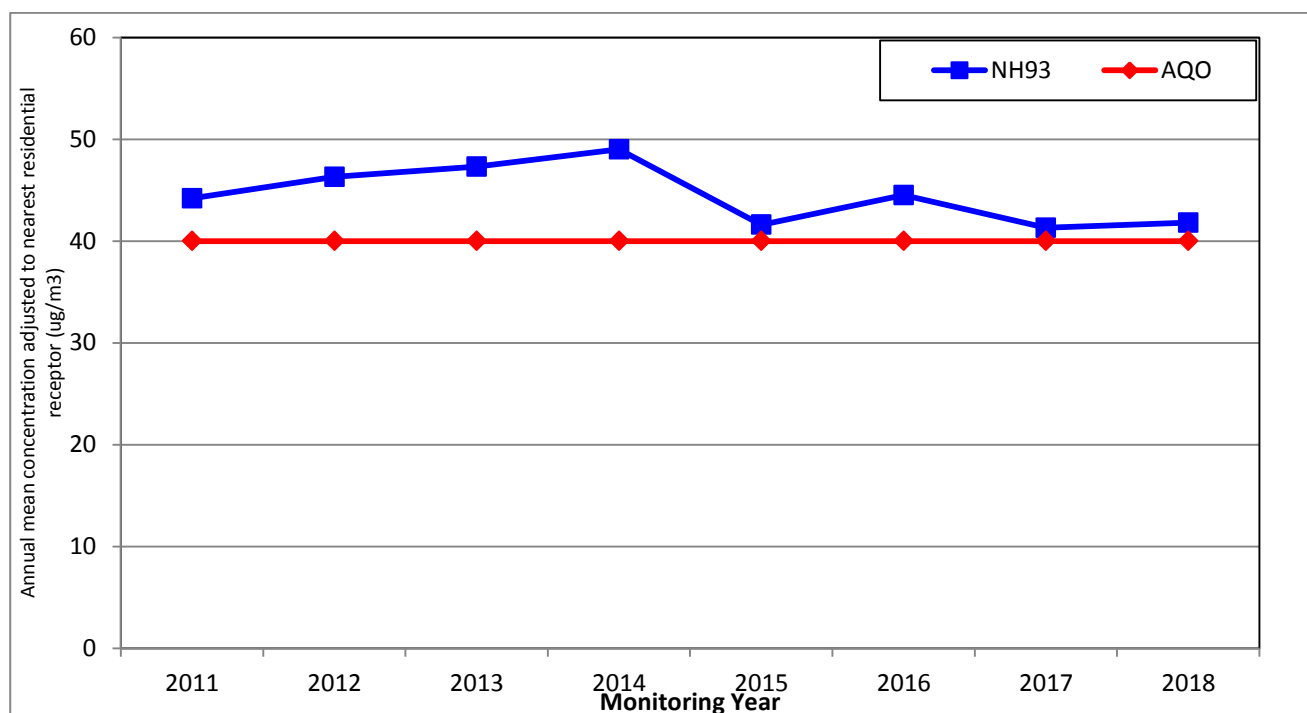


Figure 3.4: Trends in NO₂ concentrations monitored at NH93 adjusted to be relevant to the nearest residential receptor (41 Upper Tilehouse Street).

Figure 3.5 shows the trend-line for NO₂ for the eight years of available data. The line does not represent a strong fit because the value of 0.3443 is some distance from the value of 1 that would represent the strongest fit. However, compared to when this trend line was graphed in 2017 the addition of the data for 2018 has improved the fit from its previous value of 0.236.

By extrapolating this trend-line it is possible to predict when the NO₂ levels at the nearest residential receptor will be expected to decline below the AQO of 40µg/m³. Figure 3.6 illustrates that the predicted date of compliance with the AQO at 41 Upper Tilehouse Street is 2022. This is consistent with the date that was predicted in the 2017 ASR

This predication is obviously dependant on many variables, perhaps the most significant of which is linked to the primary local source of NO₂ emissions, the road traffic. The number of vehicles using the roads through the AQMAs, the impact of congestion and the nature of the vehicles, such as the numbers of cars and light and heavy duty vehicles and also their engine type.

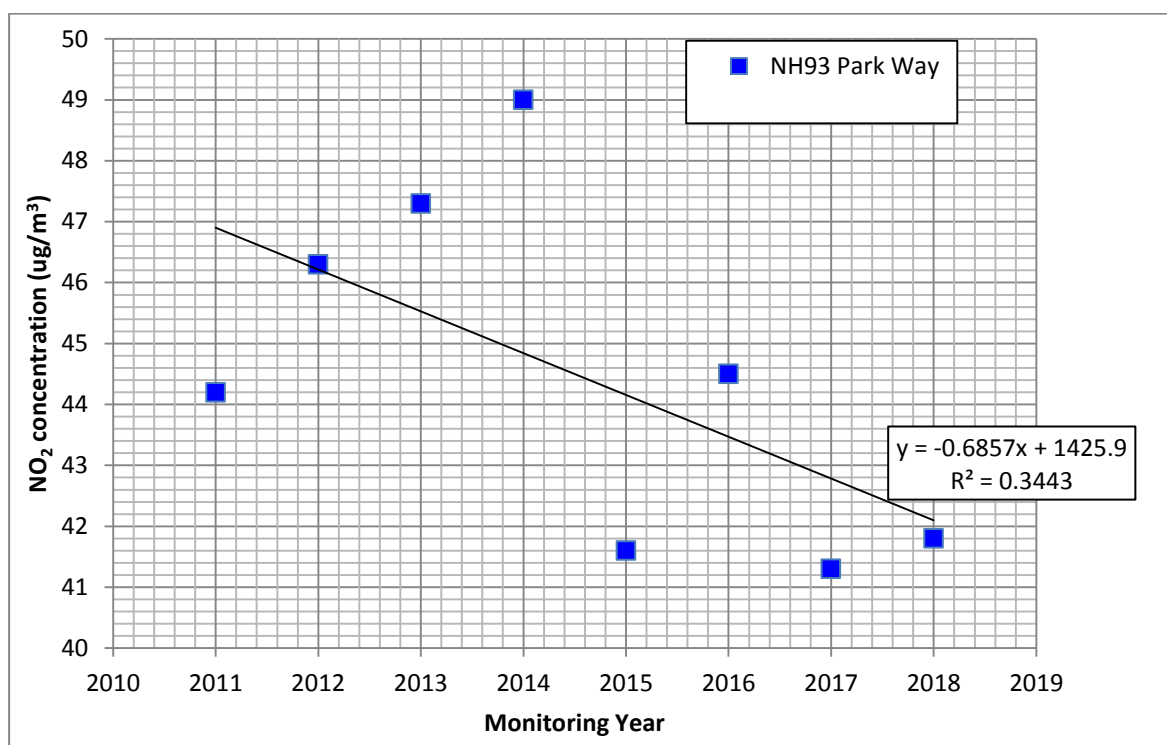


Figure 3.5: Trend-line for NO₂ concentrations as calculated at 41 Upper Tilehouse Street.

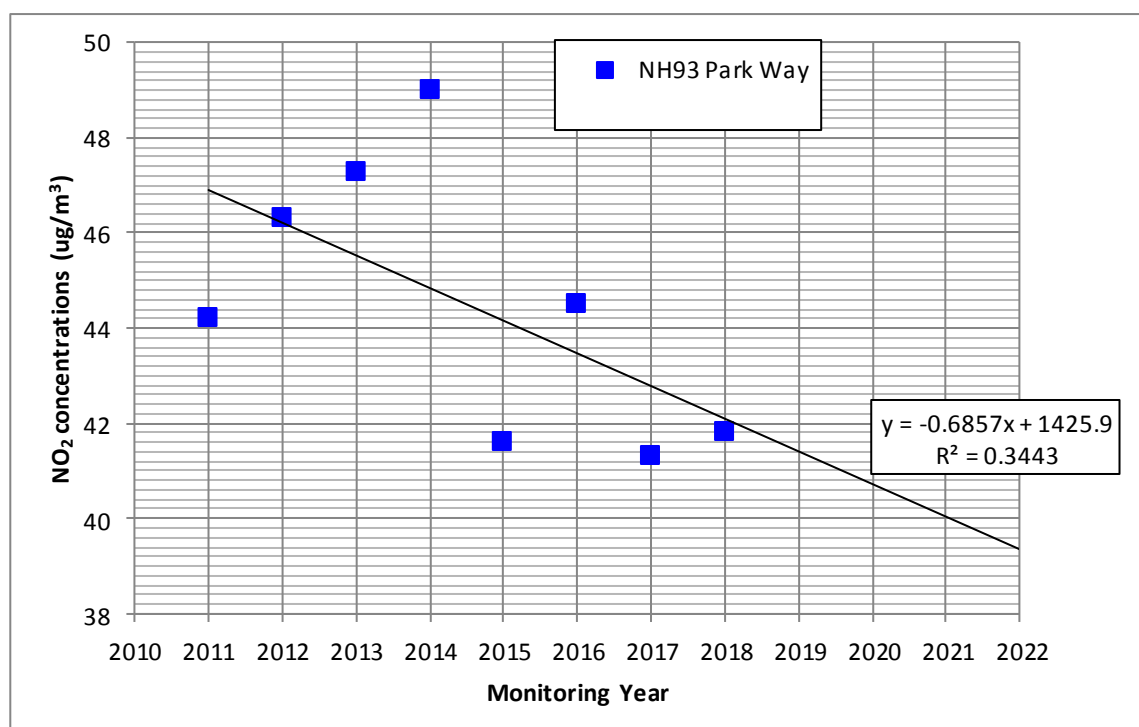


Figure 3.6: Predicted change in NO₂ concentrations at 41 Upper Tilehouse Street based on extrapolation of eight years of monitoring

Traffic counts are the only readily available measure of a change in the local sources of NO₂. However, from experience in previous years it is known that the Department for Transport publishes road traffic count statistics for each year in the late summer of the following year. As such, Figure 3.7 can only show road traffic data covering the 2005 to 2017 period.

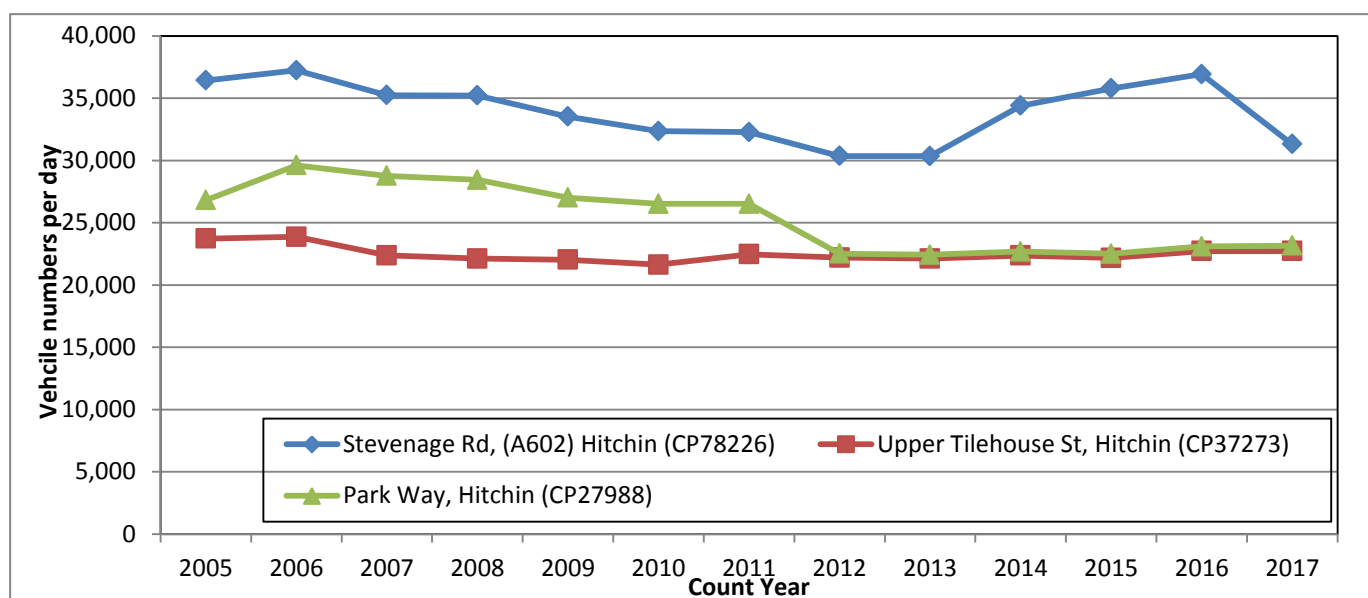


Figure 3.7: Trends in road traffic counts at the three DfT count points closest to the Stevenage Road AQMA and Payne’s Park AQMA in Hitchin

Reductions in the volume of traffic at Stevenage Road had been recorded between 2005 and 2013. However 2014, 2015 and 2016 saw an estimated increase in the volume of road traffic passing through the AQMA. This increase coincided with an increase in NO₂ recorded in the AQMA in 2014 and 2016, but it did not correlate to the reduction in NO₂ recorded in 2015. 2017 traffic count data represented a significant reduction in the levels of traffic on Stevenage Road and so links in better to the measured improvement in local air quality.

At the Payne’s Park/Park Way count location, traffic volumes have remained steady since a decline in 2012 and 2017 showed no change in this trend. At the Upper Tilehouse Street count location, traffic volumes had been relatively unchanged for a longer period than at Payne’s Park/Park Way location.

The split of vehicles comprising the traffic counted at the three sites since 2010 are illustrated by Figures 3.8, 3.9 and 3.10. This is of interest because heavy goods vehicles (HGV) and to a lesser extent light goods vehicles (LGV) contribute more emissions of NO₂ per vehicle compared to cars and motor-cycles. Buses (Public Transport Vehicles) share this characteristic with HGV, but it should be noted that HGV are much more prevalent than buses in these areas of Hitchin.

