2025 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

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Local Responsibilities and Commitment

This ASR was prepared by Environmental Protection at Luton Council with the support and agreement of the following officers and departments:

- Andrew Loosley, Principal Environmental Protection Officer (Environmental Protection)

This ASR has been approved by:

X ███████████████

Elizabeth Elliott
Acting Director of Public Health

This ASR has been signed off by a Director of Public Health.

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Executive Summary: Air Quality in Our Area

Air Quality in Luton

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 – Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

Road traffic is Luton's main source of pollution, with the town and the motorway providing significant traffic volumes. Other sources include London Luton Airport and local industry, distributed in pockets around the borough. As of 2024, 38 industrial processes permitted by Luton Council were operational within the town.

Historically, the main pollutant of concern in Luton has been NO_2, with three Air Quality Management Areas (AQMA) declared for exceedances of the annual mean air quality objective of 40µg/m^3. Declared in 2003 and 2005, respectively, the first two of these AQMAs (N$^{os.}$ 1 & 2) are situated along the route of the M1 motorway, starting just south of junction 11 and extending

northward. The final AQMA (N$^{o.}$ 3) was designated in 2016 and encompasses Stuart Street in the town centre, running along the A505 Dunstable Road East from the south of Bury Park to the western end of the Park Viaduct. Maps showing the boundaries of the AQMAs are provided in Appendix D of this report, with further information available on the council's website (https://tinyurl.com/y9zegeyj) and the UK Air web portal (https://tinyurl.com/yd8t7ma2).

In recent years, monitoring has shown that NO_2 levels have significantly reduced compared to those observed when the AQMAs were first declared (Table 2.1). The maximum annual mean concentration recorded in each AQMA during 2024 has reduced by between 42% and 58% relative to initial values, with no exceedances of the 40µg/m^3 annual mean objective level seen at any AQMA monitoring sites since 2019. Observed across the town, this reduction is consistent with a national trend of decreasing NO_2 levels[1].

In addition to NO_2, particulate matter (PM) is also measured at automatic and sensor-based indicative monitoring sites across the town. Classified according to size, the current focus is on measuring the fractions of PM where particles are less than 10 micrometres in diameter (PM_{10}) and less than 2.5 micrometres in diameter ($PM_{2.5}$) based on the latest evidence on their effects on health[2]. To date, no exceedance of the air quality objectives for PM_{10} has either been predicted by modelling or measured within Luton. During 2024, annual mean PM_{10} levels remained essentially unchanged from the previous year at the two automatic monitoring sites close to the airport (LA08/HB007 – located on-site at the airport, and LA001 – located in Wigmore Valley Park). Both sites experienced a 1% decrease. However, in the town centre, Luton Council's LN60/HB007 continuous air quality monitoring station on Stuart Street saw the annual mean PM_{10} level fall by 16% from 2023 to 12.6µg/m^3, the lowest level at this site for the last five years.

Introduced by *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023*, new legally binding national concentration and exposure reduction targets will come into force for $PM_{2.5}$ in 2040. In preparation, associated interim targets have been set for January 2028. These targets look to reduce annual mean $PM_{2.5}$ concentrations to 12µg/m^3 by the beginning of 2028 and 10µg/m^3 by the end of 2040. Neither target has been exceeded in Luton since 2020. Furthermore, during 2024, the annual mean $PM_{2.5}$ levels recorded at both of Luton's operational automatic monitoring sites (LN60/HB007 [7.8µg/m^3, down 10% from 2023] and LA001 [7.6µg/m^3, down 14% from 2023]) were the lowest since measurement began.

With NO_2 and PM concentrations remaining at or below the reduced levels seen during the Covid-

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1   Defra. Accredited official statistics – Nitrogen dioxide (NO_2), 2023 [https://tinyurl.com/347rax7z]

2   Defra. Accredited official statistics – Particulate matter (PM_{10} / $PM_{2.5}$), 2024 [https://tinyurl.com/mryfpw2r]

19-affected years of 2020 and 2021, the 2024 monitoring data represent the third consecutive post-pandemic year during which no exceedances of the annual mean NO_2 objective level were observed at any relevant receptor locations. Consequently, all three AQMAs now meet the preliminary requirement of three consecutive years of compliance stipulated in para. 3.57 of Defra's statutory technical guidance LAQM.TG22 as being a prerequisite for the consideration of revocation.

In light of the continued absence of exceedances, as set out in last year's report, going forward, Luton Council intends to focus on the potential revocation of its three AQMAs and the delivery of a borough-wide Air Quality Strategy to secure further reductions in NO_2 and PM levels across the town.

As a member of the *Herts & Beds Air Quality Network*, Luton Council works with colleagues in neighbouring authorities to ensure a consistent approach and to raise awareness of air quality in Luton and the surrounding area. As a unitary authority, Luton Council colleagues from Environmental Protection, Climate Change & Sustainability, Highways, Planning and Public Health, amongst others, all work together in an integrated manner to address local air quality concerns.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

As recommended by the *Air Quality Strategy: Framework for local authority delivery*[3] and the Environmental Policy Implementation Community guidance on *Integrating Action on Air Quality & Climate Change*[4], Luton Council has continued to integrate climate change mitigation and adaptation measures with measures to improve air quality.

Following the publication of the council's *Climate Policy and Action Plan*[5], recent developments of potential benefit to both the climate change and air quality agendas are detailed in the *Luton Net Zero Roadmap and Action Plan: Progress Report 2024* (https://tinyurl.com/mryu8yab)*.

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[3] Defra. Air quality strategy: framework for local authority delivery, 2023 [https://tinyurl.com/yjb9fuwj]

[4] Environmental Policy Implementation Community (EPIC). Integrating Action on Air Quality & Climate Change: A Guide for Local Authorities (V.1), 2024 [https://tinyurl.com/2nktc5xh]

[5] Luton Council. Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/y5ekszz5]

Conclusions and Priorities

In 2024, monitored NO_2 concentrations remained at the significantly reduced levels observed since the pandemic. The PM_{10} level fell in the town centre but remained essentially unchanged near the airport, and mean annual $PM_{2.5}$ levels were at an all-time low at both of the town's operational automatic monitoring sites (LN60/HB007 and LA001).

With no exceedances at a relevant receptor in 2024 and with annual mean NO_2 concentrations at all passive sites in AQMAs remaining below 36µg/m^3 since 2019, the main priorities for Luton Council in the coming year are:

- to proceed with the revocation of AQMA N°s. 1 & 2;

- to engage with Defra to determine whether a detailed assessment would be required before the revocation of AQMA N$^{o.}$ 3; and

- to discontinue the development of a new AQAP focused on reducing NO_2 levels within the AQMAs and instead bring forward a more holistic borough-wide Air Quality Strategy.

As in previous years, the principal challenge in delivering this work programme over the coming year will be the continued lack of resources within the Council's Environmental Protection Team, which has been subject to prolonged staff shortages.

How to get Involved

Environmental Protection regularly attends the Health Equity Town Board to advise on air quality matters and reports on air pollution to the Climate Change Advisory Board.

The potential for the residents and businesses of Luton to positively impact air quality is considerable. Poor air quality in the town has been shown to result from busy and congested roads.

By choosing sustainable methods of travel, there will be less pollution in the local atmosphere. Recommended travel methods are:

- Walking

- Cycling

- Public Transport

- Use of Electric Vehicles

Where these are not feasible, a newer vehicle that meets a higher emissions specification will produce less pollution than older models.

For more information on journey planning, sustainable modes of travel, and the local transport network, visit the council's Transport and Streets webpages (https://tinyurl.com/yd8du68t). To find out how your activity contributes to pollution levels and receive personalised recommendations on how you can make a difference, use Global Action Plan's online Air Pollution Calculator (https://tinyurl.com/y5ch8jex).

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Luton during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Luton Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

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 should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by Luton Council can be found in Table 2.1 -. The table presents a description of the three AQMAs that are currently designated within Luton. Appendix D provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designation(s) are as follows:

• NO_2 annual mean.

With no exceedances observed at a relevant receptor in 2024 and with annual mean NO_2 concentrations at all passive sites within AQMAs remaining below 36μg/m^3 since 2019, we propose to commence the revocation of all three AQMAs following the completion of a detailed assessment, if required.

Table 2.1 - Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Luton AQMA N°·1	Declared 03/11/2003	NO$_2$ Annual Mean	24 Residential properties on either side of the M1 Motorway, near Junction 11	YES	47.6µg/m^3	N/A (highest monitored conc. 22.1µg/m^3)	7 years (5 years below 36µg/m^3 at all passive sites)	Within Local Transport Plan 3 2011-2026 March 2011	[Link to LTP3](#)
Luton AQMA N°·2	Declared 31/03/2005	NO$_2$ Annual Mean	431 Residential properties on either side of the M1 Motorway, near Junction 11	YES	58.9µg/m^3	N/A (highest monitored conc. 24.8µg/m^3)	7 years (5 years below 36µg/m^3 at all passive sites	Within Local Transport Plan 3 2011-2026 March 2011	[Link to LTP3](#)
Luton AQMA N°·3	Declared 01/05/2016	NO$_2$ Annual Mean	From Dunstable Road by Kenilworth Road through to Stuart Street and Chapel Viaduct by Latimer Road, including Castle Street to Holly Street and Telford Way	NO	54.6µg/m^3	N/A (highest monitored conc. 31.4µg/m^3)	5 years	Initial AQAP approved by Council Executive June 2018 However, subsequently not accepted by Defra.	[Link to relevant minute](#)

☒   Luton Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

☒   Luton Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in Luton

Defra's appraisal of last year's ASR concluded that:

"On the basis of the evidence provided by the local authority the conclusions reached in the report are accepted for all sources and pollutants…The report is well structured, detailed, and provides the information specified in the Guidance."

The appended commentary made the following suggestions for future reports:

- *"The concentration map presented in section 2.3 is a great addition to the report. Showing the difference between the years will change in $PM_{2.5}$ (sic) concentrations and may better support your discussion."*

  Response: As suggested, an additional map has been included in this year's report (Figure 2.4) showing the reduction in modelled background $PM_{2.5}$ levels between 2024 and 2040.

- *"Any cells that have missing data points should include dashes ("-") as per the template."*

  Response: Noted and actioned in this year's report.

Luton Council has taken forward a number of direct measures during the current reporting year of 2024/25 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 41 measures are included within Table 2.2 (plus an additional 12 previously completed measures and two that have been aborted), with the type of measure and the progress Luton Council have made during the reporting year of 2024/25 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

As many of these measures are shared with other policy areas where they offer co-benefits (e.g. Transport, Climate Change and Public Health), where appropriate, links to relevant documents in these areas have been included in Table 2.2. Recent developments of potential benefit to both the climate change and air quality agendas are detailed in the *Luton Net Zero Roadmap and Action Plan: Progress Report 2024* (https://tinyurl.com/mryu8yab)*.*

Luton Council expects the following measures to be completed over the course of the next reporting year: If deemed necessary by the LAQM Helpdesk, the completion of a detailed assessment of AQMA N°. 3 to determine whether revocation is appropriate.

Luton Council's priorities for the coming year are:

- to proceed with the revocation of AQMA N°s. 1 & 2;

- to engage with Defra to determine whether a detailed assessment would be required before the revocation of AQMA N$^{o.}$ 3; and

- to discontinue the ongoing development of a new AQAP focused on reducing NO_2 levels within the AQMAs and instead bring forward a more holistic borough-wide Air Quality Strategy.

The principal challenge in delivering this work programme over the coming year will be the continued lack of resources within the Council's Environmental Protection Team, which has been subject to prolonged staff shortages.

With compliance already achieved in all AQMAs for at least the last four years, Luton Council does not anticipate that further additional measures not yet prescribed will be required in subsequent years to enable revocation.

Table 2.2 - Progress on Measures to Improve Air Quality

	Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	1	Implement Luton Park & Ride by securing delivery of Travel Hub at identified locations *[AQ Hub; Buses and Coaches; Park and Ride]*	Alternatives to private vehicle use	Bus based Park & Ride	2018 Targeted start: 2025	March 2026 (completion of Park & Ride subject to winter 25/26 and setting up operations)	Luton Council	National Bus Strategy Fund	No	Funded	£1m - £10m	Implementation	A Park & Ride would result in fewer cars driving into Luton Town Centre and the Airport	Monitor use of Park & Ride once up and running	Feasibility study completed (2016) Potential locations for park & ride sites identified. Planning application for the construction of a 338 space park and ride site at Great Marlings (Butterfield Park) approved 28 March 2024 [23/01474/REG3]	Luton Local Plan 2011 - 2031 Policy LLP5 provides policy support for Park & Ride schemes at M1 junction 10A (Policy LLP5) and Butterfield Park (Policy LLP7) [https://tinyurl.com/3cjz6n8f] Included in the Bus Service Improvement Plan as Measure 3: Park & Ride [https://tinyurl.com/5d25kjxr] Supports LTP4 Policy 4 - Improving Public Transport [https://tinyurl.com/bdfnss4m] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	2	Deliver bus priority measures: - strategic bus lanes on key routes (3km new bus lanes) - improved access for buses to the town centre - Traffic signalling priorities for buses *[AQ Hub; Traffic Management; Vehicle priority and High Occupancy Vehicle (HOV) lanes]*	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	-	2025	Luton Council; Arriva	National Bus Strategy Fund	No	Funded	-	Implementation	Reduced congestion and journey time should result in higher uptake and reduced emissions	Congestion reduction Passengers numbers	£19.1 million confirmed to support measures over 2 years All sites reviewed and changes made where possible	Included in the Bus Service Improvement Plan as Measure 6: Traffic Signalling Priorities for Buses and Measure 8: Bus Lanes [https://tinyurl.com/5d25kjxr] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ PM₂.₅ CO₂	3	Deliver town-wide future cycling and walking network set out in the emerging local cycling and walking infrastructure plan *[AQ Hub; Cycle lane network / off road network]* *[AQ Hub; Walking infrastructure improvements]*	Promoting Travel Alternatives Transport Planning and Infrastructure	Promotion of cycling Promotion of walking Cycle network	2022	2032	Luton Council	-	No	Not Funded	-	Implementation	Increase in cycling creates modal shift away from the car, resulting in reduced emissions	Increased number of people using cycle routes to access the town centre	Ongoing Portfolio of suggested network amendments developed Public consultation on draft Local Cycling and Walking Infrastructure Plan (LCWIP) completed April 2023 LCWIP adopted in 2023 [https://tinyurl.com/2p8xhr6s]	LTP4 Policy 5 - Smarter Choices supported by LTP4 Policy 2 - Walking and Cycling [https://tinyurl.com/bdfnss4m] Supports Strategic Vision for Sport and Physical Activity 2018-22 Outcome 10 [https://tinyurl.com/3u5z65e5] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

	Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NO₂ PM₁₀ PM₂.₅ CO₂	4	Implement a local delivery hub to maximise the efficiency of deliveries / enable green 'last mile' services. [AQ Hub; Freight; Last Mile Delivery Service]	Freight and Delivery Management	Other	-	Targeted start: 2025	Luton Council; Delivery Companies	-	No	-	-	Planning	Reduction in vehicle movements and emissions from LDV delivery vehicles	Volume of deliveries routed via the hub	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂	5	Widespread EV infrastructure across the council estate for both council and public charging. [AQ Hub; Local authority electric vehicle charging strategy]	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2025	Luton Council	£1.2 million provisionally allocated by the Office for Zero Emission Vehicles and private investment	No	Funded	£1m - £10m	Planning	Increased EV use will result in a decrease in emissions	EV charging point usage data	Installation of ×4 rapid chargers completed 2020 Electric vehicle chargepoint strategy 2022 to 2025 adopted November 2022 (https://tinyurl.com/4r54ek7c)	Supported by LTP4 Policy 6 - Ultra Low Emission and Electric Vehicles [https://tinyurl.com/bdfnss4m] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂	6	EV infrastructure installed in key council housing car parks [AQ Hub; Local authority electric vehicle charging strategy]	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2024	Luton Council and private chargepoint operator	Private investment	No	Funded	£100k - £500k	Implementation	Increased EV use will result in a decrease in transport emissions	EV chargepoint utilisation data	Contract has been provisionally awarded to supplier.	Electric vehicle chargepoint strategy 2022 to 2025 Priority EV6 [https://tinyurl.com/4r54ek7c] Chargepoint infrastructure will be funded by supplier. Expect Installation of chargepoints to due to start Q3, 2024.
NO₂ PM₁₀ PM₂.₅ CO₂	7	Supportive measures to encourage modal shift to active travel and monitor impacts: - Low Traffic Neighbourhoods - Driver awareness training and marketing and promotion.	Promoting Travel Alternatives	Other	2023	-	Luton Council; Luton schools and colleges; Businesses; Community groups	-	No	-	-	-	Emission reduction through modal shift to active travel	Modal shift - increased use of active travel	-	Detailed in Section 7 of the Local Cycling and Walking Infrastructure Plan [https://tinyurl.com/2p8xhr6s Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	8	Exclusive 'Taxi Only' EV infrastructure at taxi ranks [AQ Hub; Electric Vehicle (EV) Charging; Local authority electric vehicle charging strategy]	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2025	Luton Council; Taxi companies	-	No	-	-	[Ongoing]	Increased EV use will result in a decrease in emissions	Number of chargepoints installed Proportion of taxi fleet that are Evs	Four 55kW EV rapid charging units installed in taxi bays on Station Road, Park Street, Cheapside and Chaul End Lane during reporting year 2020/21	Supported by LTP4 Policy 6 - Ultra Low Emission and Electric Vehicles [https://tinyurl.com/bdfnss4m] Electric vehicle chargepoint strategy 2022 to 2025 Priority EV19 [https://tinyurl.com/4r54ek7c] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	9	The Council will undertake a fleet review, to identify a preferred pathway to electrify its vehicle fleet and inform a procurement strategy based on whole life costs *[AQ Hub; Fleet Management; Local authority fleets (inc. grey fleet)]* *[AQ Hub; Sustainable Procurement; Procurement strategy/policy]*	Promoting Low Emission Transport Policy guidance and Development Control	Public Vehicle Procurement - Prioritising uptake of low emission vehicles Sustainable Procurement Guidance	2023	-	Luton Council	-	No	-	-	-	-	-	-	Electric vehicle chargepoint strategy 2022 to 2025 Priority EV10 [https://tinyurl.com/4r54ek7c] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	10	Luton council suppliers' fleet to be EV (set target years for cars and vans). Include zero carbon vehicle requirements in all service delivery contracts *[AQ Hub; Sustainable Procurement; Procurement strategy/policy]*	Promoting Low Emission Transport Policy guidance and Development Control	Other Sustainable Procurement Guidance	-	2030	Luton Council	-	No	-	-	-	-	-	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	11	Improvement of Chapel viaduct / Castle Street roundabout *[AQ Hub; Traffic Management; Junction and road improvement schemes]*	Traffic Management	Other	-	-	LBC Transport	-	No	-	£500k - £1m	Planning	Less idling would result in reduced emissions	Improved traffic flow	Junction Mitigation Assessment Completed (2015) [https://tinyurl.com/y52t2hr7]	Included in Luton Local Plan 2011 - 2031 Policy LLP31 - Sustainable Transport Strategy [https://tinyurl.com/3cjz6n8f]

	Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	12	Implement School Streets (traffic exclusion zones) for schools in Luton and Play Streets to restrict traffic movements at peak times and encourage shift to active travel. *[AQ Hub; Traffic Management; Footstreets]*	Promoting Travel Alternatives	Promotion of walking	2023	-	Luton Council; Luton schools	-	No	-	-	-	Emissions reduced through traffic reduction and modal shift to active travel	Modal shift - increased use of active travel at school gate	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	13	Enforce pedestrianisation of key areas such as High Town and Bury Park high Street. Extend vehicle free spaces across Luton town centre. *[AQ Hub; Traffic Management; Footstreets]*	Traffic Management Promoting Travel Alternatives	Other Promotion of walking	-	2030	Luton Council; Luton businesses	-	No	Not Funded	-	Planning	Wider pedestrianisation will reduce vehicle use in the Town Centre and hence result in improved air quality	Expansion of pedestrianised area will result in more people walking into the Town Centre	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	14	Development of taxi and private hire zero (or low) emissions policy, adopting phased approach until 2040 *[AQ Hub; Taxis; Taxi licensing]*	Promoting Low Emission Transport	Taxi Licensing conditions Taxi emission incentives	-	2040	Luton Council; Taxi companies; Luton Councillors	-	No	-	-	Planning	Increased use of zero emission vehicles will result in a decrease in traffic-related pollution	Proportion of taxi fleet that are EVs	-	Long timescale Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	15	The Council will undertake a hackney/PHV fleet review and work with operators to develop a pathway that increases EV uptake for these vehicles *[AQ Hub; Taxis; Taxi financial incentives]*	Promoting Low Emission Transport	Taxi emission incentives	2023	-	Luton Council	-	No	-	-	-	Increase in EV uptake will result in reduced NOx emissions	Number and rate of EV uptake	-	Electric vehicle chargepoint strategy 2022 to 2025 Priority EV20 [https://tinyurl.com/4r54ek7c] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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NO₂ PM₁₀ PM₂.₅ CO₂	16	Work with schools and colleges to develop travel plans via Modeshift STARS which decrease use of the car and increase walking and cycling *[AQ Hub; Car sharing and car clubs; School travel planning]*	Promoting Travel Alternatives	School Travel Plans	-	2023	Luton Council; Luton Schools & colleges	-	No	-	-	[Ongoing]	Increased uptake of lift sharing or sustainable transport methods will reduce emissions	Number of new and updated school travel plans	Ongoing	LTP4 Policy 5 - Smarter Choices [https://tinyurl.com/bdfnss4m] Supports Strategic Vision for Sport and Physical Activity 2018-22 Outcomes 10 & 17 [https://tinyurl.com/3u5z65e5] LBC information on School Travel Planning: [https://tinyurl.com/bdzy27jj] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6] Accredited schools have to submit their travel plans annually to maintain accreditation
NO₂ PM₁₀ PM₂.₅ CO₂	17	Work with large employers to develop travel plans which decrease use of the car and increase walking and cycling *[AQ Hub; Travel Planning; Workplace travel planning]*	Promoting Travel Alternatives	Workplace Travel Planning	2018	2025	Luton Council; Luton businesses	-	No	-	-	[Ongoing]	Increased uptake of lift sharing or sustainable transport methods will result in reduced emissions	Increase modal shift of staff using more sustainable modes	Planning phase	LTP4 Policy 5 - Smarter Choices [https://tinyurl.com/bdfnss4m] Potential measures to encourage sustainable travel include promotion of cycling and walking, discounted bus and rail travel, and car sharing Modeshift STARS to be used to manage process Included in the Bus Service Improvement Plan as Measure 19: Green Travel Plans [https://tinyurl.com/5d25kjxr] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ PM₂.₅ CO₂	18	Anti-idling awareness campaign and enforcement *[AQ Hub; Anti-idling; Anti-idling measures]*	Traffic Management	Anti-idling enforcement	2022	Ongoing	LBC Parking Enforcement	-	No	-	-	Implementation	Reduced idling would result in lower emissions	Fewer drivers idling as a result of LBC intervention	Enforcement commencing Summer 2022	LTP4 calls for interventions to to be directed at areas where there are greater concentrations of vulnerable people (e.g. schools, hospitals and day care centres). [https://tinyurl.com/bdfnss4m]

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NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	19	Engage with and promote travel schemes and discounted tickets e.g. Arriva discounted tickets for organisations participating in a travel club, including bus fares for 17-21 year olds at 70% of the adult fare, 16 and under at 50%	Alternatives to private vehicle use	Other	2023	2025	Luton Council; Local transport organisations; Arriva	National Bus Strategy Fund	No	Funded	-	-		Reduction in vehicle numbers resulting in reduced emissions	Scheme uptake Passenger/ticket numbers	-	Included in the Bus Service Improvement Plan as Measure 18: Promotional Ticketing Offers [https://tinyurl.com/5d25kjxr] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	20	Provide support for car clubs through engagement with local schools and businesses beginning with an E-Car Club pilot scheme in Luton *[AQ Hub; Car sharing and car clubs; Car clubs]*	Alternatives to private vehicle use	Car Clubs	2023	-	Luton Council; Local community groups; Schools; Local business	-	No	-	-	-	Reduction in pollution secured through provision of either EV or less polluting modern vehicles to replace private ownership of older more polluting models	Number of car club members Number of private cars replaced by membership	-	Supports LTP4 Policy 1 - Shared mobility and Mobility as a Service [https://tinyurl.com/bdfnss4m] Electric vehicle chargepoint strategy 2022 to 2025 Priority EV11 [https://tinyurl.com/4r54ek7c] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ PM₂.₅ CO₂	21	Provide support for lift sharing schemes through engagement with local schools and businesses *[AQ Hub; Car sharing and car clubs; Car share scheme]*	Alternatives to private vehicle use	Car & lift sharing schemes	2023	-	Luton Council; Local community groups; Schools; Local business	-	No	-	-	-	Lift sharing will result in fewer cars on the roads and hence reduced emissions	Number of lift share scheme users Number of jouney miles saved	-	Supports LTP4 Policy 1 - Shared mobility and Mobility as a Service [https://tinyurl.com/bdfnss4m] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	22	To assess road user charging and its impact locally *[AQ Hub; Clean Air Zones / Low Emission Zones; Traffic Regulation Conditions]* *[AQ Hub; Congestion Charging]*	Traffic Management	Road User Charging (RUC) / Congestion charging	-	2025	Luton Council Sustainable Travel Team	-	No	-	-	Planning	Generate income stream to fund transport improvements that in turn will deliver emissions reductions Reduction in car use resulting in reduced emissions	Amount of funding generated and redistributed	Feasibility study completed (2019)	Updated action included in Luton Net Zero Roadmap and Action Plan Progress Report 2024 [https://tinyurl.com/4ftrwz9u]

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NO$_2$ PM$_{10}$ PM$_{2.5}$ CO$_2$	23	Consider workplace parking levy to fund transport improvements *[AQ Hub; Vehicle Parking; Workplace Parking Levy]*	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2025	2025	Luton Council	-	No	-	-	Planning	Generate income stream to fund transport improvements that in turn will deliver emissions reductions Reduction in car use resulting in reduced emissions	Amount of funding generated and redistributed	-	Included in the Bus Service Improvement Plan as Measure 12: Parking Levy [https://tinyurl.com/5d25kjxr]
NO$_2$ (!) PM$_{10}$ (!) PM$_{2.5}$ (!) CO$_2$ (!)	24	Investigate implementing a Clean Air/Low Emissions Zone in the Town Centre *[AQ Hub; Clean Air Zones / Low Emission Zones; Traffic Regulation Conditions]*	Promoting Low Emission Transport	Low Emission Zone (LEZ) or Clean Air Zone (CAZ)	-	-	LBC Sustainable Travel Team LBC Environmental Protection	-	No	Not Funded	-	-	Cleaner / greener transport options for staff and deliveries would reduce emissions in the town centre	Increased take up of clean energy vehicles / bikes by local businesses	Initial in house feasibility study completed (2019)	Need for action to be reconsidered following the reductions in NO$_2$ in AQMA N°. 3 Feasibility study identified as a priority in LTP4, however currently still unfunded [https://tinyurl.com/bdfnss4m] Action included in Luton Net Zero: Climate Policy and Action Plan (updated 2024) [https://tinyurl.com/3yzeswy6]
NO$_2$ PM$_{10}$ PM$_{2.5}$ CO$_2$ (!)	25	Transition bus fleet to electric - introduce electric buses on the Luton Dunstable Busway network *[AQ Hub; Buses and coaches; Procurement of low emission buses and coaches]*	Vehicle Fleet Efficiency Promoting Low Emission Transport	Promoting Low Emission Public Transport Company Vehicle Procurement - Prioritising uptake of low emission vehicles	-	-	Luton Council; Bus companies	-	No	-	-	-	-	Reduced emissions from buses	-	Included in the Bus Service Improvement Plan as Measure 31: Low Emission Vehicles [https://tinyurl.com/5d25kjxr] LTP4 encourages the use of low carbon buses as part of Bus Quality Partnerships [https://tinyurl.com/bdfnss4m] DfT funding opportunities to be explored
NO$_2$ PM$_{10}$ PM$_{2.5}$ CO$_2$ (!)	26	Work towards Euro 6 by retrofitting existing bus fleet. All buses entering town centre to be zero or low emissions *[AQ Hub; Buses and coaches; Procurement of low emission buses and coaches]*	Vehicle Fleet Efficiency Promoting Low Emission Transport	Vehicle Retrofitting programmes Company Vehicle Procurement - Prioritising uptake of low emission vehicles	-	-	Luton Council; Bus companies	-	No	-	-	-	Reduced emissions from buses	June 2025 announcement by Arriva of an investment of £9.7 million to upgrade their Busway fleet serving London Luton Airport through the purchase of 30 Volvo B8RL MCV eVoRa buses [http://tinyurl.com/3nuvyz8c]	Included in the Bus Service Improvement Plan as Measure 31: Low Emission Vehicles [https://tinyurl.com/5d25kjxr] LTP4 encourages the use of low carbon buses as part of Bus Quality Partnerships [https://tinyurl.com/bdfnss4m] Target introduction of zero/low emission buses through Bury Park and on Dunstable Road DfT funding opportunities to be explored

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NO$_2$ (!) PM$_{10}$ (!) PM$_{2.5}$ (!) CO$_2$ (!)	27	Review 20mph zones in and around AQMA #3 to encourage traffic calming and lower speeds *[AQ Hub; Traffic Management; Speed Management]*	Traffic Management	Reduction of speed limits, 20mph zones	2018	-	LBC Transport LBC Road Safety	-	No	-	-	-	Vehicles travelling under 30mph generally emit less particulates and so improve air quality	Increase number of vehicles adhering to 20mph within the zones	20mph zones in place (Completed 2016 – 17)	Need for action to be reconsidered following the reductions in NO$_2$ in AQMA N° 3
NO$_2$ (!) PM$_{10}$ (!) PM$_{2.5}$ (!) CO$_2$ (!)	28	High standards for non-residential new build - Town centre development to provide leadership for change: to meet best practice design standards rather than just current building regulations, and to include the new football stadium development. District heating and shared renewable generation infrastructure should be included and designed for future expansion. *[AQ Hub; Commercial and Domestic Heat and Power; District heating schemes]*	Policy Guidance and Development Control Promoting Low Emission Plant	Air Quality Planning and Policy Guidance Shift to installations using low emission fuels fir stationary and mobile sources	2023	-	Luton Council; Energy/heat specialists; Local businesses; Construction sector	-	No	-	-	-	Reduced emissions from combustion	Predicted NOx and PM$_{2.5}$ savings compared to individual and/or non-renewable sources	-	Supported by Luton Town Centre Design Guide Supplementary Planning Document [https://tinyurl.com/3p9kradc] Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
	29	Non-residential building retrofits - Encourage business and public sector property owners to invest in retrofit to reduce fossil fuel use, improve energy efficiency and increase renewable generation across multiple projects	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	2023	-	Business and public sector property owners	-	No	-	-	-	Reduction in emissions secured by replacement of more polluting combustion plant with less polluting modern alternatives	Number of retrofits Emissions reductions	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	30	Campaign for a car free day and promote behaviour change with businesses and residents [AQ Hub; Public Information Campaigns / Events; Sustainable transport based campaigns]	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2023	-	Luton Council; Local community groups	-	No	-	-	-	Emissions reduction secured by reduction in private vehicle use; Increased uptake of active travel	Level of engagement with campaign	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
	31	Develop targets and an action plan for optimizing mileage for Council business travel through travel planning	Promoting Travel Alternatives	Workplace Travel Planning	2023	-	Luton Council	-	No	-	-	-	Reduction in work-related mileage resulting in reduced emissions	Journey miles saved	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ PM₁₀ PM₂.₅ CO₂	32	All major residential and commercial planning applications to include a Travel Plan in line with current best practice and to ensure buses provided with the infrastructure needed to serve new developments [AQ Hub; Travel Planning; Residential travel planning]	Policy Guidance and Development Control Promoting Travel Alternatives	Air Quality Planning and Policy Guidance Promotion of cycling Promotion of walking	2023	-	Luton Council; Developers	-	No	-	-	-	Promotion of more sustainable modes of travel resulting in reduced use of private vehicles and hence reduced emissions	Uptake of sustainable modes at new developments	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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NO$_2$ PM$_{10}$ PM$_{2.5}$ CO$_2$	33	Supportive measures to encourage modal shift to active travel, and monitor impacts: - Cycle training, - Cycle hire schemes - Cycle recycling scheme - Community cycle clubs *[AQ Hub; Active Travel (Cycling, Walking etc); Cycle hire/share schemes]* *[AQ Hub; Active Travel (Cycling, Walking etc); Cycle to work schemes / new home bike schemes / recycling schemes]*	Promoting Travel Alternatives Transport Planning and Infrastructure	Promotion of cycling Cycle network	2023	-	Luton Council; Luton schools and colleges; Businesses; Community groups	-	No	-	-	-	Emission reduction through modal shift to active travel	Modal shift - increased uptake of cycling	Making Cycling E-asier rental scheme, Bikeability cycle training and joint working with the L&D Cycle Forum all ongoing [https://tinyurl.com/4txhsr6a]	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO$_2$ PM$_{10}$ PM$_{2.5}$ CO$_2$	34	Maximise local and regional rail connectivity to Luton, from London, the Midlands and through interchange with East West Rail *[AQ Hub; Rail; Rail improvements]*	Promoting Travel Alternatives Transport Planning and Infrastructure	Promote use of rail and inland waterways Public transport improvements – interchanges stations and services	-	2025	Luton Council; East West Rail	-	No	-	-	-	Emission reduction through modal shift to rail travel	Increase in rail passenger numbers	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
	35	Ensure that London Luton Airport has an ambitious Sustainable Travel Plan and outstanding bus connections with Luton and beyond.	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	-	2027	Luton Council; Luton Rising; Airport operator	-	No	-	-	-	-	-	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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	36	To produce a monitoring and evaluation report that will quantify the impact of Luton's recently implemented TRL UTC system on the environment and provide recommendations specific to Luton around potential improvements including: supporting the shift to active travel; and bus priority. *[AQ Hub; Traffic Management; Urban Traffic Management and Control]*	Traffic Management	UTC, Congestion management, traffic reduction	2024	-	Luton Council Highways team	-	No	-	-	-	Reduce emissions by smoothing traffic flows. Possible source of data on vehicle numbers and fleet make-up to support AQ modelling and intervention evaluation.	Improved traffic flow and reduced congestion Provision of local data and associated insights	-	Updated action included in Luton Net Zero Roadmap and Action Plan Progress Report 2024 [https://tinyurl.com/4ftrwz9u]
	37	Airport operations: lighting upgrades and heating equipment	Promoting Low Emission Plant	Other Policy	-	2025	Luton Rising; Airport tenants; Airport operator	-	No	-	-	-	Reduction in emissions secured by replacement of more polluting plant with less polluting modern alternatives	Emissions reductions	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO$_2$ PM$_{10}$ (!) PM$_{2.5}$ (!) CO$_2$	38	Airport operations and Surface Access: Promote the use of low emission vehicles and zero emission vehicles increase flexible capacity for recharging of vehicles using the airport *[AQ Hub; Alternative Fuels /Low Emission Vehicles; Electric vehicles]*	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	2030	Luton Rising; Luton Council - transport	-	No	-	-	-	Emission reduction secured through increased use of low/zero emission vehicles	Capacity for recharging vehicles	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO$_2$ PM$_{10}$ (!) PM$_{2.5}$ (!) CO$_2$	39	Surface access: freight consolidation and promotion of proportion of full-load trips *[AQ Hub; Freight; Freight consolidation]*	Freight and Delivery Management	Freight Consolidation Centre	-	-	Luton Rising; Airport operator	-	No	-	-	-	Reduction in vehicle movement and associated emissions	Number of journey miles and associated emissions saved	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]

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NO₂ PM₁₀ (!) PM₂.₅ (!) CO₂	40	Surface access: EV points where possible and ensure all new builds provide the infrastructure required to meet Government standards *[AQ Hub; Alternative Fuels /Low Emission Vehicles; Electric vehicles]*	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	-	2030	Luton Rising; Airport operator	-	No	-	-	-	Emission reduction secured through increased use of low/zero emission vehicles	Number and availability of EV charge points	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	41	Surface access: Provide infrastructure to support the use of low emissions public transport and freight vehicles *[AQ Hub; Freight; Alternative fuels for freight and deliveries]*	Promoting Low Emission Transport Freight and Delivery Management	Other	-	-	-	-	No	-	-	-	Emission reduction secured through increased use of low emission PSV/HDVs	Capacity of infrastructure provided	-	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
	-	Implement monitoring mechanisms e.g. Urban Traffic Management Control. Traffic data will be essential in planning and evaluating the effectiveness of AQ and carbon reduction interventions. *[AQ Hub; Traffic Management; Urban Traffic Management and Control]*	Traffic Management	UTC, Congestion management, traffic reduction	2023	2023	Luton Council	-	No	-	-	Completed	Reduce emissions by smoothing traffic flows. Possible source of data on vehicle numbers and fleet make-up to support AQ modelling and intervention evaluation.	Improved traffic flow and reduced congestion	UTC contract awarded to TRL Software [https://tinyurl.com/mrxmyrcd]	Action included in Luton Net Zero: Climate Policy and Action Plan [https://tinyurl.com/3yzeswy6]
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	-	Reallocation of lanes, where possible to reduce start-stop traffic and congestion *[AQ Hub; Traffic Management; Junction and road improvement schemes]*	Traffic Management	Other	-	2017	LBC Transport	-	No	Funded	-	Completed	Reducing start-stop traffic reduces acceleration and braking, resulting in reduced emissions	Improved traffic flow Reduction in queuing traffic	Dunstable Road scheme completed September 2017	Initial report evaluating the impact of the improvements presented to the Overview and Scrutiny Board, 25 June 2019 https://tinyurl.com/yyn7eban

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NO_2 (!) PM_{10} (!) $PM_{2.5}$ (!) CO_2 (!)	-	In coordination with the Luton BID and local dealers, hold pop-up events in the town centre to showcase available EVs *[AQ Hub; Public Information Campaigns / Events; Events]*	Promoting Low Emission Transport	Other	2018	2018	LBC Transport LBC Environmental Protection	-	No	-	-	Completed	Increased EV uptake will result in reduced emissions	Increased EV sales resulting from events	Event held in St. Georges Square on 27/28 April 2018	-
NO_2 (!) PM_{10} (!) $PM_{2.5}$ (!)	-	Implement variable message signs (VMS) linked to car parks in town centre, with direction varying dependent on congestion *[AQ Hub; Traffic Management; Variable Message Signage (VMS)]*	Traffic Management	UTC, Congestion management, traffic reduction	2017	2018	LBC Transport Network Technology	£76k Government grant awarded February 2017	No	Funded	£50k - £100k	Completed	Smoother traffic flow leading to lower emissions	Improved traffic flow and information dissemination	Installation of VMS completed Autumn 2018	-
NO_2 (!) PM_{10} (!) $PM_{2.5}$ (!) CO_2 (!)	-	Information to vulnerable groups – Air Pollution Alert service *[AQ Hub; Public Information Campaigns / Events; Air quality websites]*	Public Information	Via the internet Via other mechanisms	2018	2019	LBC Environmental Health Herts & Beds Air Quality Network	-	No	Funded	< £10k	Completed	By informing vulnerable groups of likely peaks in air pollution, they will have an opportunity to limit exposure / better manage their conditions	Number of subscribers	Service launched 1st March 2019 and still operational	Service sign-up page: https://tinyurl.com/y3pb95j9
NO_2 (!) PM_{10} (!) $PM_{2.5}$ (!) CO_2 (!)	-	School Streets Project - Pilot road closure outside Hillborough Junior School *[AQ Hub; Traffic Management; Footstreets]*	Promoting Travel Alternatives	Promotion of walking	2018	2019	LBC Road Safety Sustrans	-	No	Funded	-	Completed	Modal shift away from the car, resulting in reduced emissions	Decrease in number of young people travelling to school by car Increase in number of children travelling actively Improved air quality at the school gate	Project completed and evaluated August 2019	-
	-	Prohibition of right turns onto Windsor Street at the traffic light controlled junction with Castle Street	Traffic Management	Other	-	2020	LBC Transport	LBC Transport	No	Funded	< £10k	Completed	Reduction in queuing traffic would result in reduced emissions	Improved traffic flow	Work completed 2020	Potential issue with non-compliance (i.e. drivers continuing to make right turns at the junction)

