2020 Air Quality Annual Status Report (ASR)

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

June 2020

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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 billion[3].

During 2019, air quality monitoring has continued to be below Air Quality Objectives (AQOs) across the majority of the North Hertfordshire.

There are no locations within the district where concentrations of particulate matter, whether PM_{10}, or the smaller $PM_{2.5}$ fractions exceed the relevant AQOs according to the Government's national modelling. Real-time automatic monitoring data located at one of the busiest roads in North Hertfordshire, with nearby residential receptors, continues to show results for PM10 and PM2.5 below statutory limits.

Historically there have been two areas where pollution concentrations for nitrogen dioxide, close to busy road junctions in Hitchin have exceeded air quality objectives, resulting in declarations of Air Quality Management Areas on Stevenage Road (AQMA 2012) and Payne's Park Roundabout (AQMA 2017), both along the A602.

The latest trends from long term monitoring sites show continued improvements in air quality at most monitoring sites. For the Stevenage Road AQMA, close examination of monitoring results highlights that pollution levels closest to the Hitchin Hill Roundabout remain static at levels marginally above or just below objective levels, but when corrected for relevant exposure are all below objective levels. For the Payne's Park AQMA there is a single monitoring site (NH93) within the AQMA, that remains above objective levels when corrected for relevant exposure.

[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

In summary: from results of monitoring data corrected for relevant exposure shows the following:

Stevenage Road AQMA

- No results above objectives for 3 years in succession (2019, 2018,2017).
- No results within 10% of objective levels in last two years (2019, 2018)

Payne's Park AQMA

- Two years with results above objectives in last 3 years (2018, 2017)
- Last 3 years with results within 10% of objective levels (2019,2018,2017)

In summary these results suggest the following in relation to the continued status of these AQMAs.

Stevenage Road AQMA

- Continue monitoring in 2020 following a review of monitoring locations, and if no results within 10% of objectives, then recommend this AQMA should be revoked.

Payne's Park AQMA

- Retain the current AQMA. Continue monitoring following a review of monitoring locations, until results are consistently below 90% of the objective level.

For Both AQMA sites

Recommend a review of monitoring locations within and close to each AQMA to provide evidence to review status of each AQMA.

Emissions from road transport along the A602 have been responsible for designation of both these AQMAs. [Input from Transport on status of traffic on A602]

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 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 and it is reviewed in Section 2 of this report.

The improvements in air quality reflected in the monitoring results at both AQMAs, are clearly a combined result of policies operating at a national, regional and local levels. This is in addition to specific measures developed in the joint Action Plan that have contributed to reductions in emissions from road transport, resulting in the improvements in local air quality now being recorded.

The continued status of both AQMAs for the time being, and likely retention of the Payne's Park AQMA for several years highlights the need for continued action to support measures that contribute to improving air quality in AQMA hotspots and maintaining air quality below objective levels in all other areas.

Measures to reduce emissions to atmosphere are addressed by policies that are developed to tackling climate change, as well as tackling air pollution. Transport Policies that control congestion at pollution hotspots on urban roads closest to housing are also significant.

Councillors at North Hertfordshire District Council (NHDC) approved a new Climate Change Strategy and action plan to help tackle climate change in the district, at a Cabinet meeting on 28 January 2019.

The new Strategy builds upon the passing of a Climate Emergency motion by the Council in May 2019, where the Council pledged to do everything within its power to achieve net zero carbon emissions in North Hertfordshire by 2030, one of the five objectives in the Council Plan 2020-2025.

The Council has agreed to:

- **Reduce the Council's carbon footprint** – including purchasing energy from renewable sources, consider the use of Ultra Low Emission Vehicles for all future operational vehicles, and minimising waste from Council activity.

- **Improve leadership in the fight against climate change in the district** – including installing additional electric vehicle charging points in Council car parks, holding more frequent Waste Electric, Electronic Equipment recycling events, and increasing local awareness of how to reduce, reuse and recycle plastic waste.
- **Work closely with partner organisations to tackle climate change in North Herts** – including supporting and engaging local community groups that address climate change, agreeing a plan to eliminate single use plastics from our Leisure Centres and swimming pools, and working with cycling groups to promote cycling as a means of transport.

NHDC has already actioned the following since passing its Climate Emergency motion last year:

- Introduction of subsidised licensing fees for hackney carriages and private hire vehicles that use clean fuel.
- Approval of a Council motion to promote renewable energy and support the Government's Local Electricity Bill which if made law, would make the set up and running costs of selling local electricity to local customers affordable.
- Conversion of floodlighting on Norton Common in Letchworth from halogen to LED lighting, which will cut energy use by 50%.
- Launched a Plastic Free North Herts Campaign and helped promote businesses in the district who have achieved a plastic free status.

Thus, measures to address climate change can be considered in tandem with measures to address air pollution, and vice-versa.

Full details of the actions the Council has taken to date, and measures it proposes to take are presented in the Council Plan and NHDC Cabinet approved proposals.

The measures in the Council plan and proposals that are particularly relevant in terms of addressing emissions from road transport include:

- Consider all future operational vehicles leased or purchased by the council are Ultra Low Emission Vehicles and encourage contractors to adopt similar measures
- Installing additional electric vehicle charging points in council car parks to ensure that every car park has charging points in at least 5% of spaces, with a minimum of two spaces per car park.
- Installation of on street electric vehicle charging points in on street parking bays in town centres (in agreement with the County Council).
- Work with cycling groups to produce a cycling plan to promote cycling, including the use of electric bicycles, as a means of transport and identify simple to remove barriers.

As reported in the 2019 ASR, NHDC continues to work closely with a number of key partnerships, including:

- Hertfordshire County Council, Transport Planning, Public Health, and Electric Vehicle and Future Transport Group.
- Herts & Bedfordshire Air Quality Forum
- NHDC Officers for Strategic Planning, Transport Planning, and Development Control

The challenges to maintaining reduced levels of air pollution remain as previously reported, notably increased traffic related to housing and related infrastructure growth, and the potential growth in traffic that would be stimulated by the proposed expansion to Luton Airport to the south of the district.

During the last year NHDC have been engaged in making responses to the Secretary of State regarding the potential impacts of the proposed Luton Airport expansion.

Actions to Improve Air Quality

Actions to improve air quality can be linked to measures developed to combat climate change. On 21May 2019, the Council passed a Climate Emergency motion which pledged to do everything within the Council's power to achieve zero carbon emissions in North Hertfordshire by 2030. The Council is currently formalising its strategy to manage the expected growth in demand for electric vehicles and other green initiatives.

As part of the Council's emerging Local Plan 2011-2031, NHDC published an accompanying Transport Strategy in 2017, with the stated aim of focusing on the potential for solutions and mitigations to better reflect the new sustainable transport priorities, which is further reflected in HCC's LTP4. This includes a commitment to a transport user hierarchy, which seeks to prioritise active and sustainable modes of travel.

Transport is recognised as one of largest contributors of Greenhouse Gases, as such if the Council is to realise its aim of achieving zero carbon emissions by 2030, then encouraging modal shift by residents in the District from private vehicles to green modes will be required. In addition, the Council should consider the opportunities to the transition of its fleet from ICE to EV vehicles and other alternatives where possible, thereby setting a positive example.

Within this context it is proposed that NHDC, working with partners will seek to provide a range of initiatives to provide residents with realistic options for undertaking day-to-day travel, such that they offer a genuine choice instead of using the car, under the banner of 'Sustainable North Hertfordshire'.

There are priority areas for action listed under the terms of the Council's Climate Change Strategy, notably:

- Reduce the Council's carbon footprint, including purchasing energy from renewable sources, consider the use of Ultra Low Emission Vehicles for all future operational vehicles, and minimising waste from Council activity.
- Improve leadership in the fight against climate change in the district – including installing additional electric vehicle charging points in Council car parks, holding more frequent Waste Electric, Electronic Equipment recycling

events, and increasing local awareness of how to reduce, reuse and recycle plastic waste.

- Work closely with partner organisations to tackle climate change in North Herts – including supporting and engaging local community groups that address climate change, agreeing a plan to eliminate single use plastics from our Leisure Centres and swimming pools, and working with cycling groups to promote cycling as a means of transport.

The following measures are already being progressed:

- Introduction of subsidised licensing fees for hackney carriages and private hire vehicles that use clean fuel.
- Approval of a Council motion to promote renewable energy and support the Government's Local Electricity Bill which if made law, would make the set up and running costs of selling local electricity to local customers affordable.

The additional proposed measures listed above under the Climate Change Strategy, that are relevant to transport emissions

- Future vehicles leased or purchased by the council are ULEVs and encourage contractors to adopt similar measures
- Installing additional electric vehicle charging points in council car parks to ensure that every car park has charging points in at least 5% of spaces, with a minimum of two spaces per car park. Installation of on street electric vehicle charging points (work with HCC)
- Installation of on street electric vehicle charging points in on street parking bays in town centres (in agreement with the County Council).
- Work with cycling groups to produce a Cycling Plan to promote cycling, including the use of electric bicycles, as a means of transport and identify simple to remove barriers.

During 2019 NHDC has continued to engage with:

- Developing an EV charging infrastructure strategy for North Hertfordshire for all forms of EV charging across North Hertfordshire. An on-line resident's survey has taken place to gauge local interest.

- A number of partners to develop a pilot project for developing electric vehicle charging infrastructure in Hitchin
- HCC via the Electric Vehicle (EV) Charging and Future Transport Working Group, in relation to future provision of on-street Electric Vehicle Charging Infrastructure
- The Herts & Bedfordshire Air Quality Forum
- The Public Health Board at HCC where a presentation was made on the Air Pollution Notification system to front line health services, highlighting the needs of the most vulnerable.

The NHDC Local Plan is still undergoing examination as reported in the 2019 ASR.

The Local Plan is updating commitments to address climate change within the vision statement which highlights important links with air quality plans to reduce transport emissions, particularly from private transport:

- *The District will play its part in addressing climate change by improving opportunities for travelling by public transport, walking and cycling, using natural resources more efficiently, reducing the demand for water, securing high quality sustainable design and managing the risk of flooding.*

Further links between managing transport emissions and improving air quality are now embedded within the Local Transport Strategy for NHDC, where it states:

- *The focus should be on increasing the use of sustainable modes. A general increase in highway capacity into and through the towns is not recommended, the exception being where junction improvements can reduce AQMA issues without significantly increasing traffic through the town, or where they would have a more strategic function. The focus should instead be on managing the networks, smoothing flows, reducing speeds in the towns and providing better facilities for walking, cycling and buses.*

[Ref: NHDC Transport Strategy Section 5.9]

Conclusions and Priorities

Air Quality in North Hertfordshire District continues to improve with one of the two AQMAs at Stevenage Road Hitchin, meeting the Air Quality Objectives for three consecutive years. The intention is to review the status of this AQMA after one more year's monitoring and consider revocation. The second AQMA at Payne's Park albeit a smaller area close to a roundabout has higher pollution concentrations still above objective levels at positions of relevant exposure and will need retaining until such time as objectives are consistently attained

As it stands there are no other locations where air quality objectives are being breached within the District, but the challenges of housing and associated growth in infrastructure, and potential for expansion at Luton Airport continue to provide challenges to the management of the local road transport network.

The future priorities for NHDC over the coming year are to continue to deliver sustainable programmes that address both air quality and climate change, particularly in relation to:

- Engaging with key stakeholders throughout NHDC to promote sustainable transport, particularly ULEVs and EVs across the district by promoting measures within Council fleets as an example of good practice
- Delivering a high-profile programme for extending the network of private and public EV charging facilities across the district, following the completion of the Council's EV Strategy
- Providing alternatives to use of private motor vehicles
- Promoting high quality ULEV public transport fleets
- Promoting travel plans and workplace travel plans that prioritise sustainable transport and engage with the public in making smart travel choices.

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

During 2020 the Council has already sought residents' opinions with regard to the development of the EV strategy.

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/ltplive/ = 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.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in North Hertfordshire during 2019. 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 (AQMAs) 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 AQMAs declared by North Hertfordshire District Council (NHDC) can be found in Table 2.1. Further information related to declared or revoked AQMAs, 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.

The two AQMAs within NHDC are located in Hitchin, on sections of the A602.

Stevenage Road AQMA (Declared June 2012)

- We propose to retain this AQMA for at least one more year. We will continue monitoring in 2020 and complete a review of monitoring locations. If no results are within 10% of objectives, then we will recommend this AQMA should be revoked.

Payne's Park AQMA (Declared January 2017)

- We propose to retain the current AQMA. Continue monitoring following a review of monitoring locations, until results are consistently below 90% of the objective level.

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	29th 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	32.7µg/m^3 (35.1 in 2018)	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	9th 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	37.7µg/m^3 (41.8µg/m^3 in 2018)	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

☒ **NHDC 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 the report is detailed, concise, satisfies the criteria of relevant standards and can be considered an example of good practice.

The appraisal recommended:

- A local bias factor should be calculated
- NHDC should continue to implement their Air Quality Strategy and continue monitoring
- Labelling of diffusion tube maps should be improved
- The Council should continue their good work and submit an Annual Status Report in 2020.

In response to the recommendations above:

- A local bias factor was not used because there were concerns that the positions of the diffusion tubes did not lend themselves to use of a local bias factor. These tubes have been relocated to allow consideration of a local bias factor in future.
- The Air Quality Strategy is an initiative within Hertfordshire County Council
- Labelling of some maps has been modified

NHDC has taken forward several direct measures during the current reporting year of 2019 in pursuit of improving local air quality and reducing the impacts of climate change. 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 (Referenced against the measure numbers in the joint AQMA Action Plan, dated January 2018) and updating measure status as recorded in the 2019 ASR Report:

NHDC expects the following measures to be completed over the course of the next reporting year (2020):

- Recruitment of a dedicate staff member to lead on air quality;
- Development and adoption of an Electric Vehicle Strategy;
- A pilot study for Hitchin in partnership with the private sector and Member of Parliament to set out the opportunities for electric vehicle charging utilising bespoke software solutions;
- Expansion of the Council's own EV network within its own car parks;
- Development and implementation of a number of specific air quality initiatives such as an anti-idling campaign in partnership with local schools;
- Development of a Sustainable North Herts strategy with improving air quality as the main aim.

North Hertfordshire District Council's priorities for the coming year are contained within the Council Plan. The Council Plan has recently been amended and adopted by the Council, Objective 3 – Respond to Challenges to the Environment, has the following statement: We will work to improve the monitoring and management of air quality across the district, prioritising those areas where air quality is most in need of improvement. Arising from the objective are the following specific actions:

- As part of the 'Sustainable North Hertfordshire', work to include the development and support of policies that encourage electric vehicle use and other 'cleaner air' initiatives. This includes the issue of bus and car idling, particularly outside schools and on taxi ranks;
- Work to progress the implementation of a better cycle network in North Herts, linking the District and beyond; and

- Introduce trial/experimental Electric Vehicle charging points in North Hertfordshire.

The principal challenges and barriers to implementation that North Hertfordshire District Council anticipates facing are primarily related to the recovery and impacts arising from the current pandemic. Council resources, both staffing and finances, are significantly under pressure and directed to supporting communities and businesses at this unprecedented time and will be so for the foreseeable future. However, the Council will seek to deliver on its objectives and actions to the best of its ability at this time and going forward with the support of Central Government grant schemes.

Progress on the following measures has been slower than expected due to difficulties in recruiting staff with the necessary level of expertise and on permanent contracts as well as the diversion of resources to deal with the current pandemic situation.

North Hertfordshire District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Stevenage Road AQMA by 2021, and in the Payne's Park AQMA by 2023.

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 may be required in subsequent years to achieve compliance and enable the revocation of Payne's Park AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations Involved	Funding Source	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 and Delivery Management	Delivery & Service Plans / Route Management Plans	Postponed for the short-medium term	Local Authority Environmental Health, Local Authority Transport	Local Authority, Funding: Defra Air Quality Grant	Number of companies signed up	Not defined	No current action on this measure	Not known due to need to source alternative means of funding	Requirement for funding means that implementation is unlikely to occur until at least 2020-1
2	Intro to & uptake of ECO Stars scheme in Hitchin Town Centre	Freight and Delivery Management	Delivery & Service Plans / Route Management Plans	Postponed for the short-medium term	Local Authority Environmental Health, Local Authority Transport	Local Authority, Funding: Defra Air Quality Grant	Numbers of companies signed up	Not defined	No current action on this measure	Not known due to need to source alternative means of funding	Requirement for funding means that implementation is unlikely to occur until at least 2020-1
3	Engage with & promote school travel plans in Hitchin schools	Promoting Travel Alternatives	School Travel Plans	2019	Hertfordshire County Council.	Local Authority, Funding: Cost neutral relies on existing staff resources	Number of schools with updated Travel Plans & proactively engaging with travel planning	Reduction in private car journeys to school & associated reduction in vehicle emissions	5 schools in the Hitchin area are engaged with the Active and Safer Travel Team and are working on the national on-line Mode shift STARS travel plan. Additional guidance issued in response to Covid-19.	Ongoing. Road safety Officers promote Mode shift Stars travel plans and road safety initiatives across the County	Work with 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	2019	North Hertfordshire Environmental Protection Team & HCC's Active & Safer Travel Team	Local Authority, Funding: Cost neutral relies on existing staff resources	Not defined	Not defined	The Strategic Planning team are currently producing an LCWIP, (Local Cycling and Walking Infrastructure Plan) in partnership with HCC for the District; this will identify the main cycling and walking for future funding. The Active and Safer Travel Team also have dedicated cycle trainers that deliver Bikeability into schools, this is also promoted to all schools throughout the year	LCWIP is currently due to completed in Spring 2021.	Work with NHDC Active Communities Team and HCC's Active & Safer Travel Team to investigate initiatives to promote walking & cycling
4a	Promotion of Walking & Cycling in accordance with COVID 19 Social Distancing Measures	Promoting Travel Alternatives	Promotion of walking and cycling	2020	Hertfordshire County Council Transport	DfT High Street Fund, ERDF Funding,	Not defined	Not defined	The Local Authority are working together with HCC to introduce social distancing measures for pedestrians in town centres and securing funding to implement cycle racks across all 4 town centres to promote cycling to these key destinations	March 2021	Continue to work with HCC, and limitations to funding opportunities from Local Govt.
14	Baseline survey state of cycling provision in Hitchin	Transport Planning and Infrastructure	Cycle network	2018	North Hertfordshire Environmental Protection Team & Hertfordshire County Council	Not defined	Thorough understanding of the current situation & identification of future options	Not defined	None	Expected to be addressed by LCWIP, (Local Cycling and Walking Infrastructure Plan) in partnership with HCC for the District	Work with NHDC Active Communities Team and HCC's Active & Safer Travel to investigate initiatives to promote cycling
5	Increasing/ improving publicly available re-charging for Electric Vehicles (EV) in car parks	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	2020-1	North Hertfordshire Environmental Protection Team	Not yet defined	EV ownership numbers in Hertfordshire & records of usage of available posts	Not defined	The NHDC EV Charging Strategy is being developed. When adopted it will provide the policy steer for the installation of further off-street EV charging infrastructure.	2020 onwards	Funding

6	Increasing/ improving publicly available re-charging for on-street EV	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	Planned 2020-1	Hertfordshire County Council. North Hertfordshire Environmental Protection Team	OLEV	Presence of on-street EV charging infrastructure	Not defined	HCC on-street EV charging strategy in progress, operated in conjunction with District Authorities.	Ongoing	Funding
7	Increasing private availability of recharging infrastructure for Electric Vehicles	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure	2018 onwards	North Hertfordshire Planning Department and Environmental Protection Team	Through Planning Conditions for new developments	Number of Discharge of Condition Planning Cases referred to EP Team & number of EV re-charging points approved in a year	Not defined	All new developments with parking are required to provide EV charge points as defined in NHDC Air Quality & Planning Guidance 2018	Ongoing	Effective mechanism, paid by developer contributions
8	Dedicated parking bays for EVs at charging points	Promoting Low Emission Transport	Priority parking for LEV's	Ongoing	North Hertfordshire Environmental Protection Team and Strategic Planning Team	NHDC	Principle of not charging for EV parking at charge points in Car Parking Strategy	Not defined	Standard conditions available & supported by Local Plan Policy & guidance document. Planning permissions being granted with EV infrastructure conditions in place	2021	Significant barriers exist that require collaborative working & experience sharing to overcome. These include financial viability, civil engineering, accessibility & enforcement & health & safety issues
9	NHDC fleet review diesel to low emission vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Ongoing	North Hertfordshire Environmental Protection Team	NHDC	Presence in NHDC fleet of Low Emission Vehicles	Not defined	This was discussed recently as potential avenue for further exploration, specifically with regards to the renewal of NHDC's fleet.	Not defined	No further action at this stage has been undertaken.
10	Establish legal status of anti-idling provision (S.42 Road Traffic Act 1988) & application by NHDC	Traffic Management	Anti-idling enforcement	Not yet actioned	North Hertfordshire Environmental Protection Team	NHDC	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	Subject to further local consideration, but no current plans in force to implement
11	Review on-street parking designation & enforcement at Stevenage Road & Upper Tilehouse Street	Traffic Management	Parking Enforcement on Highway	2019	North Hertfordshire Environmental Protection Team and Strategic Planning Team	Not defined	Not defined	Changes to parking controls & enforcement activity. Reduced queuing	Added to current work programme	2020-2021	Not defined
12	Hitchin Industrial Estate Connectivity/ Relief Road	Transport Planning and Infrastructure	Strategic Highway Improvement	Not yet actioned	Hertfordshire County Council	Not defined	Decision on connectivity options to be investigated	Reduction in numbers of HGV passing through AQMAs	The scheme is identified as a package in the HCC draft North Central Growth Transport Pan. This scheme is to be investigated as part of the A505 corridor study, which will include an assessment of the movement of commercial vehicles to/from the industrial estate to better understand the needs for potentially additional accesses for all users.	Hertfordshire County Council is aware of findings of HGV movement survey & the associated AQ issues	Subject to further investigation by HCC, and funding options to be considered.
13	Engage with Herts CC on development of LTP4 & Local Growth & Transport Plan	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2017	North Hertfordshire Environmental Protection Team via Hertfordshire County Council	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 and the importance of mitigation and benefits of specific projects including some relevant to Hitchin 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.