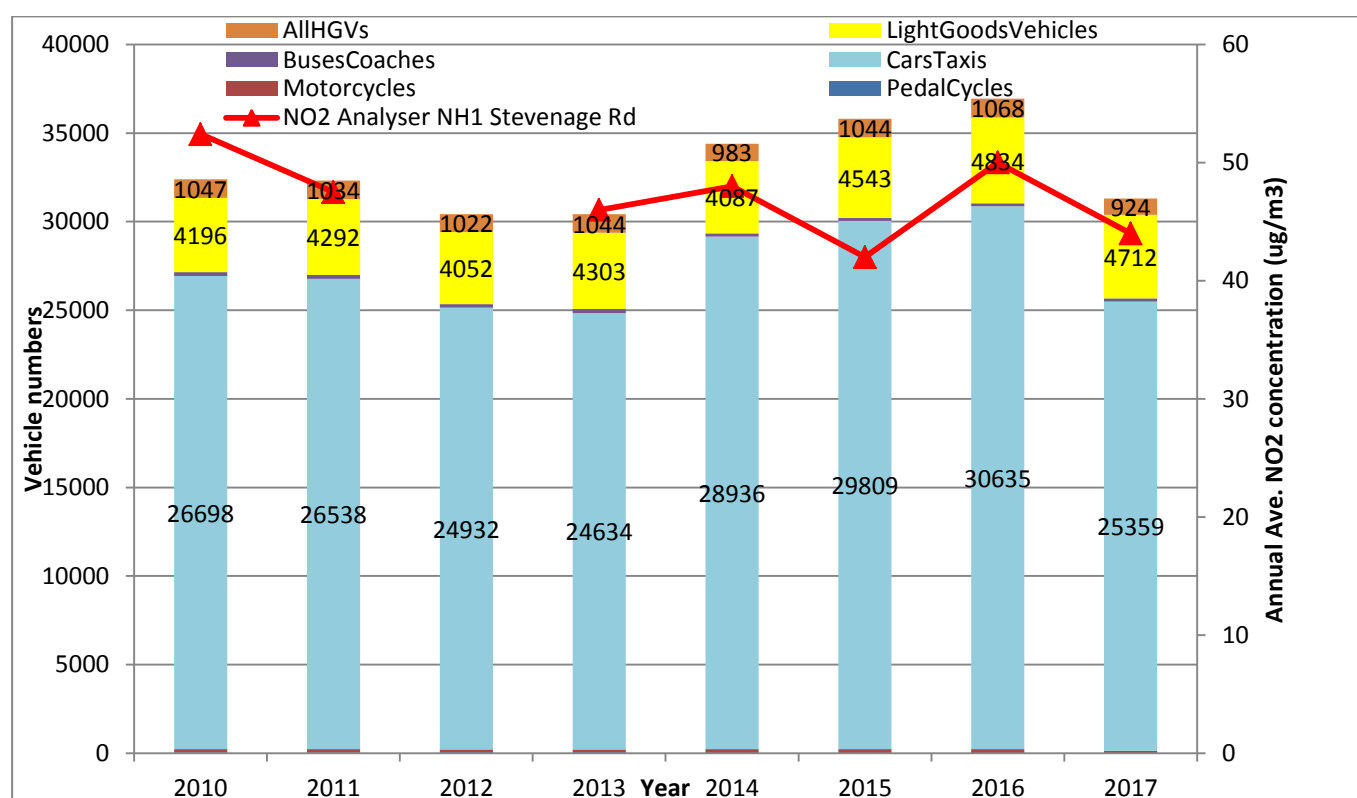


Figure 3.8: Road traffic counts at DfT count point 78226 within the Stevenage Road AQMA Hitchin compared to mean annual average NO₂ measured by the automatic analyser

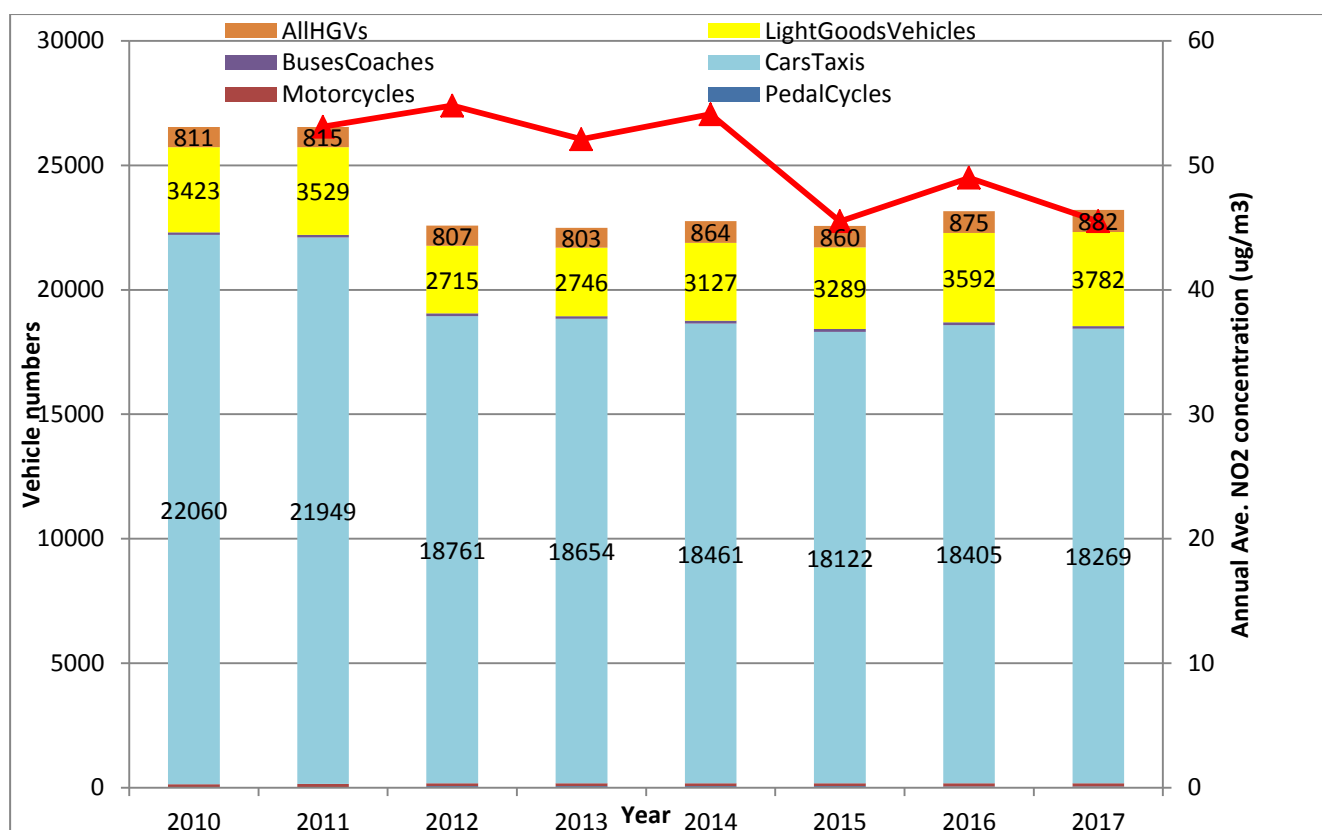


Figure 3.9: Road traffic counts at DfT count point 27988 at Park Way, Hitchin compared to the mean annual average NO₂ measured by diffusion tube NH93

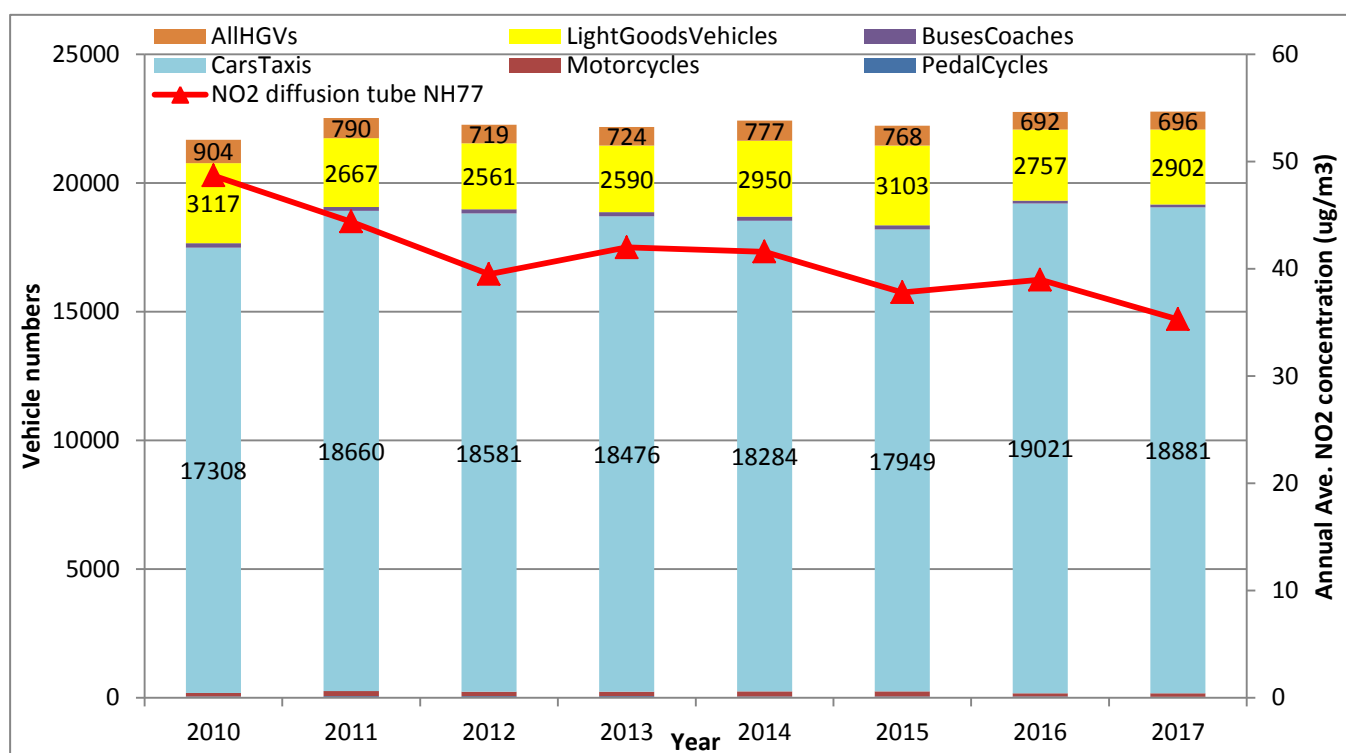


Figure 3.10: Road traffic counts at DfT count point 37273 at Upper Tilehouse Street, Hitchin compared to the mean annual average NO₂ measured by diffusion tube NH77

Across the three traffic count locations, there is not a strong direct link between the measured NO₂ concentrations and total vehicle numbers, or the numbers of particular groups of vehicle for any of the locations considered. Such a simplistic relationship would not necessarily be expected, particularly when considering such proportionately low changes in vehicle numbers. Additionally the influence that meteorological conditions can have on the delivery of national or international air pollution is significant as it is on the dispersion of air pollutants locally emitted from vehicle exhausts. There is also the expectation that with an improving vehicle fleet, in terms of lower air pollution emissions per exhaust, that numbers of vehicles could rise without a commensurate increase in air pollution emissions.

The only other area of North Hertfordshire where an exceedance of the annual AQO has been considered to be likely is in Baldock. Figure 3.11 is included here to illustrate how gradual reductions in NO₂ similar to those observed in Hitchin have

also been observed in Baldock. Even the kerbside site at NH88, which is not ideally located to be used to assess whether there is justification for an AQMA, has continued its downward trend following slight increases in NO₂ concentrations being measured in 2016 and 2017. These data confirm that there is no current need to consider the declaration of an AQMA in Baldock.

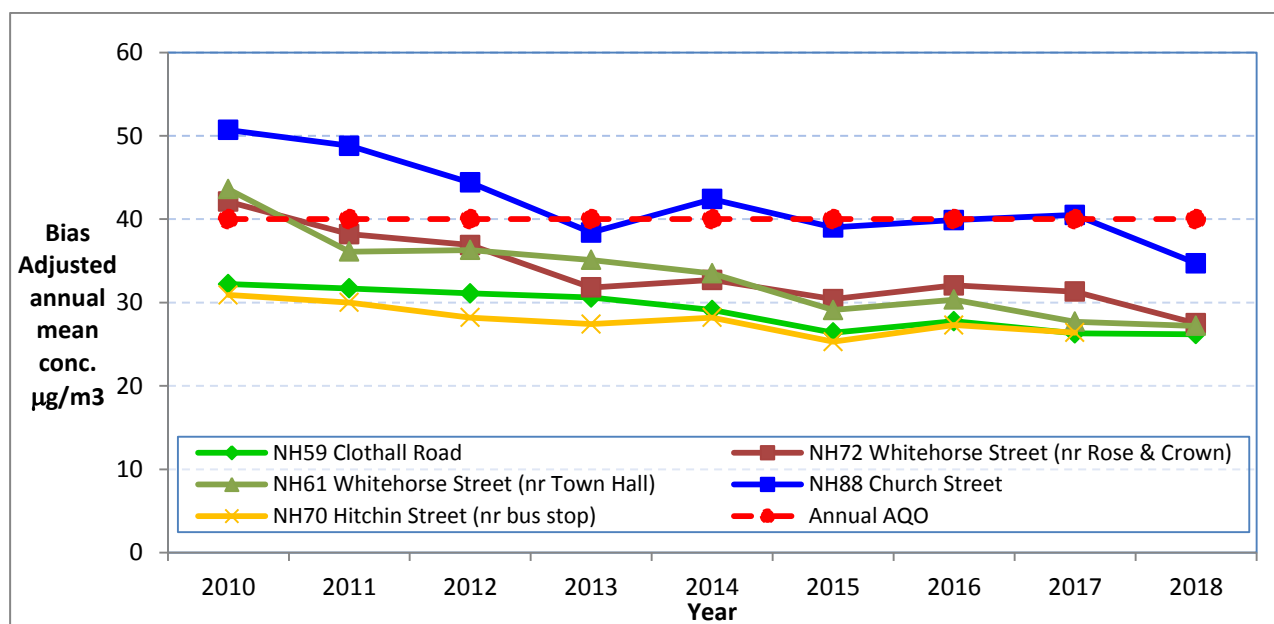


Figure 3.11: Trends in NO₂ concentrations at monitoring sites in Baldock

3.2.2 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

2018 was the third full year of PM₁₀ monitoring at the Stevenage Road location. The data from all three years are displayed in Figure 3.12 and show that the mean average concentrations for all years were below the 40µg/m³ AQO. The number of daily exceedences of the 50µg/m³ AQO are also shown in Figure 3.12 as displayed with the number of allowable exceedences in a calendar year.

Although the annual mean average concentrations have remained stable between 2016 and 2018, the number of daily exceedences was higher in 2017 compared to 2016, but in 2018 only one daily exceedence was measured. Just three years of monitoring data are not sufficient to establish a trend, but it is enough to be confident that the AQO is not at risk of being exceeded. The data capture rate from the PM₁₀ analyser in 2017 was only at 80.39% and 84.18% in 2018 compared to 98.88% in 2016. The largest periods of missing data from 2017 were the 31 days of October and 28 days in November, compared to the last 12 days in June and the 31 days in July during 2018. Missing data is due to faults with the monitoring equipment.

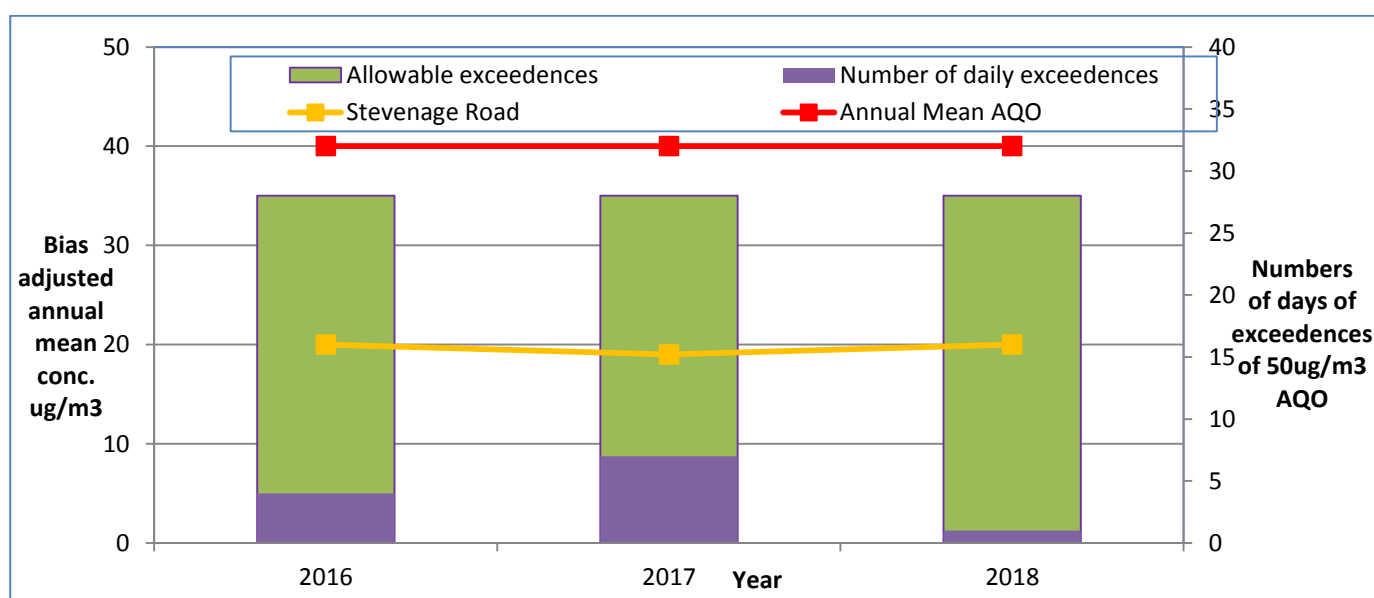


Figure 3.12: PM₁₀ concentrations measured at Stevenage Road, Hitchin

3.2.3 Particulate Matter (PM_{2.5})

Table A.7 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 3 years.