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NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!) -	Bedfordshire Sustainable Travel Access to Railway Stations (STARS) *[AQ Hub; Public Information Campaigns / Events; Sustainable transport based campaigns]*	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	-	2020	LBC Sustainable Transport Team in partnership with Central Bedfordshire Council and Bedford BC	£2.1 million funding secured from the DfT Access Fund for Sustainable Travel 2017 – 2020	No	Funded	£1m - £10m	Completed	Increased use of sustainable travel will reduce car use and emissions	Increase in use of sustainable travel into Luton Town Centre	Completed Funding ended March 2020	-
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!) -	Deployment of network of low cost pollution sensors to provide enhanced real time NO₂ and PM₂.₅ monitoring data to public via online portal *[AQ Hub; Public Information Campaigns / Events; Air quality websites*	Public Information	Via the Internet	2021	2021	LBC Transport LBC Environmental Protection LBC Sustainability	LBC Transport	No	Funded	£50k - £100k	Completed	Data to be used to inform targeted local interventions	Substantial improvement in geographical coverage of real time NO2 and PM2.5 monitoring data Improved public awareness	5 continuous indicative air quality monitors deployed Nov 2021 Real time data available via the Herts & Beds AQ Network website [https://tinyurl.com/3f78jc4c]	Project funding due to end November 2025.
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!) -	Installation of Gas-To-Liquid (GTL) refuelling infrastructure at LBC Depot to facilitate move of entire 300 vehicle fleet from Diesel *[AQ Hub; Alternative Fuels / Low Emission Vehicles; Gas refuelling (e.g. CNG)]*	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2021	LBC Fleet Services	LBC Fleet Services	No	Funded	£50k - £100k	Completed	Average NOx reduction of 40 to 44% compared to Diesel	Reduced emissions from buses	Completed June 2021	Options being pursued to offer GTL refuelling to third parties
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!) -	Free electric vehicle training course for taxi and private hire drivers to showcase available models *[AQ Hub; Public Information Campaigns / Events; Events]*	Promoting Low Emission Transport	Other	-	2022	LBC Sustainable Development and Transport Energy Savings Trust Department for Transport	Department for Transport	No	Funded		Completed	Increased EV uptake will result in reduced emissions	Increased EV uptake amongst taxi & private hire drivers	Hybrid event held on 30th March 2022, with online training in the morning and demonstration test drives at Stockwood Discovery Centre in the afternoon	-

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NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	-	New Ways of Working adopted at LBC; promotion of a hybrid working model with employees in the office 40% of their hours *[AQ Hub; Travel Planning; Promoting home-working]*	Promoting Travel Alternatives	Encourage / Facilitate home-working	2022	[Ongoing]	Luton Council	-	No	-	-	Completed	Reduction in car journeys commuting to work will result in reduced emissions (NO2 and particulate matter)	Number of journeys avoided	Policy implemented and guidance published	-
NO₂ PM₁₀ PM₂.₅ CO₂	-	Proposed project to replace a number of small town centre surface car parks with intelligent parking system enabled multi storey on Crawley Road site *[AQ Hub; Vehicles Parking; Car park strategies]*	Traffic Management	Other	2018	-	LBC Property & Construction	-	No	-	-	Aborted	Less engine idling and running time while drivers search for parking	Improved parking information and organisation	Planning application permitted	Work on project discontinued
NO₂ (!) PM₁₀ (!) PM₂.₅ (!) CO₂ (!)	-	Rollout of Schools Air Quality Workshops *[AQ Hub; Schools / Education; School based educational activities]*	Promoting Travel Alternatives Public Information	Other	2022	-	LBC Sustainable Development and Transport	-	No	Not Funded	-	Aborted	Modal shift away from the car, resulting in reduced emissions	Decrease in number of young people travelling to school by car Increase in number of children travelling actively Improved air quality at the school gate	Successful pilot sessions held at Hillborough Junior and Bushmead Primary Exploring funding options	Project discontinued - unable to secure funding

2.3 PM$_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[6], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM$_{2.5}$). There is clear evidence that PM$_{2.5}$ (particulate matter smaller than 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Responding to growing concerns about the health effects of fine particulate matter, Luton Council started measuring PM$_{2.5}$ levels at its Dunstable Road East roadside automatic monitoring station (LN60/HB007) at the end of 2014. Then, in 2019, Luton Rising also started monitoring PM$_{2.5}$ when it established a new air quality monitoring station in Wigmore Valley Park to monitor airport emissions (LA001). More recently, in 2021, Luton Council deployed five indicative air quality monitors at suspected congestion hotspots across the borough to measure PM$_{2.5}$ (as well as PM$_{10}$ and NO$_2$) in real time. Finally, in November 2024, Defra started monitoring PM$_{2.5}$ levels at its *Automatic Urban & Rural Network* (AURN) roadside monitoring site on the A505 near Junction 10 of the M1 (LUTR).

Since coming into operation, the MCERTS-certified Palas Fidas 200 fine dust monitoring device located at LN60/HB007 has shown the annual mean PM$_{2.5}$ concentration at this site to be on an overall downward trajectory, with the level observed in 2024 being the lowest in the time series (a in Appendix A). Similarly, the annual mean measured at LA001 in 2024 was also the lowest yet recorded and continues the trend of year-on-year reductions seen at this site since it was established (b in Appendix A). However, unlike LN60/HB007, the instrumentation used at LA001 is not currently approved by Defra for use in the UK.

Since 2020, annual mean levels at LN60/HB007 and LA001 have remained below the 10µg/m^3 2040 concentration target introduced by *The Environmental Targets (Fine Particulate) (England) Regulations 2023*.

In contrast to the compliance suggested by recent monitoring results, using 2018 as a reference year, Defra's modelled LAQM background mapping data [https://tinyurl.com/2eb2urjd] had continued to predict that background PM$_{2.5}$ levels would remain above 10µg/m^3 across much of Luton. However, since November 2024, this has changed with the release of new background maps that use 2021 as a reference year [https://tinyurl.com/4hm8vwa5]. Figure 2.1 compares the

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[6] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

distributions of the annual mean $PM_{2.5}$ concentrations predicted for each square kilometre in Luton by the 2018 and 2021 reference year background maps.

Significantly lower than the 2018 reference year predictions, the 2021 reference year data predicts that background concentrations across Luton are already well below the 2040 concentration target and will continue to decrease steadily until at least 2040. This contradicts the previous modelling, which predicted that decreasing background $PM_{2.5}$ levels would flatline after 2025, with concentrations remaining above $10\mu g/m^3$ in much of the town.

Comparing the two sets of modelled data with the monitoring results, particularly for LN60/HB007, the 2021 reference year figures would appear to offer a better fit. Located at the roadside, it would be expected that $PM_{2.5}$ concentrations at LN60/HB007 would exceed background levels due to the additional contribution from passing traffic. However, contrary to expectations, the 2018 reference year data consistently estimated background levels in the square kilometre containing the monitoring site to be higher than the measured concentrations. The lower estimated background levels predicted by the new 2021 reference year modelling would appear to go some way to addressing this apparent anomaly.

Figure 2.2 shows the 2021 reference year modelled background $PM_{2.5}$ levels for each square kilometre in Luton for 2024. Figure 2.3 shows similar predictions for 2040, the model's final year. As suggested in the appraisal report issued by Defra on accepting the 2024 Annual Status Report, Figure 2.4 shows the difference between the two predictions, *i.e.* the estimated reduction in background annual mean $PM_{2.5}$ levels between 2024 and 2040.

The reliability of the background mapping data is important, as it is this data that is used to calculate *Public Health Outcomes Framework indicator D01 – Fraction of mortality attributable to particulate air pollution* [https://tinyurl.com/d2duysv5]. Consequently, modelled overestimations in previous years could partially explain Luton's poor performance in this metric. Although, for the most part, the high attributable mortality figures calculated for Luton result from its compact urban form and high population density. With the 21st highest population density of all local government administrative areas in England and Wales, an estimated 5,329 people per square kilometre in mid-2023[7,8], Luton is the most densely populated local authority outside London.

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[7]   ONS. Estimates of the population for England and Wales, 15 July 2024 [https://tinyurl.com/buewe752]

[8]   ONS. Standard Area Measurements for Administrative Areas (December 2023) in the UK, Updated 18 December 2024 [https://tinyurl.com/u32ztp7d]

Down from 7.0% in 2022, with a value of 5.6% in 2023, Luton had the sixth highest attributable mortality figure in the East of England (behind Watford [5.8%], Thurrock, Hertsmere, Norwich and Epping Forrest) and the 60th highest in England as a whole. The English national average for the year was 5.2%.

Ultimately, as there is no evidence of a safe level of exposure to $PM_{2.5}$ or a threshold below which no adverse health effects occur[9], the case for action is undiminished regardless of both monitoring and modelling indicating that concentrations across Luton already comply with the 2040 target. Although the actions listed in Table 2.2 were predominantly chosen with the reduction of NO_2 levels in mind, many will also be effective at securing reductions in $PM_{2.5}$ emissions and exposure.

Linking the selected actions back to the toolbox of strategy measures recommended for consideration on Defra's local authority Air Quality Hub, a column has been added to Table 2.2 showing the pollutants each intervention would be expected to reduce. An exclamation mark after a pollutant denotes that any improvement may not be automatic and will likely be subject to some degree of trade-off depending on how the measure is implemented.

Typically, the selected measures fall into three categories:

- Reducing the number of vehicles on the road (e.g. through public transport improvements and promotion, travel planning and the promotion of lift sharing);

- Promoting modal shift to active forms of travel (e.g. improvements to cycle infrastructure and the prioritisation of active travel options through travel planning); and

- Improving the public provision of air quality information to enable individuals to manage their personal exposure more effectively (e.g. the *Herts & Beds Air Pollution Alert service* [https://tinyurl.com/mr3ptc3n] and the publication of near real-time air quality data via the *Herts & Beds Air Quality Network* web portal [https://tinyurl.com/5cdm2h43] and town centre CityTree electronic noticeboard).

In addition to the above, Luton Council's entire administrative area has been a smoke control area since the 1970s [https://tinyurl.com/4k4hhzxe].

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9   WHO. WHO global air quality guidelines, 2021 [https://tinyurl.com/rwcp7ady]

Figure 2.1 – Box plots comparing the distribution of the modelled PM₂.₅ background mapping data obtained for Luton using the reference years 2018 and 2021
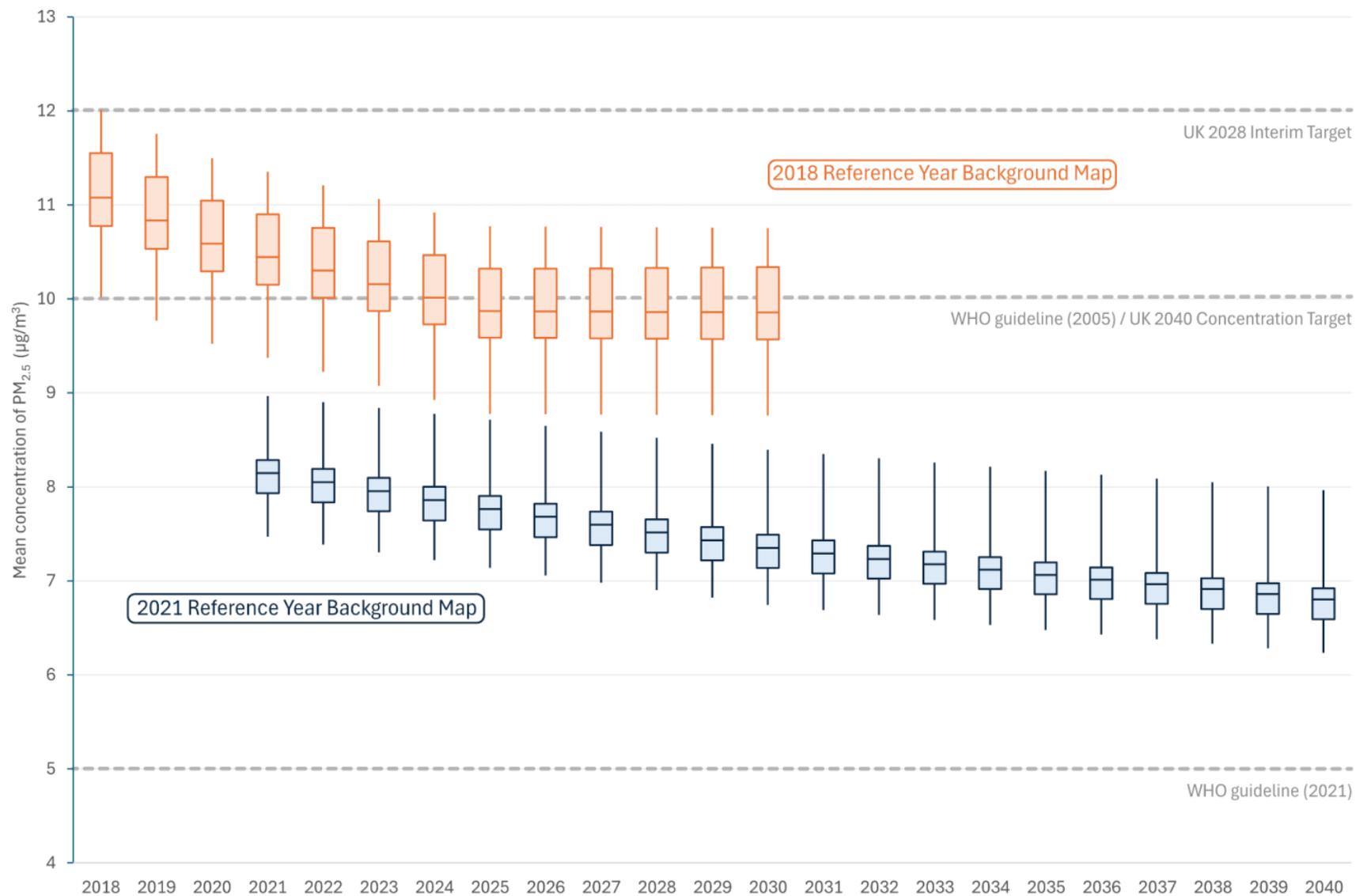
Figure 2.2 – Defra modelled annual average background PM$_{2.5}$ concentration (µg/m^3) per square kilometre for 2024
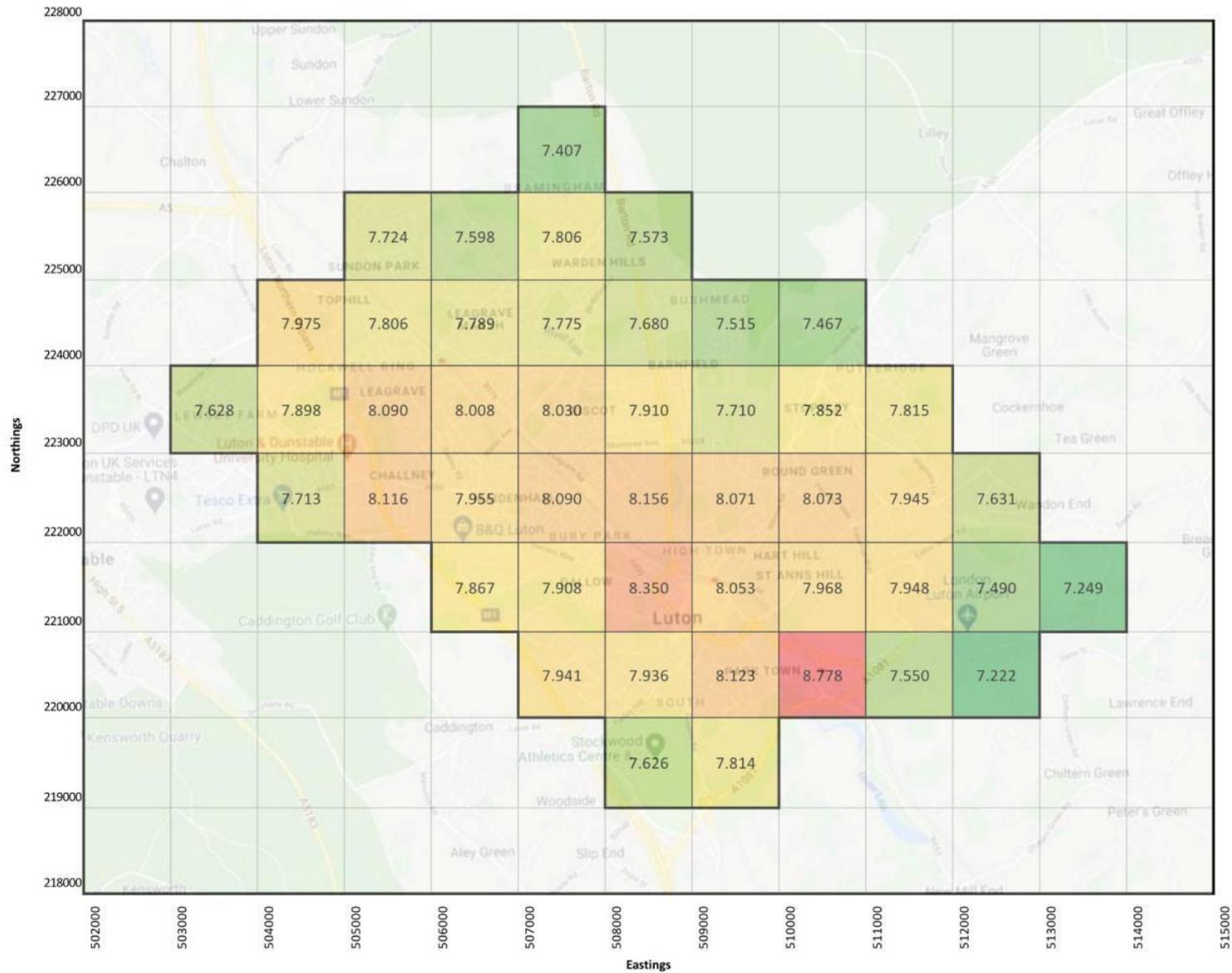
Figure 2.3 – Defra modelled annual average background PM$_{2.5}$ concentration (µg/m^3) per square kilometre for 2040
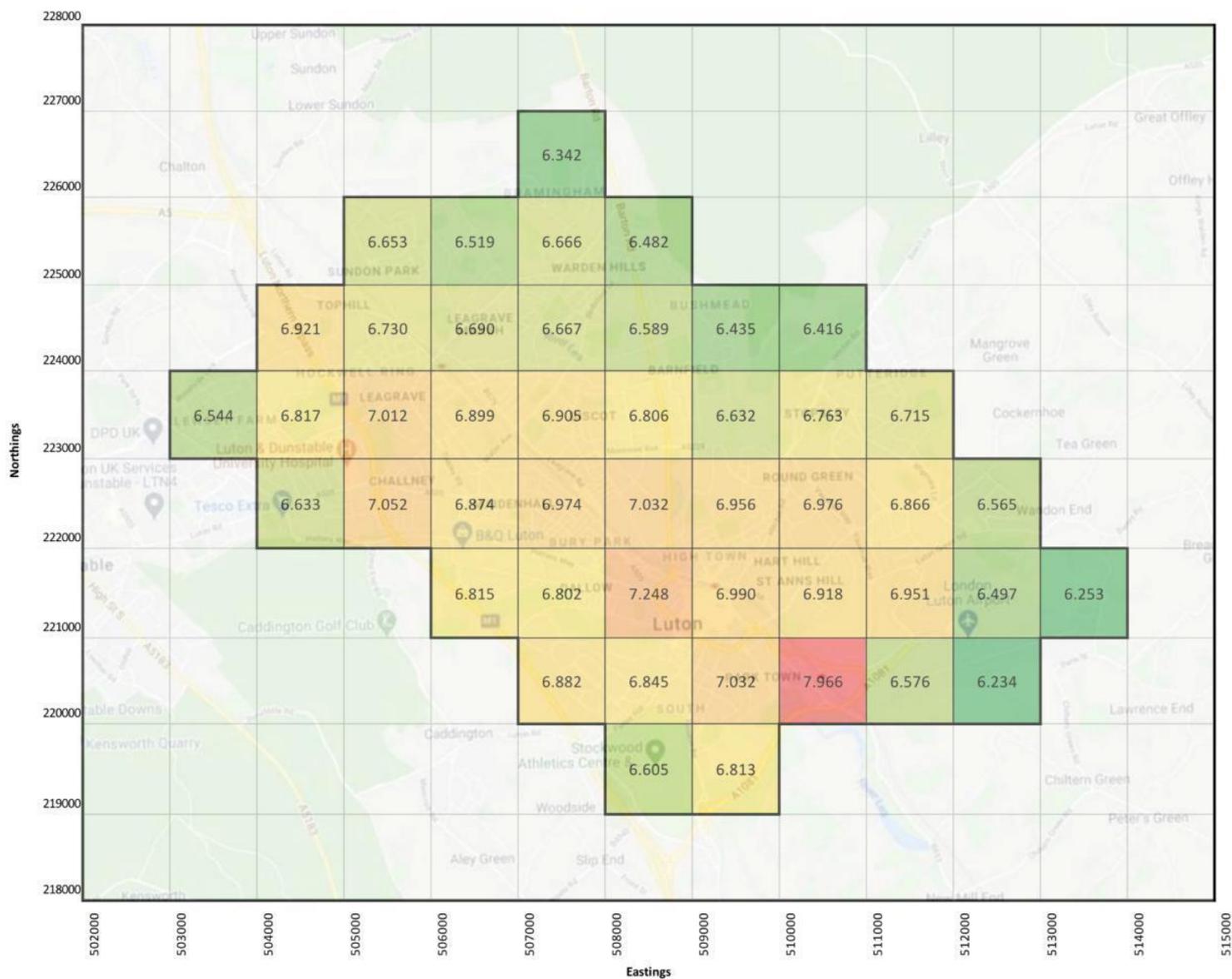
Figure 2.4 – Predicted reduction in annual average background PM$_{2.5}$ concentration (µg/m³) per square kilometre between 2024 and 2040
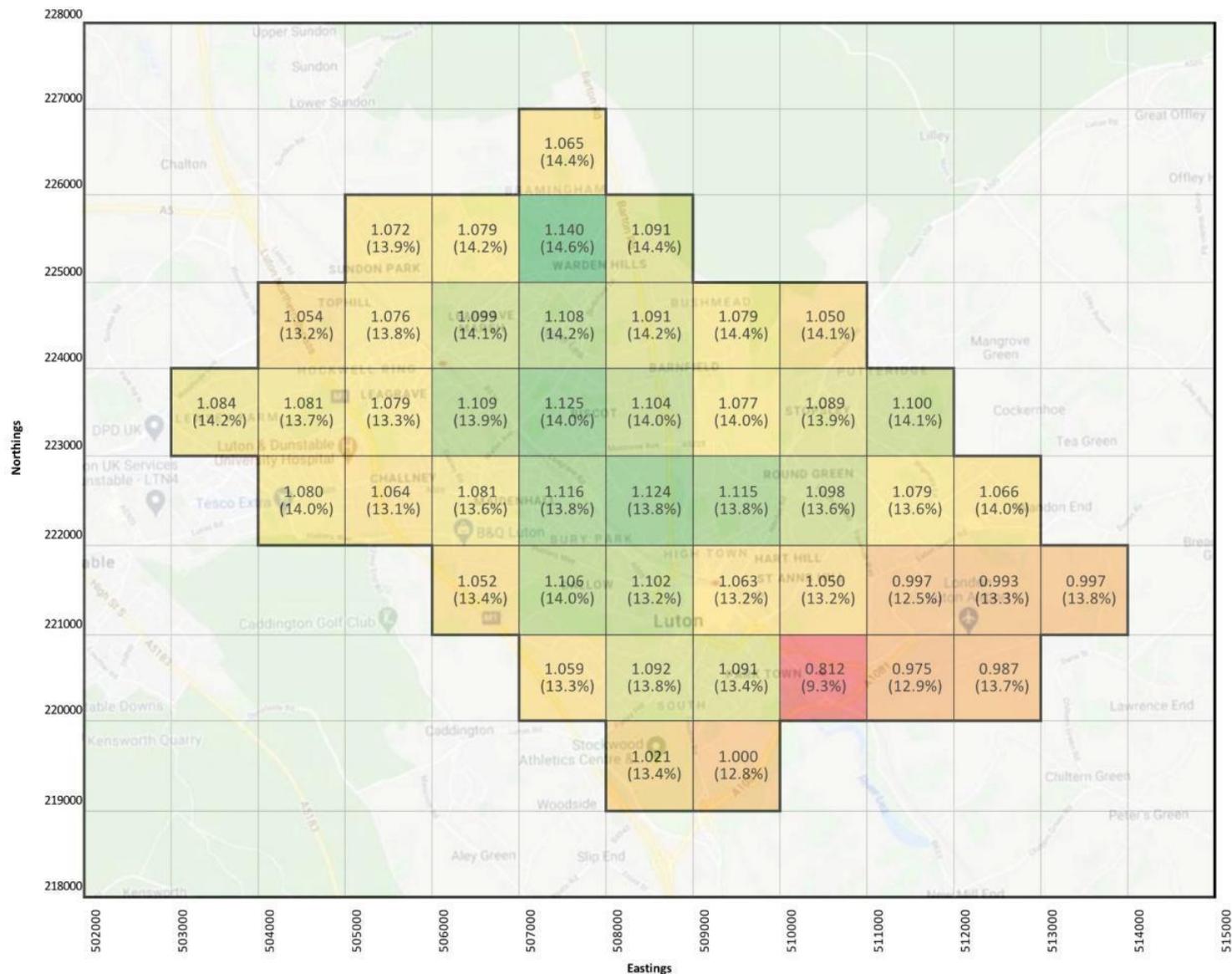
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2024 by Luton Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