15	Workplace & School based car sharing including consideration of preferential parking	Alternatives to private vehicle use	Car & lift sharing schemes	2019	North Hertfordshire Environmental Protection with Hertfordshire County Council Travel Planning Team	Not defined	Engagement by schools and businesses	Not defined	Schools encouraged to consider promotion of car sharing between parents/carers where practicable. Linked directly to Measure 3	Not defined	Lift share no longer promoted at County level due to safeguarding issues. Carsharing not actively promoted.
16	Car clubs for new developments	Alternatives to private vehicle use	Car & lift sharing schemes	2018	North Hertfordshire Environmental Protection with Hertfordshire County Council Travel Planning Team	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	Via the Internet	Ongoing annual event	Hertfordshire County Council and North Hertfordshire District Council	June 2019 and annually thereafter - 2019 focus on uptake of 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	Postponed in 2020 due to Covid-19 pandemic
18	Air Quality Notification System	Public Information	Air Pollution Alert	2018	North Hertfordshire DC, other Herts local authorities & Herts County Council Public Health	LAs in Herts, HCC, Public Health	Numbers of members of the Notification System	Not defined	Contract signed. Notification System to launch in 2019	Feb-19	Ability to get sign up will depend on access to vulnerable and interested groups and therefore publicity and support from partners. Requires further publicity.
19	Reducing emissions from public transport	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	No progress	North Hertfordshire District Council & Herts CC & bus companies	Funding not defined	Number of buses retrofitted	NO2 reduction of 0.009g/km per Euro 5 bus	Intalink Enhanced Partnership between HCC, Districts and public transport operators, managed by HCC. See: https://www.hertfordshire.gov.uk/about-the-council/consultations/transport-and-highways/intalink-enhanced-partnership-public-consultation.aspx	Not defined	Planning Obligations from Major Scale Developments
20	Engage with schools to raise awareness of air pollution	Public Information	Other	2020 onwards	North Hertfordshire in liaison with Herts CC Active & Safer Travel Team	Funding not defined	Number of schools in Hitchin utilising the Air Pollution teaching toolkit	Not defined	Air Quality for Schools Toolkit Resources are uploaded to the Herts Grid for learning.	Air Quality Campaigns will continue to be promoted with all schools in the North Herts District	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 and Development Control	Air Quality Planning and Policy Guidance	Delivered 2018	North Hertfordshire's Environmental Protection and Planning Teams	ongoing - being updated as policy, legislation and best practice changes	Acceptance of the Air Quality Policy within the Local Plan	Not defined	The Local Plan is under examination with proposed modifications to Air Quality Policy	Planning Guidance Document updated in 2018. Local Plan Policy completed 2018 and subject to Examination	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 represent-ation	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Ongoing	North Hertfordshire's Environmental Protection Team	NHDC	County-wide initiatives and joint working on bids and projects	Not defined	Active & well-established Forum	Work ongoing	Consider Active & Safer Travel Team representation on the group
23	Green Wall	Other	Other	No progress	North Hertfordshire District Council Environmental Protection Team	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 Attenutation 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.

2019 represents the fourth 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 NOx 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.

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

3.1 Summary of Monitoring Undertaken

There are two current AQMA's in the district with associated monitoring as summarised below:

AQMA1 Stevenage Road Hitchin

Continuous monitoring Sites:

NH1 Automatic monitoring for Nitrogen Oxides

NH2 Automatic Monitoring for Particulate Matter PM10 and PM2.5

Diffusion tube sites

NH 45, 92, 103,104,105

AQMA2 Payne's Park Hitchin

Diffusion Tube Sites:

NH 63, 77, 82, 93, 114

In summary: from results of monitoring data corrected for relevant exposure shows the following:

Stevenage Road AQMA 1

- No results above objectives for 3 years in succession (2019, 2018,2017).
- No results within 10% of objective levels in last two years (2019, 2018)

Payne's Park AQMA 2

- Two years with results above objectives in last 3 years (2018, 2017)
- Last 3 years with results within 10% of objective levels (2019,2018,2017)

The significant change in the last 12 months is that after correcting for relevant exposure, there are now no monitoring results for AQMA1 above or within 10% of objective levels for two years in succession. Monitoring results in AQMA2 remain above and within 10% of objective levels.

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 2019. Both 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 PM2.5) 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. 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 46 sites (one site comprises 3 co-located diffusion tubes) during 2019. Table A.2 in Appendix A shows the details of the sites. This reflects an overall increase in 3 monitoring sites compared to 2018, based upon 7 new sites NH128-NH134, and discontinuing monitoring at the following 4 sites NH78, NH83, NH118 and NH126, where annual mean results have been consistently below 30$\mu g/m^3$.

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[4], "annualisation" (where the data capture falls below 75%), and distance correction[5]. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Note that the concentration data presented in Table A.3 represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant for sites within 10% or above the objective level.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The following figures F3.1 and F3.3 show trend data for AQMA monitoring sites without corrections for distance.

Figure 3.2 highlights the application of distance corrections as applied to the two monitoring sites in the Stevenage Road AQMA that are furthest from the roundabout.

Overall, within the AQMA, there are 6 monitoring points, one automatic site and 5 additional diffusion tube points. In 2019, two sites (NH1and NH45) showed marginal increases, whilst four sites (NH 92, NH103-5) all showed marginal decreases. The sites closest to the roundabout and road junction were those tending to show increases, suggesting localised traffic congestion is the cause. These localised increases are against trends in the last two years that have shown small but consistent decreases.

[4] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[5] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

When corrected for distance, there are no monitoring results within the Stevenage Road AQMA above, and only a single result for NH45 within 10% of the AQ objective.

On this basis a further years monitoring is proposed until all results remain less than 90% of objective levels.

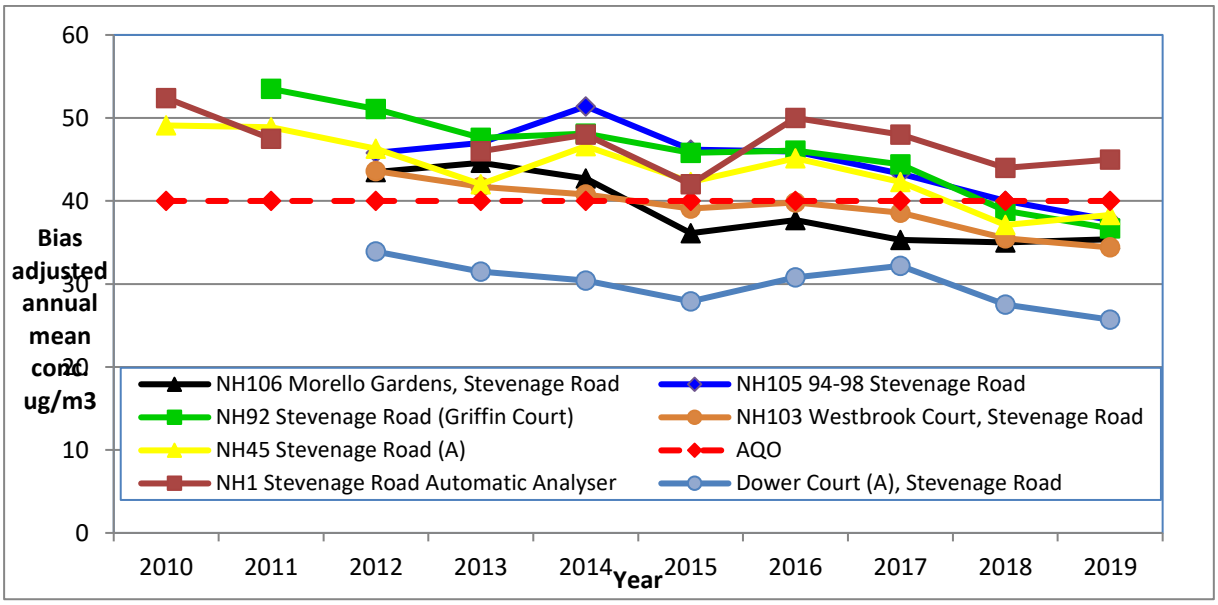

Figure 3.1: Trends in NO_2 concentrations at monitoring sites (all except NH106) located within the AQMA at Stevenage Road, Hitchin

The continued trend in reductions of monitored pollution levels at two sites, previously showing exceedances are highlighted in Figure 3.2 below. These results are now significantly below objective levels.

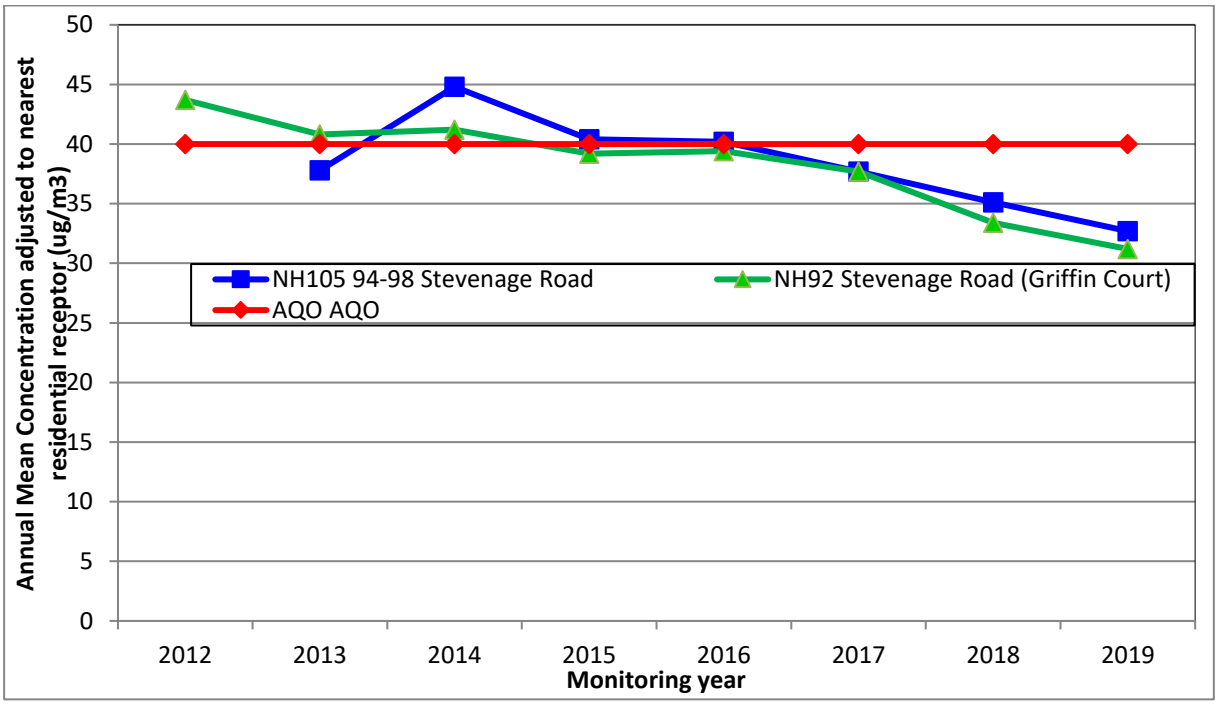

Figure 3.2: Trends in NO_2 concentrations monitored at NH105 and NH92 adjusted to be relevant to the nearest residential receptors

Figure 3.3 below, highlights trends for monitoring results within the Payne's Park AQMA up to 2019. The most recent results all highlight the continued trend of reductions in monitored levels of pollution at all sites, with a single site at NH93 Park Way remaining above objective levels, prior to distance correction. However, after correcting for distance the result for relevant exposure was 37.7 µg/m^3, still within 10% of the objective level.

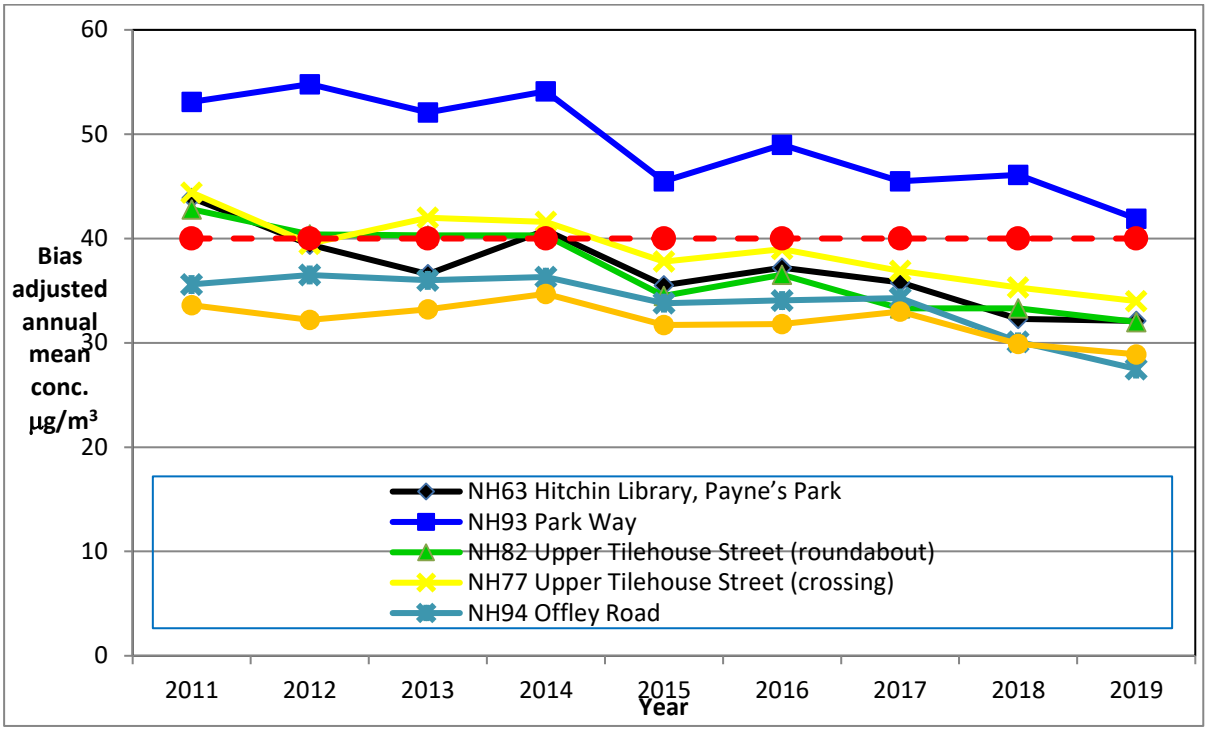

Figure 3.3: Trends in NO_2 concentrations at monitoring sites at Payne's Park, Hitchin

The monitoring site NH93, remains the critical receptor as representative of the only residential dwelling within the AQMA at 41 Upper Tilehouse Street. The recent results for NH93 (prior to distance correction are illustrated below in Figure 3.4.

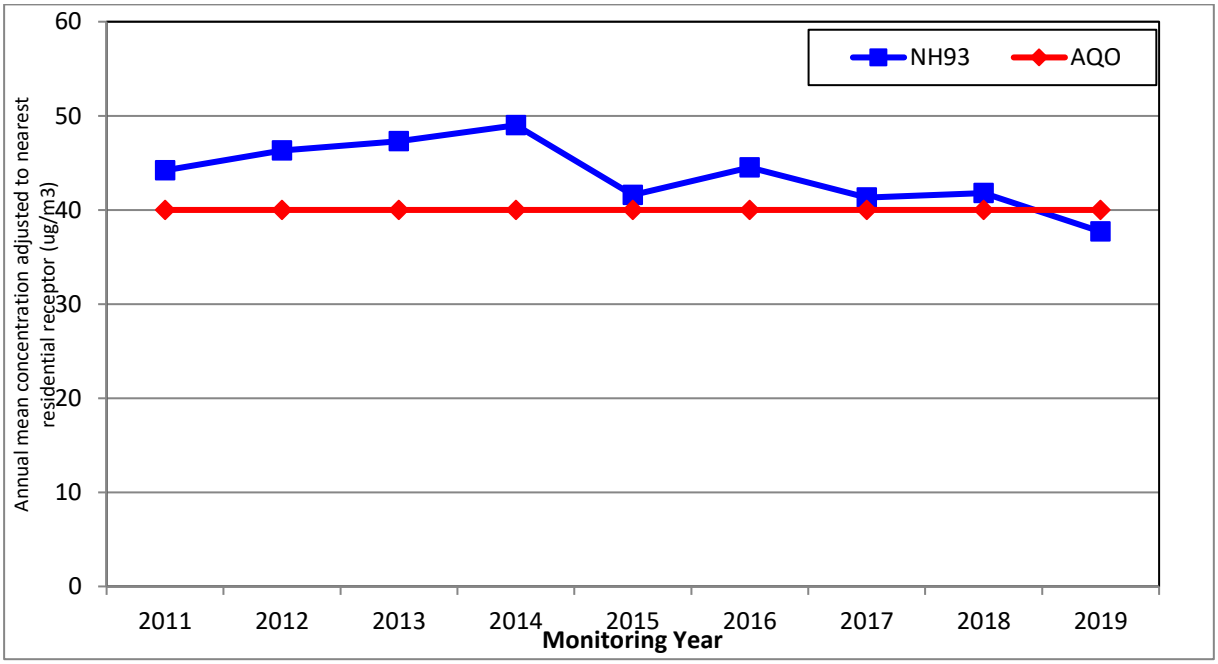

Figure 3.4: Trends in NO_2 concentrations monitored at NH93 adjusted to be relevant to the nearest residential receptor (41 Upper Tilehouse Street).

Figure 3.5 highlights the continuing trend in reductions in monitored pollution levels at monitoring site NH93.