2018 was the third full year of PM_{2.5} monitoring at the Stevenage Road location. The data are displayed in Figure 3.13 and show that the mean average concentrations for each year were below the non-statutory target value of 25µg/m³. The number of days when moderate and high (as defined by the Defra Daily Air Quality Index) concentrations of PM_{2.5} were measured is also displayed in Figure 3.13. There is no

limit or objective in place specifying how many, if any, days of exceedences of a given PM_{2.5} concentration are allowed.

Although three years of monitoring data are not sufficient to establish a trend, both the annual mean average PM_{2.5} concentration and the number of days when moderate and high PM_{2.5} concentrations were detected were lower in 2017 and 2018 than in 2016.

The data capture rate in 2018 was 95.59%, which represents the most consistent performance of the monitoring equipment; data capture rates having been 86.6%, and 91.3% in previous years.

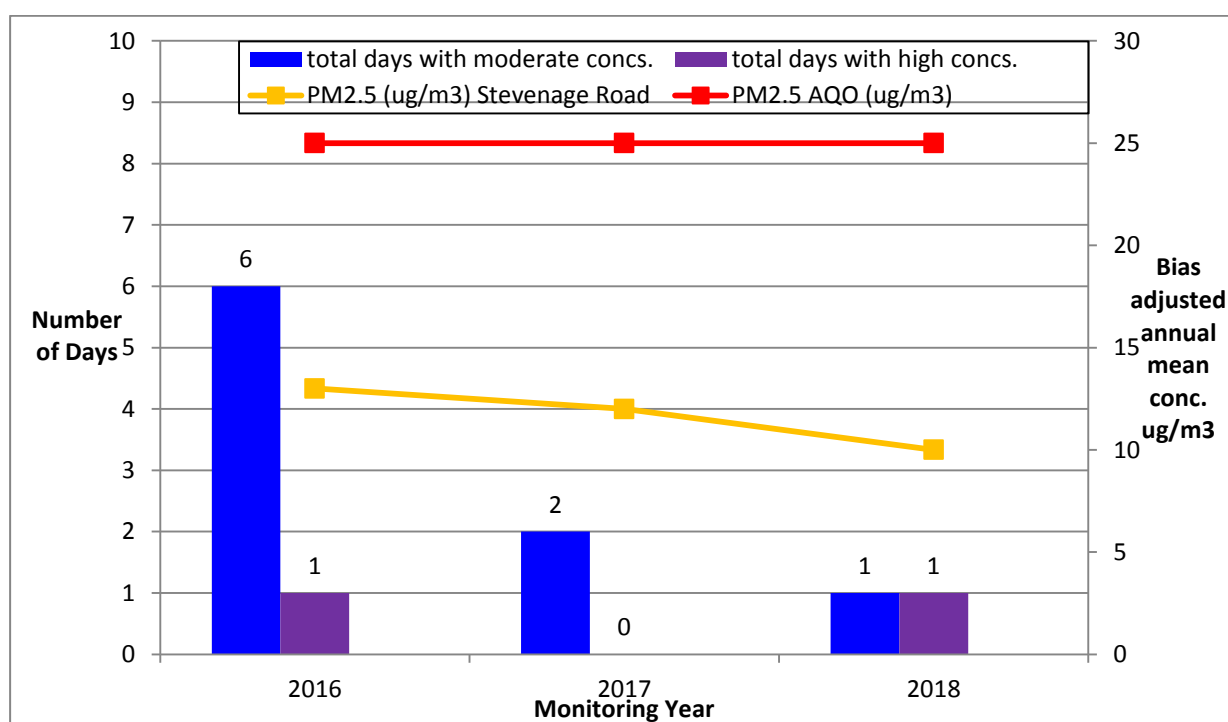


Figure 3.13: PM_{2.5} concentrations measured at Stevenage Road, Hitchin

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
NH1	Stevenage Road NOx	Roadside	518740	228348	NO2	YES	Chemiluminescent	11	2	1.5
NH2	Stevenage Road PM	Roadside	518713	228349	PM10, PM2.5	YES	TEOM, BAM	19	2	1.5

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
NH06	Melbourn Road, Opposite Town Hall, Royston	Roadside	535906	240794	NO ₂	NO	7	1.1	NO	2.1
NH45	Stevenage Road A, Hitchin	Roadside	518708	228347	NO ₂	YES	19	2	NO	2
NH59	(NH04a) Clothall Road, Baldock	Roadside	524649	234061	NO ₂	NO	11	3	NO	2
NH60	(NH13a) Willian Road, Hitchin	Roadside	519916	230099	NO ₂	NO	29	1.1	NO	2
NH61	(NH53a) Whitehorse Street, Baldock (nr town hall)	Roadside	524428	233882	NO ₂	NO	35	2	NO	2.1
NH63	(NH02a) Library Hitchin	Roadside	518160	229092	NO ₂	NO	30	3.5	NO	2
NH67	Cadwell Court, Hitchin	Roadside	519225	230553	NO ₂	NO	12	2	NO	2.1
NH127	64 Grove Road, Hitchin	Roadside	518821	229993	NO ₂	NO	0	6	NO	2
NH72	Opp Rose Crown, Whitehorse Street, Baldock	Roadside	524502	233948	NO ₂	NO	27	2	NO	2
NH103	Westbrook Court, Hitchin	Roadside	518773	228342	NO ₂	YES	10	2.4	NO	2
NH77	Upper Tilehouse St, Hitchin-traffic lights	Roadside	518006	229032	NO ₂	NO	5	1.5	NO	2

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
NH78	West Hill, Hitchin	Roadside	518099	229229	NO ₂	NO	4	2	NO	2
NH82	Upper Tilehouse Street, Nr Roundabout	Roadside	518129	229065	NO ₂	NO	7	1.5	NO	2
NH83	Hitchin Station, Roundabout A	Roadside	519366	229806	NO ₂	NO	20	1	NO	2
NH87	11 Stevenage Road, Hitchin	Roadside	518731	228362	NO ₂	NO	0	15	NO	1.9
NH88	Church St, Baldock (Opp. Town Hall)	Kerbside	524448	233898	NO ₂	NO	13	0.5	NO	2
NH89	London Road, Hitchin	Roadside	518706	228293	NO ₂	NO	20	1.9	NO	2
NH91	St John's Road, Hitchin	Roadside	518656	228406	NO ₂	NO	5	7.9	NO	2.1
NH92	Stevenage Road (Griffin), Hitchin	Roadside	518872	228305	NO ₂	YES	5	2	NO	2
NH93	Park Way, Hitchin	Roadside	518130	229036	NO ₂	YES	3	1.6	NO	1.8
NH94	Offley Road, Hitchin	Roadside	517915	228967	NO ₂	NO	7	2.3	NO	2
NH95	Pirton Road, Hitchin	Roadside	517886	228975	NO ₂	NO	22	1.3	NO	2
NH98	Walsworth/Radcliffe Road, Hitchin	Roadside	519080	229510	NO ₂	NO	4	1.5	NO	2
NH99	Nightingale Road, Hitchin	Roadside	518953	229786	NO ₂	NO	5	1.7	NO	2
NH108	Hitchin - Hermitage Road (97)	Roadside	518534	229302	NO ₂	NO	3	0.8	NO	2

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
NH104	Dower Court (A), Stevenage Road, Hitchin	Roadside	518757	228334	NO ₂	YES	0	3.3	NO	1.8
NH105	94-98 Stevenage Road, Hitchin	Roadside	519067	228255	NO ₂	YES	7	3.5	NO	2.1
NH106	Morello Gardens, Stevenage Road, Hitchin	Roadside	519250	228218	NO ₂	NO	5	1.4	NO	2
NH107	Whitehill Rd, Hitchin	Roadside	518720	228335	NO ₂	NO	26	2.3	NO	2
NH110	Stevenage Road, AQ Analyser 1, Hitchin	Roadside	518740	228348	NO ₂	YES	11	2	YES	1.2
NH111	Stevenage Road, AQ Analyser 2, Hitchin	Roadside	518740	228348	NO ₂	YES	11	2	YES	1.2
NH112	Stevenage Road, AQ Analyser 3, Hitchin	Roadside	518740	228348	NO ₂	YES	11	2	YES	1.2
NH114	Old Park Road, Hitchin (number 20)	Roadside	518150	229160	NO ₂	NO	0	2.45	NO	2.1
NH115	Old North Road, Royston	Roadside	535373	241466	NO ₂	NO	9	1	NO	1.9
NH116	6 Horseshoe, Park Street, Hitchin	Roadside	518492	228669	NO ₂	NO	0	2.4	NO	1.8
NH117	Hitchin - Fishponds Road	Roadside	518278	229752	NO ₂	NO	0	3.3	NO	2
NH118	High Street (27) Graveley	Roadside	523125	227954	NO ₂	NO	1.2	1.8	NO	2
NH119	High Street (125) Codicote	Roadside	521767	218110	NO ₂	NO	0.4	1.1	NO	2

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
NH120	Five House Farmhouse Sandon Rd, Therfield	Rural	533805	233823	NO ₂	NO	11.4	1.2	NO	1.9
NH121	1 Hadrians Way Baldock	Roadside	523849	233497	NO ₂	NO	5	11	NO	2
NH122	29 Hopewell Road, Baldock	Roadside	523917	233917	NO ₂	NO	7	1.5	NO	2
NH123	Dunkerley Court, Letchworth Garden City	Roadside	522289	232985	NO ₂	NO	0	5.3	NO	2
NH124	82 Bedford Road, Letchworth Garden City	Roadside	520967	233073	NO ₂	NO	13	3.2	NO	2
NH125	11 Luton Road, Cockernhoe	Rural	512486	223251	NO ₂	NO	9	3	NO	2
NH126	2 Taylor Court, Wymondley	Roadside	521189	227462	NO ₂	NO	17	2	NO	2

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾						
					2012	2013	2014	2015	2016	2017	2018
NH1	Roadside	Automatic	95	95		46	48	42	50	48	44
NH06	Roadside	Diffusion Tube	100	100	27.9	29.7	29.3	26.8	25.94	26.5	24.6
NH45	Roadside	Diffusion Tube	100	100	46.3	42	46.6	42.3	45.16	42.3	37.1
NH59	Roadside	Diffusion Tube	92	92	31.1	30.6	29.1	26.4	27.75	26.3	26.2
NH60	Roadside	Diffusion Tube	100	100	30	31.5	29	29.5	29.89	29.4	28
NH61	Roadside	Diffusion Tube	100	100	36.3	35.1	33.5	29.2	30.35	27.7	27.2
NH63	Roadside	Diffusion Tube	83	83	39.4	36.6	40.8	35.5	37.20	35.8	32.3
NH67	Roadside	Diffusion Tube	1000	100	29.8	28.9	26.6	25.3	27.15	28.3	23.7
NH127	Roadside	Diffusion Tube	100	100							21.9
NH72	Roadside	Diffusion Tube	92	92	36.9	31.8	23.7	30.4	32.05	31.3	27.5
NH103	Roadside	Diffusion Tube	92	92	43.6	41.7	40.8	39.1	39.83	38.6	35.5
NH77	Roadside	Diffusion Tube	92	92	39.5	42	41.6	37.8	38.99	36.9	35.3
NH78	Roadside	Diffusion Tube	100	100	28.6	29	29.3	25.9	26.90	24.3	25.1
NH82	Roadside	Diffusion Tube	100	100	40.4	40.3	40.3	34.5	36.53	33.3	33.3
NH83	Roadside	Diffusion Tube	100	100	32.7	32.9	34.1	30.4	32.35	31.4	27.8
NH87	Roadside	Diffusion Tube	100	100	29.2	27.9	27.4	26.3	26.93	26.9	23.8
NH88	Kerbside	Diffusion Tube	100	100	44.4	38.4	42.4	39	39.89	40.5	34.7
NH89	Roadside	Diffusion Tube	100	100	29.5	28.4	28.7	26.3	29.70	28.2	22.8
NH91	Roadside	Diffusion Tube	100	100	34.6	32	29.9	31.2	31.85	32.2	27.4
NH92	Roadside	Diffusion Tube	100	100	51.1	47.6	48.1	45.8	46.05	44.4	38.8

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Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾						
					2012	2013	2014	2015	2016	2017	2018
NH93	Roadside	Diffusion Tube	92	92	54.8	52.1	54.1	45.5	48.99	45.5	46.1
NH94	Roadside	Diffusion Tube	92	92	36.5	36	36.3	33.8	34.06	34.3	30.1
NH95	Roadside	Diffusion Tube	100	100	32.2	33.2	34.7	31.7	31.81	33.0	29.9
NH98	Roadside	Diffusion Tube	92	92	33.6	32.7	31.9	30.3	30.44	28.6	26.6
NH99	Roadside	Diffusion Tube	75	75	33.4	32.2	29.1	28.2	30.71	29.8	29.2
NH108	Roadside	Diffusion Tube	100	100		36.5	40.2	36.1	34.04	33.1	32.1
NH104	Roadside	Diffusion Tube	100	100	33.9	31.5	30.4	27.9	30.80	32.2	27.5
NH105	Roadside	Diffusion Tube	100	100	45.8	47	51.4	46.2	45.96	43.3	40
NH106	Roadside	Diffusion Tube	100	100	43.5	44.6	42.7	36.1	37.68	35.3	35
NH107	Roadside	Diffusion Tube	100	100	30.8	29.4	29.6	28.4	29.01	27.8	25.6
NH110	Roadside	Diffusion Tube	83	83				49.6	50.16	48.2	44.3
NH111	Roadside	Diffusion Tube	92	92				58.6	56.38	54.3	49.2
NH112	Roadside	Diffusion Tube	83	83				48.7	54.21	49.6	41.2
NH114	Roadside	Diffusion Tube	100	100					30.52	29.0	27
NH115	Roadside	Diffusion Tube	100	100					26.46	26.8	24.2
NH116	Roadside	Diffusion Tube	100	100						35.8	33.6
NH117	Roadside	Diffusion Tube	100	100						28.1	24.5
NH118	Roadside	Diffusion Tube	100	100						21.3	18.9
NH119	Roadside	Diffusion Tube	100	100						26.1	24.4
NH120	Rural	Diffusion Tube	100	100						13.7	12
NH121	Roadside	Diffusion Tube	100	100							23.8
NH122	Roadside	Diffusion Tube	100	100							21

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾						
					2012	2013	2014	2015	2016	2017	2018
NH123	Roadside	Diffusion Tube	100	100							19
NH124	Roadside	Diffusion Tube	100	100							18.4
NH125	Rural	Diffusion Tube	100	100							15.8
NH126	Roadside	Diffusion Tube	100	100							18.3

☒ Diffusion tube data has been bias corrected

☒ Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾					
					2013	2014	2015	2016	2017	2018
NH1	Roadside	Automatic	95	95	1	1	0	10	4	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾					
				2013	2014	2015	2016	2017	2018
NH2	Roadside	84	84			20	20	19	20

☒ Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾					
				2013	2014	2015	2016	2017	2018
NH2	Roadside	84	84			1	4	7	1

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A.7 – PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾					
				2013	2014	2015	2016	2017	2018
NH2	Roadside	96	96			11	13	12	10

☒ Annualisation has been conducted where data capture is <75%

Notes:

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.8 – SO₂ Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	Number of Exceedances 2018 (percentile in bracket) ⁽³⁾		
				15-minute Objective (266 µg/m ³)	1-hour Objective (350 µg/m ³)	24-hour Objective (125 µg/m ³)

No monitoring undertaken within North Hertfordshire

Notes:

Exceedances of the SO₂ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
NH06	32.6	39	34.8	30.1	33.9	24.1	30	29.9	30.8	36.7	32.7	34.6	32.4	24.6	
NH45	61.5	48.6	60.8	48.7	35.6	36.4	47.7	42.5	39.8	53.3	59.3	51.9	48.8	37.1	24.8
NH59	37.6	41.4	40	28.2	30.2		33.8	31	30.4	35.2	35.1	36.8	34.5	26.2	
NH60	40	41.6	38.3	34	38.2	38.2	34.9	32.6	31.8	40.4	35.9	36.2	36.8	28.0	
NH61	37.7	37	39.5	37.3	28.2	29.4	35.6	30.5	29.2	41.1	45.5	39	35.8	27.2	
NH63	52.1	45.6	45.3	41.6	31.9	35.9	41.9	37.9	45.2	48			42.5	32.3	
NH67	31.8	37.8	30.1	29.3	20.5	20.5	29.3	27.9	29.9	36.2	44.3	36.5	31.2	23.7	
NH127	26	35.2	35.7	27.7	23.8	23.6	26.5	19.8	25.6	33	37.3	32	28.9	21.9	
NH72	47	37.7	39.8	34.2	26.1	21.9	30.3		38.3	39	44.3	40	36.2	27.5	
NH103	59.1	52.2	53.8	43.7	43.1	42.6	43.5	41.3	31.3	49.6	54.2		46.8	35.5	
NH77	51.4	49.1	54.4	45	46.3	43.5		40	40.5	42.6	52.1	45.8	46.4	35.3	
NH78	33.2	40.2	40.1	34.3	33	27	27.9	24.6	24.7	37	43.7	31.2	33.1	25.1	
NH82	48.6	51.6	47.5	44.5	39.3	38	45	37.8	41.3	40.4	51	41	43.8	33.3	
NH83	42.2	39.9	42.8	33.6	31.5	30.3	34.7	30.9	33.9	39.5	41.9	37.2	36.5	27.8	
NH87	38.9	37.4	36.9	29	21.5	20.9	27.6	27.1	32.5	32	39.9	32.6	31.4	23.8	

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Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
NH88	61	46.5	49.6	43.2	31.1	29.8	42.2	40.3	48.9	45.6	52	57.8	45.7	34.7	
NH89	38.7	35.1	39.7	17.7	22.3	17.7	23.7	25.2	28.5	32.9	40.7	37.2	30.0	22.8	
NH91	42.4	32.3	43.3	36.9	25.2	23.6	32.7	32.8	39.9	32.9	46.6	43.6	36.0	27.4	
NH92	61.4	51.6	59	53.5	44.5	47.9	51.1	49.1	47.8	44.7	51.8	50	51.0	38.8	33.4
NH93	58.5	61.1	61.4	52.8	60.7	61.1	72.8	57.7	55.5	67.7	57.8		60.6	46.1	41.8
NH94	49.1	38.7	43.7		36.2	30.1	40.8	35.5	39.7	40.6	41	40.6	39.6	30.1	
NH95	43.5	43.3	33.7	40.7	32.5	33.3	44	38.1	41.2	37.6	44.7	39.9	39.4	29.9	
NH98	45	38.7	38.4	26.9		23.8	31.2	28.1	35	33.6	44.8	40.2	35.1	26.6	
NH99	45.1	42.8	42.5		31.9		33.4	31.2	36.9	36.8		44.9	38.4	29.2	
NH108	42.7	42.7	50	45.6	33.5	31	43.7	38.5	46.1	43	45.6	44.6	42.3	32.1	
NH104	44	32.7	40.9	34.1	30.9	29.6	33.4	32.7	36.7	41.4	37.6	39.5	36.1	27.5	
NH105	62	54.7	61	49.5	42.4	39.3	55.3	48.5	48.4	53.4	58.2	59	52.6	40.0	35.1
NH106	44.6	43.3	58.9	45.9	46.5	41.9	45	33.7	38.5	52.3	57.5	43.8	46.0	35.0	
NH107	41.3	41.3	40.4	22.5	27.7	24.6	30.2	26.1	33.7	38.6	41.3	35.8	33.6	25.6	
NH110	64.5	64.4			52.2	43.5	64.7	56.9	57.1	61.3	62.3	55.8	58.3	44.3	32.1
NH111	68.3	62.8	73.9		62.5	51.6	65.1	56.4	60.5	70	72.6	68.7	64.8	49.2	35.0
NH112	56.6	59.3			43.3	41.6	55.9	48.1	56.8	58.2	68.6	54.2	54.3	41.2	30.2
NH114	37	42.1	37.7	32.3	30.8	24.6	35.8	33.4	35.8	40.1	39.7	37.2	35.5	27.0	
NH115	37.3	36.3	39.2	30.8	26.2	24.9	29.5	23.6	27.5	31.4	38.4	37.2	31.9	24.2	

North Hertfordshire District Council

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
NH116	43.4	44.3	49.1	46.3	49	42.2	48.4	37.9	35.6	45.9	50.8	38.2	44.3	33.6	
NH117	36.6	33.3	28.4	34	19.6	19.5	31.1	27.9	40.3	33.7	44	38.1	32.2	24.5	
NH118	32	28.6	32.3	22.4	18	15.5	18.3	19	23.6	24.6	31.9	32.1	24.9	18.9	
NH119	36.2	35.1	40	27.1	26	28	28.7	26	29	34.4	39.8	34.9	32.1	24.4	
NH120	19.1	20.9	20.4	14.6	9.2	9.2	11.7	11.9	14.2	15.5	23.7	19.2	15.8	12.0	
NH121	33.1	42	38.3	32.6	27.8	27.7	26.1	21.3	21.6	34	41.8	29.2	31.3	23.8	
NH122	34.7	29.5	30.9		15.7	13.8	23.4	21.1	29.8	33.4	37.9	34.4	27.7	21.0	
NH123	30.4	26.1	27.6	17.8	20.9	22.4	22.4	21.8	23.9	27.1	31.2	28.4	25.0	19.0	
NH124	30.1	24.4	29.1	23	17.4	16.2	19.5	19.4	23.3	26.6	32.3	28.6	24.2	18.4	
NH125	33.8	17.9	24.7	20.4	11.8	10.6	17.1	17.5	7.8	25.4	33.7	28.8	20.8	15.8	
NH126	30.9	19.4	29	23.6	18.6	16.9	21	21.4	20.4	28.6	31.1	28	24.1	18.3	

☐ Local bias adjustment factor used

☒ National bias adjustment factor used

☒ Annualisation has been conducted where data capture is <75%

☒ Where applicable, data has been distance corrected for relevant exposure

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Automatic Monitoring:

The R&P 1400a Tapered Element Oscillating Measurement (TEOM) monitor at Stevenage Road, Hitchin is subject to calibration visits and filter checks and changes on a monthly basis by NHDC staff. In addition, Enviro-Technology is employed to undertake two service/maintenance visits (one minor and one major service) and to respond in the event of any maintenance issues encountered during daily operation. The calibration readings are reported to Ricardo Energy and Environment who are retained by NHDC to verify and ratify the data generated by the monitor. 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 Met-One Smart Heated BAM 1020 PM_{2.5} monitor at Stevenage Road requires no periodic calibration checks, only a tape change approximately once every six weeks which is undertaken by NHDC staff. In addition Enviro-Technology is employed to undertake two service/maintenance visits (one minor and one major service) and to respond in the event of any maintenance issues encountered during daily operation. The outcome of the servicing and the associated performance of the monitor are reported to Ricardo Energy and Environment who are retained by NHDC to verify and ratify the data generated by the monitor.

The Teledyne-API T200A chemiluminescence monitor at Stevenage Road is subject to calibration checks and filter checks and changes on a monthly basis by NHDC staff. In addition Enviro-Technology is employed to undertake two service/maintenance visits (one minor and one major service) and to respond in the event of any maintenance issues encountered during daily operation. The calibration readings are reported to Ricardo Energy and Environment who are retained by NHDC, as part of the larger Hertfordshire and Bedfordshire Air Quality Network, to verify and ratify the data generated by the monitor.

Non-Automatic Monitoring:

The diffusion tubes are 50% triethanolamine (TEA) in acetone and are supplied and analysed by SOCOTEC Didcot. SOCOTEC follows the procedures set out in the Harmonisation Practical Guidance. SOCOTEC also participates in the Workplace Analysis

Scheme for Proficiency (WASP) and is currently ranked as a Category Satisfactory laboratory. This information was used in selecting the below bias adjustment factor.

Data from the diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location database. The bias adjustment factor has been taken from the March 2019 version of the Diffusion Tube Bias Adjustment Factors spreadsheet available from the Defra Review and Assessment website (<http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

According to the above database the bias adjustment factor for SOCOTEC in 2018 was 0.76.

Short-term to Long-term Data adjustment (Annualisation):

Where it has only been possible to carry out monitoring at a location, whether automatic or non-automatic, at a site for less than 75% of the 12 months the results need to be adjusted to enable an estimate of the annual mean for that location to be calculated. There were no monitoring locations where less than 75% data were collected during 2018, so annualisation was not required.

It should be noted that a minimum 6 month period is necessary for this process to be valid.

Calculations for Reduction of Nitrogen Dioxide with Distance from Kerb

The calculation of the reduction of nitrogen dioxide with distance from the kerb was undertaken in line with the methodology that is downloadable from <https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html> and which is referred to by TG(16).

In all cases local background concentrations were derived from 2017 mapping (the most current available at the time of completion of the report) sourced from

<https://uk-air.defra.gov.uk/data/laqm-background-home>

Site Name/ID	Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
NH1	2.0	11.0	13.7	44.0	31.9
NH92	2.0	5.0	13.7	38.8	33.4
NH105	3.5	7.0	13.8	40.0	35.1
NH45	2.0	19.0	13.7	37.1	24.8
NH110	2.0	11.0	13.7	44.3	32.1
NH111	2.0	11.0	13.7	49.2	35.0
NH112	2.0	11.0	13.7	41.2	30.2
NH93	1.6	3.0	15.3	46.1	41.8

Appendix D: Map(s) of Monitoring Locations and AQMAs

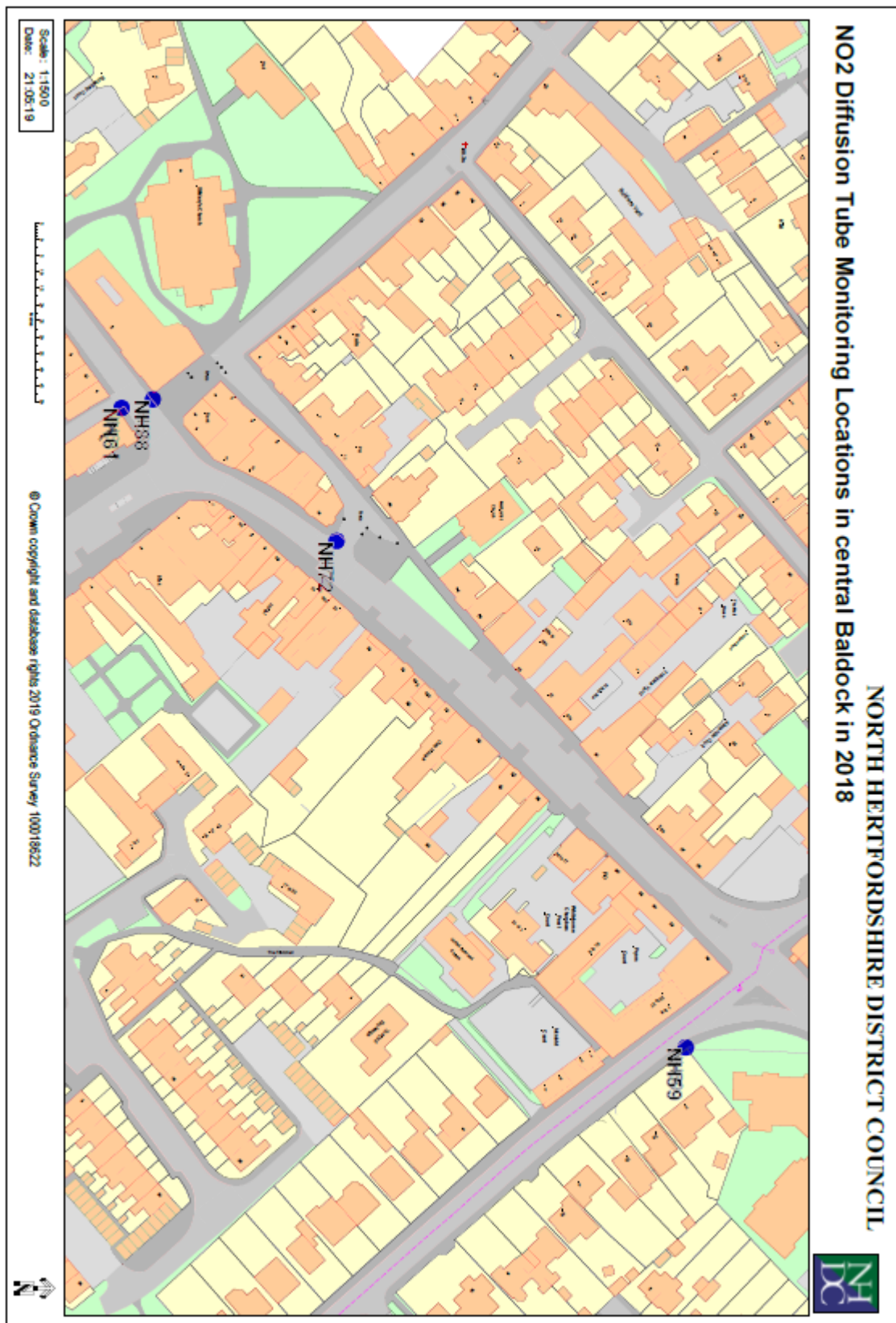


Figure D1: Diffusion Tube Monitoring Locations (NH72, NH88, NH59 & NH61) in central Baldock - 2018

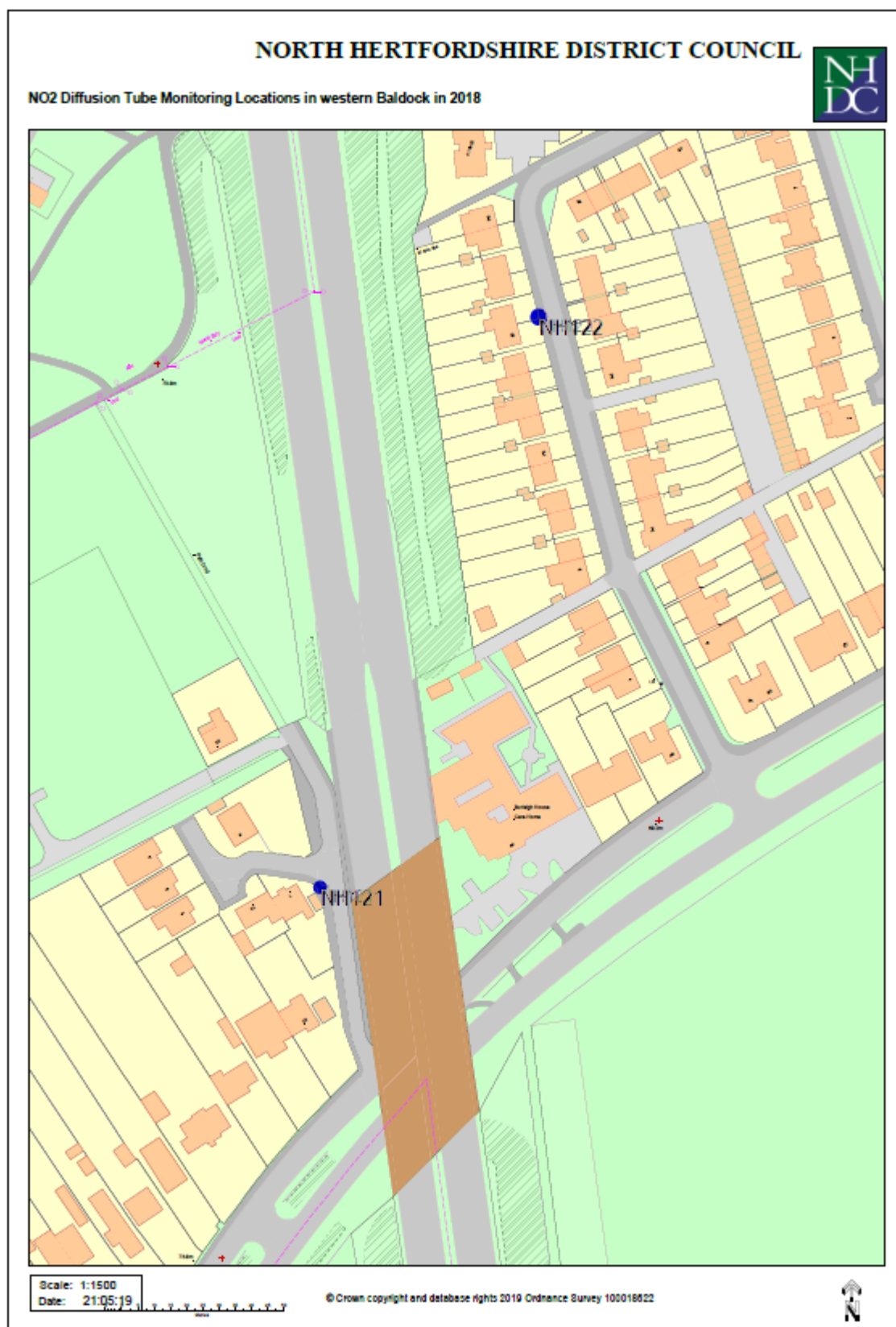


Figure D2: Diffusion Tube Monitoring Locations (NH121 & NH122) in western Baldock - 2018