During 2024, Luton Council undertook automatic (continuous) monitoring of NO_2, PM_{10} and $PM_{2.5}$ at one reference site (using a ThermoScientific Model 42i Analyzer and Palas Fidas 200, respectively) and five additional sites using EMSOL Praxis/Urban sensor-based indicative air quality monitors.

Positioned within AQMA N° 3 and co-located with diffusion tubes LN61, LN62 and LN63, the reference site is located at LN60 / HB007 – Dunstable Road, with its monitoring data publicly available in near-real-time via the Herts & Beds Air Quality Network web portal (https://tinyurl.com/w73r7gz). The location and output of the indicative monitors is discussed in Appendix G.

In addition to the monitoring undertaken by Luton Council during 2024:

- London Luton Airport Operations Ltd. (LLAOL) continuously monitored PM_{10} at its site within the airport (LA08 / HB006 – https://tinyurl.com/y32oqq5r);

- Defra continuously monitored NO_2 and (from 12/11/2024) $PM_{2.5}$ at its Luton A505 Roadside AURN site (LUTR – https://tinyurl.com/yauuwns7); and

- Luton Rising continuously monitored multiple species, including NO_2, PM_{10} and $PM_{2.5}$, at its air quality monitoring station in Wigmore Valley Park (LA001 – https://tinyurl.com/y8o7oopg).

Table A.1 in Appendix A shows the details of the automatic monitoring sites, whilst Table G.1 in Appendix G provides similar information for the indicative sites. In addition to the links above, automatic monitoring results for these sites are available through the UK-Air website [https://uk-air.defra.gov.uk].

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on

how the automatic monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2   Non-Automatic Monitoring Sites

Luton Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 104 sites during 2024. In addition, LLAOL undertook similar monitoring at 17 sites, and Luton Rising deployed NO_2 diffusion tubes at a further 16 (or 17 if you include their co-location study at HB007). Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2   Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1   Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented 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 2024 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.

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

Including data from all three monitoring networks, Figure A.2 in Appendix A presents density plots showing the annual distribution of mean NO_2 concentrations at all diffusion tube sites in operation for each of the last five years. Demonstrating a second consecutive reduction in observed annual

NO$_2$ levels, the 2024 figures are the lowest in the last five years, representing an 8.2% reduction in the population mean from 2023.

Continuing a trend of borough-wide compliance started in 2020, no exceedances of the annual mean NO$_2$ objective level were observed at relevant receptor locations during 2024. The 40µg/m^3 target was exceeded at a single roadside site operated by Luton Rising, L7, which recorded an annual mean NO$_2$ concentration of 45.4µg/m^3. However, located on Vauxhall Way, remote from amenities and residential accommodation, this site does not represent relevant exposure. Excluding this unrepresentative location, observed annual mean concentrations remained below 90% of the annual mean objective level (i.e. 36µg/m^3) at all other sites. This is significant because 36µg/m^3 is the threshold above which exceedance is considered likely to occur due to the inherent uncertainty associated with diffusion tubes. Consequently, if the annual mean NO$_2$ concentrations of all sites within an AQMA remain below 36µg/m^3 for three consecutive years, para. 3.57 of LAQM.TG22 recommends that consideration should be given to its revocation.

Figures A.3, A.4 and A.5 in Appendix A present threshold value charts showing how the annual mean NO$_2$ levels obtained at AQMA diffusion tube sites for the last six years have compared to the 90% objective level value of 36µg/m^3. Figure A.6 in Appendix A presents a similar comparison for sites located in areas previously identified for inclusion in the potential expansion of AQMA N$^{o.}$ 3 along Castle Street. Figure A.7 in Appendix A shows how the annual mean concentrations obtained at the automatic monitoring site in AQMA N$^{o.}$ 3 (LN60 / HB007) compare to the full objective level of 40µg/m^3 for the same period.

Finally, no instances of the 1-hour mean exceeding 200µg/m^3 were observed at any of the three automatic NO$_2$ monitoring sites within the borough (*LN60 / HB007, LA001* or *LUTR*).

In summary, the data shows:

- no exceedances of 40µg/m^3 at a relative receptor since 2019;

- no exceedances of either 36µg/m^3 at passive sites or 40µg/m^3 at automatic sites within an AQMA since 2019; and

- only one instance in the last five years where an annual mean concentration at a passive site has exceeded 36µg/m^3 in the area identified for inclusion in a potentially expanded AQMA N$^{o.}$ 3 (and this was only by +1.3µg/m^3).

This continued compliance means that, post-COVID, Luton has now had three consecutive years without exceedance as stipulated by the LAQM Helpdesk as a prerequisite to revocation. Having

achieved this milestone, as originally set out last year, Luton Council now proposes to:

- discontinue the planned expansion of AQMA N$^o.$ 3;

- proceed with the revocation of AQMA N$^{os.}$ 1 & 2;

- engage with Defra to determine whether a detailed assessment would be required before the revocation of AQMA No. 3; and

- discontinue development of an AQAP focused on reducing NO_2 levels within the AQMAs, instead bringing forward a more holistic borough-wide Air Quality Strategy.

3.2.2 Particulate Matter (PM$_{10}$)

Table A.6 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of $40\mu g/m^3$.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of $50\mu g/m^3$, not to be exceeded more than 35 times per year.

To date, no exceedance of the air quality objectives for PM_{10} has either been predicted by modelling or measured within Luton.

It should be noted that, unlike the instruments used at LN60 (HB007) and LA08 (HB006), and although approved for use in other European countries, the GRIMM ED180 deployed at LA001 to monitor PM_{10} is not approved by Defra for use in the UK (LAQM.TG22 para 7.176).

3.2.3 Particulate Matter (PM$_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years. This data is shown graphically in Figure A.11 in Appendix A.

The introduction of *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023* (https://tinyurl.com/2cvjtsed) has established two binding air quality targets for fine particulate matter (PM$_{2.5}$), each with associated interim targets set out in the *Environmental Improvement Plan 2023* (https://tinyurl.com/3pu4ktda):

- Regulation 4 - the annual mean concentration target: a target of $10\mu g/m^3$ to be met across England by 2040, with an interim target of $12\mu g/m^3$ to be met by January 2028; and

- Regulation 7 - the population exposure reduction target: a 35% reduction in population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

A summary of the progress made at a national level towards achieving both targets is available on the UK-Air website [http://tinyurl.com/24mzbv9n].

As shown in Figure A.11, the 2040 annual mean concentration target of 10µg/m^3 has not been exceeded at either of Luton's two operational PM$_{2.5}$ automatic monitoring sites since 2020.

It should be noted that, unlike the Palas Fidas 200 used at LN60 (HB007), and although approved for use in other European countries, the GRIMM ED180 deployed at LA001 to monitor PM$_{2.5}$ is not approved by Defra for use in the UK (LAQM.TG22 para 7.176).

3.2.4 Sulphur Dioxide (SO$_2$)

Table A.9 in Appendix A compares the ratified continuous monitored SO$_2$ concentrations for 2024 with the air quality objectives for SO$_2$.

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? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Inlet Height (m)
LN60 (HB007)	Dunstable Road East (CRAQM2)	Roadside	508708	221352	NO_2; PM_{10}; PM_4; $PM_{2.5}$; PM_1	Yes AQMA 3	Chemiluminescent (ThermoScientific Model 42i) Light-Scattering Monitor (Palas Fidas 200)	6.2	3.24	2.15
LA08 (HB006)	London Luton Airport	Other	511868	221144	PM_{10}	No	Unheated Beta Attenuation Mass Monitor (BAM)	N/A	N/A	1.7
LA001	London Luton Airport FutureLuToN	Other	512578	222204	NO_2; PM_{10}; $PM_{2.5}$; PM_1; SO_2; O_3; CO; Black Carbon; Benzene; Toluene; Ethylbenzene; m,p-Xylene; o-Xylene; Naphthalene	No	Chemiluminescent Light-Scattering Monitor (GRIMM EDM180)[3]	N/A	N/A	2.5
LUTR (UKA00605)	Luton A505 Roadside (AURN)	Roadside	505927	222644	NO_2; $PM_{2.5}$	No	Chemiluminescent Light-Scattering Monitor (Fidas)	17.1	1.5	1.7

Notes:

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

(2)   N/A if not applicable

(3)   Instrument not approved by Defra (LAQM.TG22 para 7.176)

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

a) Luton Council sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN07	Guildford Street/Bute Street	Roadside	509227	221455	NO_2	No	1.5	3.1	No	2.6
LN11	Upper George Street	Roadside	508910	221321	NO_2	No	20.0	2.7	No	2.9
LN15	Armitage Garden	Roadside	505557	222325	NO_2	Yes AQMAs 1 & 2	7.0	2.1	No	2.8
LN16	Belper Road	Roadside	505492	222607	NO_2	Yes AQMA 2	5.0	2.5	No	2.7
LN17	Wyndham Road	Roadside	505324	222812	NO_2	Yes AQMA 2	4.0	1.8	No	2.8
LN18	Copperfield	Roadside	505014	223538	NO_2	Yes AQMA 2	2.0	1.6	No	2.8
LN22	1 Mistletoe Hill	Urban Background	511341	221864	NO_2	No	0.0	9.3	No	2.5
LN23	Eaton Green Road 1	Roadside	511377	221814	NO_2	No	18.0	6.4	No	2.3
LN24	19 Barnston Close	Urban Background	511902	222144	NO_2	No	0.0	7.0	No	2.5
LN25	Eaton Green Road 2	Roadside	511893	222068	NO_2	No	17.0	1.9	No	2.9
LN26	8 Keeble Close	Urban Background	512109	222234	NO_2	No	0.0	11.5	No	2.7
LN27	Eaton Green Road 3	Roadside	512134	222198	NO_2	No	6.0	2.3	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN28	Caddington Road	Roadside	507798	219832	NO_2	No	15.0	1.7	No	2.6
LN52	Dunstable Rd/Cardigan St Residential	Roadside	508689	221379	NO_2	Yes AQMA 3	0.0	4.3	No	2.8
LN53	3rd Floor Bagshawe Court F.F.	Suburban	507717	219923	NO_2	No	0.0	23.0	No	9.8
LN54	M1 Corner Bagshawe Court F.F.	Suburban	507712	219915	NO_2	No	0.0	12.0	No	2.0
LN55	M1 Corner Wyatt Court FF	Suburban	507732	219886	NO_2	No	0.0	13.0	No	2.9
LN56	20 Wyatt Court FF	Suburban	507747	219894	NO_2	No	0.0	30.0	No	2.9
LN61, LN62, LN63	Dunstable Road East (CRAQM 2)	Roadside	508708	221352	NO_2	Yes AQMA 3	6.0	2.5	Yes (Reference)	2.0
LN64	Park Viaduct – Park Street	Roadside	509563	220952	NO_2	No	0.2	2.9	No	2.7
LN65	Park Viaduct – Queens Close	Roadside	509486	220865	NO_2	No	1.9	8.8	No	1.9
LN66	Park Viaduct	Roadside	509288	220925	NO_2	Yes AQMA 3	4.9	3.7	No	2.7
LN67	Castle Street	Roadside	509083	220709	NO_2	No	0.0	2.3	No	2.7
LN68	London Road	Roadside	508969	220487	NO_2	No	0.0	8.4	No	2.6
LN69	John Street	Roadside	509326	221357	NO_2	No	0.0	1.7	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN70	Crawley Green Road	Roadside	509813	221161	NO_2	No	0.0	6.0	No	2.6
LN71	Crescent Road	Urban Background	509549	221623	NO_2	No	0.0	10.3	No	2.4
LN72	Hucklesby Way	Urban Background	508937	221745	NO_2	No	0.0	8.7	No	2.5
LN73	Mill Street	Roadside	508959	221633	NO_2	No	0.0	3.9	No	2.9
LN74	Dunstable Road – Bury Park	Roadside	508165	222002	NO_2	No	0.0	4.8	No	2.5
LN75	New Bedford Road	Roadside	508745	222122	NO_2	No	0.0	5.2	No	2.5
LN76	Leagrave Road	Urban Background	507574	222948	NO_2	No	0.0	8.8	No	2.3
LN77	Marsh Road	Roadside	506496	224018	NO_2	No	0.0	4.8	No	2.5
LN78	Hibbert Street	Roadside	509109	220676	NO_2	No	0.2	1.4	No	2.4
LN80	Windsor Street	Roadside	509038	220719	NO_2	No	0.5	1.0	No	2.3
LN81	Bank Close	Suburban	505034	223729	NO_2	Yes AQMA 2	-	1.7	No	2.6
LN82	11 Withy Close	Suburban	504828	223999	NO_2	Yes AQMAs 1 & 2	0.0	8.5	No	2.5
LN83	b/h 9 Copperfields	Suburban	505116	223467	NO_2	Yes AQMA 2	13.0	26.0	No	2.5
LN84	97 Lime Avenue	Suburban	505230	223304	NO_2	Yes AQMA 2	8.5	1.8	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN85	26 Belper Road	Suburban	505481	222545	NO$_2$	Yes AQMA 2	0.0	17.0	No	2.0
LN86	Bradley Road (by M1 Bridge)	Roadside	505586	222235	NO$_2$	Yes AQMAs 1 & 2		2.3	No	2.6
LN87	Shelton Way Alleyway	Suburban	510170	223162	NO$_2$	No	0.0	13.0	No	2.7
LN88	510 Hitchin Rd	Roadside	510107	223087	NO$_2$	No	0.0	8.5	No	2.7
LN89	13 Saywell Road	Suburban	510515	222612	NO$_2$	No	4.5	17.0	No	2.7
LN90	304 Crawley Green Road	Roadside	510846	222209	NO$_2$	No	0.0	14.1	No	2.7
LN91	International House	Urban Background	511122	221721	NO$_2$	No	0.0	22.3	No	2.7
LN92	Harrowden Court	Suburban	511037	221657	NO$_2$	No	0.0	11.5	No	2.7
LN93	Someries Junior School	Suburban	511332	223069	NO$_2$	No	0.0	35.6	No	2.4
LN94	Ashcroft High School	Suburban	511327	222588	NO$_2$	No	0.0	78.4	No	2.6
LN95	Wigmore Primary School	Suburban	511996	222534	NO$_2$	No	0.0	44.3	No	2.4
LN96	Castle Street 3	Roadside	509059	220656	NO$_2$	No	0.0	2.5	No	2.4
LN98	Chaul End Road	Roadside	506411	222554	NO$_2$	No	-	2.2	Yes (Indicative)	-
LN100	Dunstable Road - Bury Park 2	Roadside	508380	221764	NO$_2$	Yes AQMA 3	6.5	3.2	Yes (Indicative)	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN102	Beech Hill Community Primary School	Roadside	508000	222078	NO_2	No	9.0	3.5	Yes (Indicative)	-
LN104	L&D Hospital, Lewsey Road	Roadside	504987	222805	NO_2	No	12.5	2.0	Yes (Indicative)	2.3
LN106	Peoples Park	Urban Background	509339	222128	NO_2	No	-	5.4	Yes (Indicative)	2.3
LN107	2 Chertsey Close	Urban Background	511573	221897	NO_2	No	0.0	18.8	No	2.2
LN108	Laxton Close	Suburban	512473	222295	NO_2	No	-	N/A	No	2.3
LN109	59 Malthouse Green	Suburban	512915	222308	NO_2	No	-	N/A	No	2.4
LN110	Hedley Rise	Suburban	512738	222385	NO_2	No	4.5	2.2	No	2.4
LN111	61 Lalleford Road	Roadside	511521	222203	NO_2	No	6.7	4.2	No	2.6
LN112	140 Prospect Way	Industrial	511254	221466	NO_2	No	0.0	N/A	No	2.3
LN113	786 Dunstable Road	Roadside	505005	222696	NO_2	No	0.0	10.0	No	2.3
LN114	20 Bradgers Hill Road	Roadside	509293	223741	NO_2	No	0.0	8.0	No	2.2
LN115	69 Windmill Road	Roadside	509995	220892	NO_2	No	0.0	7.2	No	2.1
LN116	85 Hitchin Road	Roadside	509655	221842	NO_2	No	0.0	1.3	No	2.3
LN117	258 Stockingstone Road	Roadside	509136	223217	NO_2	No	0.0	10.0	No	2.2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN118	Fulbourne Close	Roadside	506407	222732	NO_2	No	-	12.5	No	2.3
LN119	Challney High School for Boys	Urban Background	505588	222871	NO_2	No	0.0	41.6	No	2.5
LN120	20 High Street	Roadside	505723	223787	NO_2	No	0.0	4.1	No	2.4
LN121	4c Marsh Road	Roadside	506990	223425	NO_2	No	0.0	12.8	No	2.4
LN122	404 - 410 Selbourne Road	Roadside	506918	223295	NO_2	No	0.0	10.0	No	2.1
LN123	34 Bury Park Road	Roadside	508413	221918	NO_2	No	3.2	1.7	No	2.4
LN124	114 Bury Park Road	Roadside	508253	222053	NO_2	No	0.0	5.0	No	2.5
LN125	Bury Park Community Centre	Roadside	508321	221839	NO_2	Yes AQMA 3	0.0	10.0	No	2.7
LN126	30 Leagrave Road	Roadside	508140	222103	NO_2	No	0.0	6.4	No	2.5
LN127	33 Leagrave Road	Roadside	508095	222127	NO_2	No	0.0	4.4	No	2.4
LN128	McKenzie House	Roadside	508065	222182	NO_2	No	0.0	6.8	No	2.1
LN129	3 Selbourne Road	Roadside	507973	222289	NO_2	No	0.0	4.4	No	2.5
LN130	218 Leagrave Road	Roadside	507918	222560	NO_2	No	0.0	3.8	No	2.5
LN131	265 Dunstable Road	Roadside	507666	222143	NO_2	No	0.0	6.9	No	2.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN132	1A Maidenhall Road	Roadside	507228	222511	NO$_2$	No	0.7	2.2	No	2.6
LN133	80 Dunstable Road	Roadside	508381	221795	NO$_2$	Yes AQMA 3	0.0	7.0	No	2.4
LN134	172 Nadeem Plaza	Roadside	508156	222053	NO$_2$	No	0.0	4.9	No	2.5
LN135	Units 5-6, The Arcade	Roadside	508136	222040	NO$_2$	No	0.0	6.0	No	2.4
LN136	182 Dunstable Road	Roadside	508059	222080	NO$_2$	No	0.0	4.7	No	2.5
LN137	10 Selbourne Road	Roadside	507948	222337	NO$_2$	No	0.0	4.4	No	2.3
LN138	132 Leagrave Road	Roadside	508021	222248	NO$_2$	No	0.0	6.4	No	2.4
LN139	132 Dunstable Road	Roadside	508270	221939	NO$_2$	No	0.0	6.0	No	2.4
LN140	173 Dunstable Road	Roadside	508279	221903	NO$_2$	No	0.0	6.7	No	2.4
LN141	9 Moor Street	Roadside	508450	221790	NO$_2$	No	1.7	2.0	No	2.4
LN142	Crawley Road	Roadside	508751	221714	NO$_2$	Yes AQMA 3	0.0	2.2	No	-
LN143	L&D Hospital, Lewsey Road 2	Roadside	504993	222790	NO$_2$	No	10.5	2.5	No	-
LN145	24 Gilderdale	Suburban	504565	224563	NO$_2$	Yes AQMA 2	0.0	63.0	No	2.5
LN146	187 High Street	Suburban	505268	223404	NO$_2$	Yes AQMA 1 & 2	0.0	22.0	No	2.4