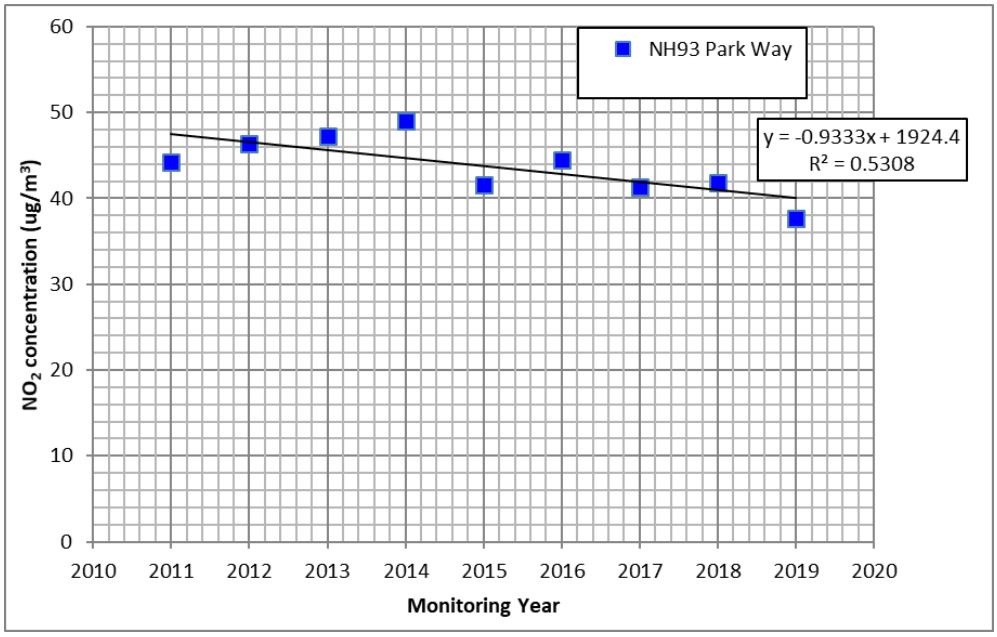

Figure 3.5: Trend-line for NO2 concentrations as calculated at 41 Upper Tilehouse Street.

An extrapolation of trend results for NH93 is shown below in Figure 3.6, highlighting that if this trend continues the results for NH93 are expected to be below 90% of objective levels for 2020.

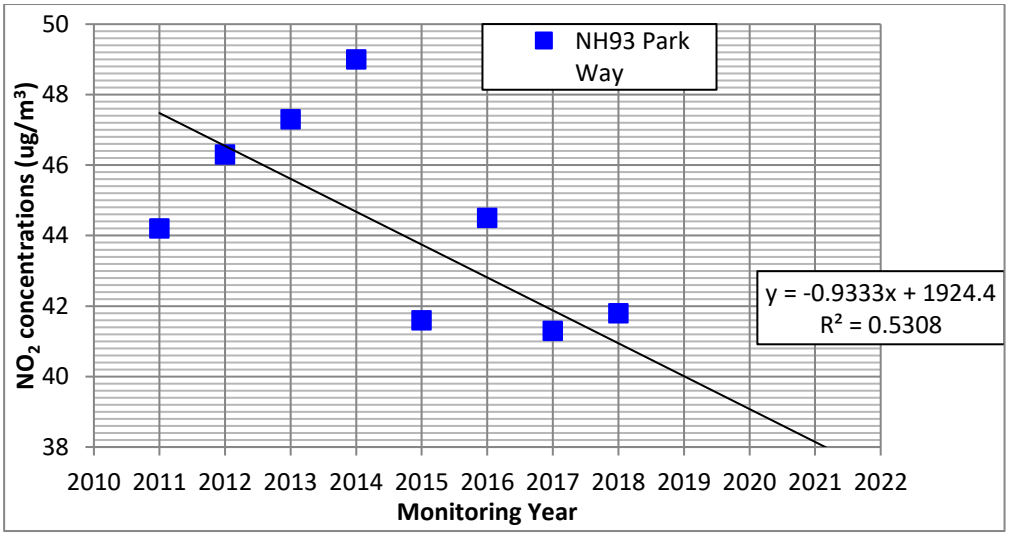

Figure 3.6: Predicted change in NO_2 concentrations at 41 Upper Tilehouse Street based on extrapolation of eight years of monitoring

The following figures 3.7-3.10 provide updated trends in traffic data for monitoring points closest to each AQMA. Traffic count data from DfT is only available for years up to 2018.

For the Stevenage Road AQMA, traffic data for the A602 shows no significant change for 2018, compared to the previous year, whereas for the Payne's Park AQMA one of the traffic monitoring sites for Park Way Hitchin, shows a reduction, consistent with long term trend results. The traffic count closest to the critical receptor for Upper Tilehouse Street shows no significant change from the previous year, again consistent with the long-term trend.

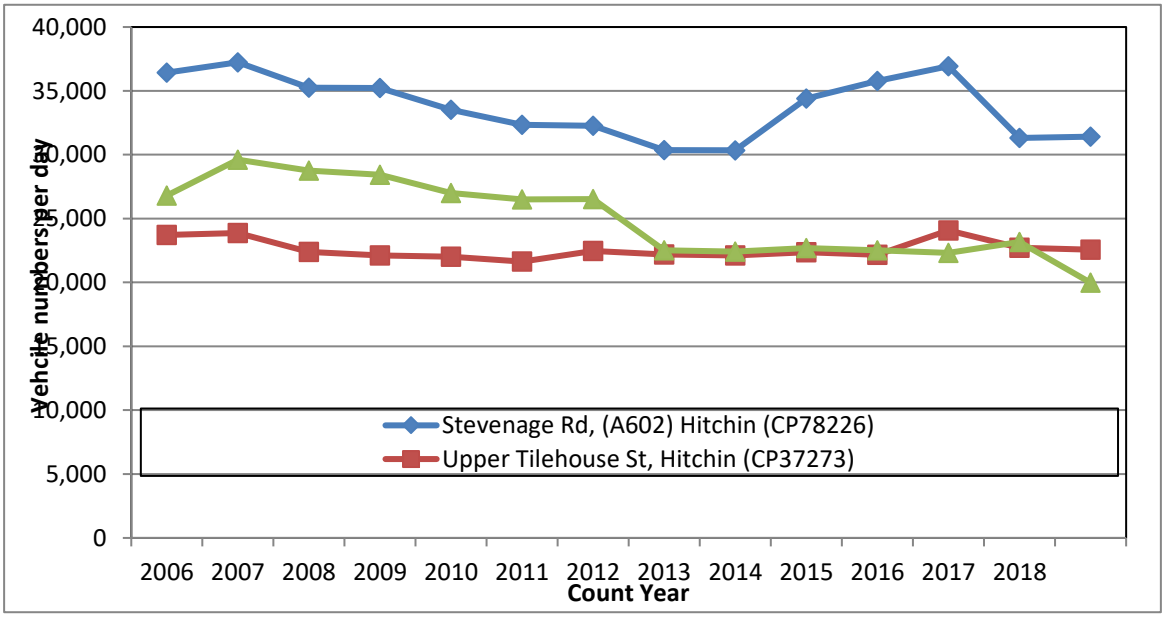

Figure 3.7: Trends in road traffic counts at the three DfT count points closest to the Stevenage Road AQMA and Payne's Park AQMA in Hitchin

Figures 3.8-3.10 below provide a breakdown of vehicle counts by vehicle categories for the three sites reported above, and show the trend in closest pollution monitoring data within each AQMA.

The A602 data representative of traffic through AQMA1, the Stevenage Road AQMA highlights no significant change in recent traffic counts against a reduction in monitored pollution levels to 2018.

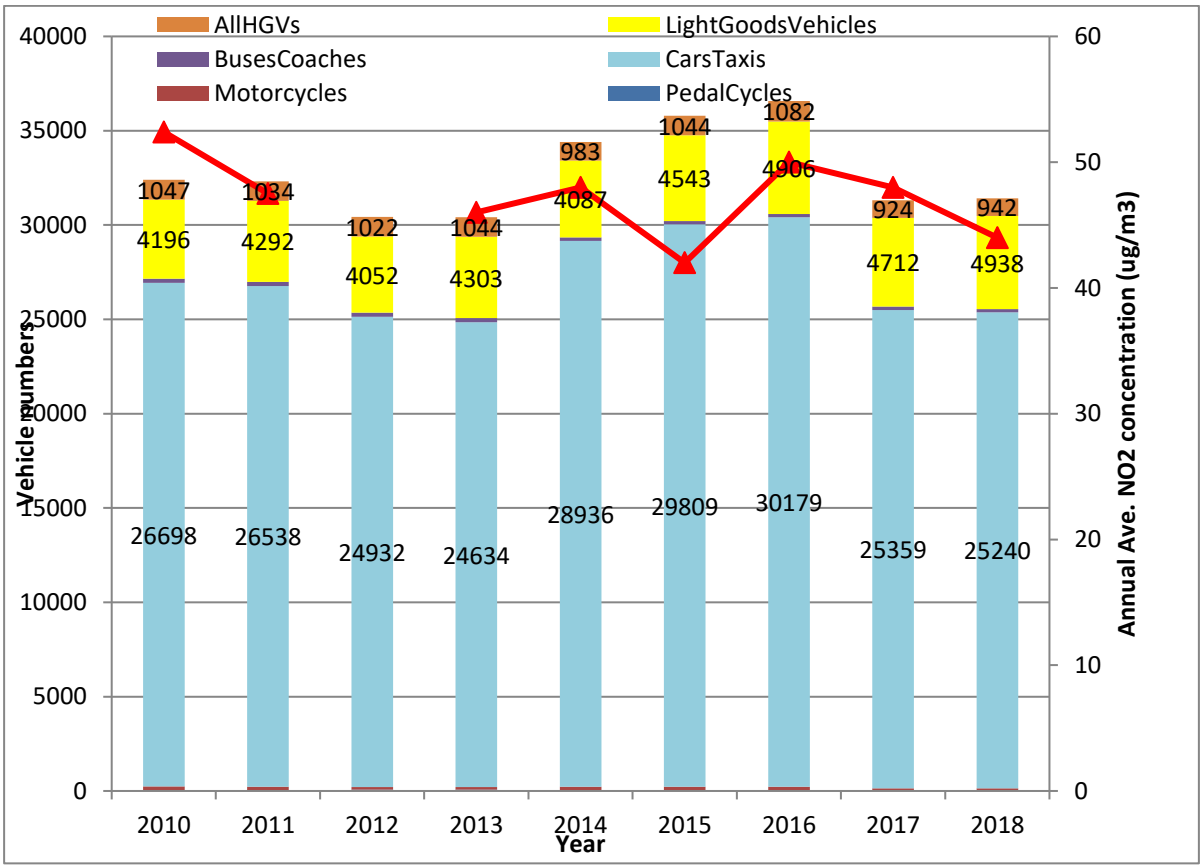

Figure 3.8: Road traffic counts at DfT count point 78226 within the Stevenage Road AQMA Hitchin compared to mean annual average NO_2 measured by the automatic analyser (red line)

The following figures 3.9-3.10 show detailed traffic data representative of the Payne's Park AQMA, alongside monitored pollution levels within the AQMA. The recent traffic data for Park Way highlights a reduction in annual traffic flows, with no significant change in pollution levels. Whereas the results in Figure 3.10 confirm the traffic reductions for Upper Tilehouse Street with an associated reduction in pollution levels nearby. However, it is likely that local pollution levels within the AQMA are significantly influenced by localised congestion, independent of total traffic flows.

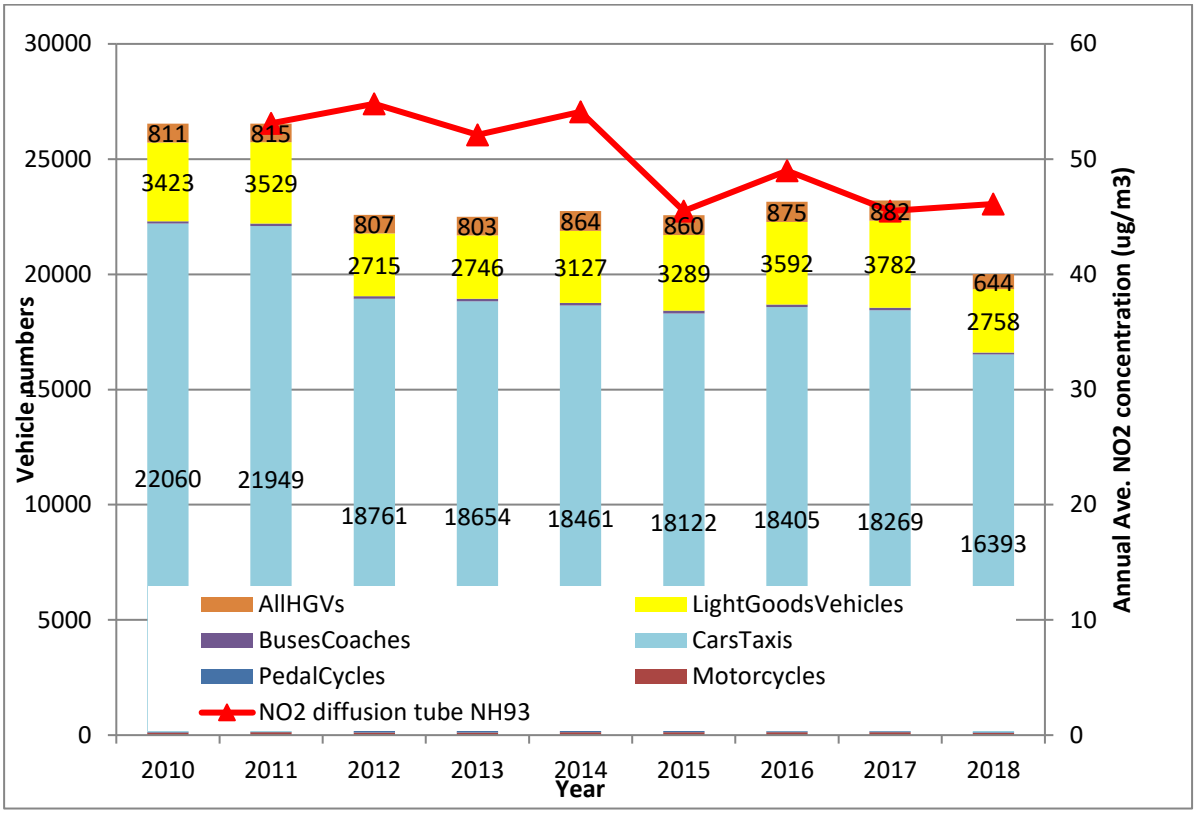

Figure 3.9: Road traffic counts at DfT count point 27988 at Park Way, Hitchin compared to the mean annual average NO_2 measured by diffusion tube NH93

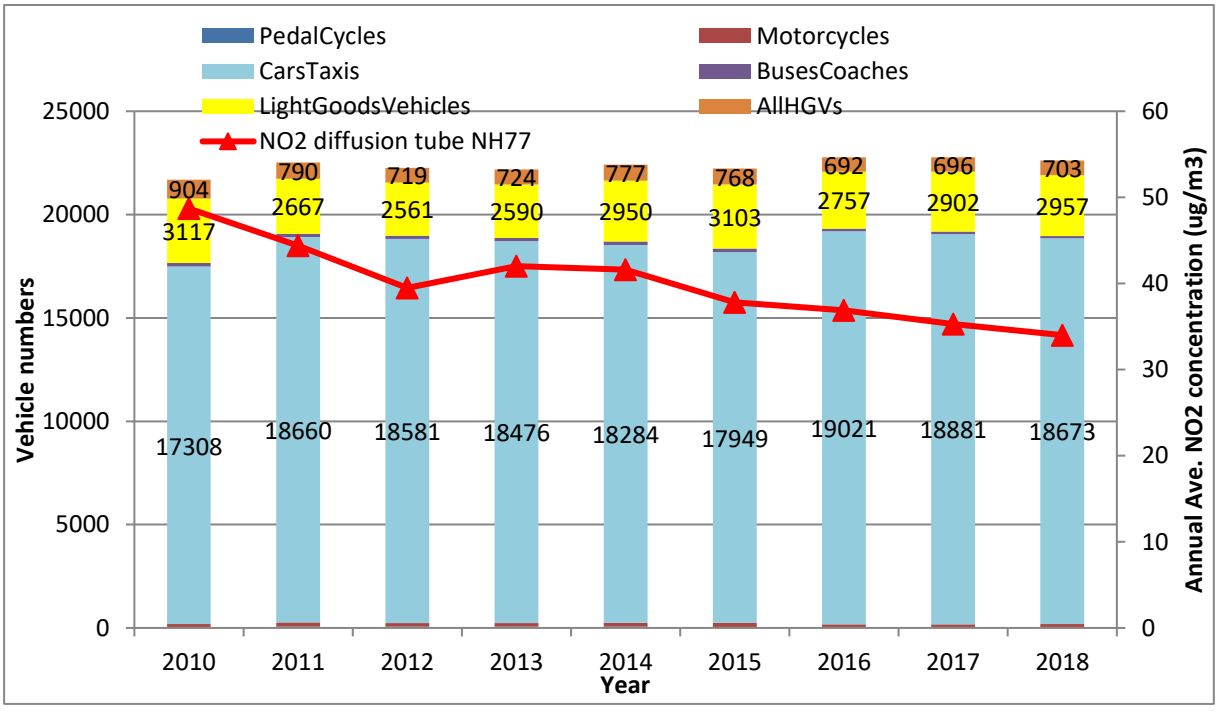

Figure 3.10: Road traffic counts at DfT count point 37273 at Upper Tilehouse Street, Hitchin compared to the mean annual average NO_2 measured by diffusion tube NH77

Another area of local significance is Baldock, and trends in recent air pollution monitoring data for sites in Baldock are shown below in Figure 3.11. The most recent monitoring data for 2019, continues to confirm recent trends of reductions in pollution levels at all monitoring sites in Baldock, with only a single site at NH93,(within the AQMA), being above objective levels,(before correcting for distance to relevant exposure).