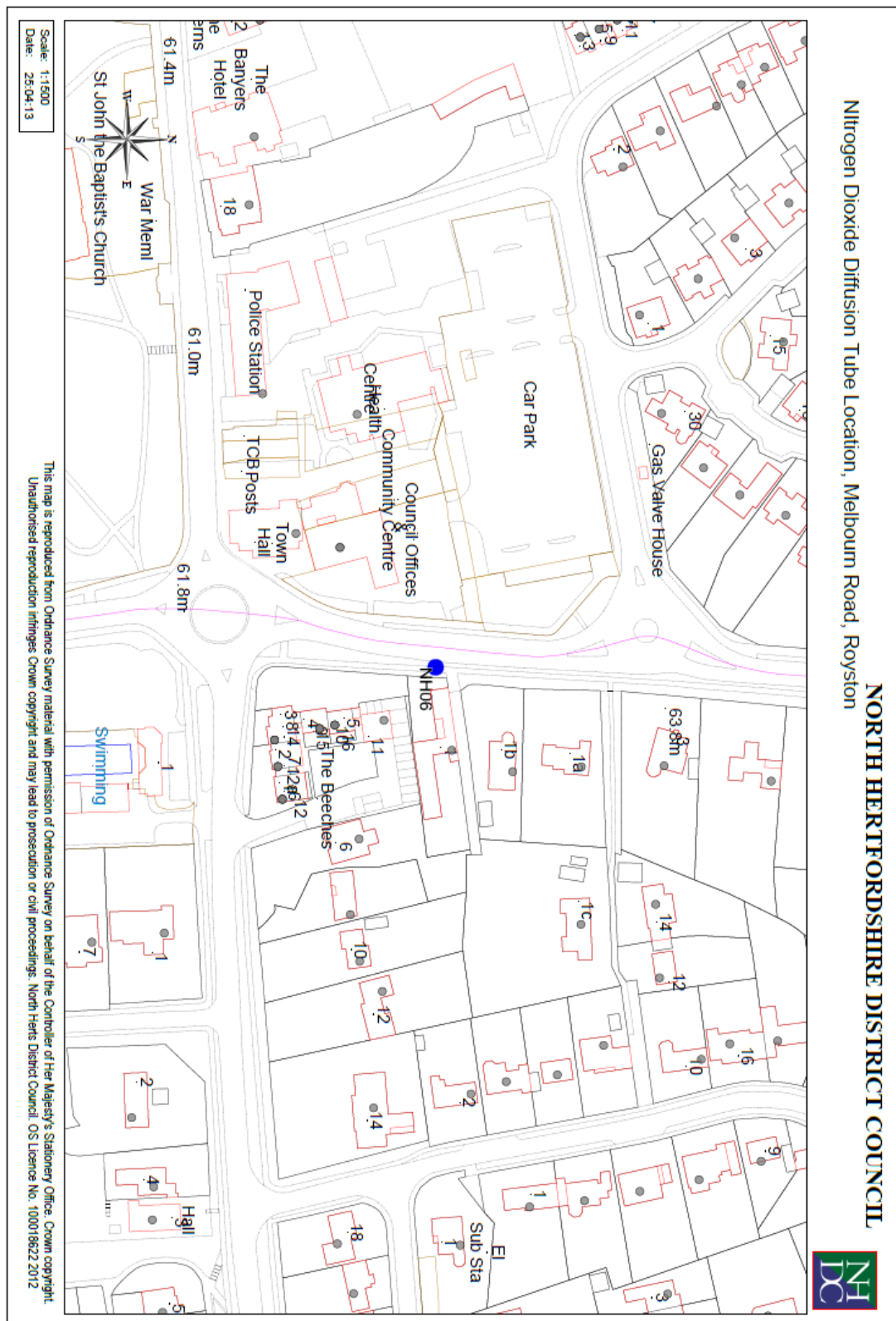


Figure D3: Diffusion Tube Monitoring Location (NH06) at Melbourn Road, Royston - 2018

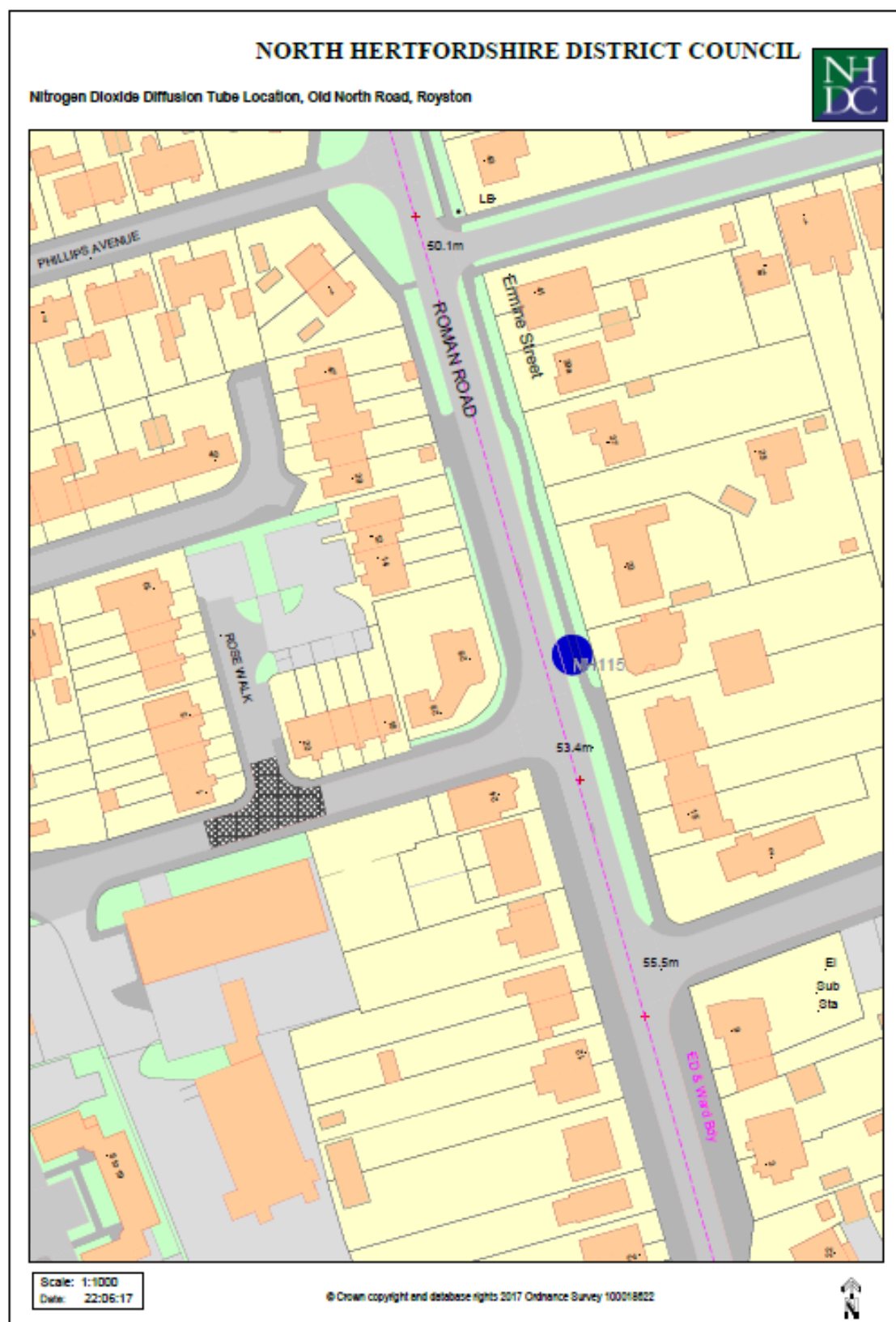


Figure D4: Diffusion Tube (NH115) Monitoring Location at Old North Road, Royston - 2018

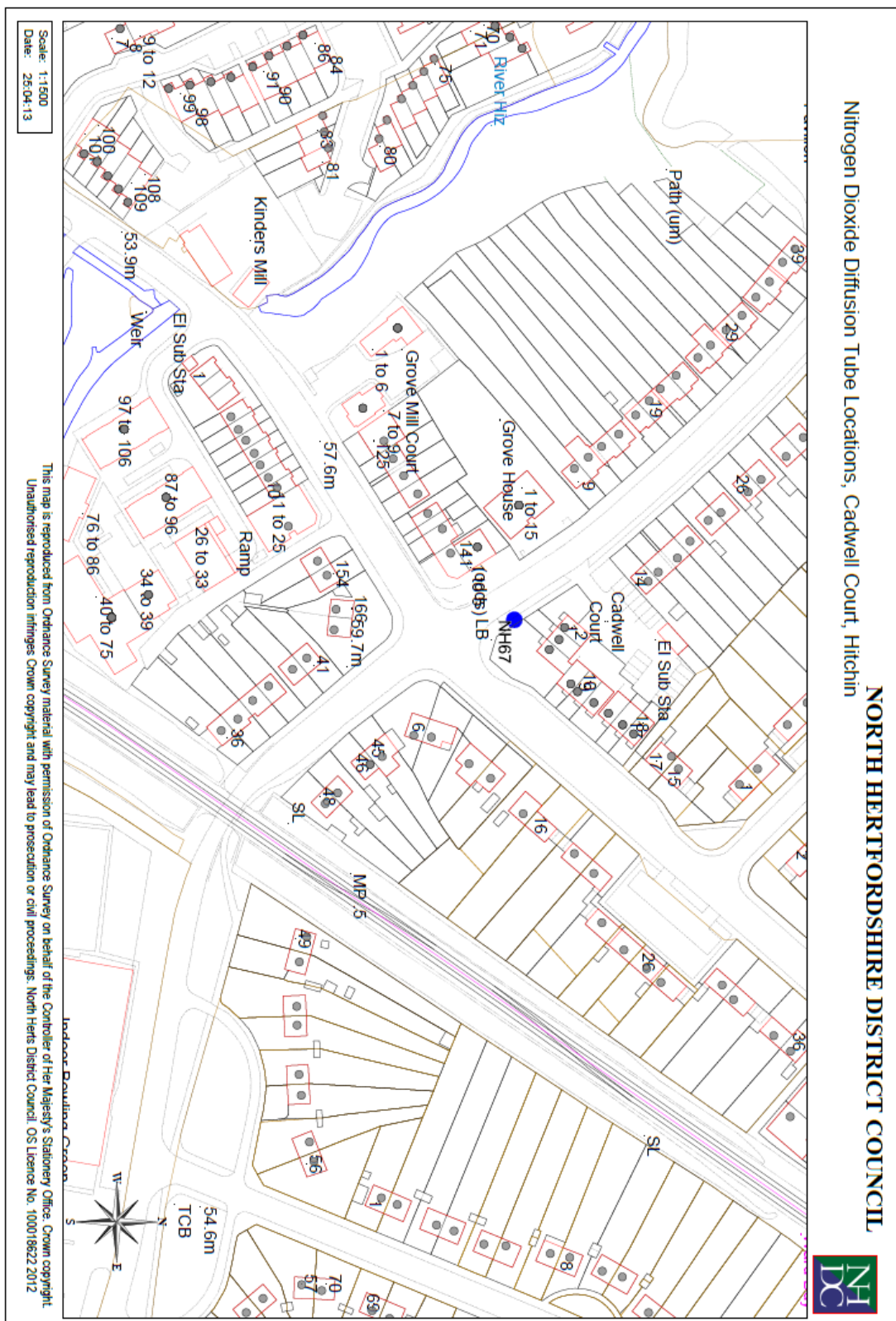


Figure D5: Diffusion Tube (NH67) Monitoring Location at Cadwell Court, Hitchin - 2018



Figure D6: Diffusion Tube (NH127) Monitoring Location at Grove Road, Hitchin - 2018



Figure D7: Diffusion Tube Monitoring Locations (NH99 & NH98) in the Nightingale Road Area of Hitchin – 2018

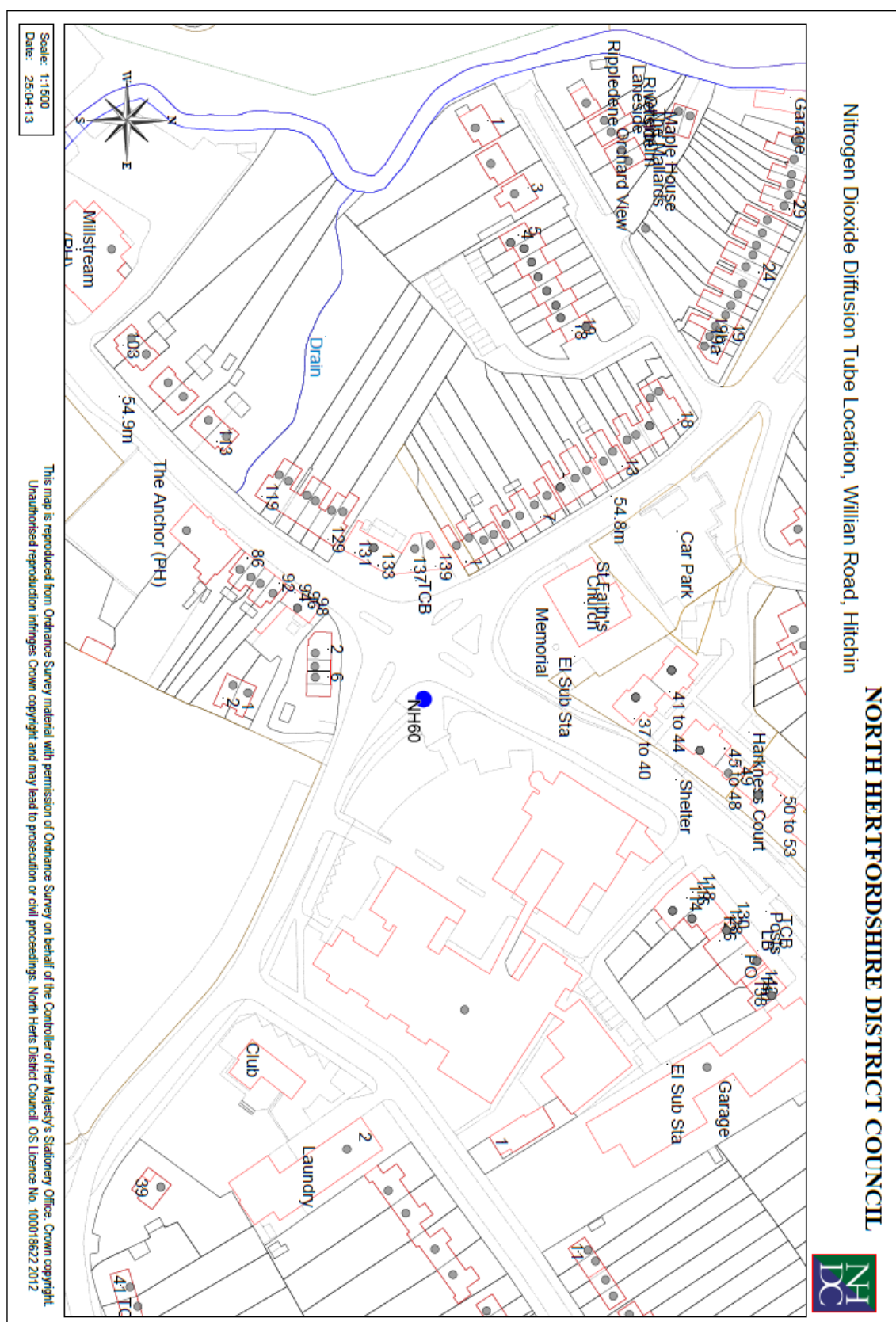


Figure D8: Diffusion Tube Monitoring Location (NH60) at Willian Road, Hitchin - 2018