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LN147	677 Dunstable Road	Roadside	505350	222727	NO_2	Yes AQMA 2	0.0	12.0	No	2.4
LN148	67 Eldon Road	Suburban	505400	222478	NO_2	Yes AQMA 2	0.0	18.0	No	2.5
LN149	25 Derby Road	Suburban	505337	222547	NO_2	Yes AQMA 2	0.0	62.0	No	2.2
LN150	1 Cowper Street	Roadside	509008	220544	NO_2	No	0.0	2.0	No	2.4
LN151	St Mary's Care Home	Roadside	508623	221416	NO_2	Yes AQMA 3	0.0	8.6	No	2.0
LN152	66 Wellington Street	Roadside	508913	221128	NO_2	Yes AQMA 3	0.0	3.6	No	2.5
LN153	61 Castle Street	Roadside	509159	220841	NO_2	Yes AQMA 3	0.0	4.4	No	2.4
LN154	Dunstable Road - Ortho Hub	Suburban	505607	222693	NO_2	Yes AQMA 2	4.0	18.6	No	2.5

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.

b) London Luton Airport Operations Ltd sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LLA 1	Terminal front [canopy]	Other *[Car Park & Drop-Off Zones]*	511920	221334	NO$_2$	No	-	-	No	-
LLA 2	Airport Approach Road	Roadside *[Access Road]*	511586	220978	NO$_2$	No	-	-	No	-
LLA 3	Runway Threshold Western	Other *[Runway & Flightpath]*	511156	220437	NO$_2$	No	-	N/A	No	-
LLA 4	Runway Threshold Eastern	Other *[Runway & Flightpath]*	513634	221198	NO$_2$	No	-	N/A	No	-
LLA 5	Airside - Stand 5	Other *[Airfield]*	511703	221320	NO$_2$	No	-	N/A	No	-
LLA 6	President Way Jct	Roadside *[Access Road]*	511645	221679	NO$_2$	No	-	-	No	-
LLA 8	BAM Co-located	Other *[Airfield]*	511871	221142	NO$_2$	No	-	N/A	No	-
LLA 9	Stagenhoe Bottom Farm	Rural *[Runway & Flightpath]*	517637	222554	NO$_2$	No	-	N/A	No	-

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LLA 10	Grove Farm Slip End	Rural *[Runway & Flightpath]*	507623	217724	NO_2	No	-	N/A	No	-
LLA 11	Dane Street	Roadside *[Runway & Flightpath]*	513125	220664	NO_2	No	-	-	No	-
LLA 12	Airside - Stand 61	Roadside *[Airfield]*	511861	221579	NO_2	No	-	N/A	No	-
LLA 13	Eaton Green Road	Roadside *[Access Road]*	511899	222051	NO_2	No	-	-	No	-
LLA 15	Eaton Green Road - Lower	Kerbside *[Access Road]*	511168	221706	NO_2	No	-	-	No	-
LLA 16	Airside - South Stands	Other *[Airfield]*	512275	221115	NO_2	No	-	N/A	No	-
LLA 17	A1081 Southbound Carriage Way	Roadside *[Access Road]*	509489	219237	NO_2	No	-	-	No	-
LLA 18	A1081 New Airport Way	Roadside *[Access Road]*	510779	220279	NO_2	No	-	-	No	-

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LLA 19	Breachwood Green Community Hall	Rural *[Runway & Flightpath]*	515109	221933	NO$_2$	No	-	-	No	-

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.

c) Luton Rising sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
L1(i), L1(ii), L1(iii)	Dunstable Road East	Roadside	508710	221353	NO_2	Yes AQMA 3	6.0	2.4	Yes	2.0
L2(i), L2(ii)	Crawley Green Road	Roadside	511155	222445	NO_2	No	-	1.2	No	2.1
L3(i), L3(ii)	Wigmore Lane	Roadside	511780	222760	NO_2	No	-	1.0	No	2.0
L4(i), L4(ii)	Eaton Green Road / Darley Road	Rural	513223	222397	NO_2	No	-	1.5	No	2.0
L5(i), L5(ii)	Chapel Road, Breachwood	Rural	515047	221904	NO_2	No	-	2.8	No	2.0
L6(i), L6(ii)	Winch Hill	Rural	513773	221752	NO_2	No	-	1.2	No	1.9
L7(i), L7(ii)	Vauxhall Way	Roadside	511057	221386	NO_2	No	-	2.1	No	2.0
L8(i), L8(ii)	Kimpton Road	Roadside	510543	220706	NO_2	No	-	2.1	No	2.0
L9(i), L9(ii)	Luton Parkway Station Exit (North)	Other	510553	220682	NO_2	No	-	N/A	No	1.6
L10(i), L10(ii)	Luton Road, Caddington	Roadside	506541	219854	NO_2	No	-	1.0	No	2.1
L11(i), L11(ii), L11(iii)	Wigmore Valley Park	Rural	512569	222207	NO_2	No	-	N/A	Yes	1.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
L12(i), L12(ii)	Chiltern Academy	Roadside	510256	220599	NO$_2$	No	-	4.6	No	1.9
L13(i), L13(ii)	Surrey Street Primary School	Suburban	509744	220103	NO$_2$	No	-	2.5	No	1.8
L14(i), L14(ii)	Tennyson Road Primary School South Site	Suburban	509195	220264	NO$_2$	No	-	2.1	No	1.8
L15(i), L15(ii)	Caddington Village School	Rural	506794	219467	NO$_2$	No	-	1.6	No	1.8
L16(i), L16(ii)	Breachwood Green JMI School	Rural	515284	222038	NO$_2$	No	-	2.1	No	1.8

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: Automatic Monitoring (μg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN60 (HB007)	508708	221352	Roadside	99.7	99.7	28.3	30.2	32.5	27.8	25.8
LA001	512578	222204	Other	93.8	93.8	11.9	11.3	14.1	12.6	11.3
LUTR (UKA00605)	505927	222644	Roadside	98.9	98.9	30.7	31.4	30.0	27.5	25.0

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

Notes:

The annual mean concentrations are presented as μg/m^3.

Exceedances of the NO$_2$ annual mean objective of 40μg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

[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%).

Table A.4 - Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

a) Luton Council sites

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN07	509227	221455	Roadside	100	100	20.3	20.9	21.5	18.5	18.4
LN11	508910	221321	Roadside	100	100	27.3	30.6	28.8	26.4	24.8
LN15	505557	222325	Roadside	83.0	83.0	20.2	20.1	20.3	19.4	15.9
LN16	505492	222607	Roadside	100	100	25.0	23.9	23.8	21.3	18.9
LN17	505324	222812	Roadside	92.5	92.5	25.5	24.1	25.7	22.7	19.9
LN18	505014	223538	Roadside	100	100	16.9	18.4	17.2	15.3	13.6
LN22	511341	221864	Urban Background	92.5	92.5	16.0	16.1	17.9	14.7	13.1
LN23	511377	221814	Roadside	100	100	24.9	24.2	27.6	25.7	23.7
LN24	511902	222144	Urban Background	100	100	16.2	16.8	17.1	15.8	14.5
LN25	511893	222068	Roadside	75.0	75.0	20.9	20.0	22.7	21.6	20.9
LN26	512109	222234	Urban Background	100	100	13.8	13.7	15.3	14.2	13.2
LN27	512134	222198	Roadside	90.6	90.6	20.1	20.4	23.2	20.1	19.5
LN28	507798	219832	Roadside	100	100	29.6	29.3	28.5	26.4	24.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN52	508689	221379	Roadside	100	100	33.0	35.7	32.9	30.4	29.7
LN53	507717	219923	Suburban	92.5	92.5	21.6	20.5	21.8	18.5	16.1
LN54	507712	219915	Suburban	75.0	75.0	21.4	23.1	22.7	20.8	13.8
LN55	507732	219886	Suburban	90.6	90.6	22.5	21.0	21.7	18.7	15.6
LN56	507747	219894	Suburban	100	100	21.8	20.1	21.8	17.8	15.3
LN61, LN62, LN63	508708	221352	Roadside	100	100	30.8	32.2	32.2	29.3	26.8
LN64	509563	220952	Roadside	64.2	64.2	21.9	22.2	21.8	20.5	21.7
LN65	509486	220865	Roadside	100	100	17.5	19.6	19.4	18.1	16.4
LN66	509288	220925	Roadside	100	100	27.6	28.6	28.8	25.4	25.1
LN67	509083	220709	Roadside	100	100	32.7	32.9	33.2	30.3	29.2
LN68	508969	220487	Roadside	100	100	24.0	26.0	25.4	23.1	23.6
LN69	509326	221357	Roadside	100	100	22.5	24.7	25.5	22.9	22.3
LN70	509813	221161	Roadside	92.5	92.5	24.1	26.8	25.8	22.7	22.6
LN71	509549	221623	Urban Background	100	100	23.5	25.1	24.9	21.9	21.5
LN72	508937	221745	Urban Background	66.0	66.0	23.5	24.0	24.4	22.0	22.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN73	508959	221633	Roadside	92.5	92.5	28.9	30.6	31.5	28.3	27.2
LN74	508165	222002	Roadside	92.5	92.5	29.5	29.7	29.7	27.0	27.1
LN75	508745	222122	Roadside	83.0	83.0	22.0	30.8	32.3	29.1	28.8
LN76	507574	222948	Urban Background	90.6	90.6	23.8	26.4	26.0	23.8	22.2
LN77	506496	224018	Roadside	100	100	27.2	26.7	27.1	25.6	25.3
LN78	509109	220676	Roadside	83.0	83.0	23.3	23.7	22.8	20.5	18.6
LN80	509038	220719	Roadside	92.5	92.5	24.3	25.8	25.7	22.4	21.9
LN81	505034	223729	Suburban	92.5	92.5	21.8	22.7	23.2	21.1	18.2
LN82	504828	223999	Suburban	90.6	90.6	20.9	19.7	19.9	18.5	16.5
LN83	505116	223467	Suburban	83.0	83.0	16.3	19.5	18.0	17.1	14.6
LN84	505230	223304	Suburban	100	100	16.8	19.4	19.1	18.9	14.7
LN85	505481	222545	Suburban	100	100	22.8	21.9	21.7	20.3	16.6
LN86	505586	222235	Roadside	100	100	28.4	27.4	28.2	24.5	22.1
LN87	510170	223162	Suburban	100	100	16.3	17.9	18.2	16.6	15.3
LN88	510107	223087	Roadside	100	100	19.9	21.2	21.8	19.6	19.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN89	510515	222612	Suburban	100	100	16.6	18.5	19.2	17.1	16.2
LN90	510846	222209	Roadside	92.5	92.5	20.5	22.0	22.8	19.8	18.1
LN91	511122	221721	Urban Background	100	100	17.5	18.5	20.4	18.3	17.1
LN92	511037	221657	Suburban	100	100	16.1	17.4	19.0	16.5	14.9
LN93	511332	223069	Suburban	100	100	11.1	12.1	13.8	11.0	10.1
LN94	511327	222588	Suburban	100	100	12.8	12.6	14.2	12.9	12.0
LN95	511996	222534	Suburban	100	100	13.2	13.2	15.3	14.1	12.6
LN96	509059	220656	Roadside	100	100	-	35.1	37.3	34.5	31.2
LN98	506411	222554	Roadside	92.5	92.5	-	-	28.1	25.2	22.5
LN100	508380	221764	Roadside	92.5	92.5	-	-	35.5	32.9	31.4
LN102	508000	222078	Roadside	100	100	-	-	24.8	23.1	21.4
LN104	504987	222805	Roadside	48.1	25.0	-	-	32.8	28.7	24.0
LN106	509339	222128	Urban Background	100	100	-	-	17.8	16.4	15.4
LN107	511573	221897	Urban Background	100	100	-	-	19.5	17.3	16.6
LN108	512473	222295	Suburban	92.5	92.5	-	-	16.8	15.2	13.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN109	512915	222308	Suburban	100	100	-	-	12.7	11.8	10.9
LN110	512738	222385	Suburban	90.6	90.6	-	-	14.8	15.4	13.0
LN111	511521	222203	Roadside	100	100	-	-	16.9	14.7	14.0
LN112	511254	221466	Industrial	84.9	84.9	-	-	15.9	14.2	12.2
LN113	505005	222696	Roadside	92.5	92.5	-	-	23.9	22.3	20.2
LN114	509293	223741	Roadside	90.6	90.6	-	-	12.9	11.2	10.6
LN115	509995	220892	Roadside	100	100	-	-	23.8	21.4	19.8
LN116	509655	221842	Roadside	92.5	92.5	-	-	35.6	35.2	34.8
LN117	509136	223217	Roadside	90.6	90.6	-	-	27.8	25.7	26.1
LN118	506407	222732	Roadside	90.6	90.6	-	-	21.7	19.3	18.1
LN119	505588	222871	Urban Background	92.5	92.5	-	-	18.6	17.1	14.8
LN120	505723	223787	Roadside	100	100	-	-	23.8	22.0	20.1
LN121	506990	223425	Roadside	100	100	-	-	22.5	19.9	18.4
LN122	506918	223295	Roadside	100	100	-	-	23.2	20.6	19.1
LN123	508413	221918	Roadside	66.0	66.0	-	-	29.7	26.8	23.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN124	508253	222053	Roadside	90.6	90.6	-	-	23.3	21.2	19.9
LN125	508321	221839	Roadside	100	100	-	-	29.1	28.8	25.4
LN126	508140	222103	Roadside	90.6	90.6	-	-	28.0	26.1	24.9
LN127	508095	222127	Roadside	92.5	92.5	-	-	25.4	23.7	22.4
LN128	508065	222182	Roadside	100	100	-	-	29.3	25.6	25.2
LN129	507973	222289	Roadside	100	100	-	-	27.6	25.0	24.9
LN130	507918	222560	Roadside	100	100	-	-	25.5	23.0	21.4
LN131	507666	222143	Roadside	100	100	-	-	24.4	21.5	19.1
LN132	507228	222511	Roadside	100	100	-	-	29.0	29.2	28.0
LN133	508381	221795	Roadside	100.0	100.0	-	-	29.3	25.8	25.3
LN134	508156	222053	Roadside	90.6	90.6	-	-	31.4	31.1	29.1
LN135	508136	222040	Roadside	100	100	-	-	28.8	26.7	25.6
LN136	508059	222080	Roadside	100	100	-	-	26.4	23.8	23.5
LN137	507948	222337	Roadside	100	100	-	-	25.5	23.5	21.9
LN138	508021	222248	Roadside	66.0	66.0	-	-	28.8	26.9	27.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN139	508270	221939	Roadside	83.0	83.0	-	-	31.6	29.6	29.6
LN140	508279	221903	Roadside	83.0	83.0	-	-	29.9	28.7	28.0
LN141	508450	221790	Roadside	75.0	75.0	-	-	23.8	21.9	19.9
LN142	508751	221714	Roadside	100	100	-	-	29.4	27.7	26.8
LN143	504993	222790	Roadside	85.2	48.1	-	-	-	26.8	28.3
LN145	504565	224563	Suburban	88.0	70.9	-	-	-	-	13.6
LN146	505268	223404	Suburban	100	80.6	-	-	-	-	17.5
LN147	505350	222727	Roadside	100	80.6	-	-	-	-	18.5
LN148	505400	222478	Suburban	100	80.6	-	-	-	-	13.4
LN149	505337	222547	Suburban	100	80.6	-	-	-	-	12.0
LN150	509008	220544	Roadside	100	80.9	-	-	-	-	30.3
LN151	508623	221416	Roadside	64.1	47.2	-	-	-	-	18.8
LN152	508913	221128	Roadside	86.9	64.4	-	-	-	-	27.9
LN153	509159	220841	Roadside	76.7	56.9	-	-	-	-	26.4
LN154	505607	222693	Suburban	100	73.6	-	-	-	-	24.8