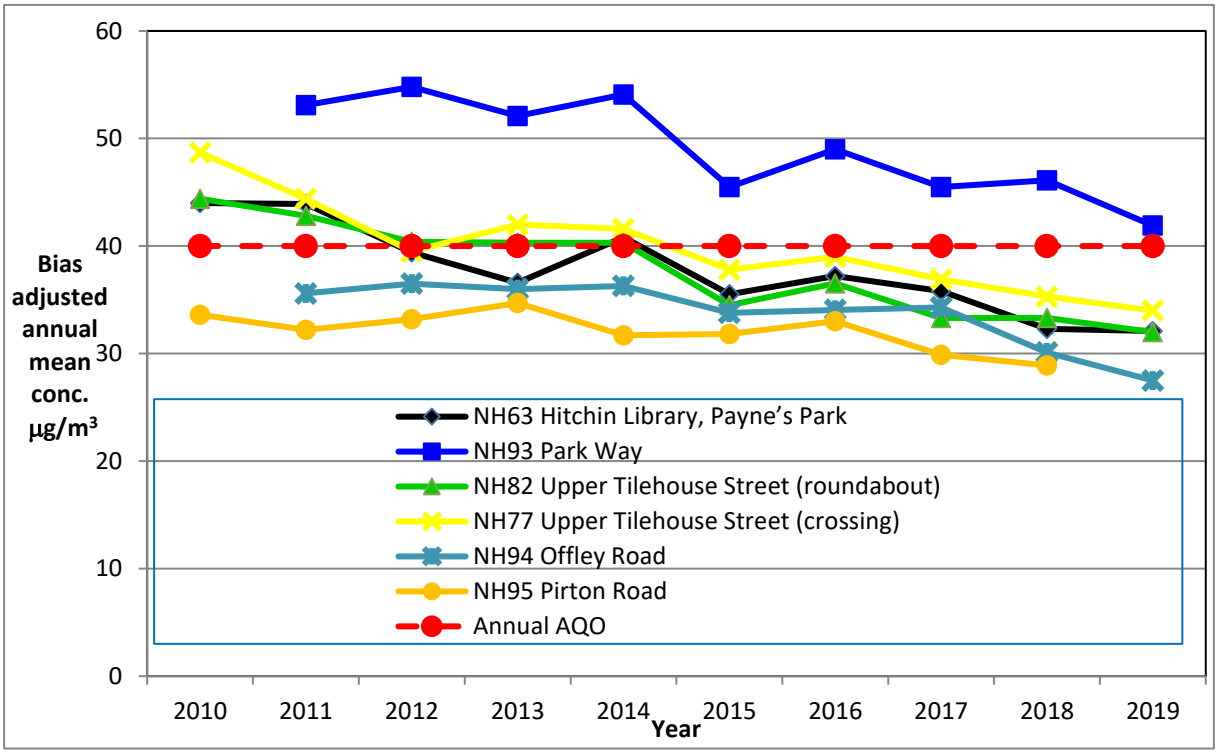

Figure 3.11: Trends in NO_2 concentrations at monitoring sites in Baldock

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

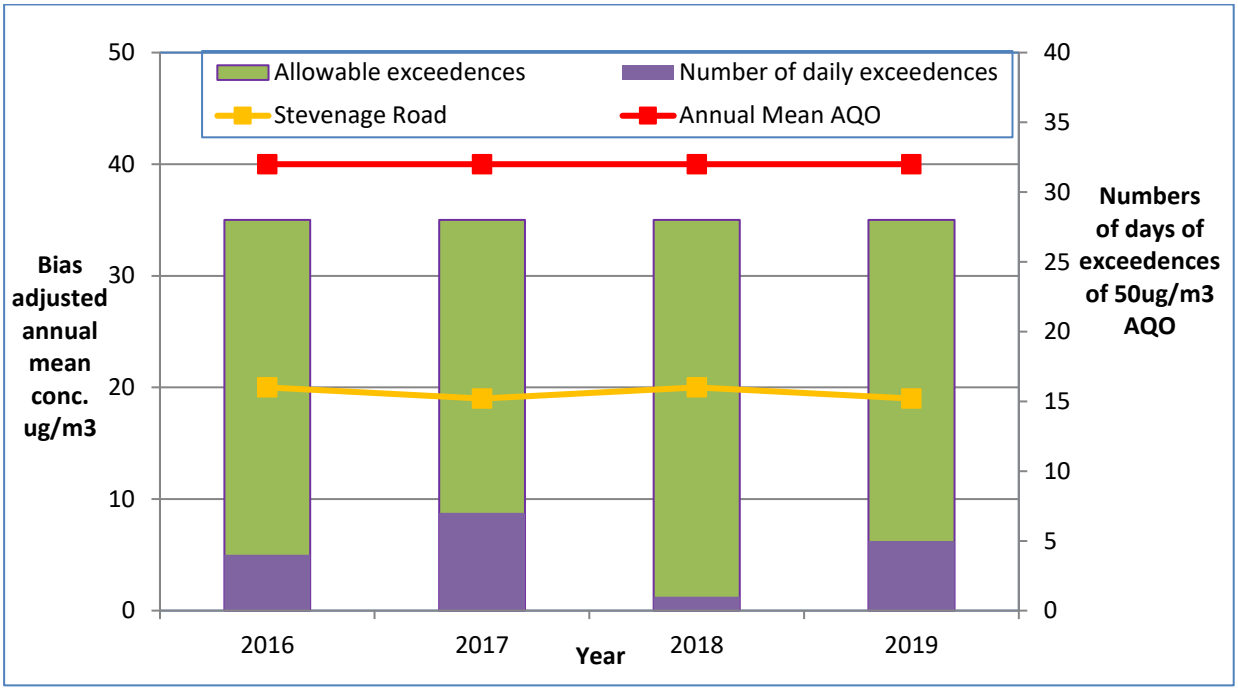

Figure 3.12: PM_{10} concentrations measured at Stevenage Road, Hitchin

2019 was the fourth full year of PM_{10} monitoring at the Stevenage Road location. The data from all four years are displayed in Figure 3.12 and show that the mean average concentrations for all years were below the 40µg/m^3 AQO. The number of daily exceedences of the 50µg/m^3 AQO are also shown in Figure 3.12 as displayed with the number of allowable exceedences in a calendar year, confirming there are no exceedances of any objectives for PM_{10}, based upon results of continuous monitoring.

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 4 years.

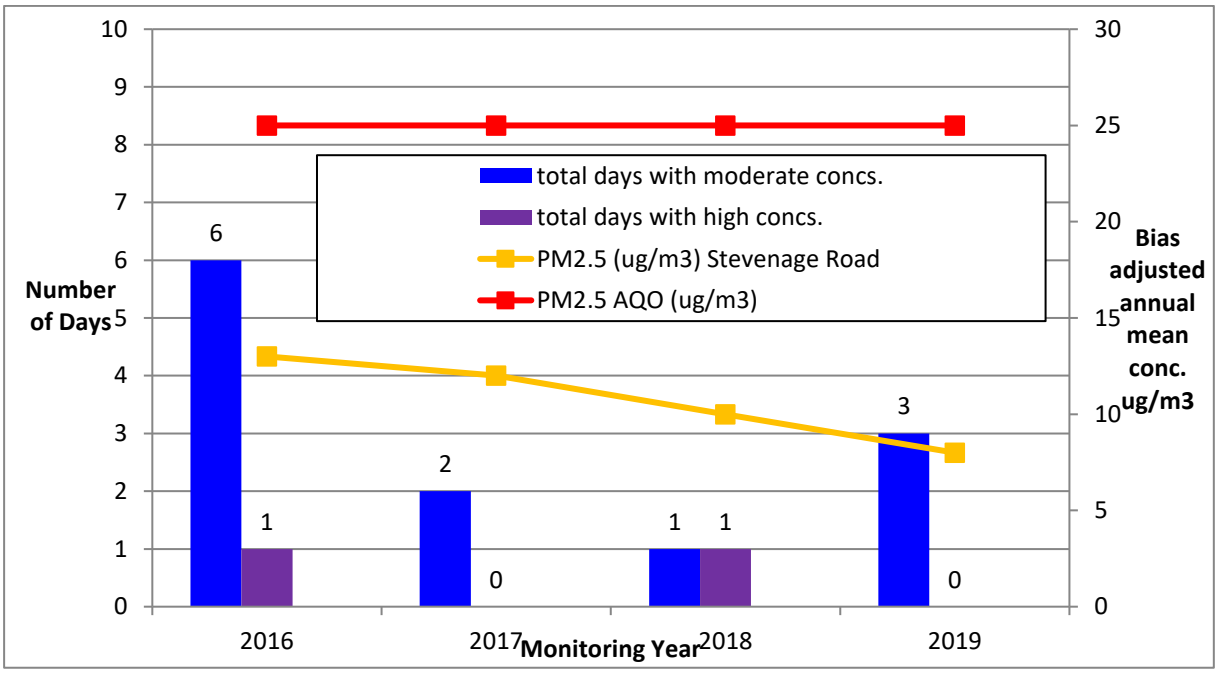

Figure 3.13: $PM_{2.5}$ concentrations measured at Stevenage Road, Hitchin

2019 was the fourth full year of $PM_{2.5}$ monitoring at the Stevenage Road location. The data displayed in Figure 3.13 above show that the mean average concentrations for each year were below the non-statutory target value of 25µg/m^3. 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. The annual mean concentrations continue to exhibit a trend of falling values, significantly below objective levels.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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 (Easting)	Y OS Grid Ref (Northing)	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	YES	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	7	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 Street, Hitchin (traffic lights)	Roadside	518006	229032	NO_2	YES	5	1.5	NO	2
NH82	Upper Tilehouse Street, Nr Roundabout	Roadside	518129	229065	NO_2	YES	7	1.5	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
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 Road, 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	YES	0	2.5	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
NH119	High Street (125) Codicote	Roadside	521767	218110	NO_2	NO	0.4	1.1	NO	2
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 Rd, Baldock	Roadside	523917	233917	NO_2	NO	7	1.5	NO	2
NH123	Dunkerley Ct, LGC	Roadside	522289	232985	NO_2	NO	0	5.3	NO	2
NH124	82 Bedford Rd, LGC	Roadside	520967	233073	NO_2	NO	13	3.2	NO	2

NH125	11 Luton Rd, Cockernhoe	Rural	512486	223251	NO_2	NO	9	3	NO	2
NH128	57 Codicote High Street	Roadside	521497	218415	NO_2	NO	9	1.2	NO	2
NH129	119 London Road, Knebworth	Roadside	525205	220142	NO_2	NO	1.5	2.3	NO	2
NH130	Opp Old White Horse, Station Rd, Baldock	Roadside	524597	234119	NO_2	NO	6	1.5	NO	2
NH131	The Clock House, Turnpike Lane, Ickleford	Kerbside	518215	231528	NO_2	NO	0.5	0.2	NO	2
NH132	Opp Laurel Way, Arlesey Road, Ickleford	Roadside	518283	231366	NO_2	NO	20	1.5	NO	2
NH133	George & Dragon, High Street, Graveley	Roadside	523124	227776	NO_2	NO	7	1.5	NO	2
NH134	6 Bucks Head Cottages, Stevenage Rd, L.Wymondley	Roadside	521516	227449	NO_2	NO	10	3.5	NO	2

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.3 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
NH1	518740	228348	Roadside	Automatic	98	95	**42**	**50**	**48**	44	45
NH06	535906	240794	Roadside	Diffusion Tube	100	100	26.8	25.94	26.5	24.6	24.8
NH45	518708	228347	Roadside	Diffusion Tube	100	100	**42.3**	**45.16**	**42.3**	37.1	38.3
NH59	524649	234061	Roadside	Diffusion Tube	100	92	26.4	27.75	26.3	26.2	23.4
NH60	519916	230099	Roadside	Diffusion Tube	100	100	29.5	29.89	29.4	28	24.5
NH61	524428	233882	Roadside	Diffusion Tube	100	100	29.2	30.35	27.7	27.2	26.8
NH63	518160	229092	Roadside	Diffusion Tube	100	83	35.5	37.2	35.8	32.3	32.1
NH67	519225	230553	Roadside	Diffusion Tube	100	100	25.3	27.15	28.3	23.7	23.5
NH127	518821	229993	Roadside	Diffusion Tube	100	100				21.9	21.0
NH72	524502	233948	Roadside	Diffusion Tube	100	92	30.4	32.05	31.3	27.5	26.8
NH103	518773	228342	Roadside	Diffusion Tube	1900	92	39.1	39.83	38.6	35.5	34.4
NH77	518006	229032	Roadside	Diffusion Tube	100	92	37.8	38.99	36.9	35.3	34.0
NH82	518129	229065	Roadside	Diffusion Tube	100	100	34.5	36.53	33.3	33.3	32.0
NH87	518731	228362	Roadside	Diffusion Tube	100	100	26.3	26.93	26.9	23.8	23.7

NH88	524448	233898	Kerbside	Diffusion Tube	100	100	39	39.89	**40.5**	34.7	35.7
NH89	518706	228293	Roadside	Diffusion Tube	100	100	26.3	29.7	28.2	22.8	23.6
NH91	518656	228406	Roadside	Diffusion Tube	100	100	31.2	31.85	32.2	27.4	29.8
NH92	518872	228305	Roadside	Diffusion Tube	100	100	**45.8**	**46.05**	**44.4**	38.8	36.7
NH93	518130	229036	Roadside	Diffusion Tube	92	92	**45.5**	**48.99**	**45.5**	**46.1**	41.9
NH94	517915	228967	Roadside	Diffusion Tube	100	92	33.8	34.06	34.3	30.1	27.5
NH95	517886	228975	Roadside	Diffusion Tube	100	100	31.7	31.81	33	29.9	28.9
NH98	519080	229510	Roadside	Diffusion Tube	100	92	30.3	30.44	28.6	26.6	26.6
NH99	518953	229786	Roadside	Diffusion Tube	92	75	28.2	30.71	29.8	29.2	28.0
NH108	518534	229302	Roadside	Diffusion Tube	100	100	36.1	34.04	33.1	32.1	31.8
NH104	518757	228334	Roadside	Diffusion Tube	92	100	27.9	30.8	32.2	27.5	25.7
NH105	519067	228255	Roadside	Diffusion Tube	92	100	**46.2**	**45.96**	**43.3**	**40**	37.7
NH106	519250	228218	Roadside	Diffusion Tube	92	100	36.1	37.68	35.3	35	35.4
NH107	518720	228335	Roadside	Diffusion Tube	100	100	28.4	29.01	27.8	25.6	26.5
NH110	518740	228348	Roadside	Diffusion Tube	100	83	**49.6**	**50.16**	**48.2**	**44.3**	43.0
NH111	518740	228348	Roadside	Diffusion Tube	92	92	**58.6**	**56.38**	**54.3**	**49.2**	49.8
NH112	518740	228348	Roadside	Diffusion Tube	100	83	**48.7**	**54.21**	**49.6**	**41.2**	42.0
NH114	518150	229160	Roadside	Diffusion Tube	100	100		30.52	29	27	25.2

NH115	535373	241466	Roadside	Diffusion Tube	92	100		26.46	26.8	24.2	24.3
NH116	518492	228669	Roadside	Diffusion Tube	100	100			35.8	33.6	31.2
NH117	518278	229752	Roadside	Diffusion Tube	100	100			28.1	24.5	26.0
NH119	521767	218110	Roadside	Diffusion Tube	92	100			26.1	24.4	23.0
NH120	533805	233823	Rural	Diffusion Tube	100	100			13.7	12	12.1
NH121	523849	233497	Roadside	Diffusion Tube	100	100				23.8	20.9
NH122	523917	233917	Roadside	Diffusion Tube	58	100				21	19.6
NH123	522289	232985	Roadside	Diffusion Tube	100	100				19	19.0
NH124	520967	233073	Roadside	Diffusion Tube	100	100				18.4	18.6
NH125	512486	223251	Rural	Diffusion Tube	100	100				15.8	17.7
NH128	521497	218415	Kerbside	Diffusion Tube	100	-					25.0
NH129	525205	220142	Kerbside	Diffusion Tube	92	-	-				27.2
NH130	524597	234119	Roadside	Diffusion Tube	92	-	-				30.7
NH131	518215	231528	Roadside	Diffusion Tube	100	-	-				38.0
NH132	518283	231366	Kerbside	Diffusion Tube	100	-	-				18.7
NH133	523124	227776	Roadside	Diffusion Tube	92	-	-				18.2
NH134	521516	227449	Roadside	Diffusion Tube	100	-	-				18.6

☒ Diffusion tube data has been bias corrected

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

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance adjustment**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 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.

(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
NH1	518740	228348	Roadside	Automatic	98	98	0	10	4	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 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 PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} Annual Mean Concentration (µg/m³) (3)				
						2015	2016	2017	2018	2019
NH2	518713	228349	Roadside	92	92	20	20	19	20	18

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

Notes:

Exceedances of the PM_{10} 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 PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
						2015	2016	2017	2018	2019
NH2	518713	228349	Roadside	95	95	1	4	7	1	5

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 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	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	$PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$) (3)				
						2015	2016	2017	2018	2019
NH2	518713	228349	Roadside	99	99	11	13	12	10	8

☒ **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.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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 (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
NH06	535906	240794	35.1	37.1	33.1	26.1	26.7	28.8	28.7	28.9	31.9	38.2	47.4	35.0	33.1	24.8	
NH45	518708	228347	47.2	65.0	44.6	51.9	42.0	45.8	45.5	48.3	47.5	56.4	65.4	53.0	51.1	38.3	24
NH59	524649	234061	40.1	42.0	29.6	31.5	26.4	29.2	25.9	21.5	28.4	34.3	29.3	35.7	31.2	23.4	
NH60	519916	230099	38.3	37.2	32.8	31.9	27.0	33.1	29.5	23.2	31.0	35.3	44.7	28.6	32.7	24.5	
NH61	524428	233882	40.4	44.0	29.5	34.1	30.0	31.6	28.2	28.2	32.5	42.2	50.1	37.7	35.7	26.8	
NH63	518160	229092	39.4	56.6	44.7	33.7	34.1	37.9	36.2	37.6	42.9	45.2	58.3	47.0	42.8	32.1	19.7
NH67	519225	230553	25.9	45.4	28.6	26.6	25.6	23.6	25.1	25.2	30.9	35.6	47.1	36.3	31.3	23.5	
NH127	518821	229993	27.7	42.9	23.2	28.1	22.6	19.7	20.8	21.4	24.0	36.4	41.1	28.7	28.1	21.0	
NH72	524502	233948	41.9	52.9	34.2	26.9	25.0	25.5	27.3	33.1	30.3	42.7	52.4	36.6	35.7	26.8	
NH103	518773	228342	55.8	54.1	44.9	41.8	38.4	37.1	35.9	33.1	44.4	51.3	64.7	48.3	45.8	34.4	24.8
NH77	518006	229032	54.5	57.1	35.6	46.8	39.2	43.0	38.3	41.0	37.1	49.5	57.7	44.2	45.3	34.0	26.9
NH82	518129	229065	45.3	52.9	42.8	43.3	37.1	39.2	35.2	39.4	36.8	44.0	52.2	43.0	42.6	32.0	24.3
NH87	518731	228362	43.1	43.3	26.6	28.1	23.2	25.4	24.7	26.8	27.7	33.2	44.7	32.4	31.6	23.7	
NH88	524448	233898	51.2	63.4	48.9	31.4	38.7	37.1	39.6	48.7	41.4	54.6	55.9	59.5	47.5	35.7	
NH89	518706	228293	45.9	44.0	30.0	22.7	23.0	23.7	25.2	22.2	26.5	36.8	41.7	36.4	31.5	23.6	
NH91	518656	228406	46.6	74.4	37.8	28.4	28.3	29.6	32.0	32.7	32.2	45.4	54.5	35.6	39.8	29.8	

NH92	518872	228305	58.3	68.1	45.9	44.0	43.5	51.1	23.8	48.2	43.2	53.4	59.7	48.4	49.0	36.7	31.2
NH93	518130	229036	60.7	60.3	46.5	54.9	57.1	56.5	55.9	52.3	*	55.0	63.8	51.2	55.8	41.9	37.7
NH94	517915	228967	39.9	43.5	41.7	30.1	31.2	32.5	32.7	30.6	36.0	40.0	51.0	30.0	36.6	27.5	22.2
NH95	517886	228975	41.0	49.0	35.8	36.7	32.7	34.5	35.0	35.7	37.7	38.7	49.6	36.1	38.5	28.9	18.4
NH98	519080	229510	45.8	48.5	34.8	30.1	26.3	28.1	25.1	28.5	30.0	36.0	52.3	40.1	35.5	26.6	
NH99	518953	229786	40.7	46.0	37.1	34.0	*	29.8	29.3	26.7	34.2	39.9	54.4	38.7	37.3	28.0	
NH108	518534	229302	46.5	52.0	43.6	33.3	37.2	34.5	41.6	40.1	39.4	46.9	45.8	47.6	42.4	31.8	
NH104	518757	228334	39.8	40.2	38.4	29.6	31.8	30.2	29.6	27.5	28.6	*	47.2	34.7	34.3	25.7	25.7
NH105	519067	228255	53.0	63.0	33.8	47.5	39.3***	43.2	45.7	44.8	49.3	56.4	62.9	52.7	50.2	37.7	32.7
NH106	519250	228218	57.4	53.8	30.8	49.7	*	40.9	37.9	36.7	44.5	49.4	74.5	43.3	47.2	35.4	
NH107	518720	228335	52.7	45.1	32.6	30.2	26.9	27.1	28.7	28.9	31.1	39.9	43.9	37.3	35.4	26.5	
NH110	518740	228348	63.7	67.2	56.1	47.9	52.9	44.7	53.0	55.9	55.2	66.4	80.5	44.1	57.3	43.0	30.3
NH111	518740	228348	63.3	68.4	58.4	64.3	58.3	*	59.3	62.5	59.3	74.3	93.0	69.1	66.4	49.8	34.3
NH112	518740	228348	60.8	66.5	55.8	46.3	50.6	49.1	51.2	54.1	51.1	57.4	76.7	51.9	56.0	42.0	29.7
NH114	518150	229160	41.9	40.8	32.0	24.7	25.9	30.1	20.4	31.4	33.2	37.8	49.2	36.0	33.6	25.2	25.2
NH115	535373	241466	37.3	43.5	32.0	24.7**	25.2	21.7	24.4	26.2	27.4	30.8	52.3	35.9	32.4	24.3	
NH116	518492	228669	41.5	49.7	34.3	47.2	39.6	42.2	36.5	35.6	39.5	38.7	53.1	41.5	41.6	31.2	
NH117	518278	229752	44.1	49.6	30.5	25.2	25.4	25.0	25.4	32.4	32.8	39.3	49.7	35.9	34.6	26.0	
NH119	521767	218110	45.0	*	23.8	30.6	26.5	23.9	22.0	19.9	28.9	35.2	49.7	32.1	30.7	23.0	
NH120	533805	233823	20.1	27.5	11.6	12.4	10.0	9.6	11.2	10.3	14.6	18.5	26.4	21.0	16.1	12.1	
NH121	523849	233497	25.9	32.1	26.3	37.6	23.0	25.3	21.4	17.5	24.6	34.2	41.4	25.7	27.9	20.9	
NH122	523917	233917	*	43.8	24.1	19.0	18.5	18.5	18.8	*	*	*	*	40.1	26.1	19.6	
NH123	522289	232985	32.9	32.5	19.6	24.0	20.3	21.4	19.6	17.3	22.0	28.7	39.6	26.4	25.4	19.0	
NH124	520967	233073	41.0	29.1	23.6	22.3	19.9	17.7	17.1	16.3	21.3	27.1	38.2	24.1	24.8	18.6	
NH125	512486	223251	32.1	37.3	16.4	15.1	15.1	15.4	15.7	17.0	20.6	29.8	36.0	33.0	23.6	17.7	
NH128	521497	218415	39.4	41.5	24.9	52.5	22.9	24.2	22.4	19.3	24.4	36.9	65.5	25.9	33.3	25.0	

NH129	525183	220164	55.6	40.4	32.2	*	26.7	30.1	28.6	22.7	33.4	39.9	55.0	34.4	36.3	27.2	
NH130	524592	234141	30.2	52.7	41.9	24.9	43.5	40.6	40.8	28.2	44.6	53.3	*	49.1	40.9	30.7	
NH131	518206	231520	57.6	60.7	45.1	47.3	43.5	46.4	42.2	41.6	48.6	56.4	71.0	47.0	50.6	38.0	
NH132	518283	231366	34.1	34.8	20.3	19.7	15.3	18.8	17.9	17.1	23.6	31.9	37.2	28.2	24.9	18.7	
NH133	523124	227776	37.0	36.4	*	20.4	14.9	17.3	16.8	14.2	23.1	26.4	33.7	27.3	24.3	18.2	
NH134	521516	227449	49.9	32.8	21.2	22.0	14.9	16.4	16.5	14.9	22.3	28.2	34.9	24.3	24.9	18.6	

☐ **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 in the final column [Note: distance corrections have only been calculated for highest readings]**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 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, Air Monitors are 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, Air Monitors are 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, Air Monitors are 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 2019 was 0.75.