Figure D9: Diffusion Tube Monitoring Location (NH108) at Hermitage Road, Hitchin – 2018

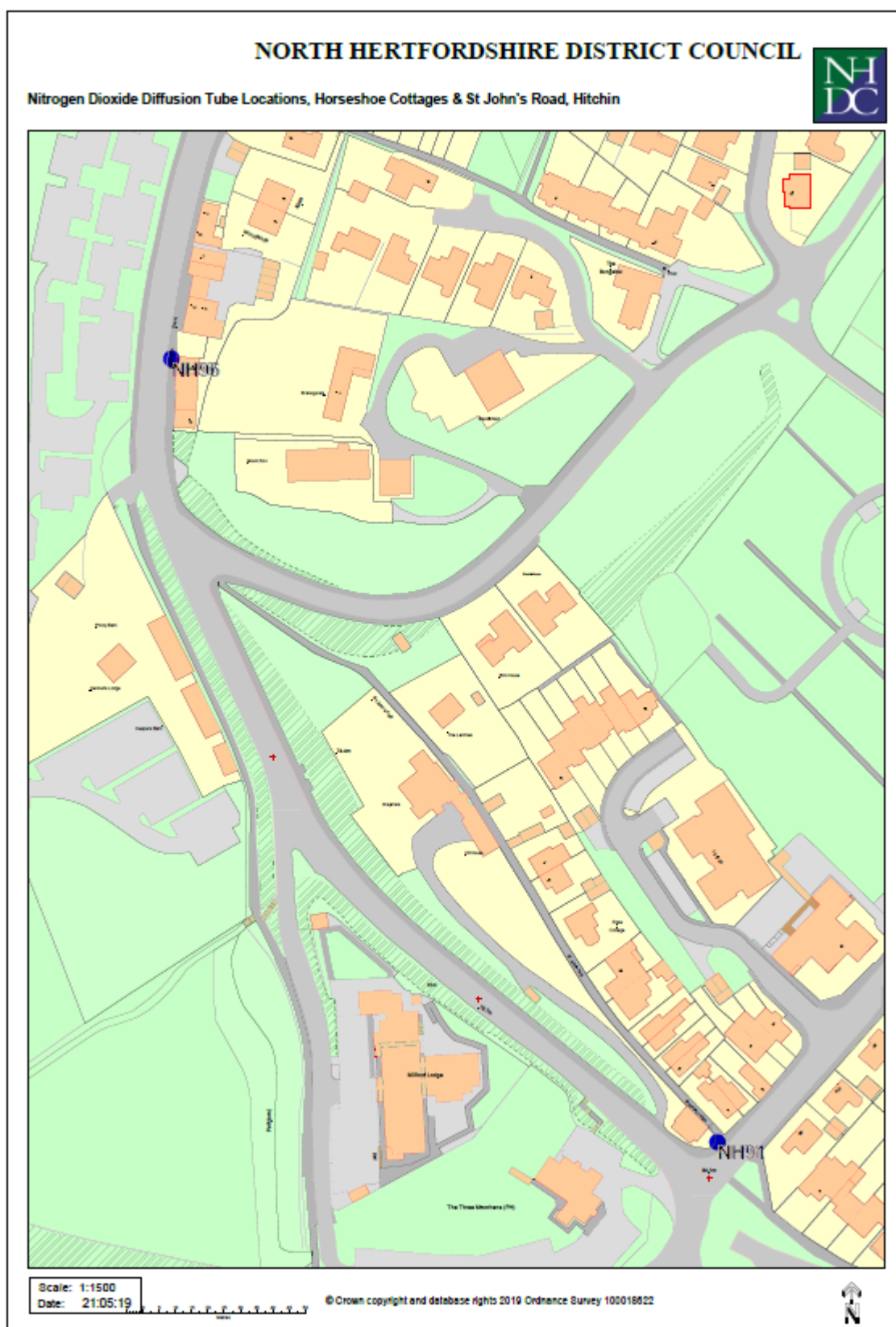


Figure D10: Diffusion Tube Monitoring Locations (NH116) at 6 Horseshoe Court, Park Street and (NH91) at St John's Road, Hitchin - 2018

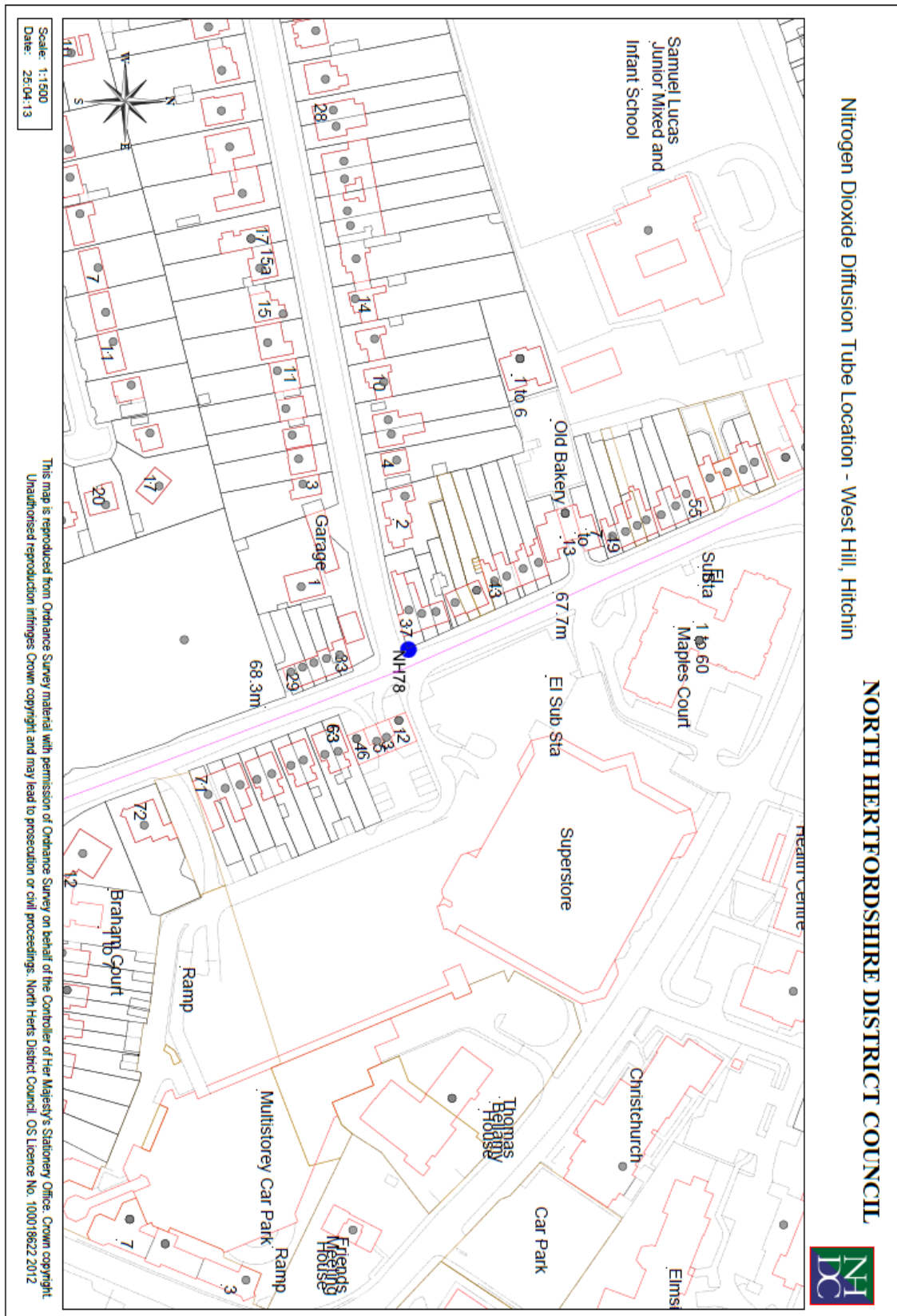


Figure D11: Diffusion Tube Monitoring Location (NH78) at West Hill Hitchin – 2018

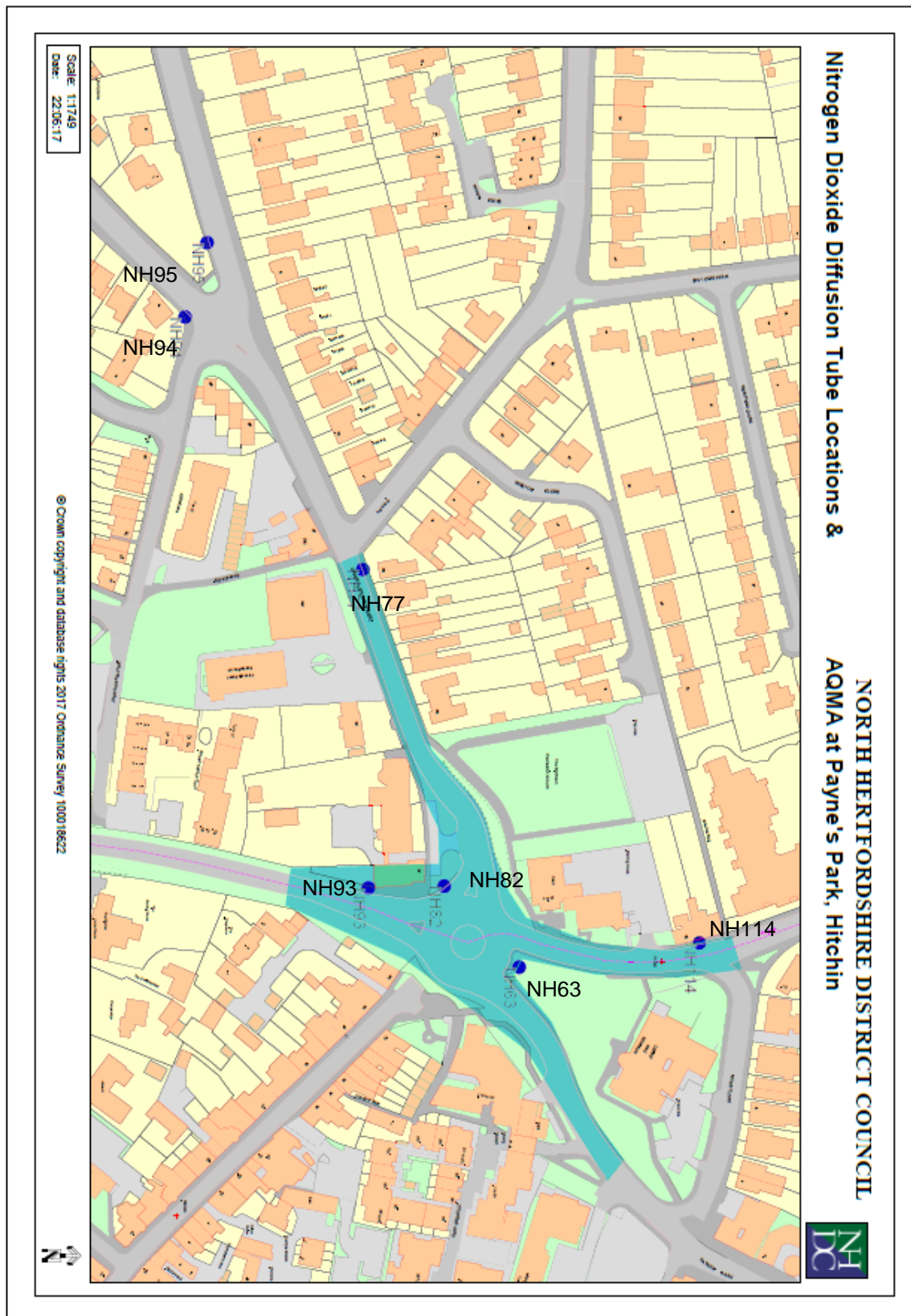


Figure D12: Diffusion Tube Monitoring Locations (NH93- NH95, NH77, NH82, NH63 & NH114) & Extent of AQMA at Payne's Park, Hitchin – 2018

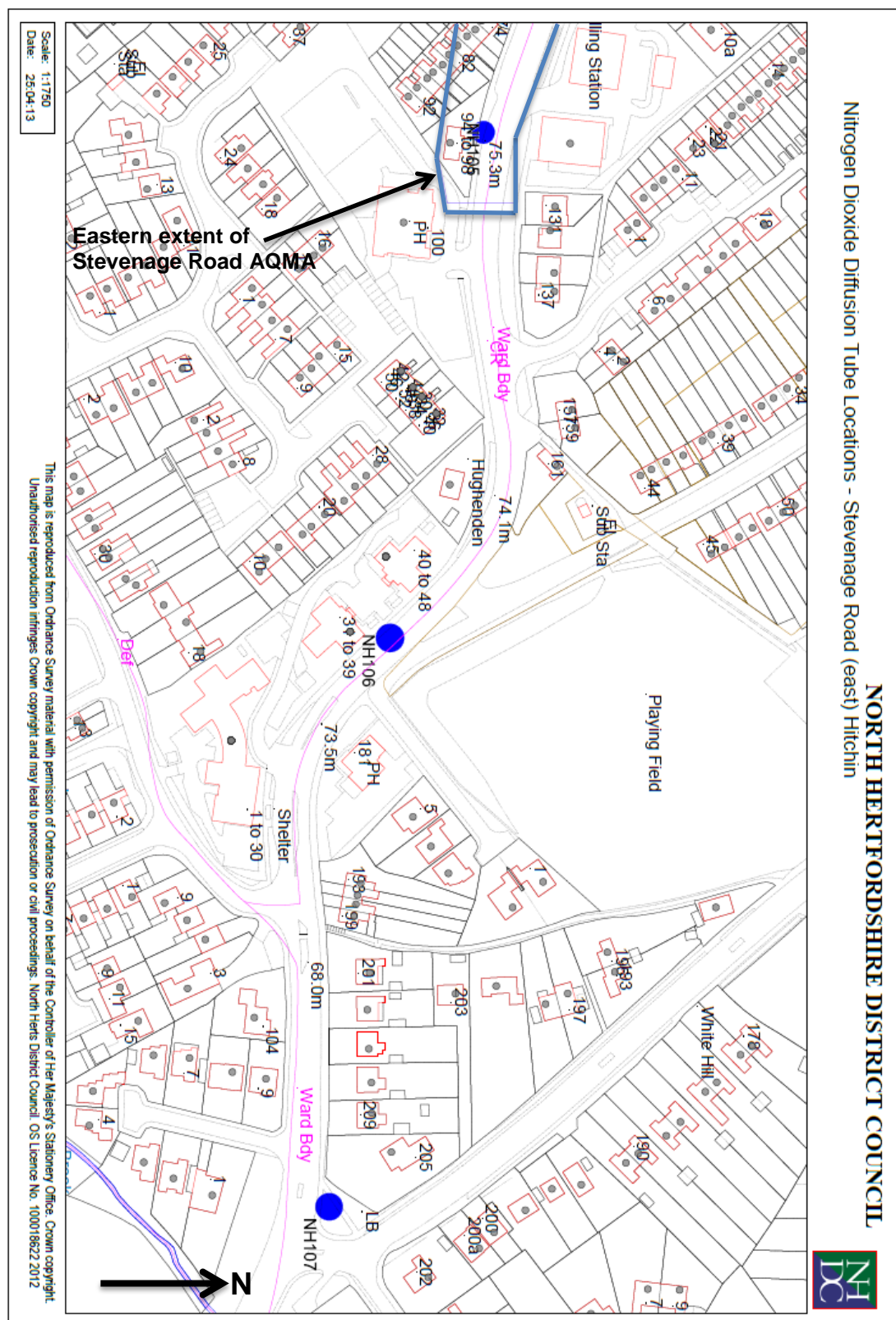


Figure D13: Diffusion Tube Monitoring Locations (NH105, NH106 & NH107) & Eastern Extent of the Stevenage Road AQMA at Stevenage Road, Hitchin – 2018