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **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 correction.**

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **<u>bold and underlined</u>**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

[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%).

b) London Luton Airport Operations Ltd sites

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LLA 1	511920	221334	Other [Car Park & Drop-Off Zones]	66.0	66.0	20.6	19.7	28.1	31.2	19.7
LLA 2	511586	220978	Roadside [Access Road]	83.0	83.0	-	18.6	25.3	25.6	22.4
LLA 3	511156	220437	Other [Runway & Flightpath]	90.6	90.6	-	14.6	15.8	14.2	11.2
LLA 4	513634	221198	Other [Runway & Flightpath]	92.5	92.5	-	10.5	12	10.8	10.2
LLA 5	511703	221320	Other [Airfield]	75.5	75.5	-	21.9	32.1	33.5	29.0
LLA 6	511645	221679	Roadside [Access Road]	100	100	-	20.2	24.9	24.2	21.0
LLA 8	511871	221142	Other [Airfield]	84.9	84.9	-	20.2	25.1	23.8	17.6
LLA 9	517637	222554	Rural [Runway & Flightpath]	58.5	58.5	-	7.3	7.1	6.2	7.3
LLA 10	507623	217724	Rural [Runway & Flightpath]	92.5	92.5	-	8	8.6	6.9	7.0
LLA 11	513125	220664	Roadside [Runway & Flightpath]	92.5	92.5	-	7.3	11.4	10.1	11.6
LLA 12	511861	221579	Roadside [Airfield]	100	100	-	21.9	33	34.5	30.2
LLA 13	511899	222051	Roadside [Access Road]	90.6	90.6	-	15.5	18.5	18.3	17.4
LLA 15	511168	221706	Kerbside [Access Road]	83.0	83.0	20.9	22.7	25.6	24.3	20.6
LLA 16	512275	221115	Other [Airfield]	100	100	19.7	18.1	23.1	26.2	20.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LLA 17	509489	219237	Roadside [Access Road]	100	100	20.2	21.5	25.4	23.2	18.7
LLA 18	510779	220279	Roadside [Access Road]	100	100	20.2	20.8	24.4	21.9	19.3
LLA 19	515109	221933	Rural [Runway & Flightpath]	75.5	75.5	9.2	8.8	9.9	8.2	7.5

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **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 correction.**

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

[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%).

c) Luton Rising sites

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
L1(i), L1(ii), L1(iii)	508710	221353	Roadside	100	100	30.5	32.2	34.3	29.2	28.3
L2(i), L2(ii)	511155	222445	Roadside	90.6	90.6	22.9	23.4	23.0	20.6	19.9
L3(i), L3(ii)	511780	222760	Roadside	100	100	20.9	21.7	22.6	19.2	18.6
L4(i), L4(ii)	513223	222397	Rural	100	100	13.9	12.5	14.1	12.6	12.2
L5(i), L5(ii)	515047	221904	Rural	100	100	10.3	9.1	9.9	8.1	7.9
L6(i), L6(ii)	513773	221752	Rural	58.5	58.5	11.6	10.2	11.5	10.6	10.7
L7(i), L7(ii)	511057	221386	Roadside	92.5	92.5	**48.0**	**49.7**	**51.4**	**47.6**	**45.4**
L8(i), L8(ii)	510543	220706	Roadside	92.5	92.5	23.5	22.3	22.1	20.3	18.8
L9(i), L9(ii)	510553	220682	Other	100	100	-	-	20.6	17.0	15.8
L10(i), L10(ii)	506541	219854	Roadside	100	100	17.7	19.1	19.9	18.2	17.3
L11(i), L11(ii), L11(iii)	512569	222207	Rural	100	100	13.0	11.5	13.1	12.2	11.0
L12(i), L12(ii)	510256	220599	Roadside	100	100	-	-	-	23.5	21.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
L13(i), L13(ii)	509744	220103	Suburban	100	100	-	-	-	11.7	11.9
L14(i), L14(ii)	509195	220264	Suburban	100	100	-	-	-	13.9	13.6
L15(i), L15(ii)	506794	219467	Rural	75.0	75.0	-	-	-	10.9	9.1
L16(i), L16(ii)	515284	222038	Rural	90.6	90.6	-	-	-	10.2	8.9

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **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 correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

[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%).

Figure A.1 – Trends in Annual Mean NO$_2$ Concentration

a) Luton Council sites

a. Within Luton AQMA N$^{os.}$ 1 & 2 (Located in Challney, Leagrave & Poets Wards)
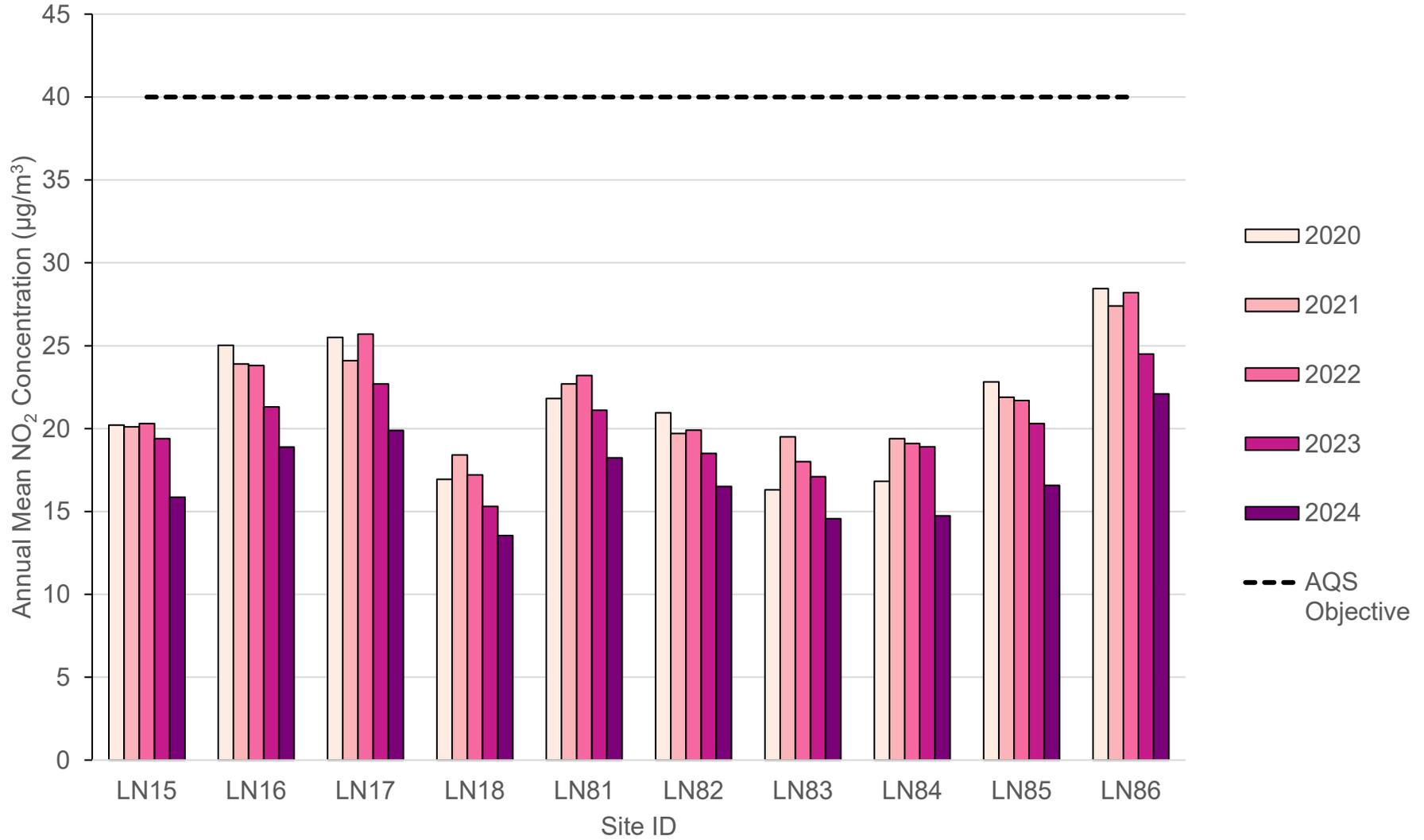
b. Newly established sites within Luton AQMA N$^{os.}$ 1 & 2 (Located in Challney, Leagrave & Poets Wards – deployed 2024)
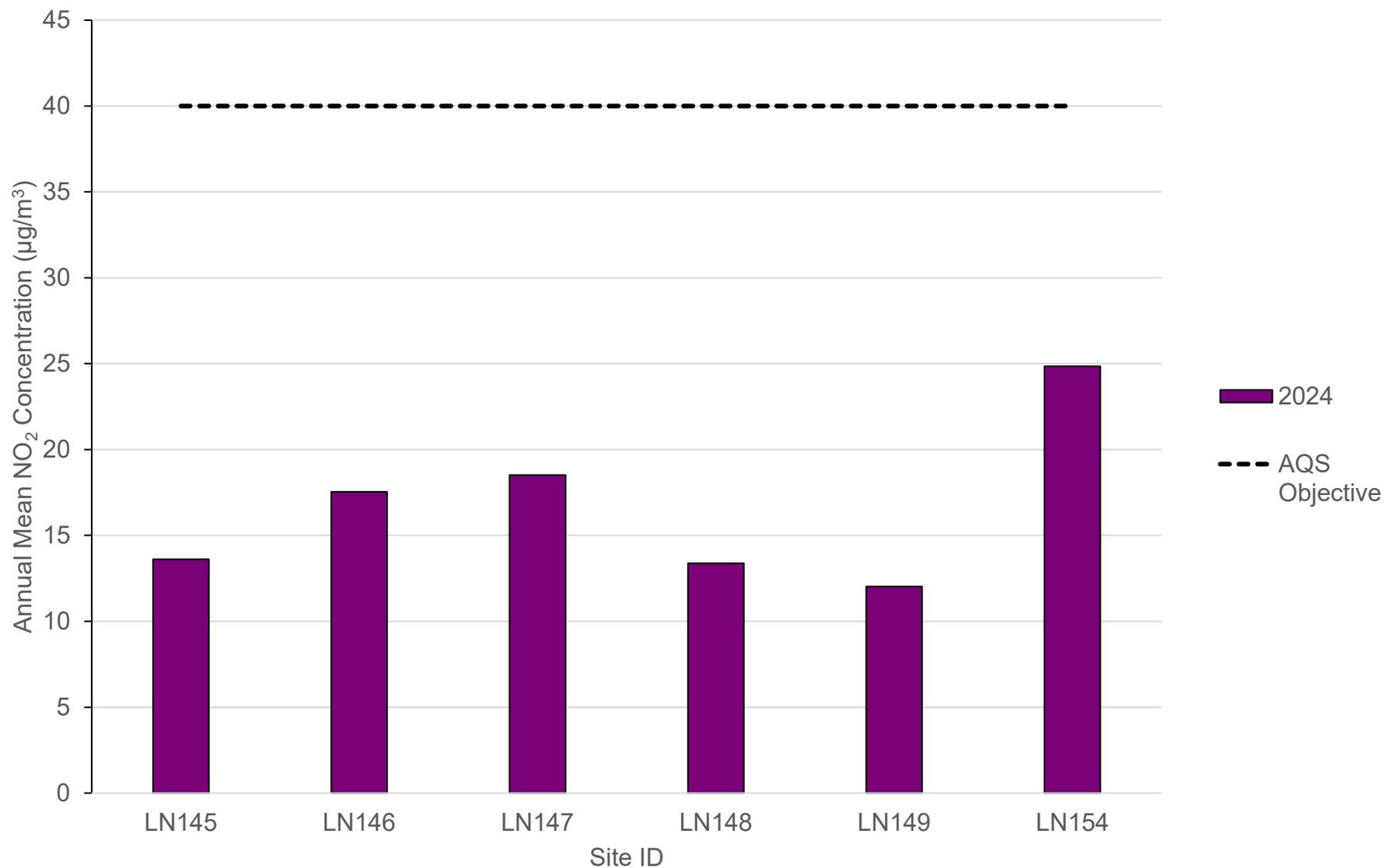
c. Within Luton AQMA No. 3 (Located in Beech Hill, Central & Dallow Wards)
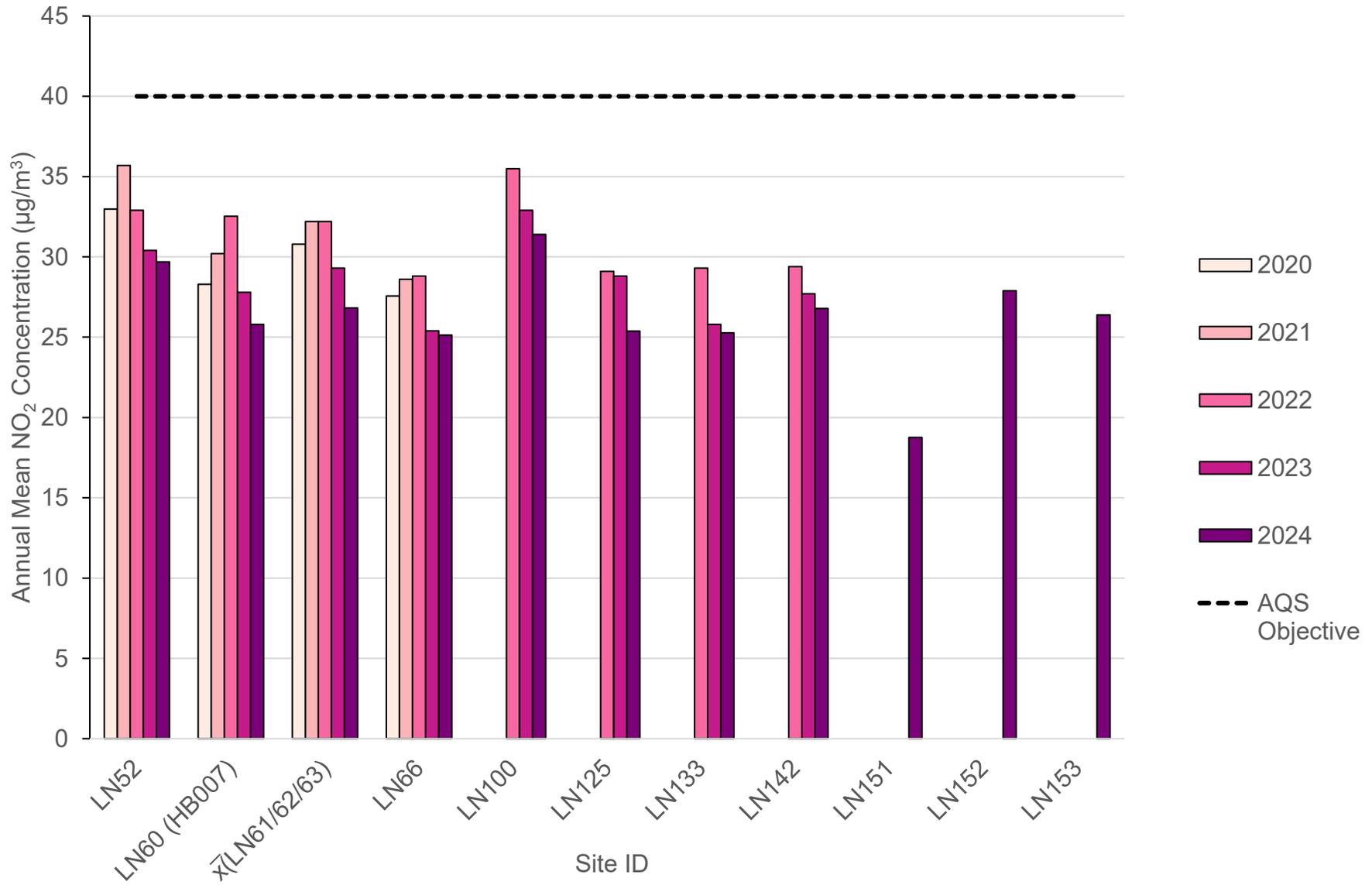
d. Non-AQMA locations in and around Bury Park (Located in Beech Hill, Biscot & Central Wards – deployed 2022)
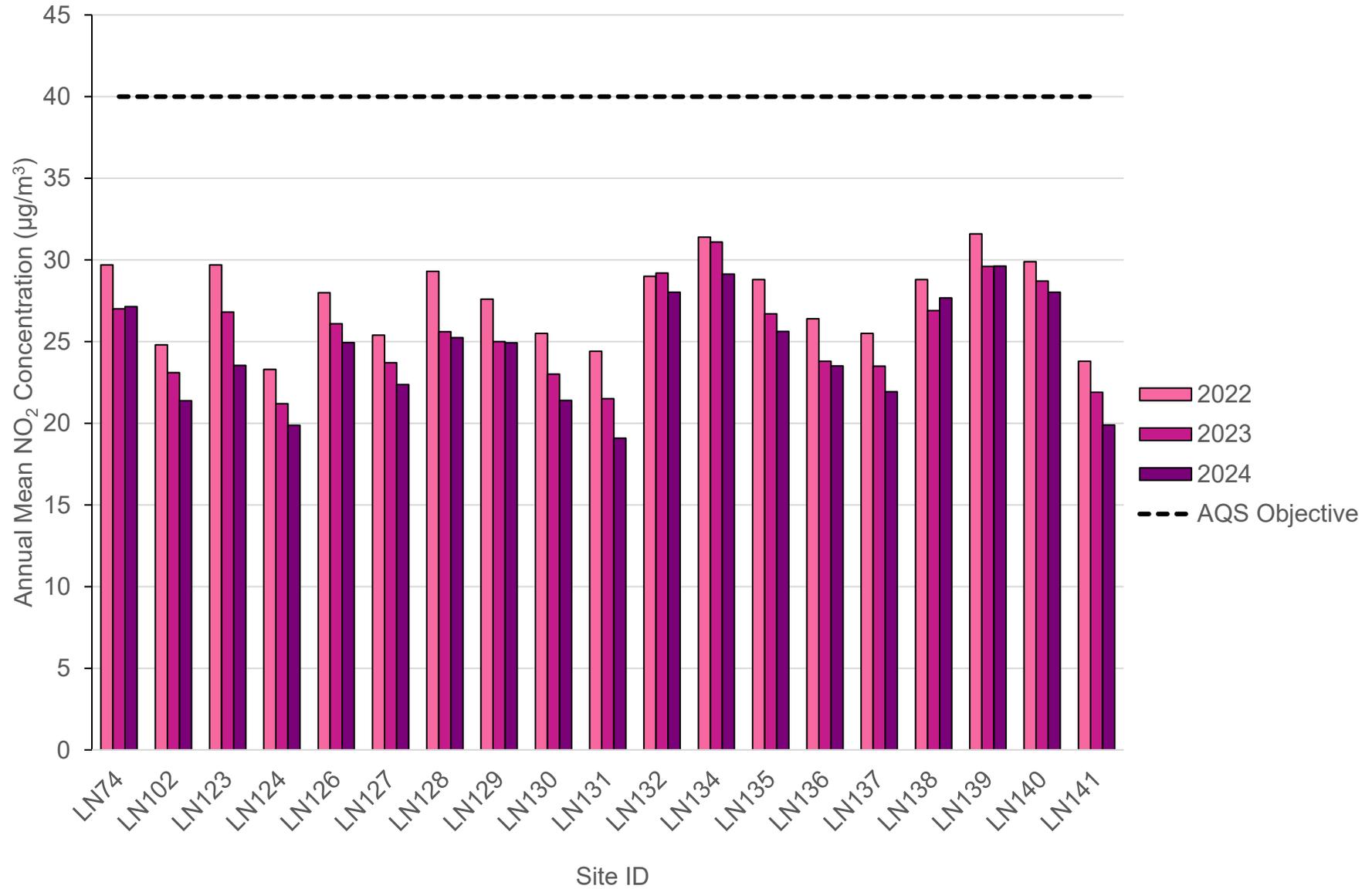
e. Non-AQMA locations in Northwest Luton (Located in Challney, Leagrave, Northwell, Poets & Saints Wards)