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 was a single monitoring location, NH122 (58%) where less than 75% data were collected during 2019, so annualisation was required for this location. 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 2018 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 ($\mu g/m^3$)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
NH1	2.0	11.0	11.1	45.0	31.5
NH92	2.0	5.0	11.1	36.7	31.2
NH105	3.5	7.0	11.1	37.7	32.7

NH45	2.0	19.0	11.1	38.3	24.0
NH110-2	2.0	11.0	11.1	42.0	29.7
NH93	1.6	3.0	11.8	41.9	*37.7*
NH103	2.4	12.4	11.1	34.0	*24.8*
NH104	3.3	3.3	11.1	25.7	*25.7*
NH63	3.5	33.5	11.8	32.1	*19.7*
NH77	1.5	6.5	11.8	34.0	*26.9*
NH82	1.5	8.5	11.8	32.0	*24.3*
NH114	2.5	2.5	11.8	25.2	*25.2*

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

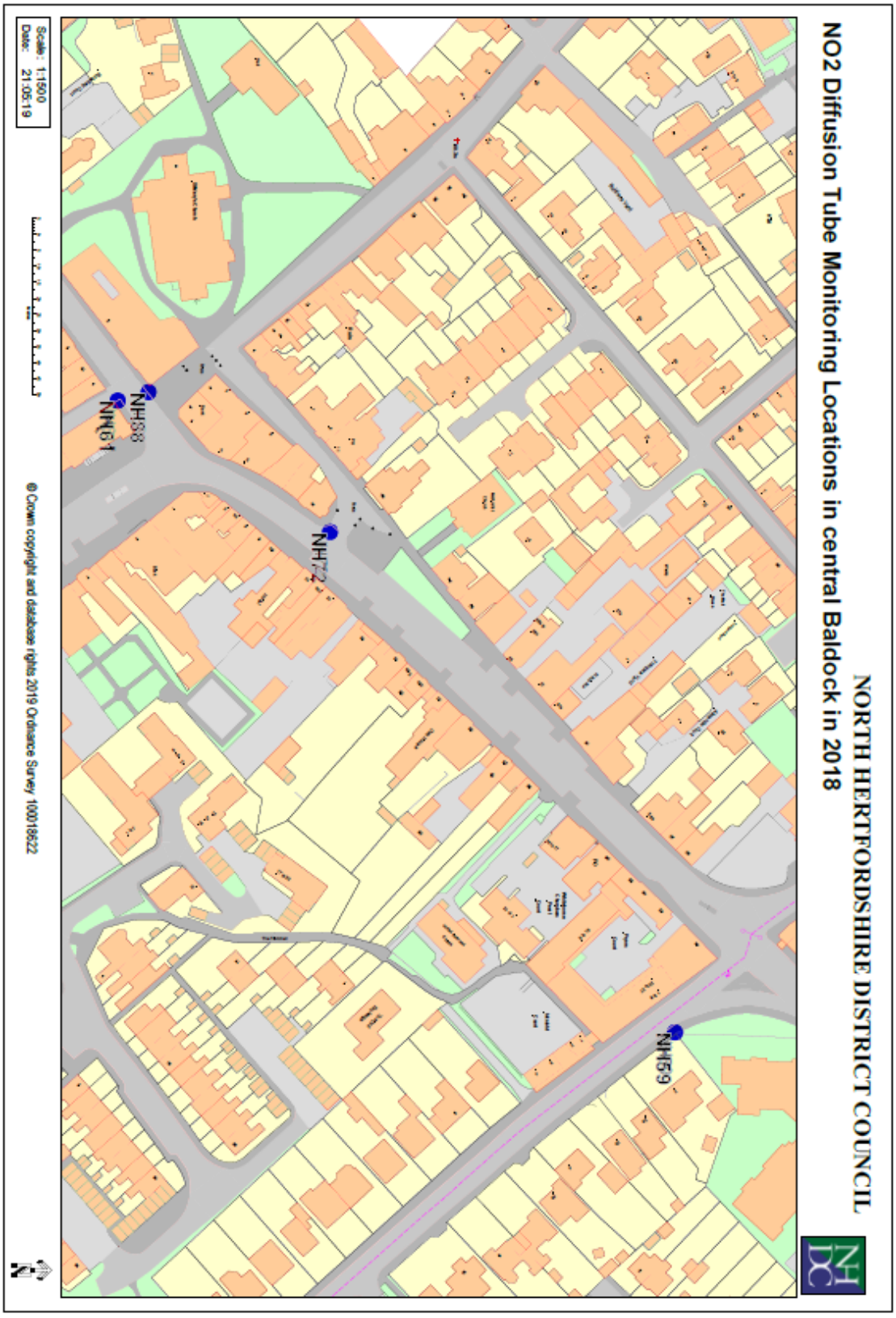

Figure D1: Diffusion Tube Monitoring Locations (NH72, NH88, NH59 & NH61) in central Baldock - 2018

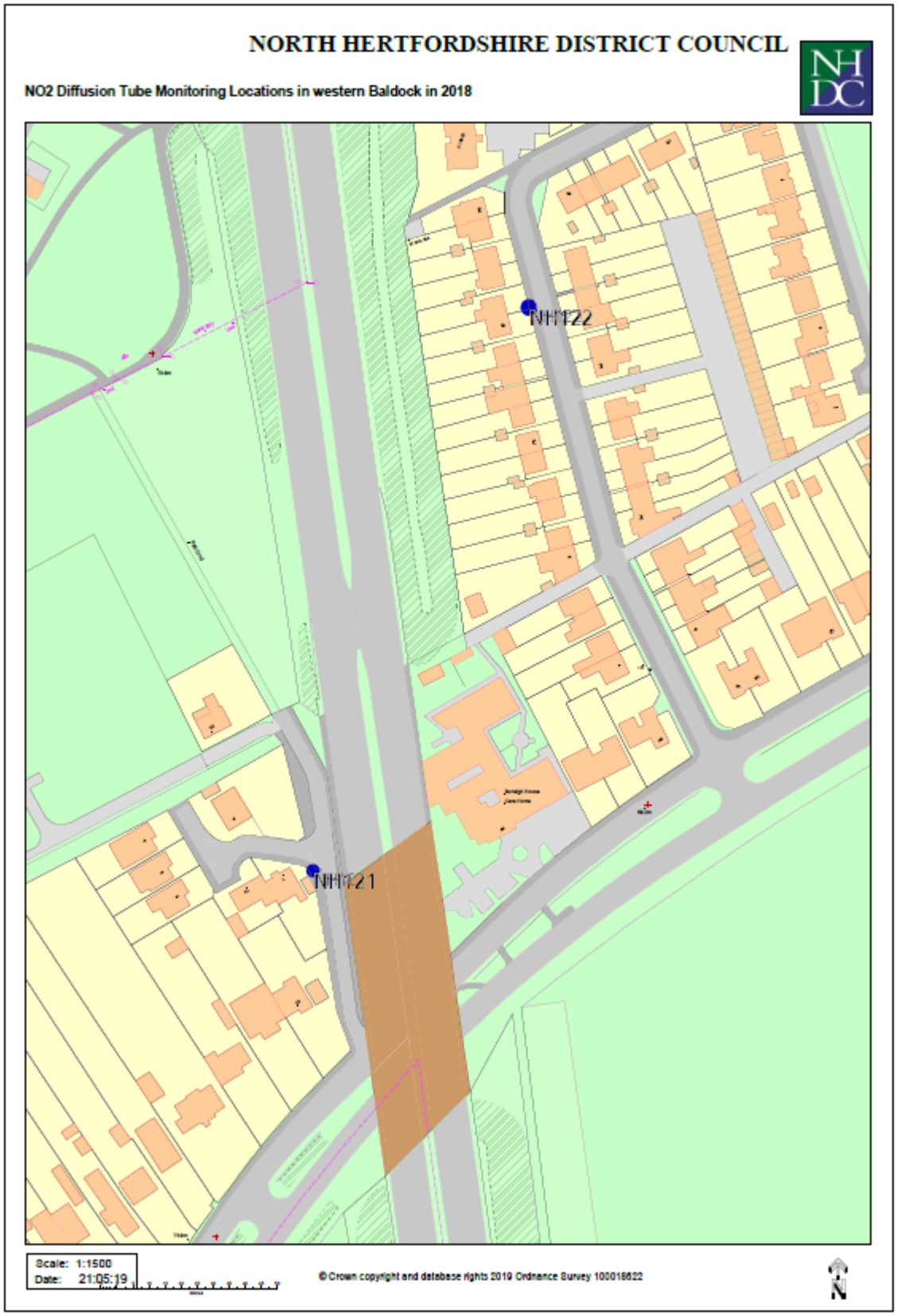

Figure D2: Diffusion Tube Monitoring Locations (NH121 & NH122) in western Baldock - 2018

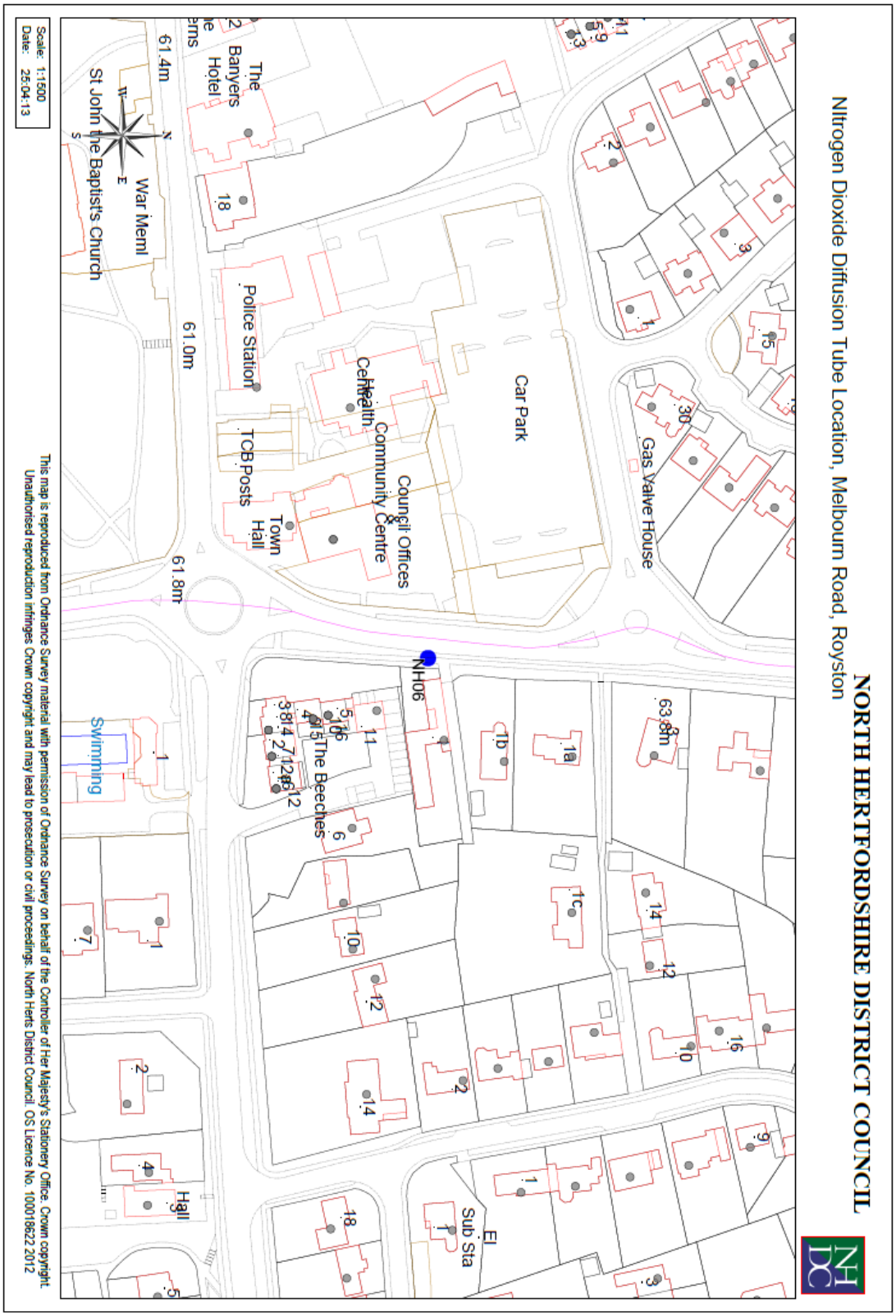

Figure D3: Diffusion Tube Monitoring Location (NH06) at Melbourn Road, Royston - 2018

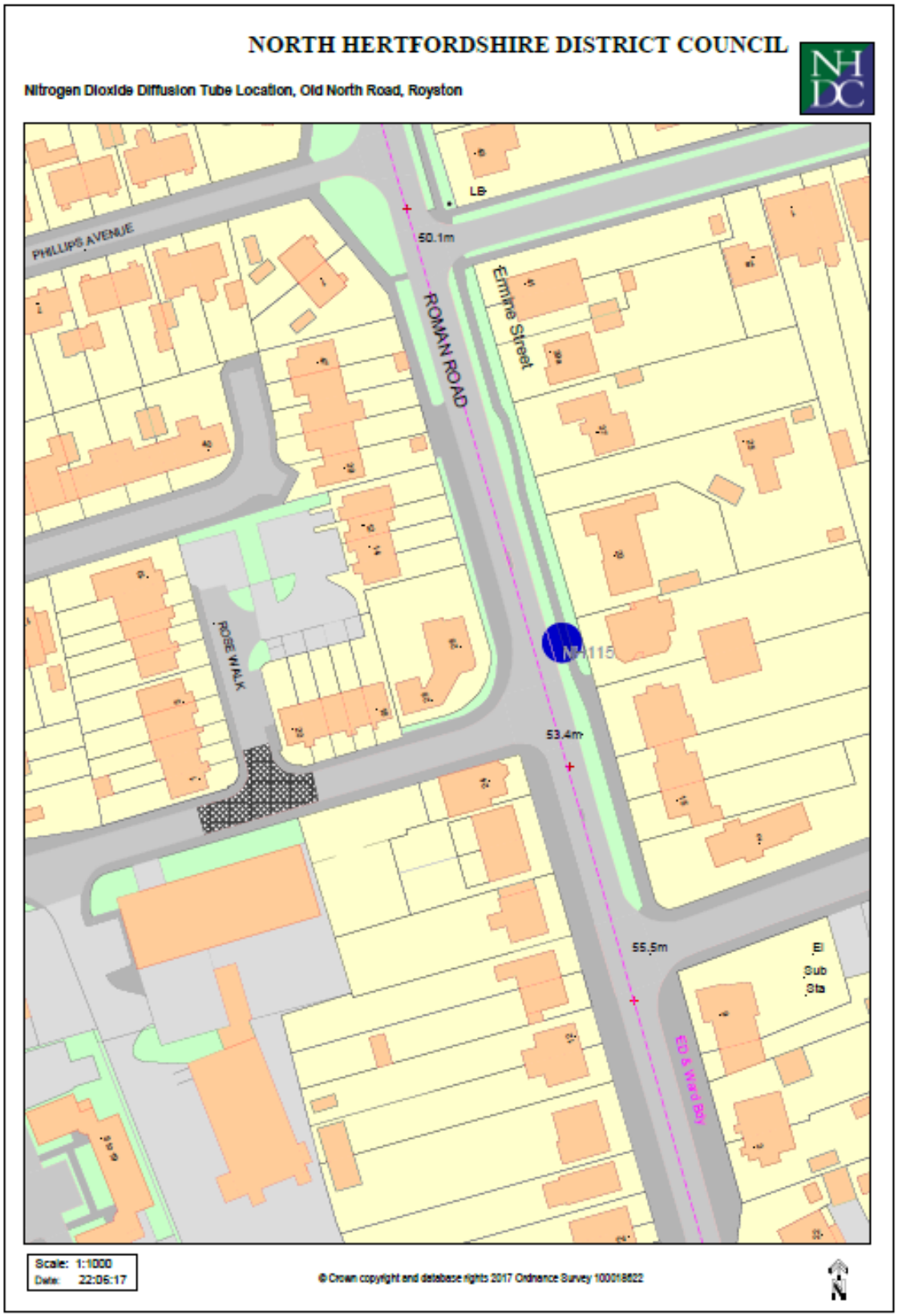

Figure D4: Diffusion Tube (NH115) Monitoring Location at Old North Road, Royston - 2018