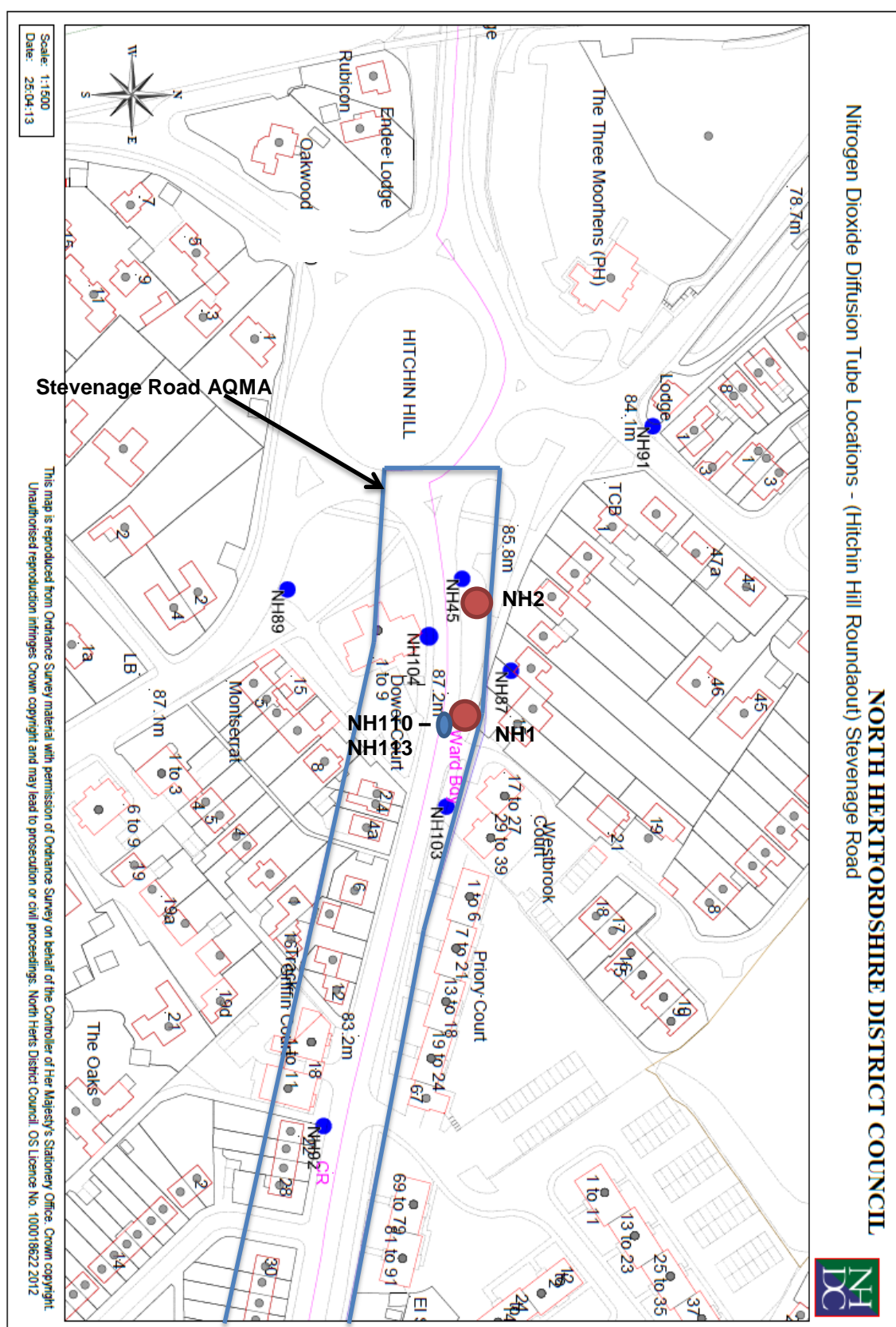


Figure D14: Diffusion Tube Monitoring Locations (NH45, NH87, NH89, NH91, NH92, NH91 & NH110-112), Real-Time Analyser Locations (NH1 and NH2) & the Stevenage Road AQMA at Stevenage Road, Hitchin – 2018

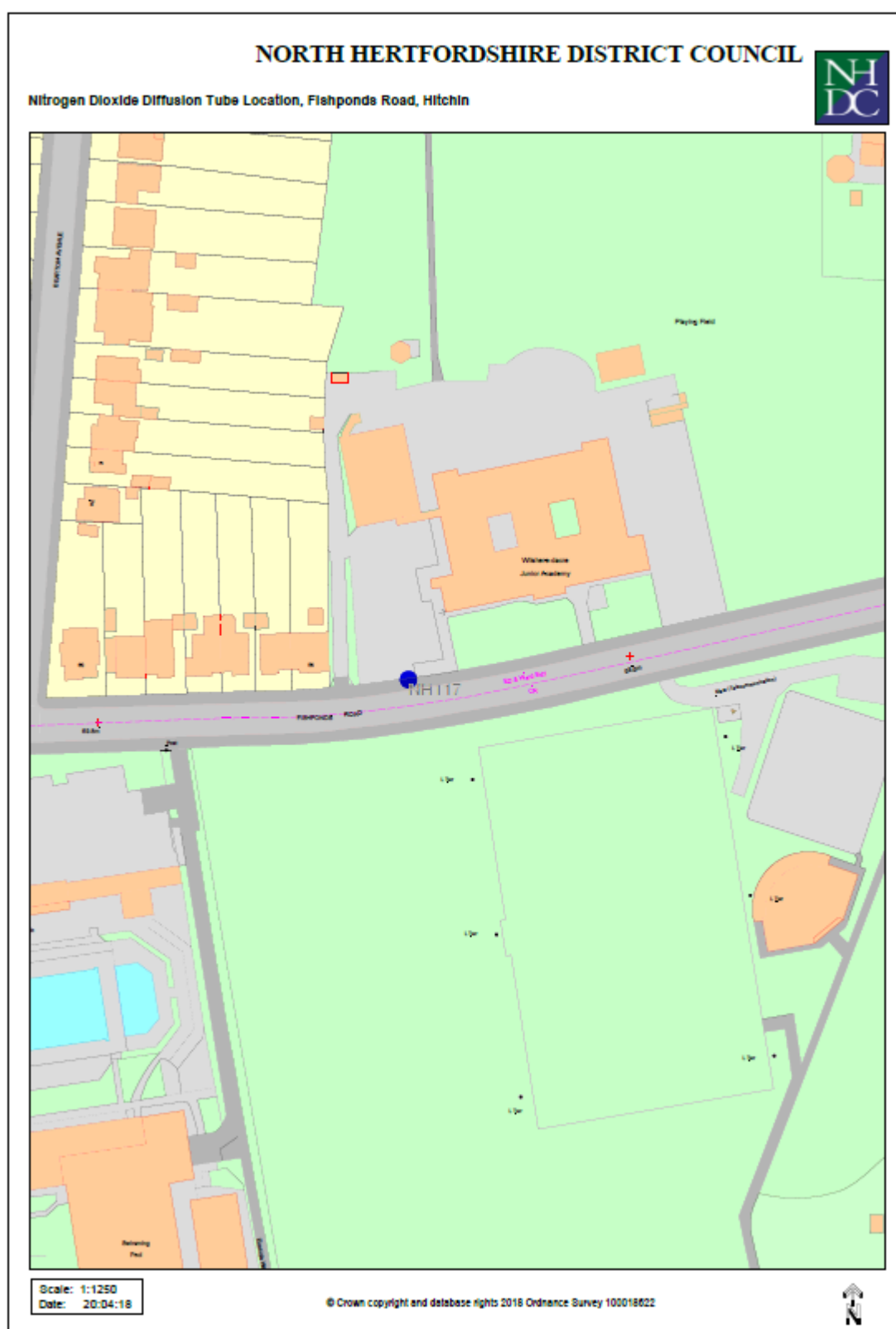


Figure D15: Diffusion Tube Monitoring Location (NH117) at Fishponds Road, Hitchin - 2018

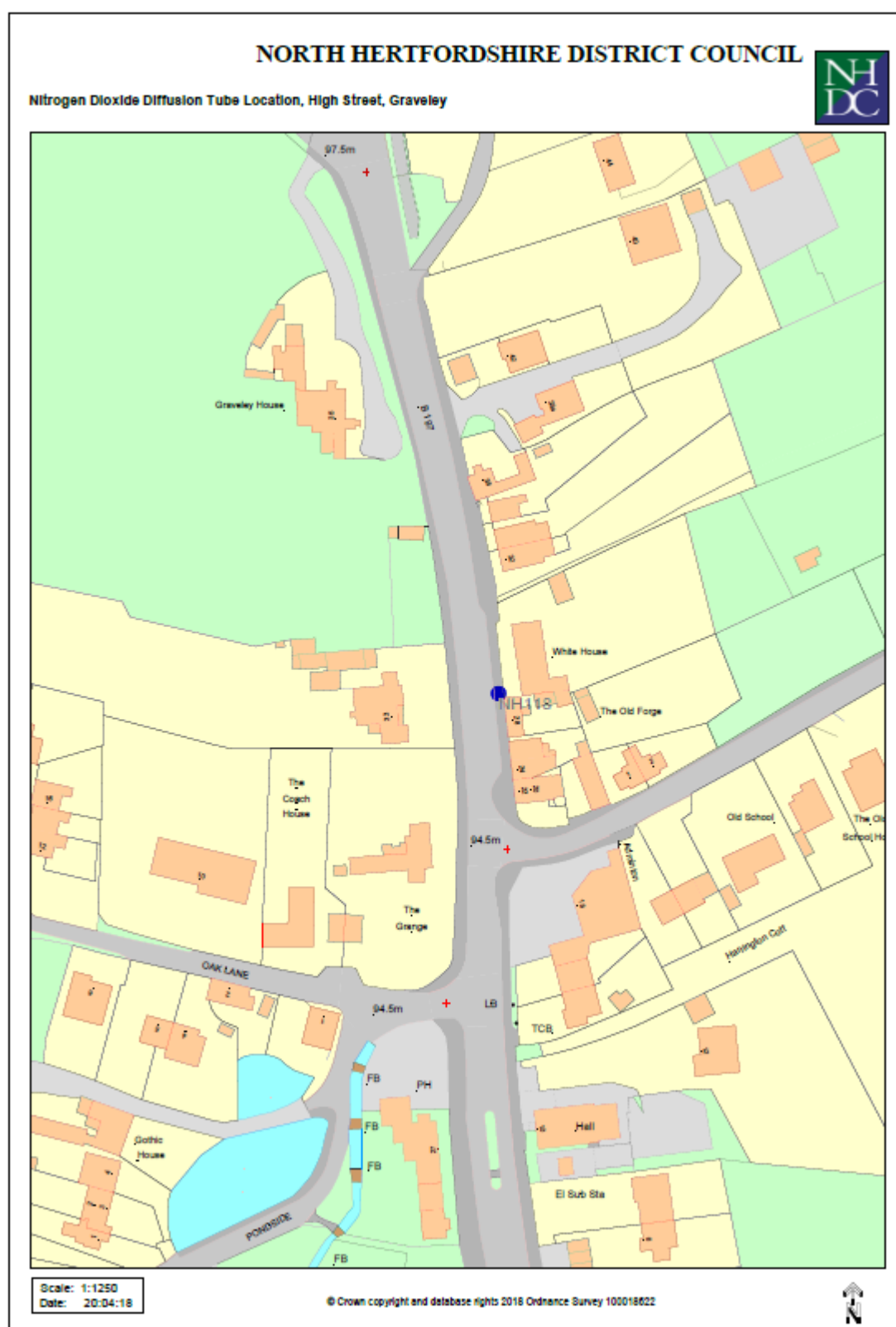


Figure D16: Diffusion Tube Monitoring Location (NH118) at High Street (27), Graveley – 2018

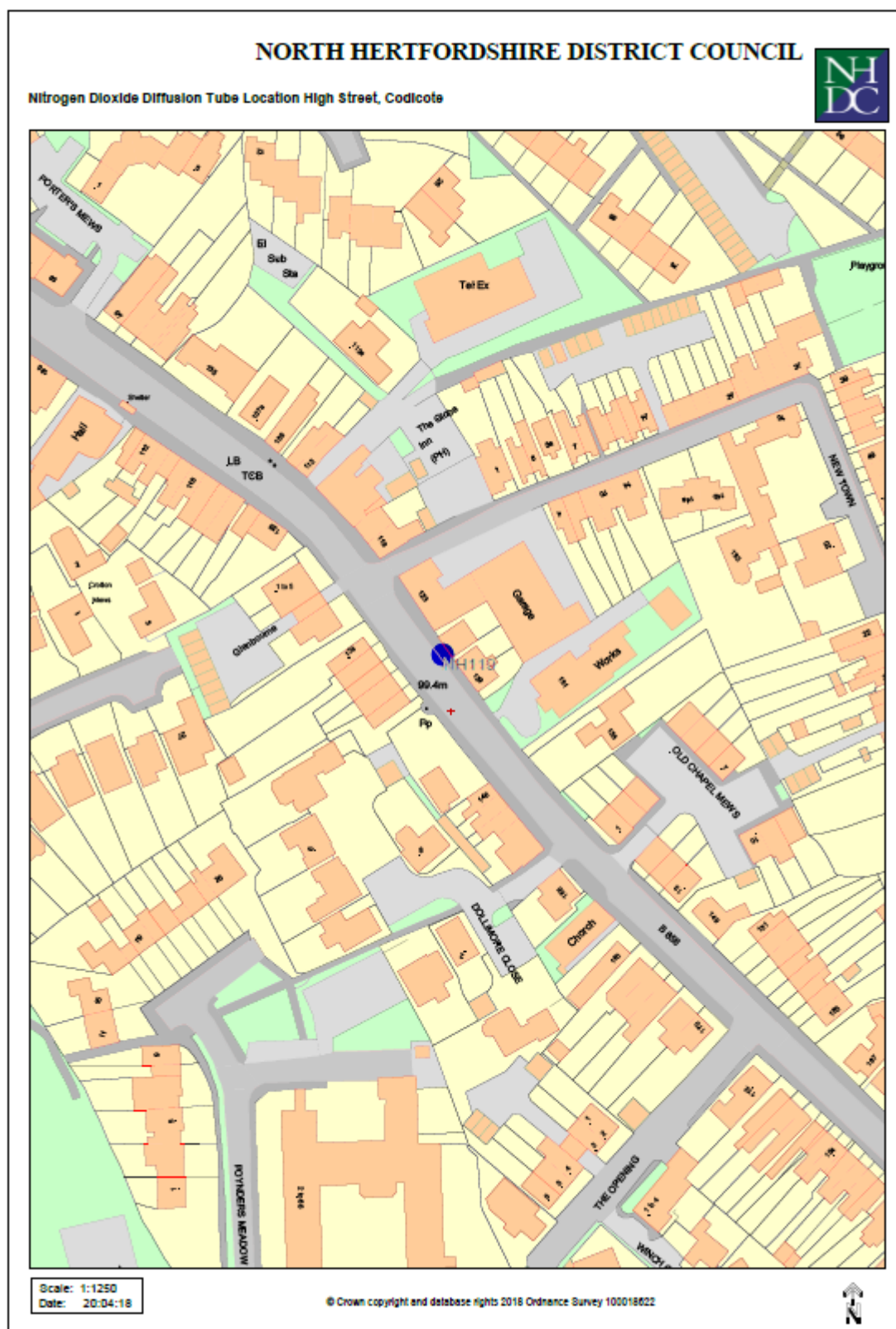


Figure D17: Diffusion Tube Monitoring Location (NH119) at High Street (125), Codicote - 2018