f. Non-AQMA locations in Central / North Luton - Part 1 (Located in Central & South Wards)
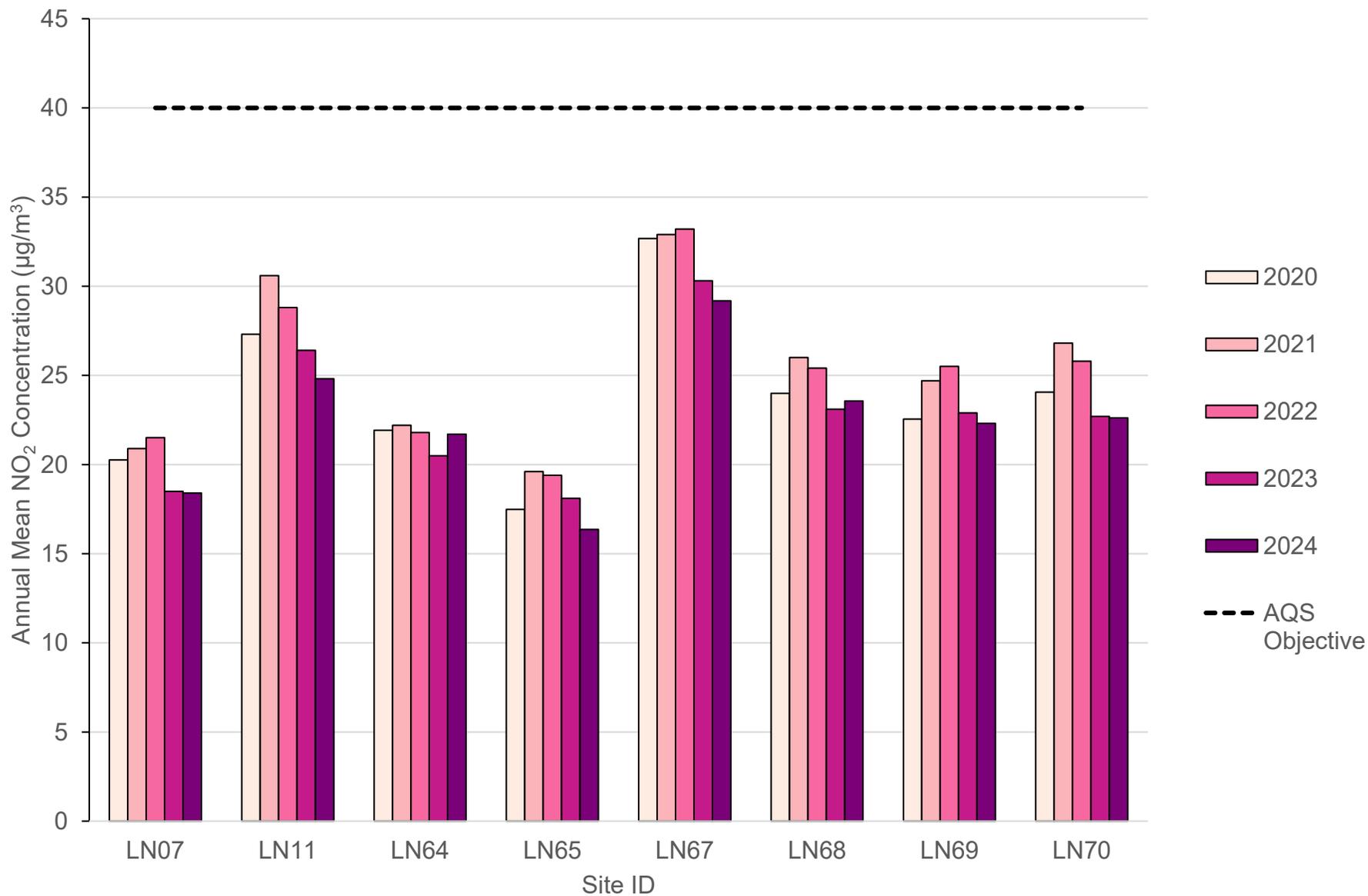
g. Non-AQMA locations in Central / North Luton - Part 2 (Located in Central, High Town & South Wards)
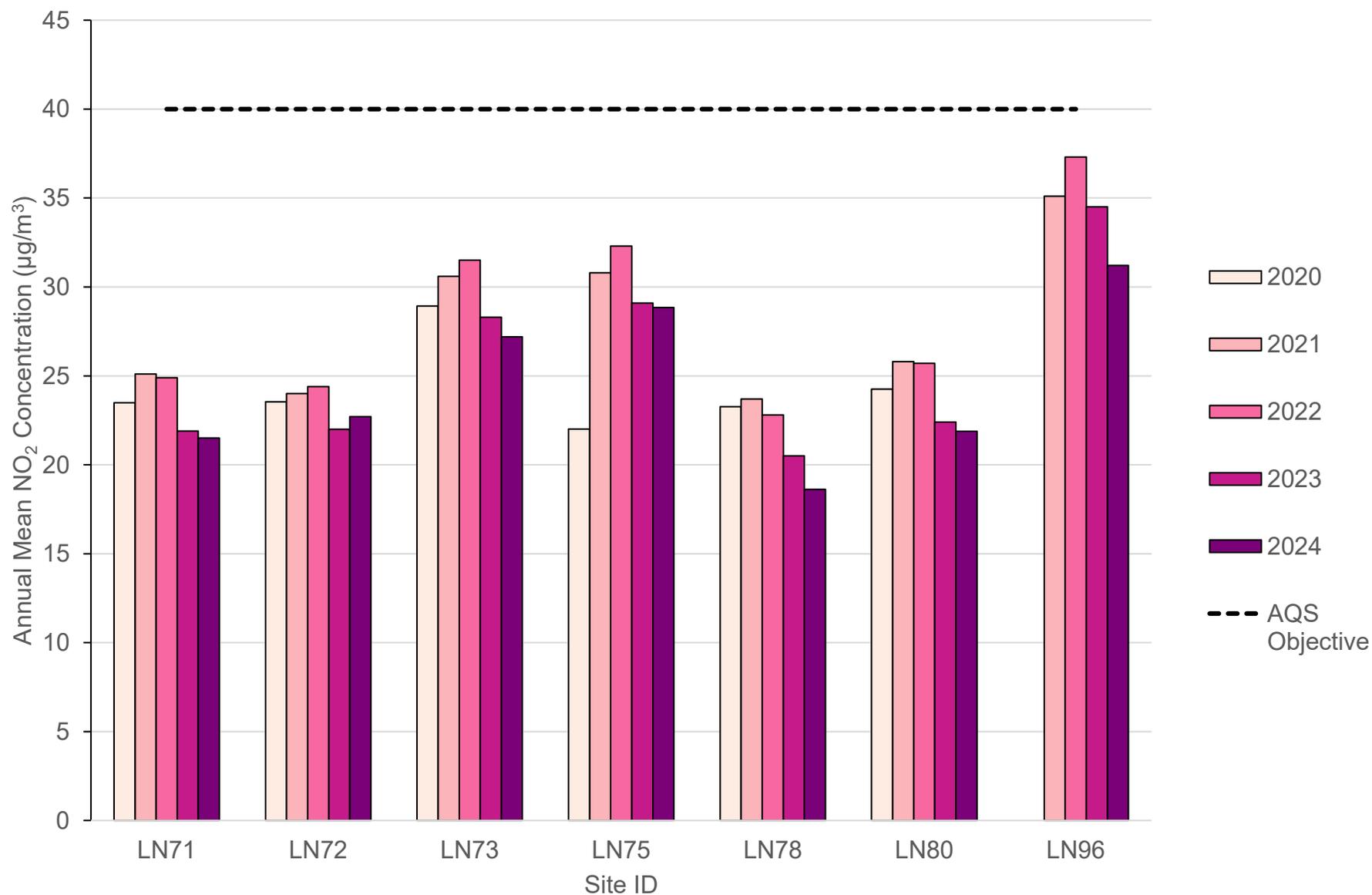
h. Non-AQMA location in Central / North Luton (Located in Barnfield, High Town & South Wards - deployed 2022)
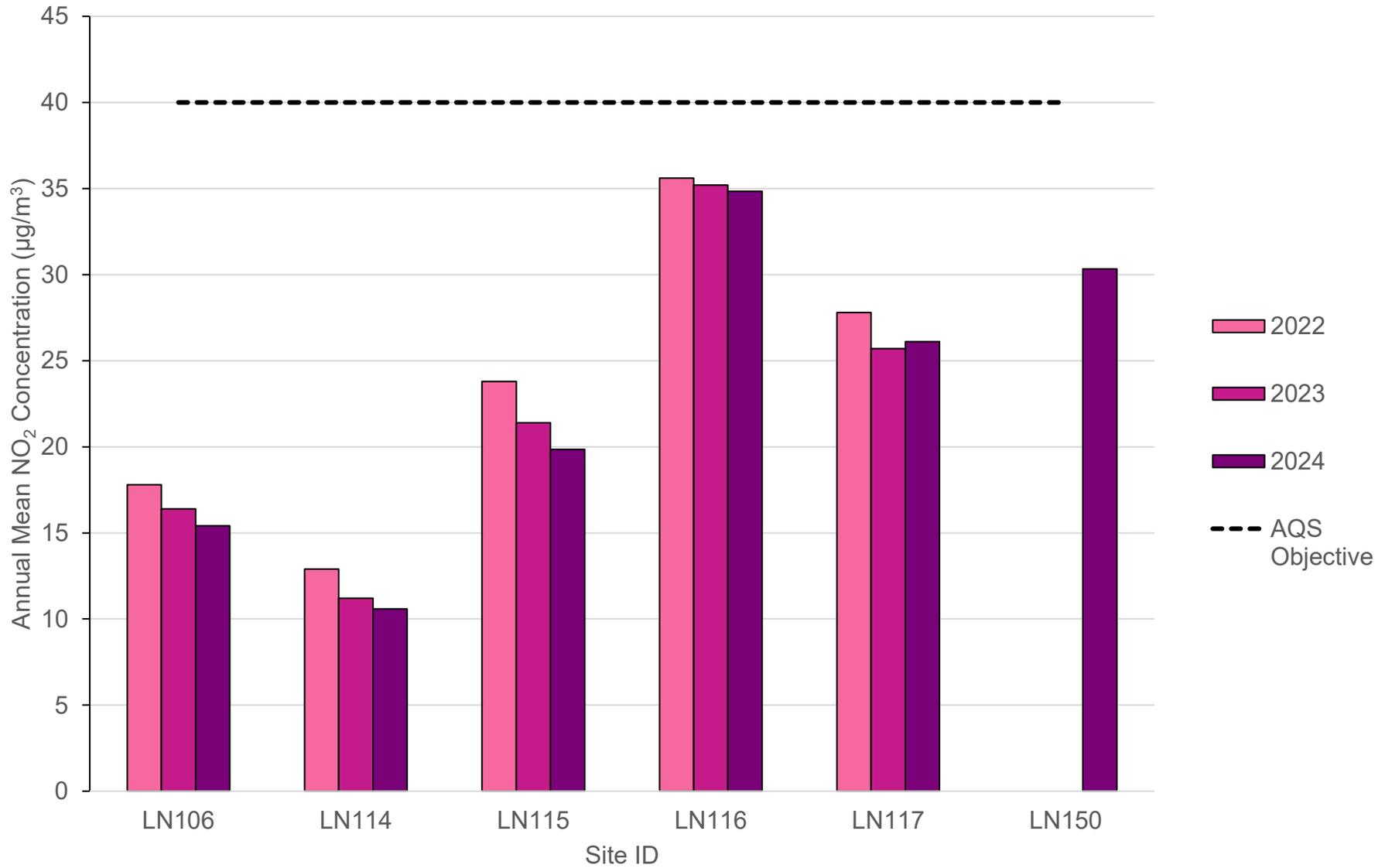
i. Non-AQMA locations in East Luton - Part 1 (Located in Vauxhall & Wigmore Wards)
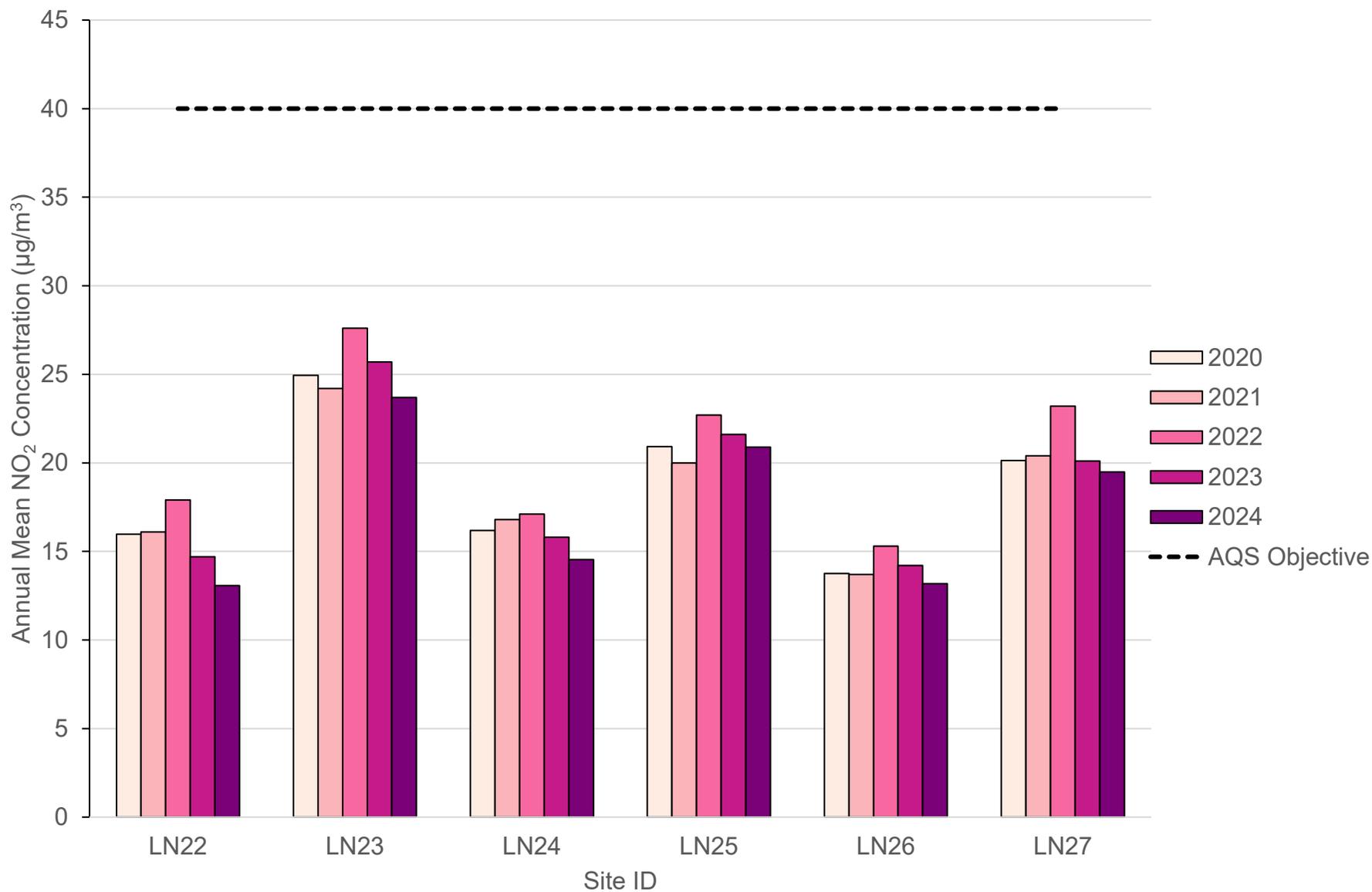
j. Non-AQMA locations in East Luton - Part 2 (Located in Round Green, Stopsley, Vauxhall & Wigmore Wards)
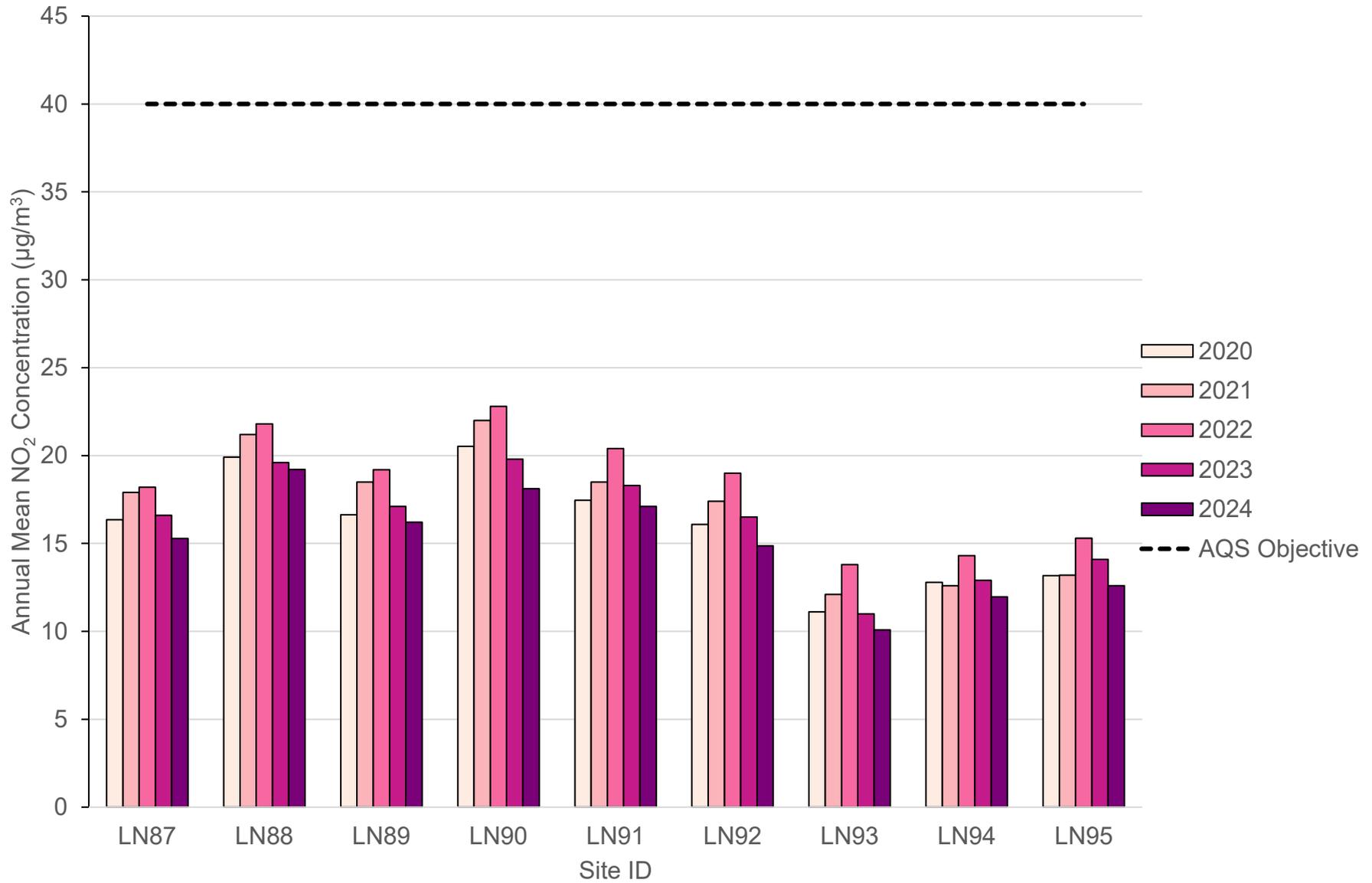
k. Non-AQMA locations in East Luton (Located in Vauxhall & Wigmore Wards – deployed 2022)
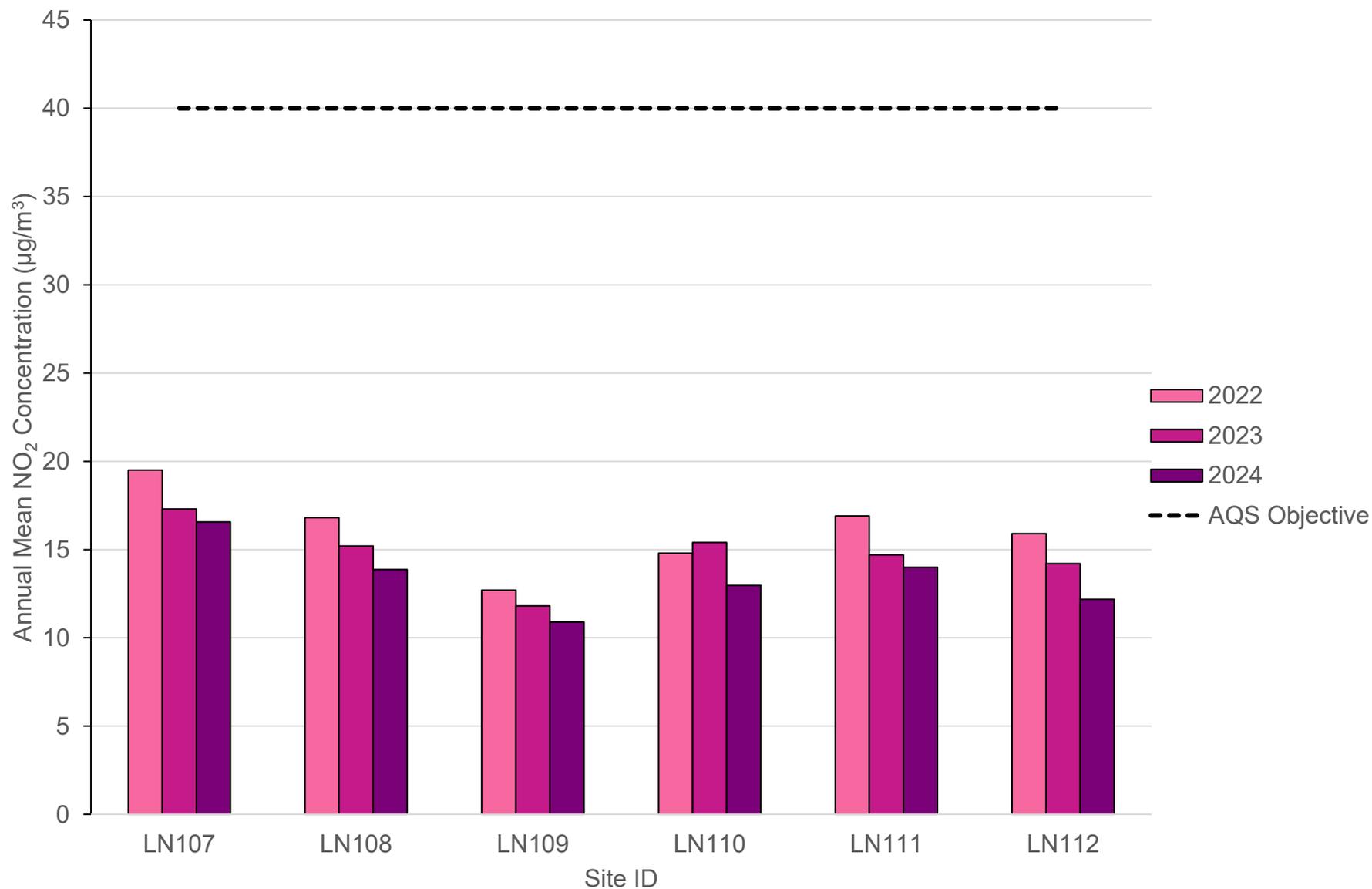
I. Non-AQMA locations in West Luton (Located in Farley Ward)
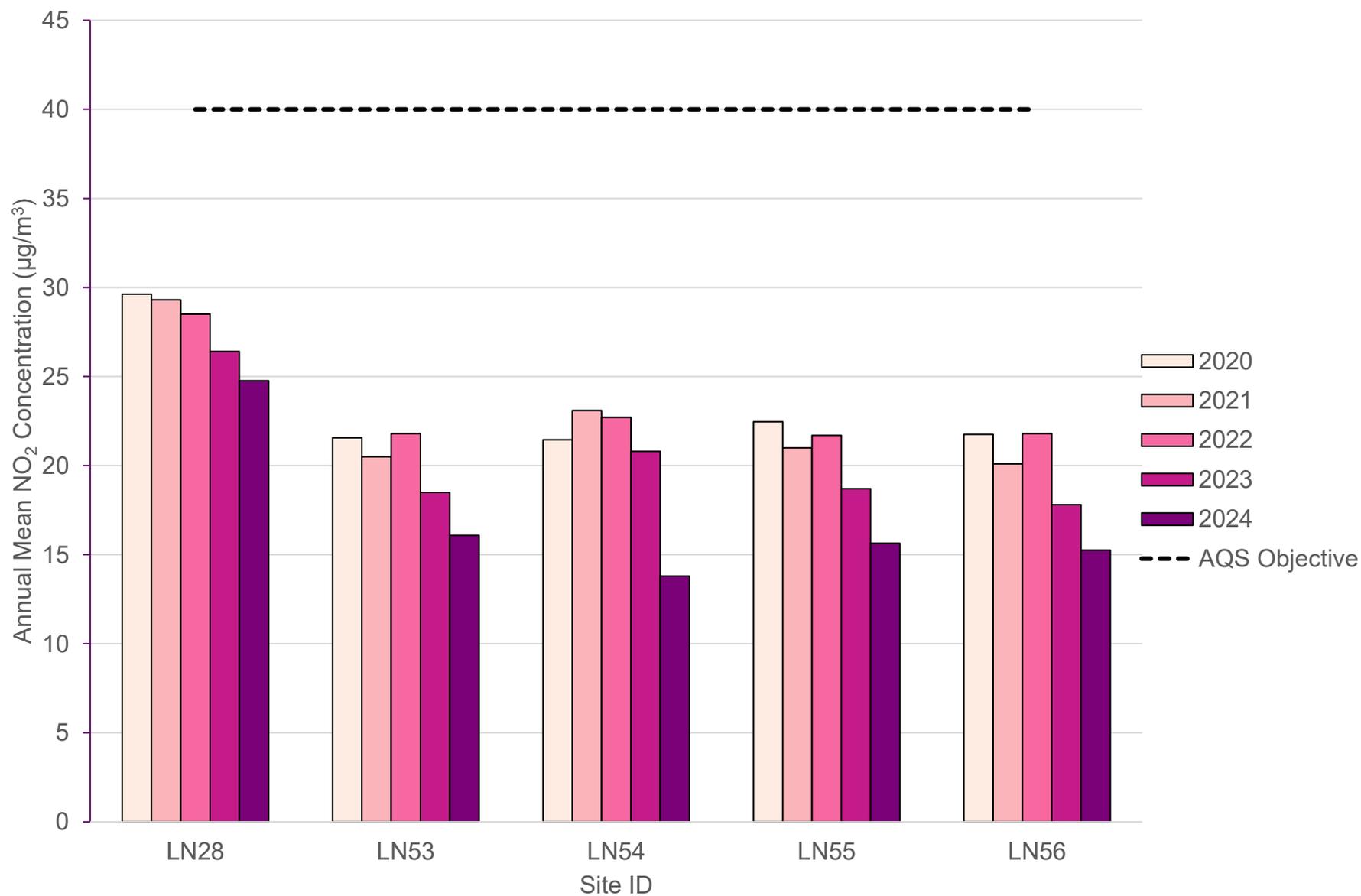
b) LLAOL sites