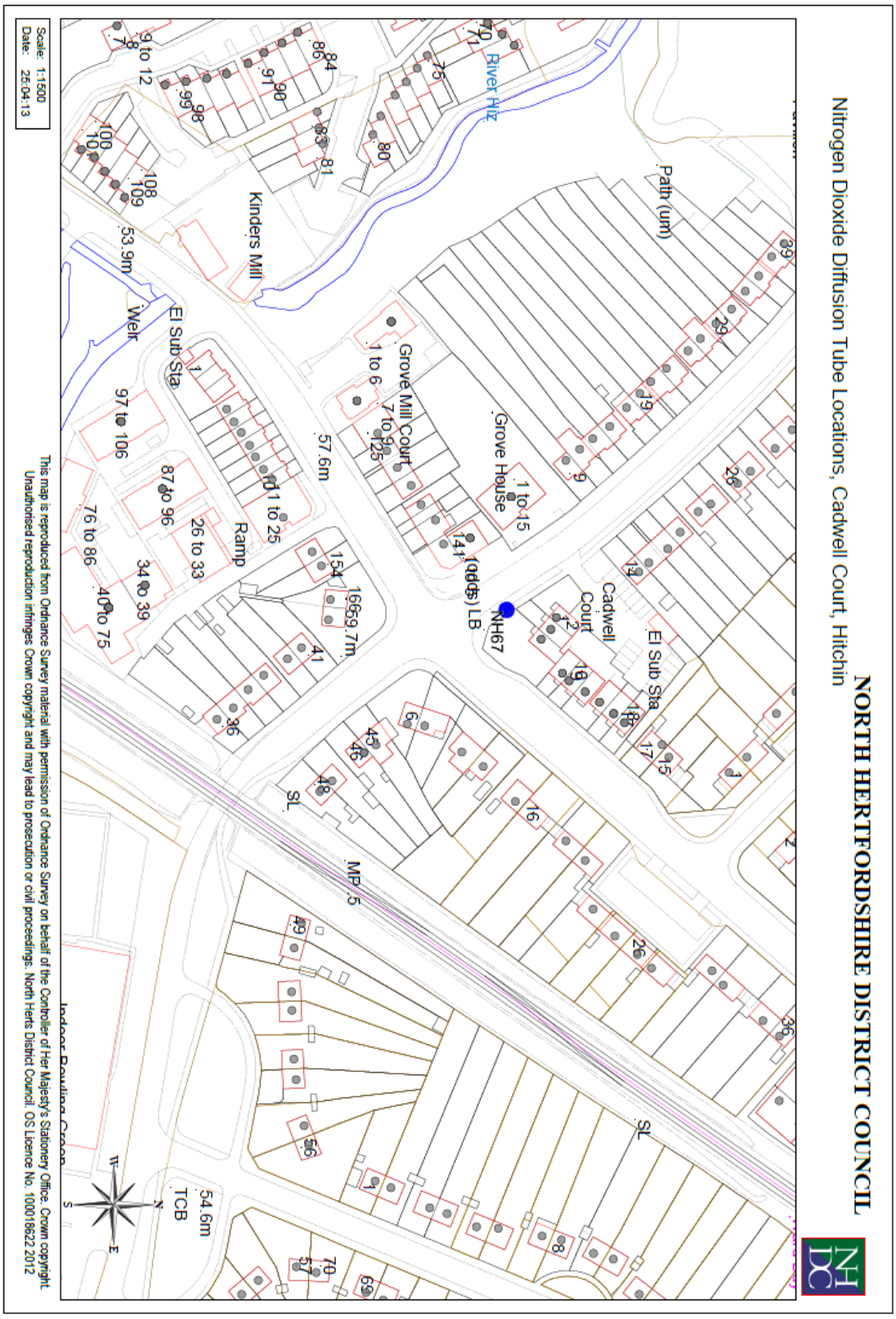

Figure D5: Diffusion Tube (NH67) Monitoring Location at Cadwell Court, Hitchin - 2019

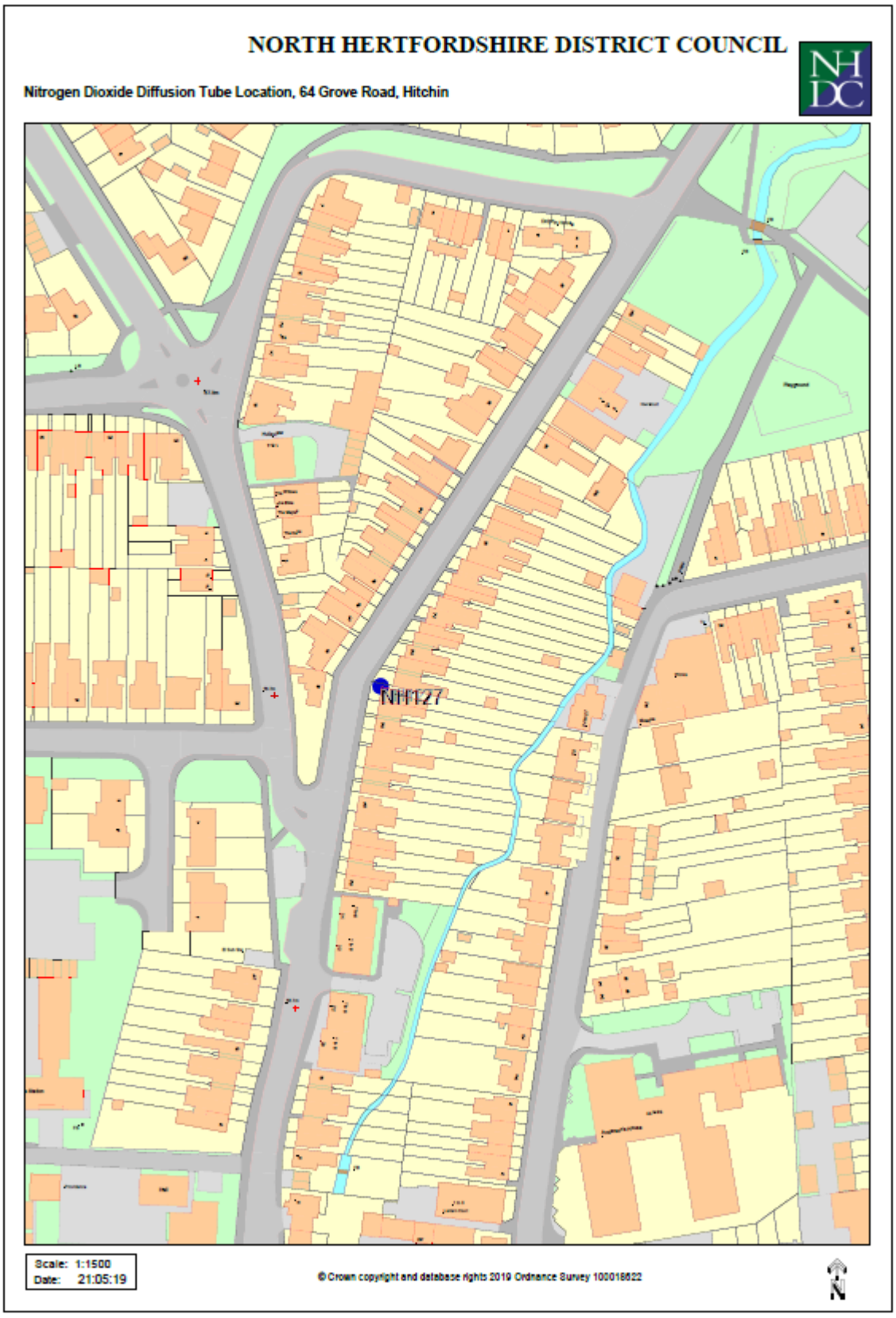

Figure D6: Diffusion Tube (NH127) Monitoring Location at Grove Road, Hitchin - 2019

Figure D7: Diffusion Tube Monitoring Locations (NH99 & NH98) in the Nightingale Road Area of Hitchin – 2019

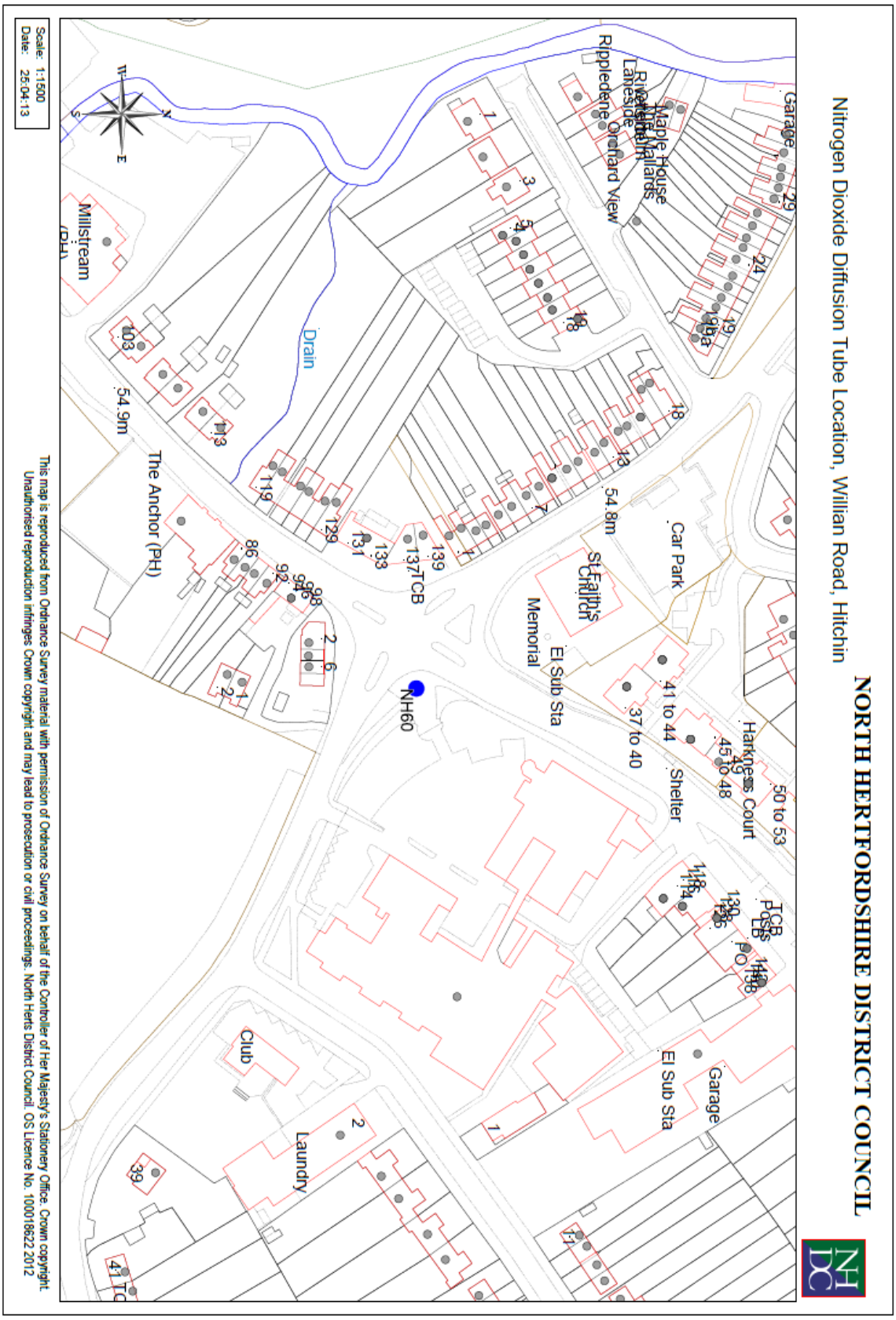

Figure D8: Diffusion Tube Monitoring Location (NH60) at Willian Road, Hitchin - 2019

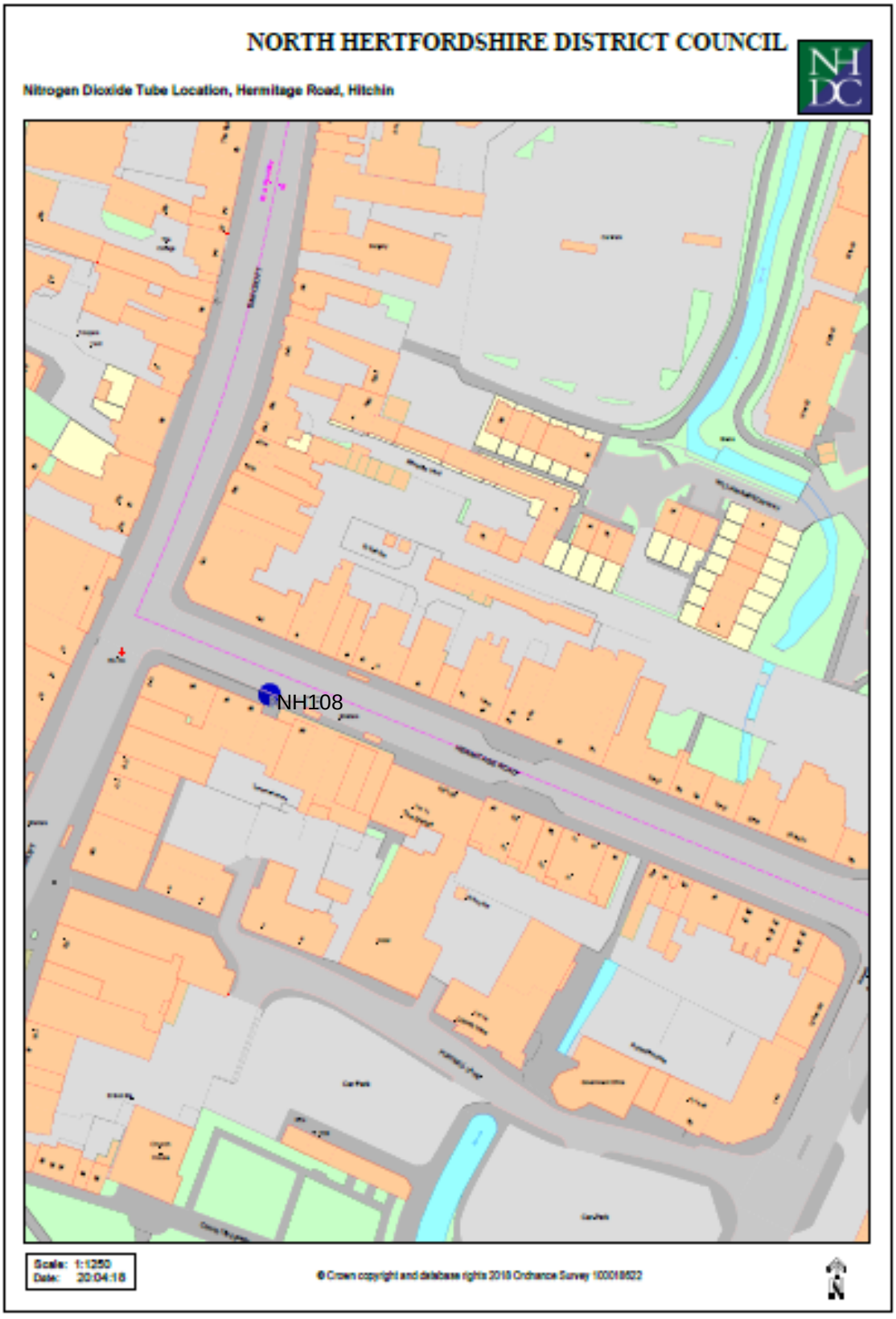

Figure D9: Diffusion Tube Monitoring Location (NH108) at Hermitage Road, Hitchin – 2019

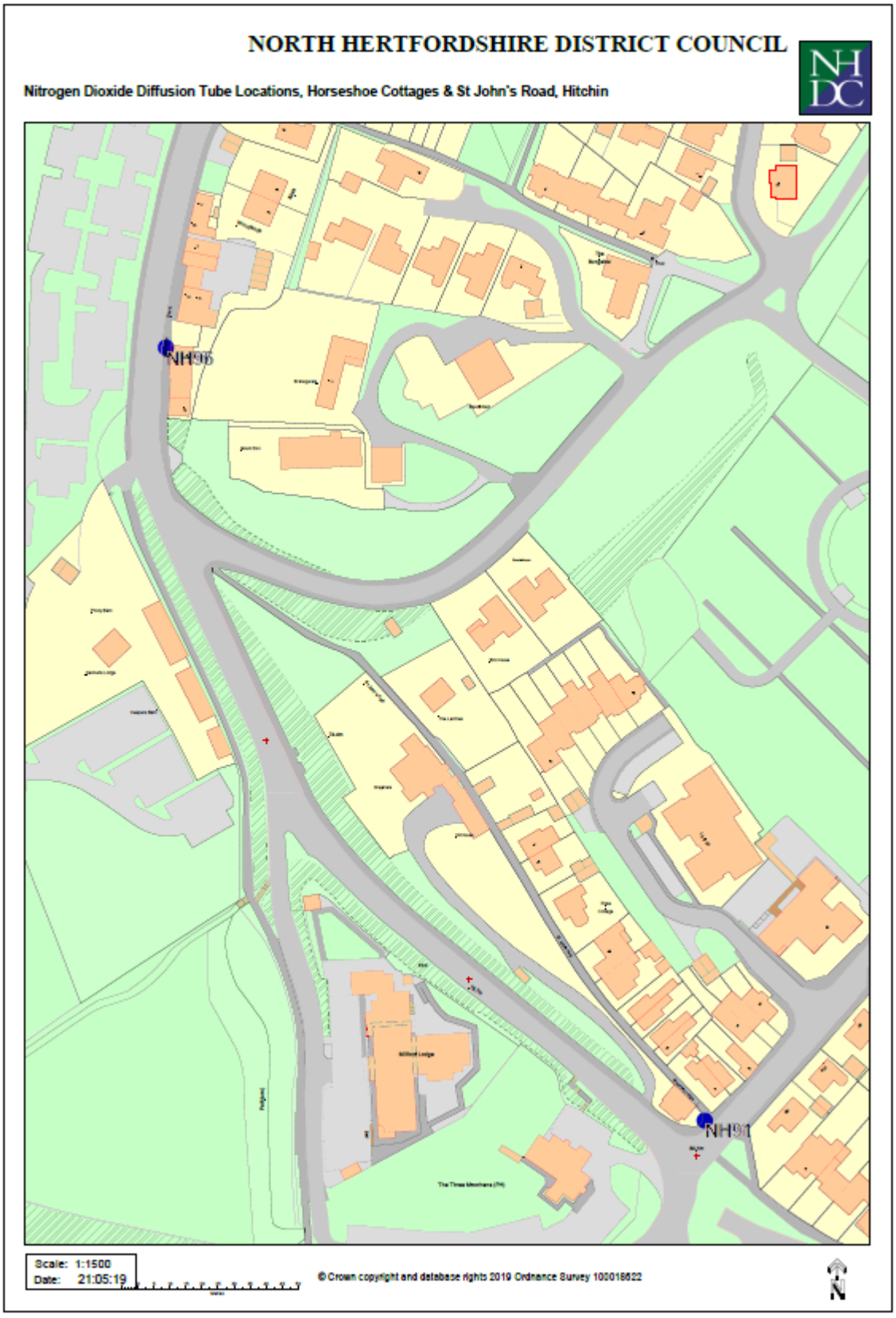

Figure D10: Diffusion Tube Monitoring Locations (NH116) at 6 Horseshoe Court, Park Street and (NH91) at St John's Road, Hitchin - 2019

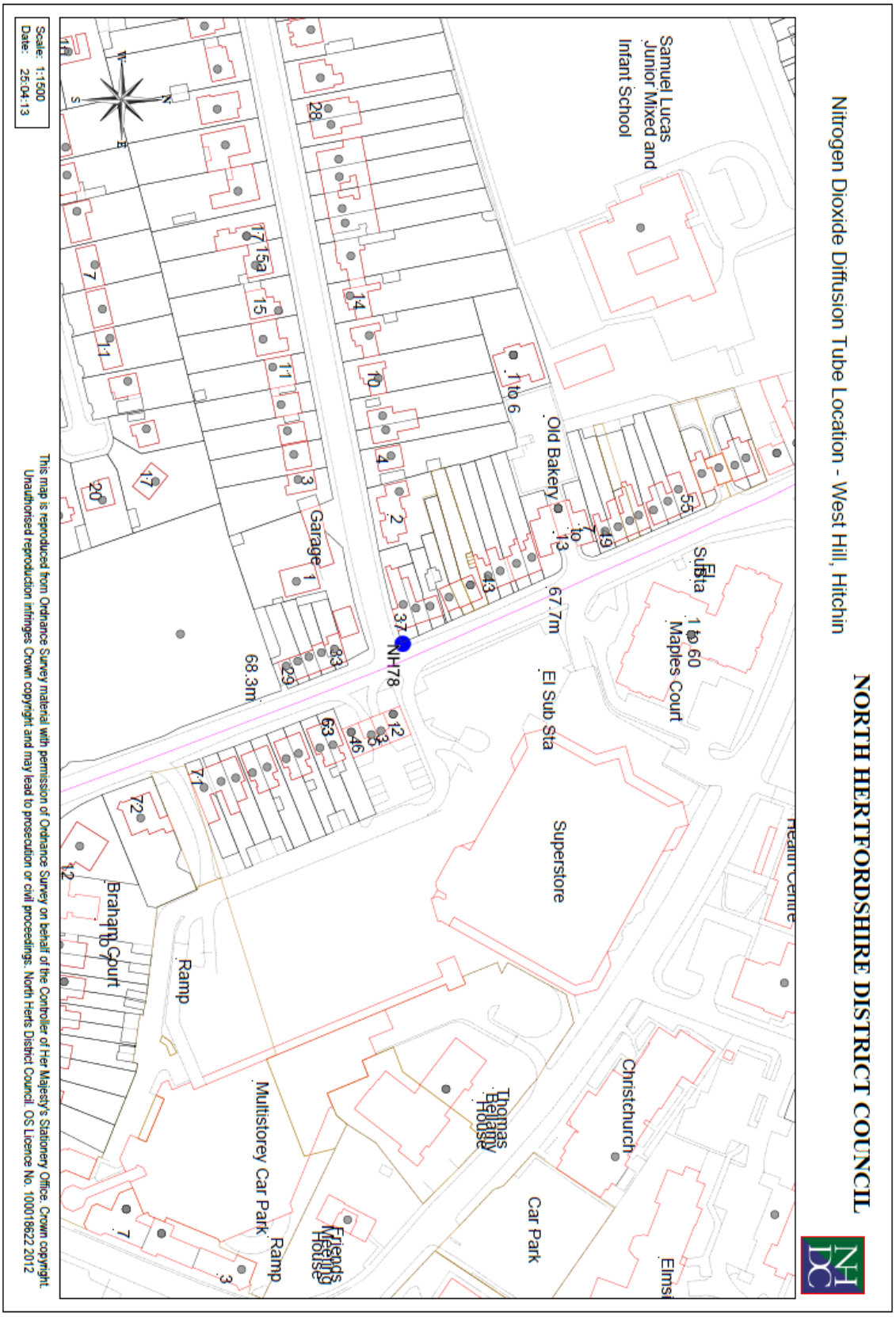

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Figure D11: Diffusion Tube Monitoring Location (NH78) at West Hill Hitchin – 2019