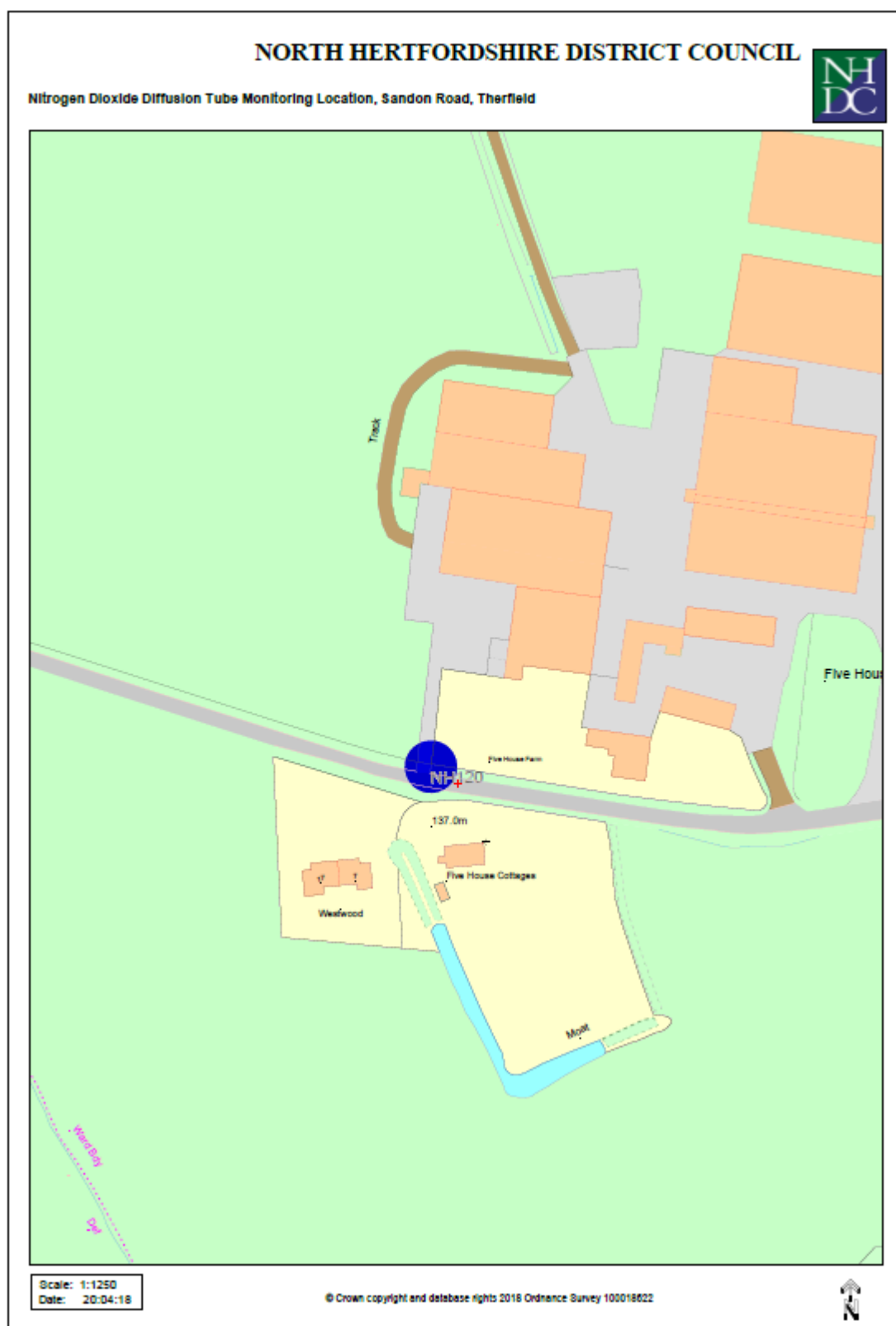


Figure D18: Diffusion Tube Monitoring Location (NH120) at Five House Farmhouse, Sandon Lane, Therfield - 2018

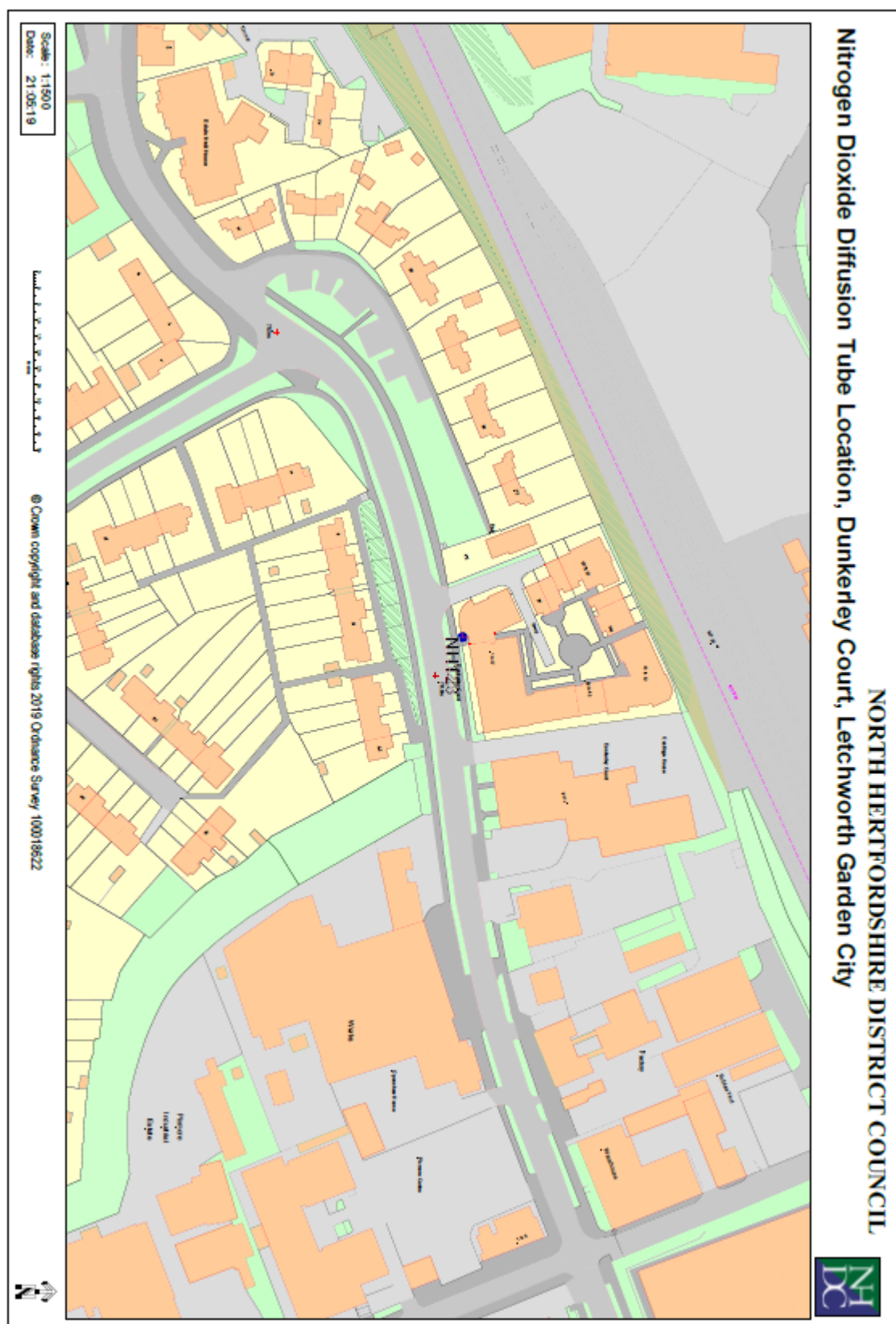


Figure D19: Diffusion Tube Monitoring Location (NH123) at Dunkerley Court, Letchworth Garden City - 2018



Figure D20: Diffusion Tube Monitoring Location (NH124) at 82 Bedford Road, Letchworth Garden City - 2018

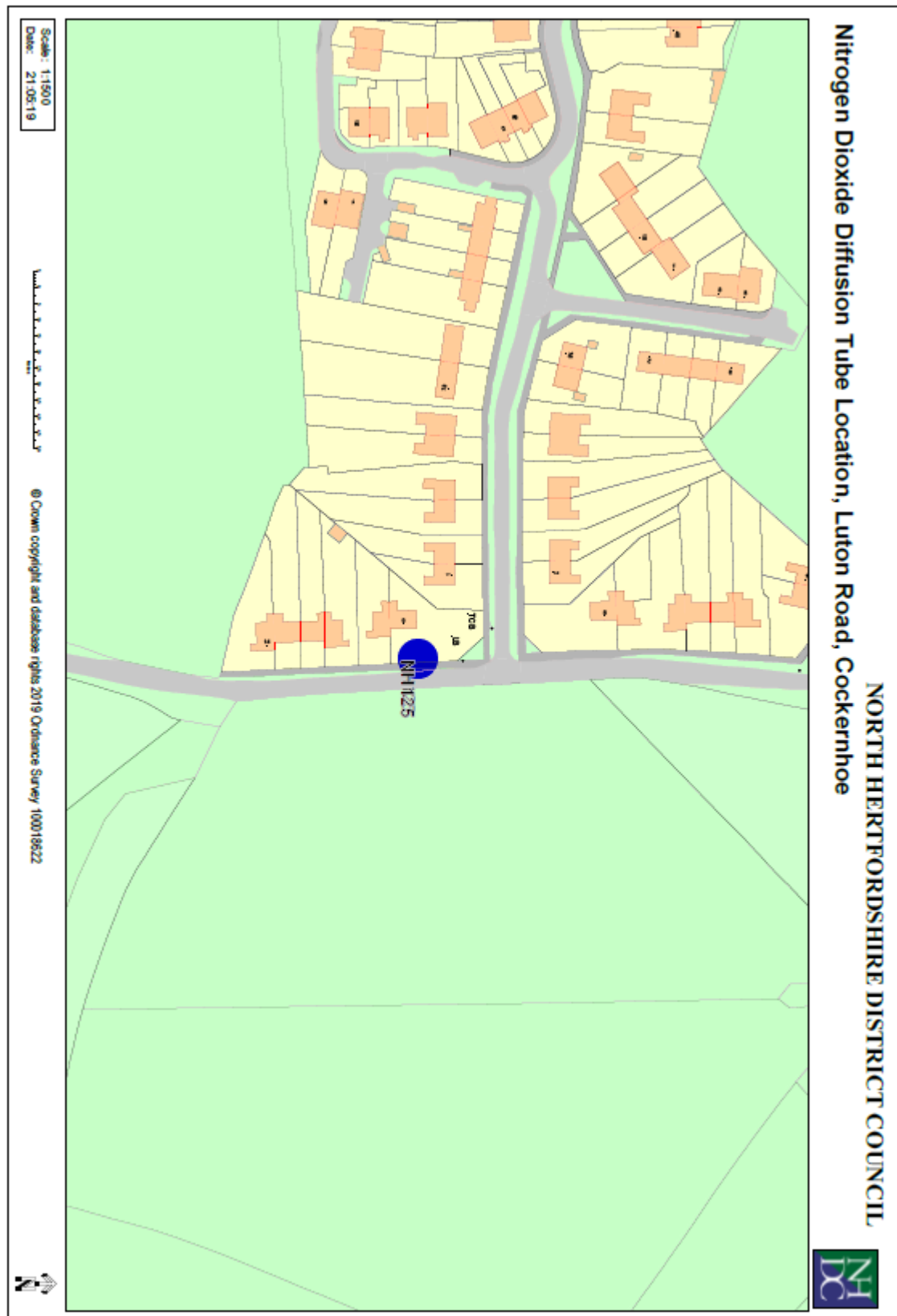


Figure D21: Diffusion Tube Monitoring Location (NH125) at 11 Luton Road, Cockernhoe - 2018

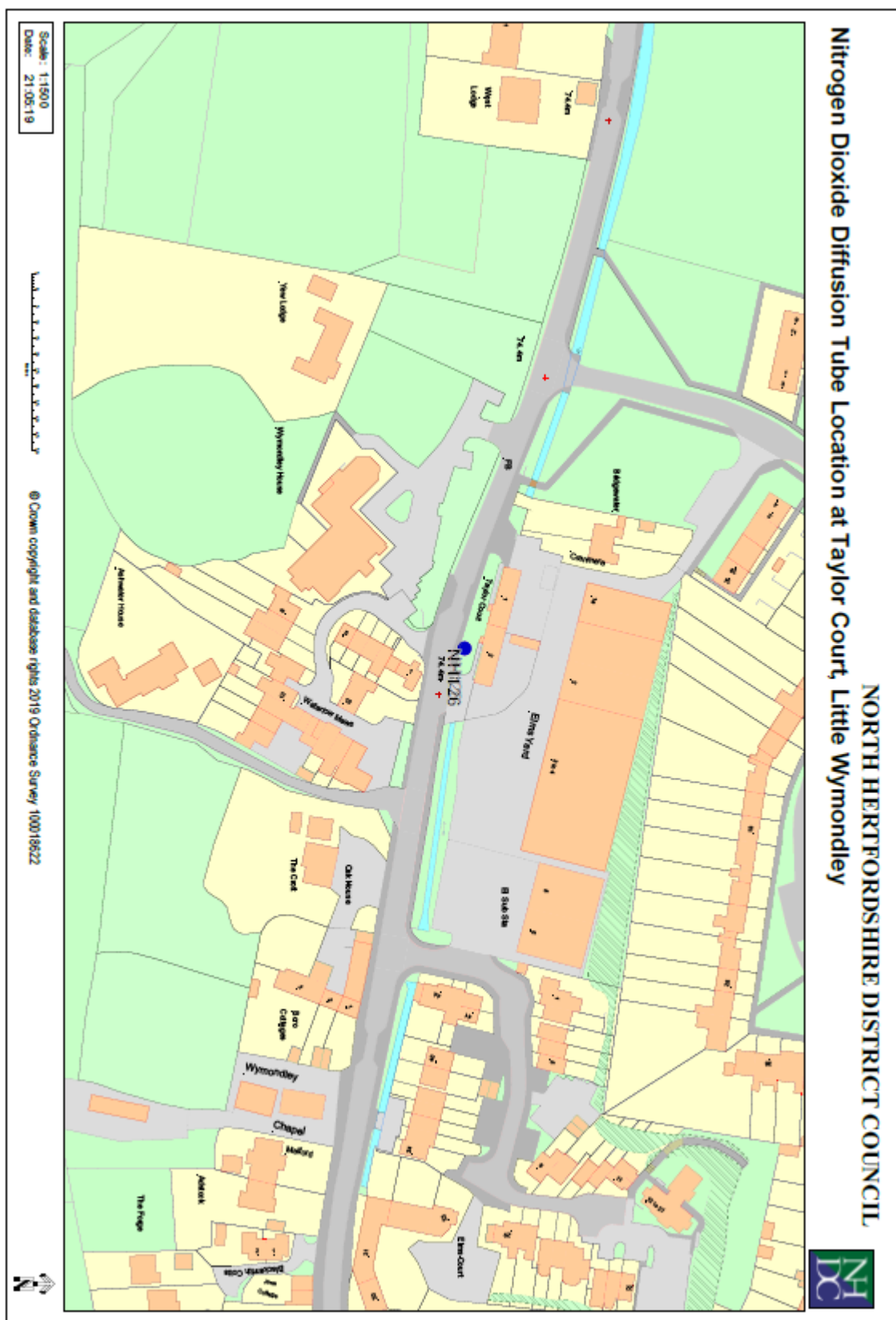


Figure D22: Diffusion Tube Monitoring Location (NH126) at 2 Taylor Court, Little Wymondley - 2018

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

No additional references