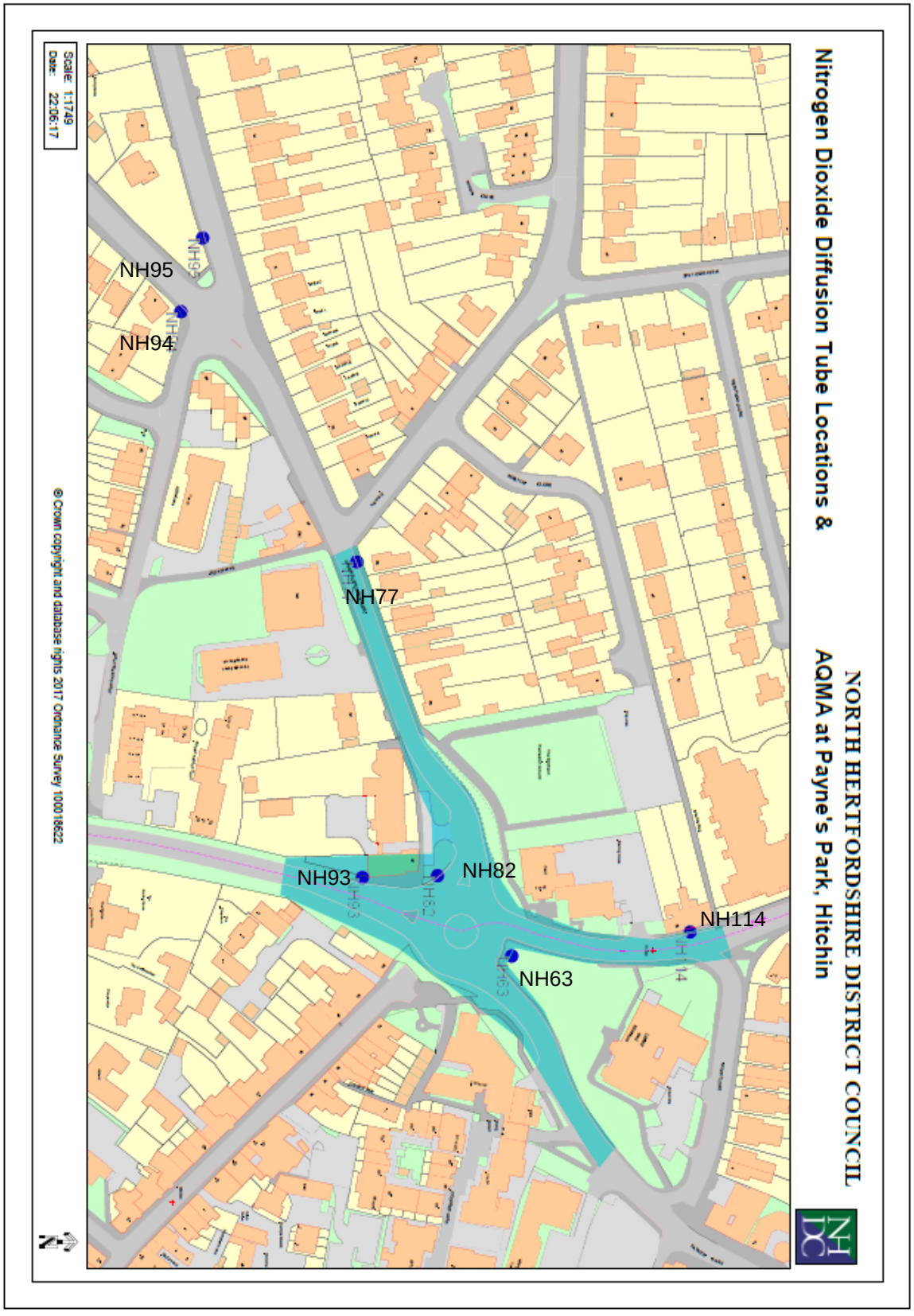

Figure D12: Diffusion Tube Monitoring Locations (NH93- NH95, NH77, NH82, NH63 & NH114) & Extent of AQMA at Payne's Park, Hitchin – 2019

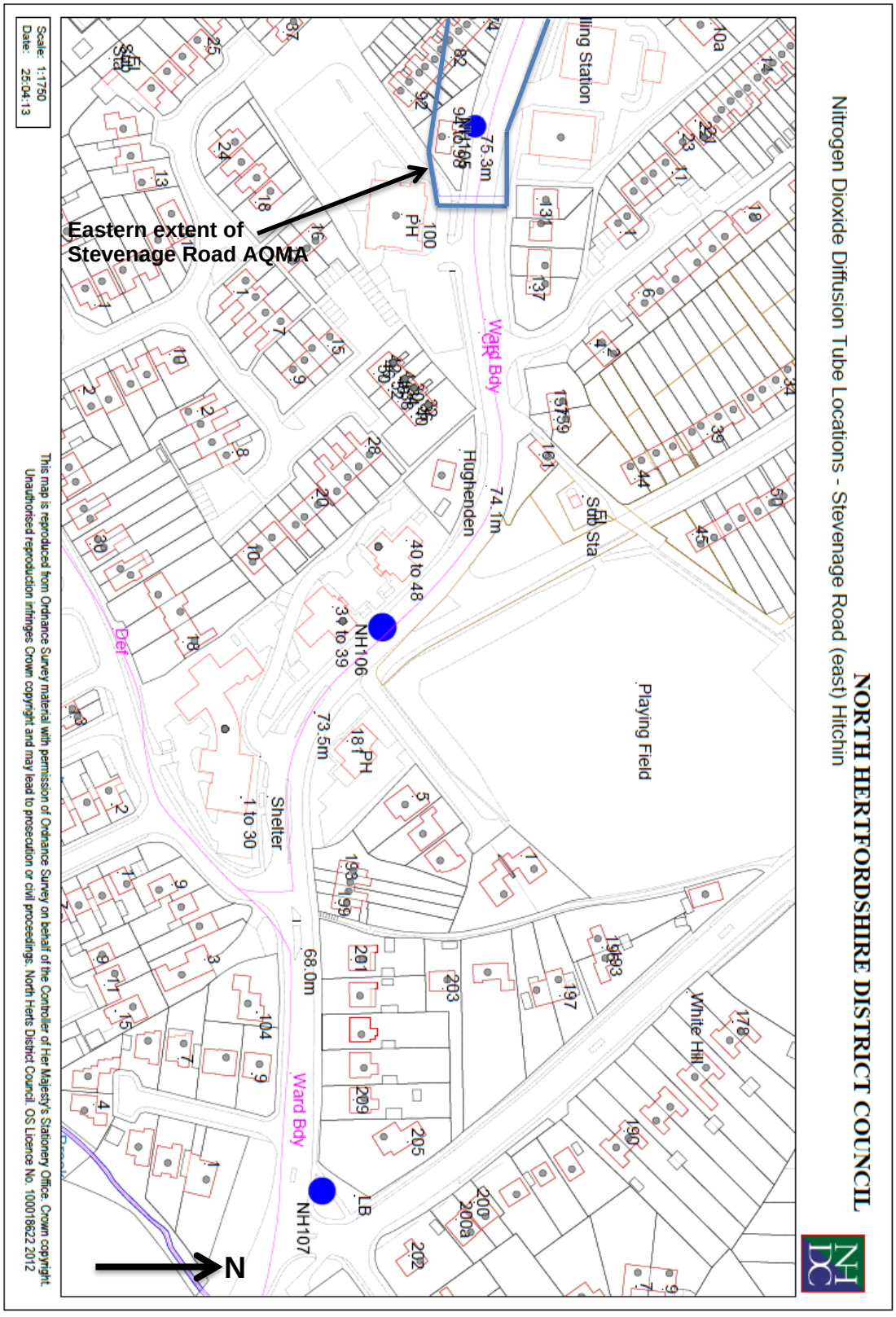

Figure D13: Diffusion Tube Monitoring Locations (NH105, NH106 & NH107) & Eastern Extent of the Stevenage Road AQMA at Stevenage Road, Hitchin – 2019

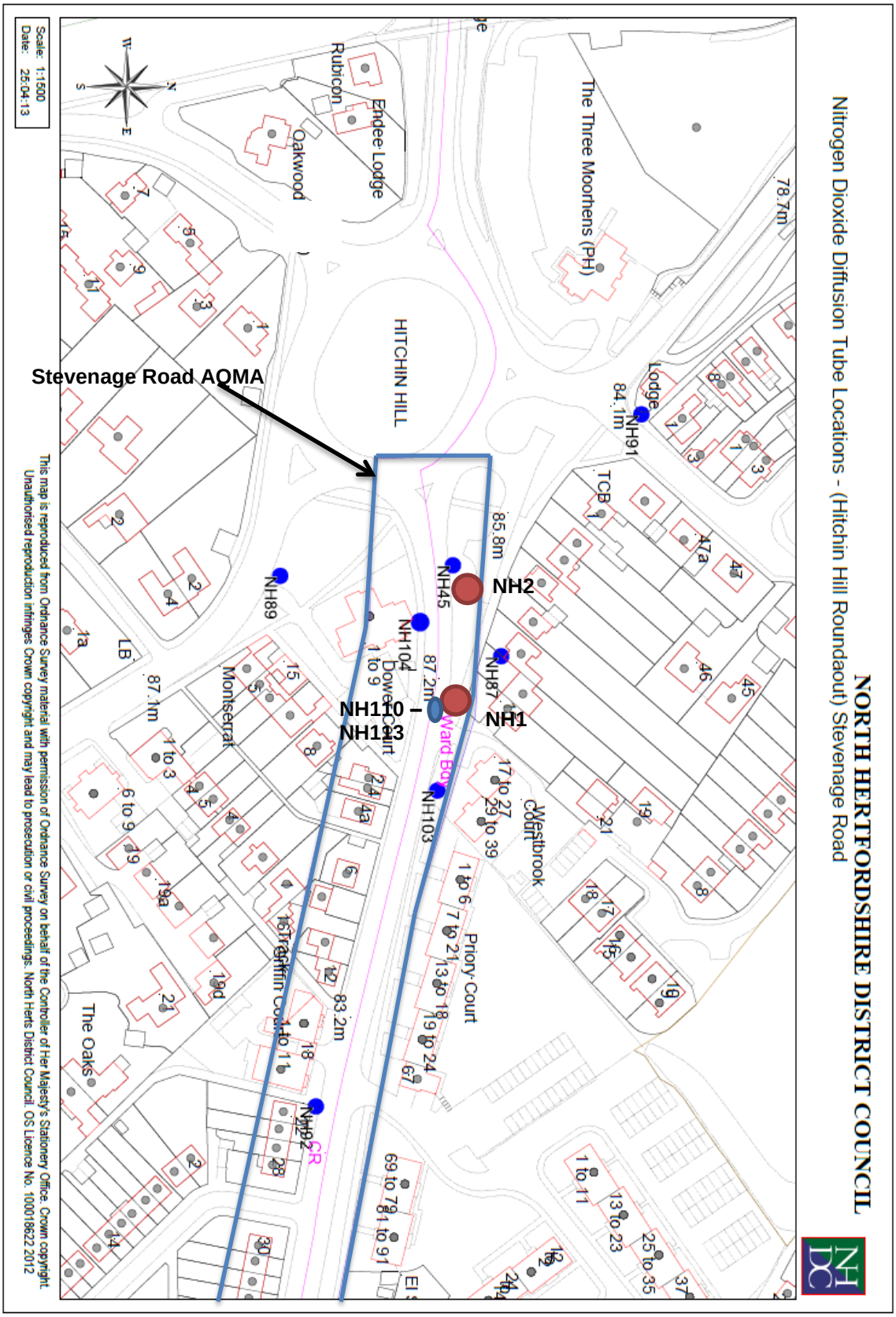

Figure D14: Diffusion Tube Monitoring Locations (NH45, NH87, NH89, NH91, NH92, NH103, NH104 & NH110-112), Real-Time Analyser Locations (NH1 and NH2) & the Stevenage Road AQMA at Stevenage Road, Hitchin – 2019

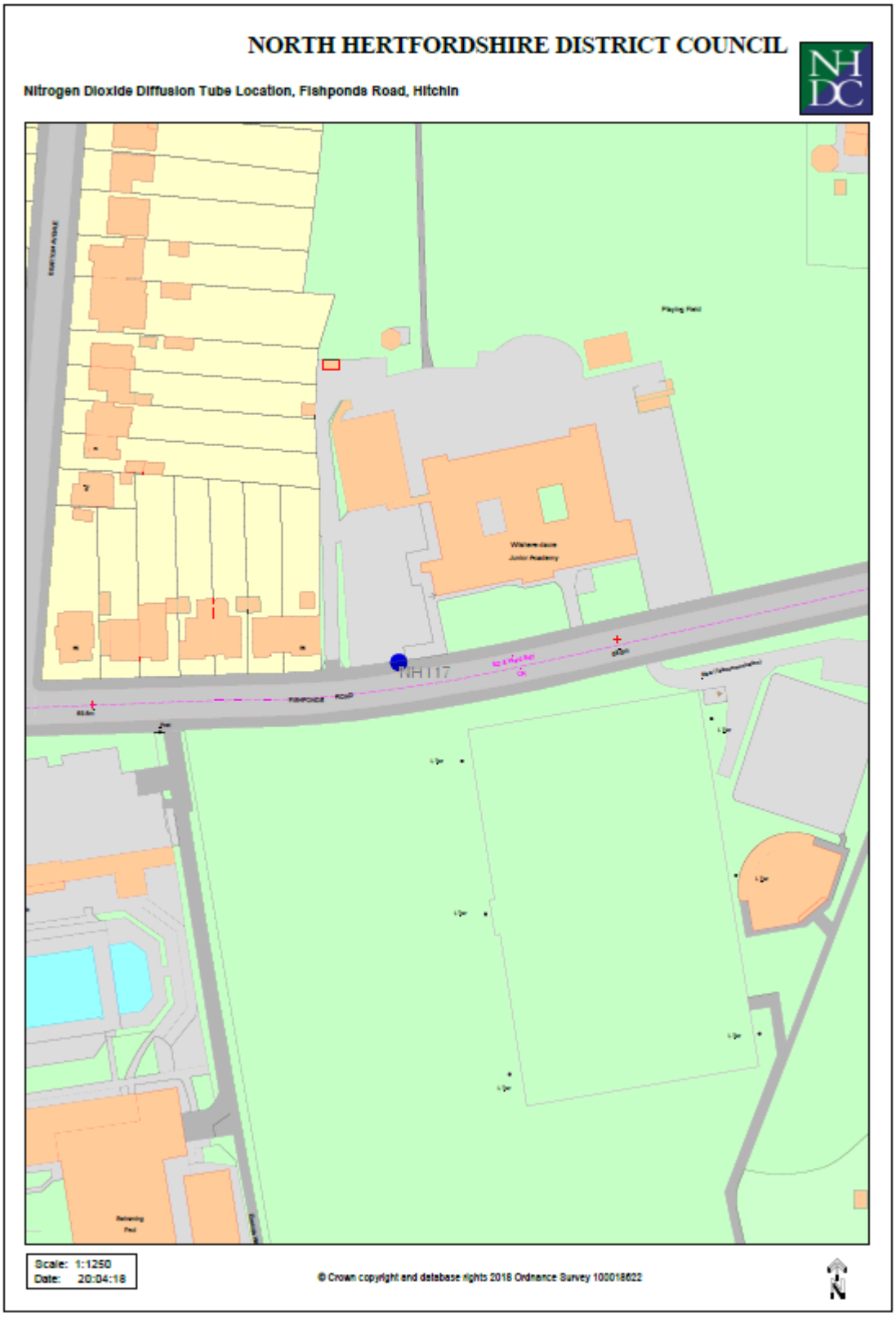

Figure D15: Diffusion Tube Monitoring Location (NH117) at Fishponds Road, Hitchin - 2019

Figure D16: Diffusion Tube Monitoring Location (NH118) at High Street (27), Graveley – 2019

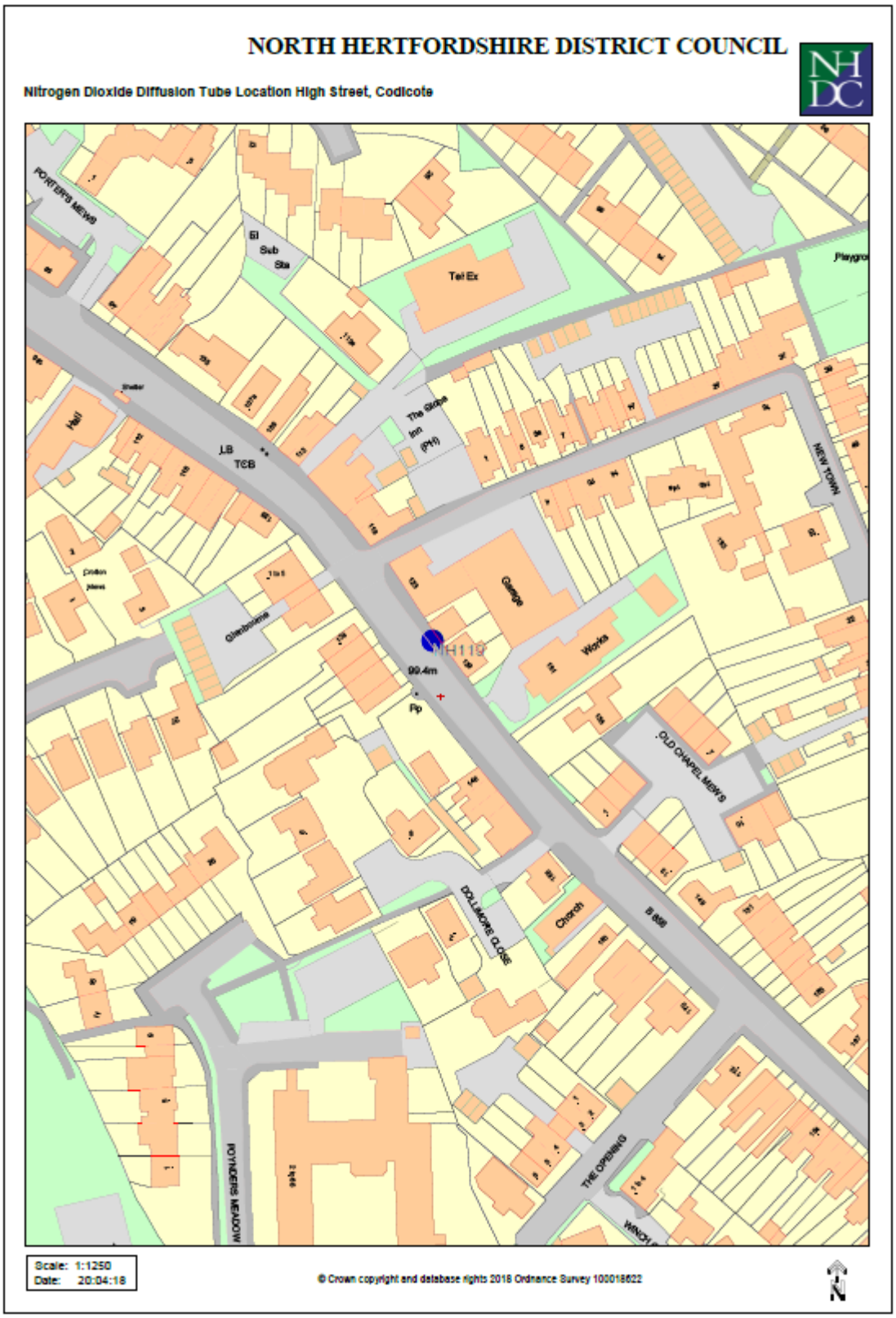

Figure D17: Diffusion Tube Monitoring Location (NH119) at High Street (125), Codicote - 2019

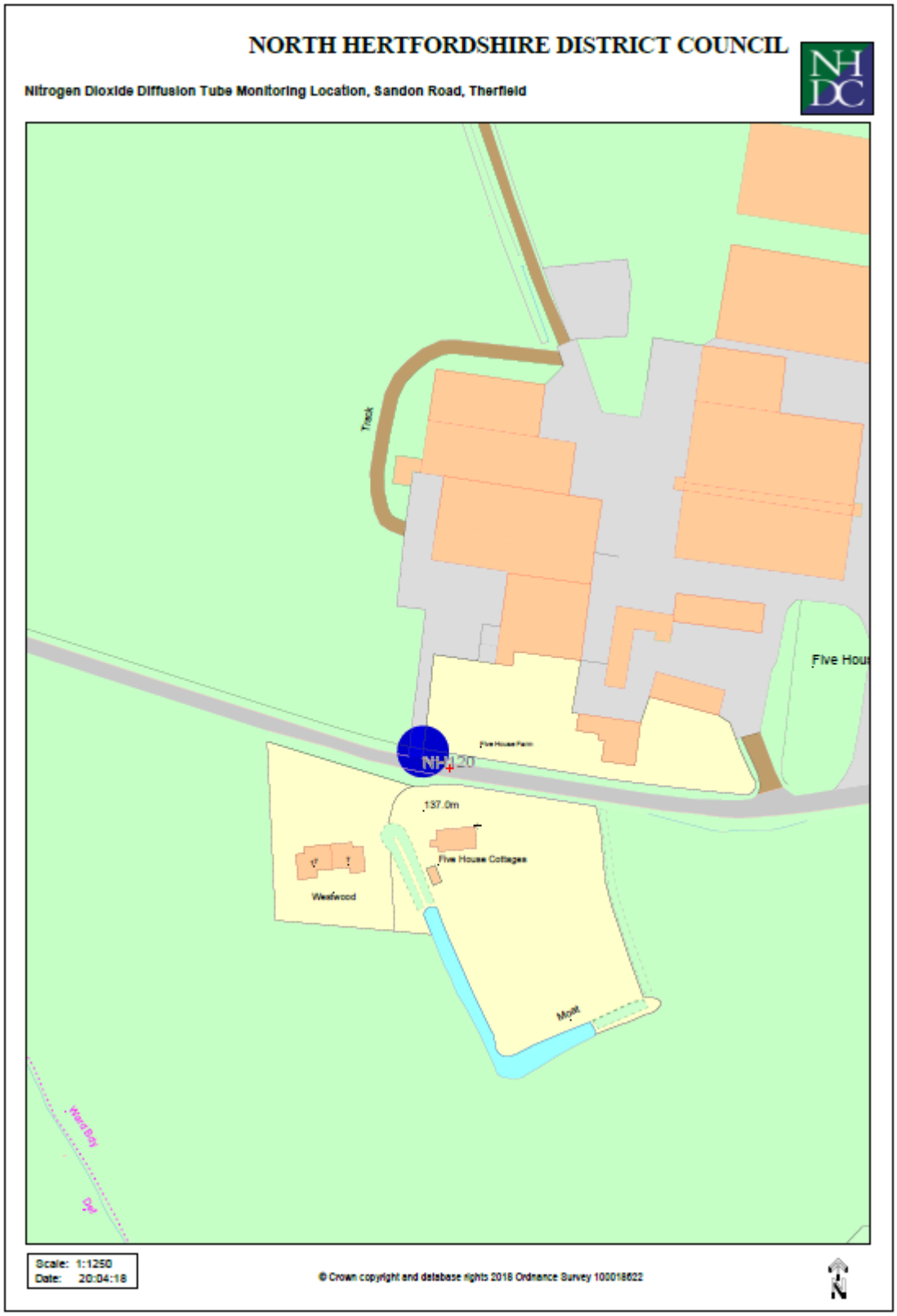

Figure D18: Diffusion Tube Monitoring Location (NH120) at Five House Farmhouse, Sandon Lane, Therfield - 2019

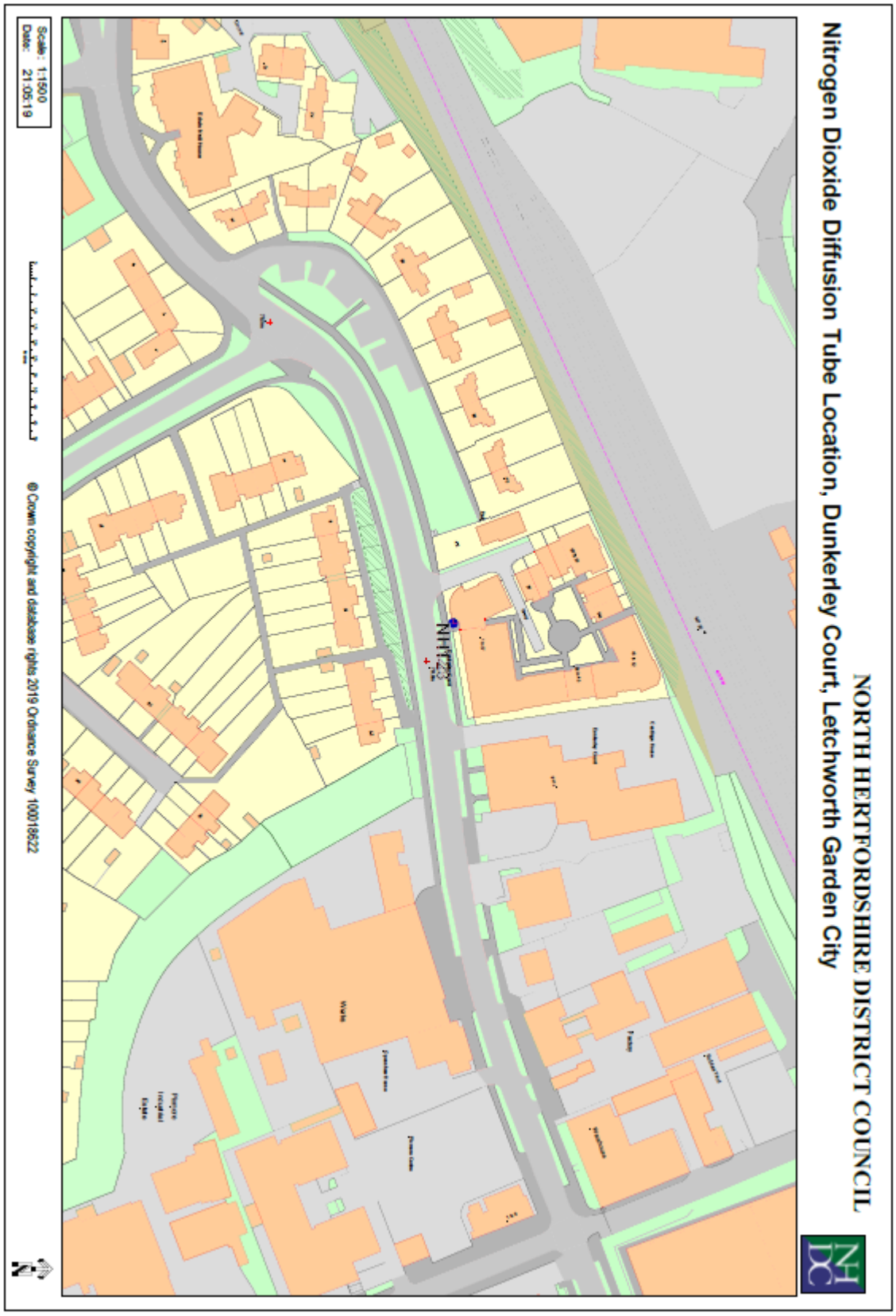

Figure D19: Diffusion Tube Monitoring Location (NH123) at Dunkerley Court, Letchworth Garden City - 2019

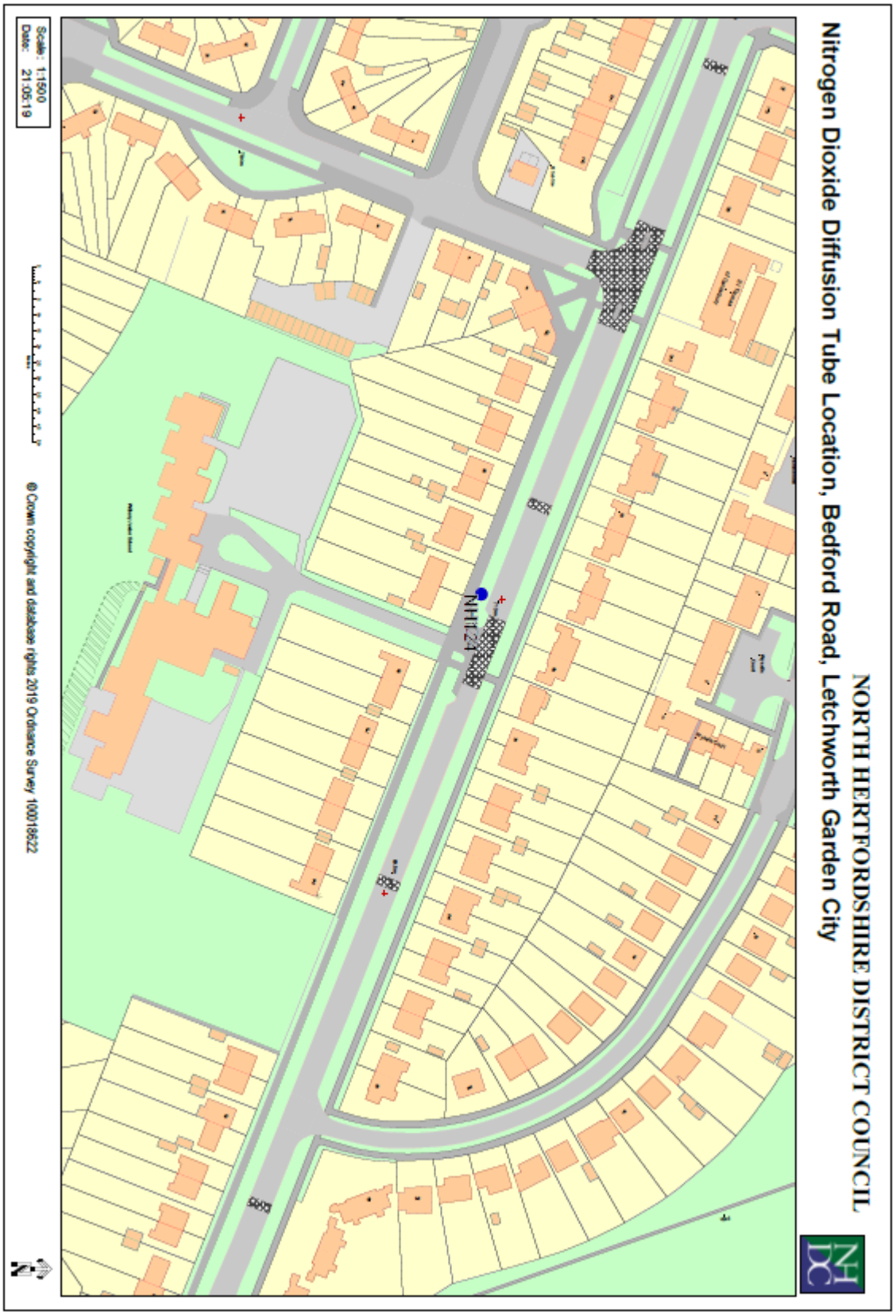

Figure D20: Diffusion Tube Monitoring Location (NH124) at 82 Bedford Road, Letchworth Garden City - 2019

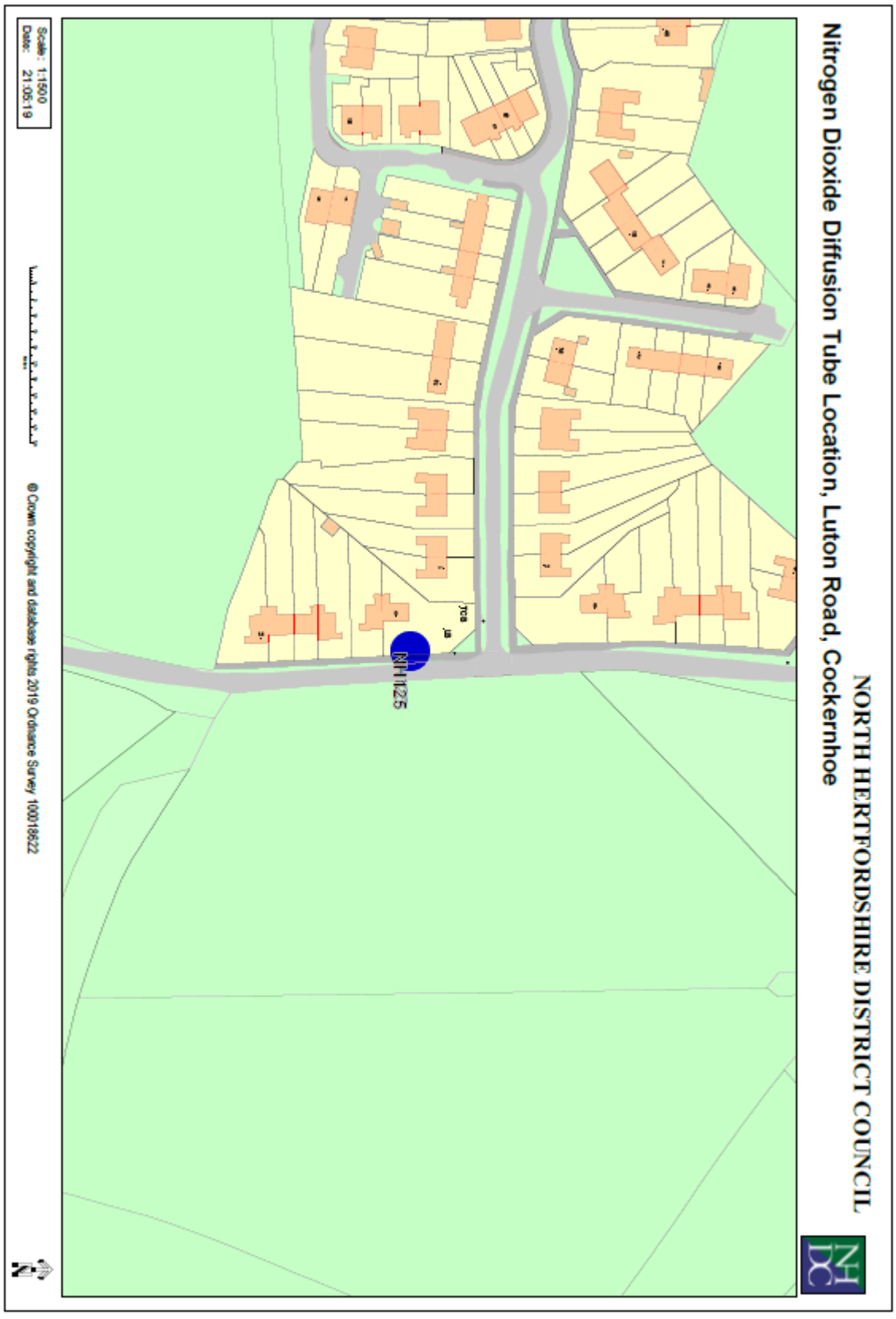

Figure D21: Diffusion Tube Monitoring Location (NH125) at 11 Luton Road, Cockernhoe - 2019

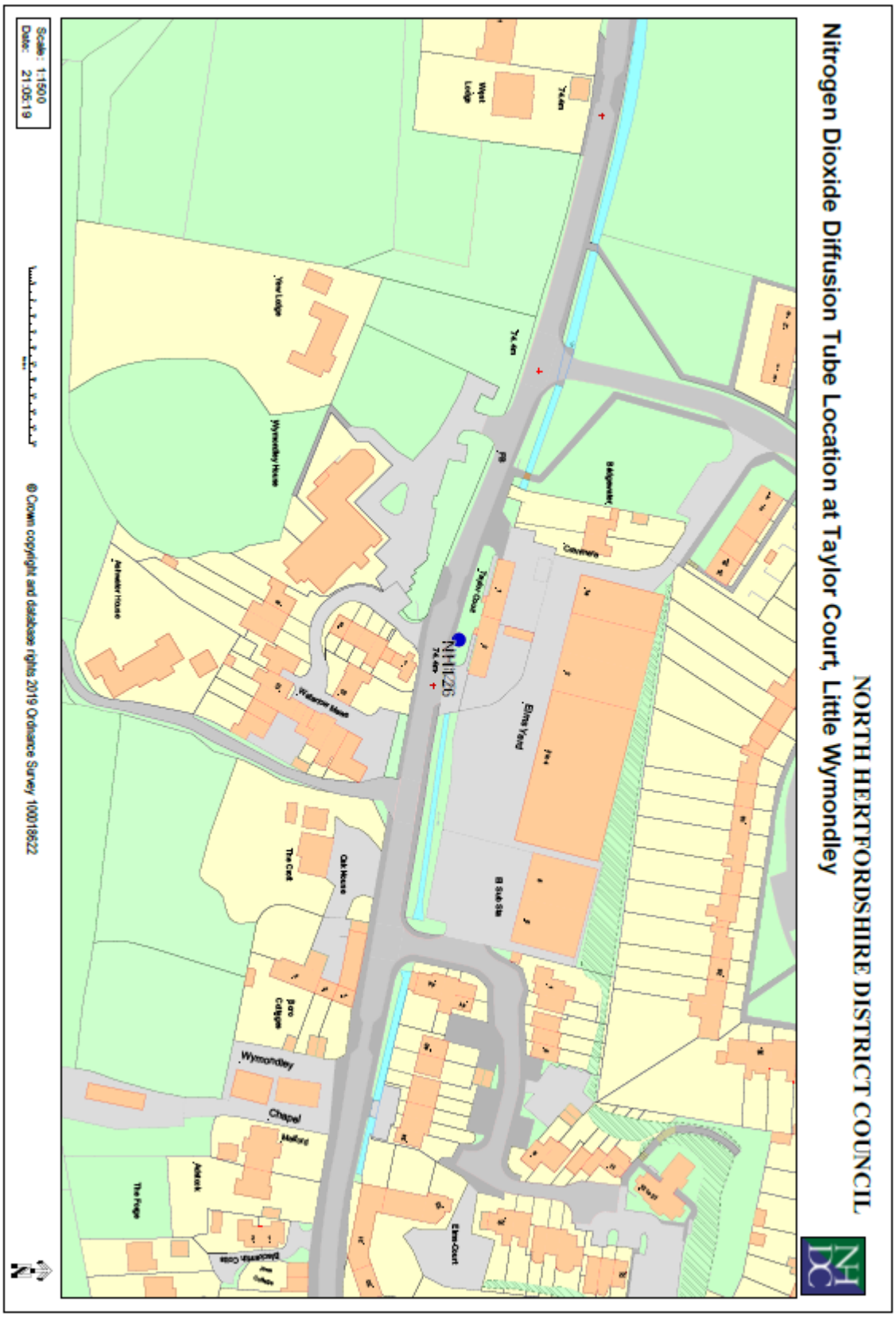

Figure D22: Diffusion Tube Monitoring Location (NH126) at 2 Taylor Court, Little Wymondley - 2019

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[6]	
	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

[6] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

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
NHDC	North Hertfordshire District Council
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