a. LLAOL Site Group: Access Road
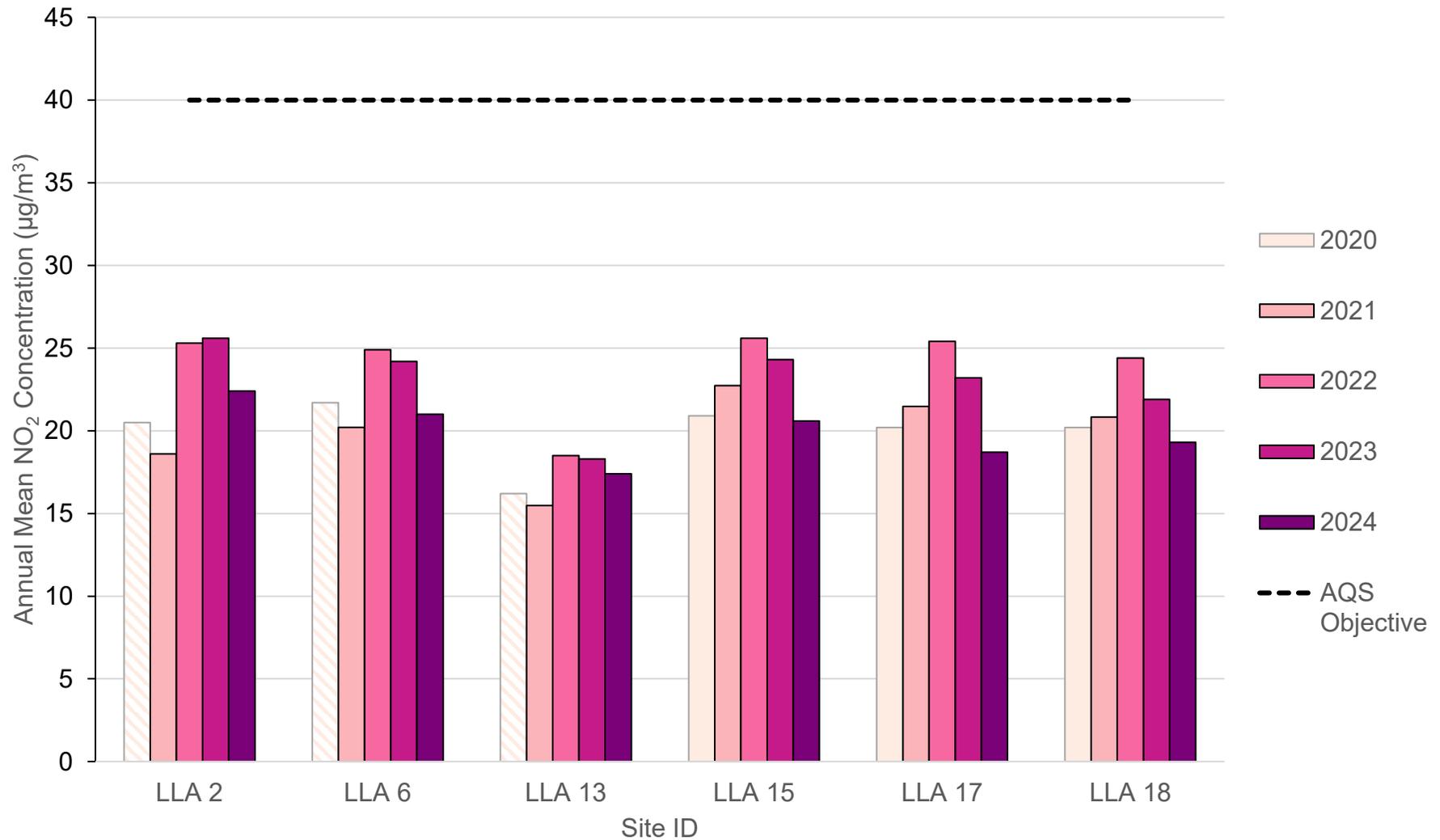
Note: Hatching indicates data from a previous location(s) where tube has been relocated within the last 5 years.

b. LLAOL Site Group: Airfield
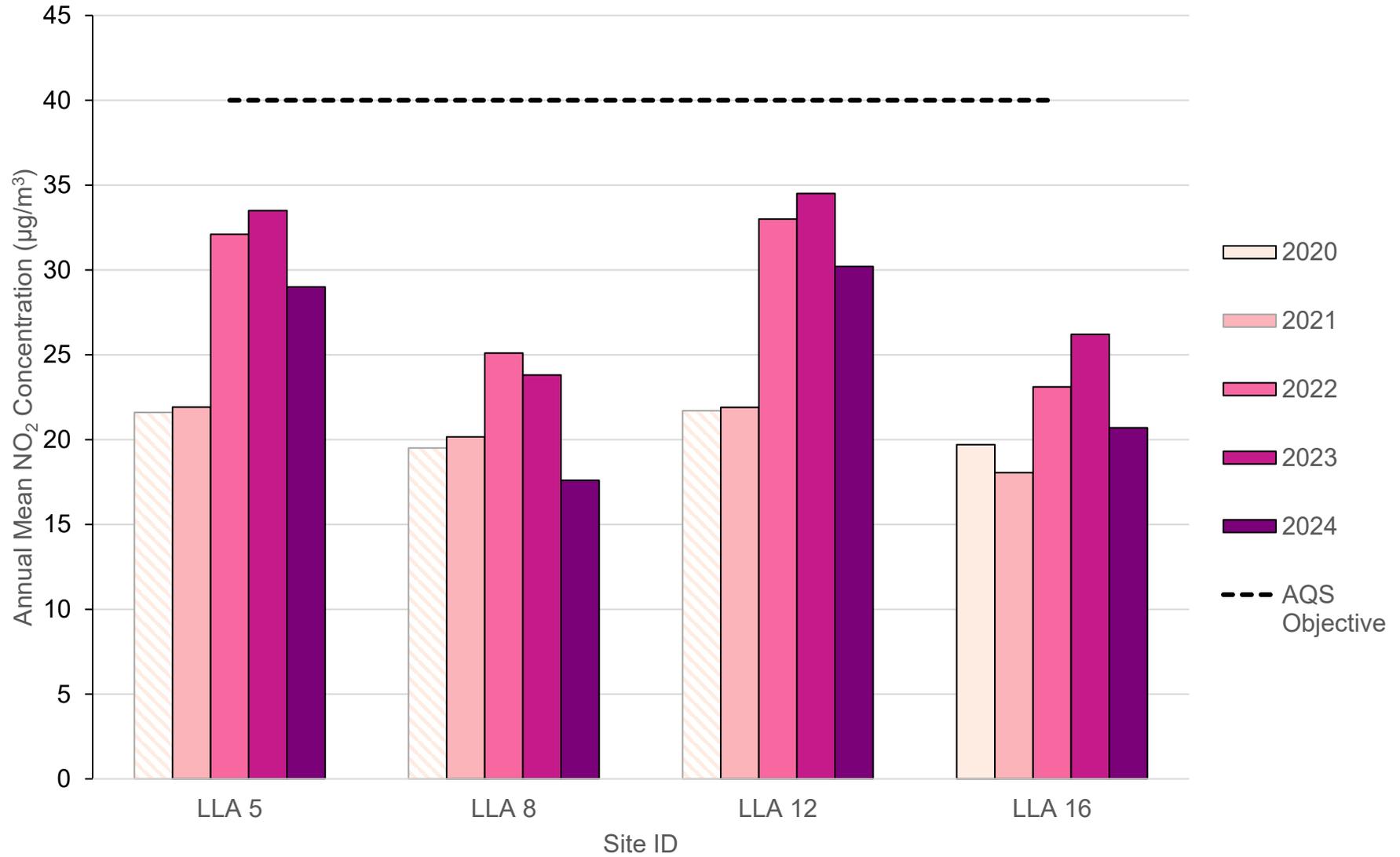
Note: Hatching indicates data from a previous location(s) where tube has been relocated within the last 5 years.

c. LLAOL Site Group: Car Park & Drop-Off
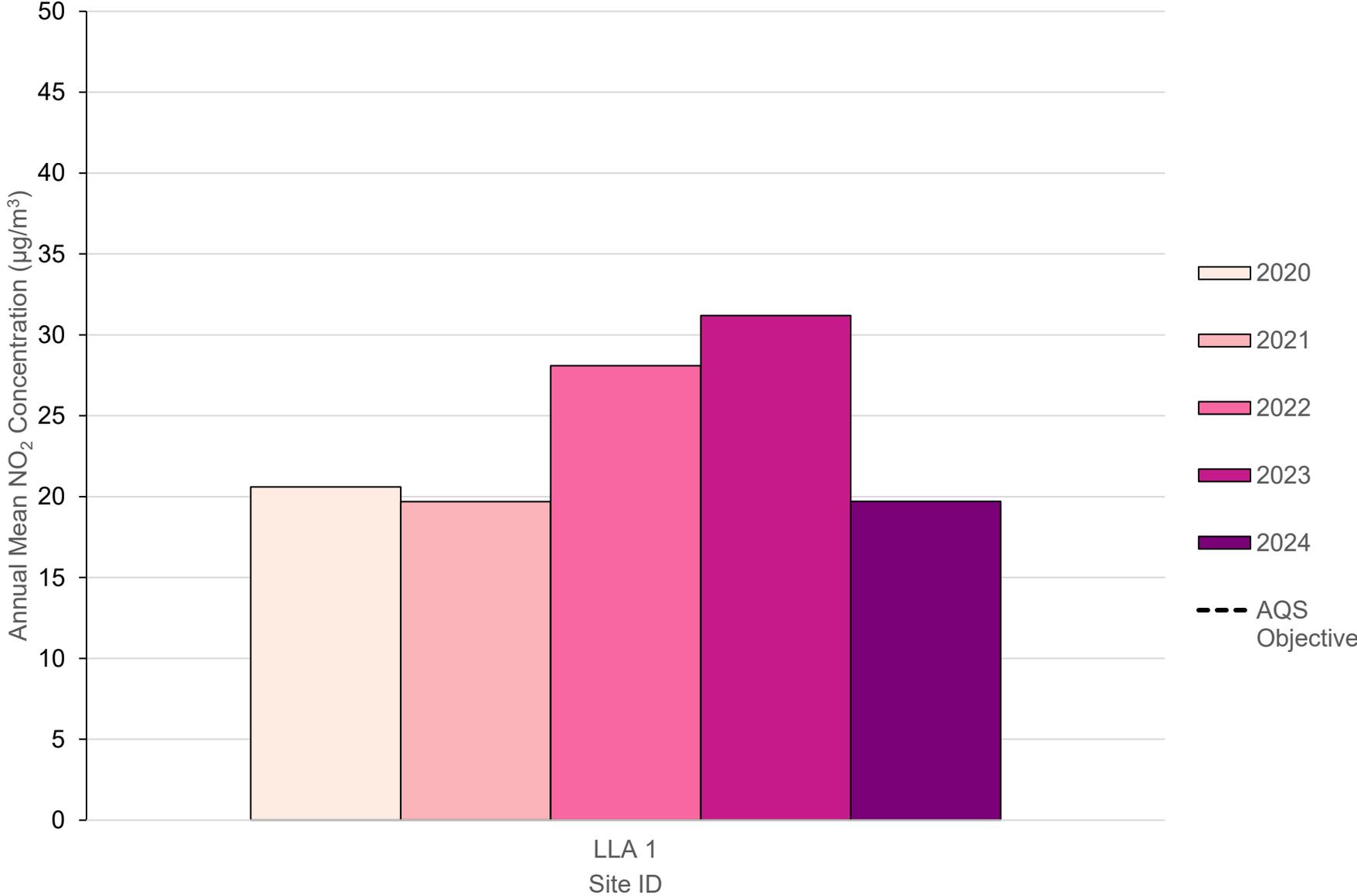
d. LLAOL Site Group: Runway & Flightpath

LAQM Annual Status Report 2025   June 2025
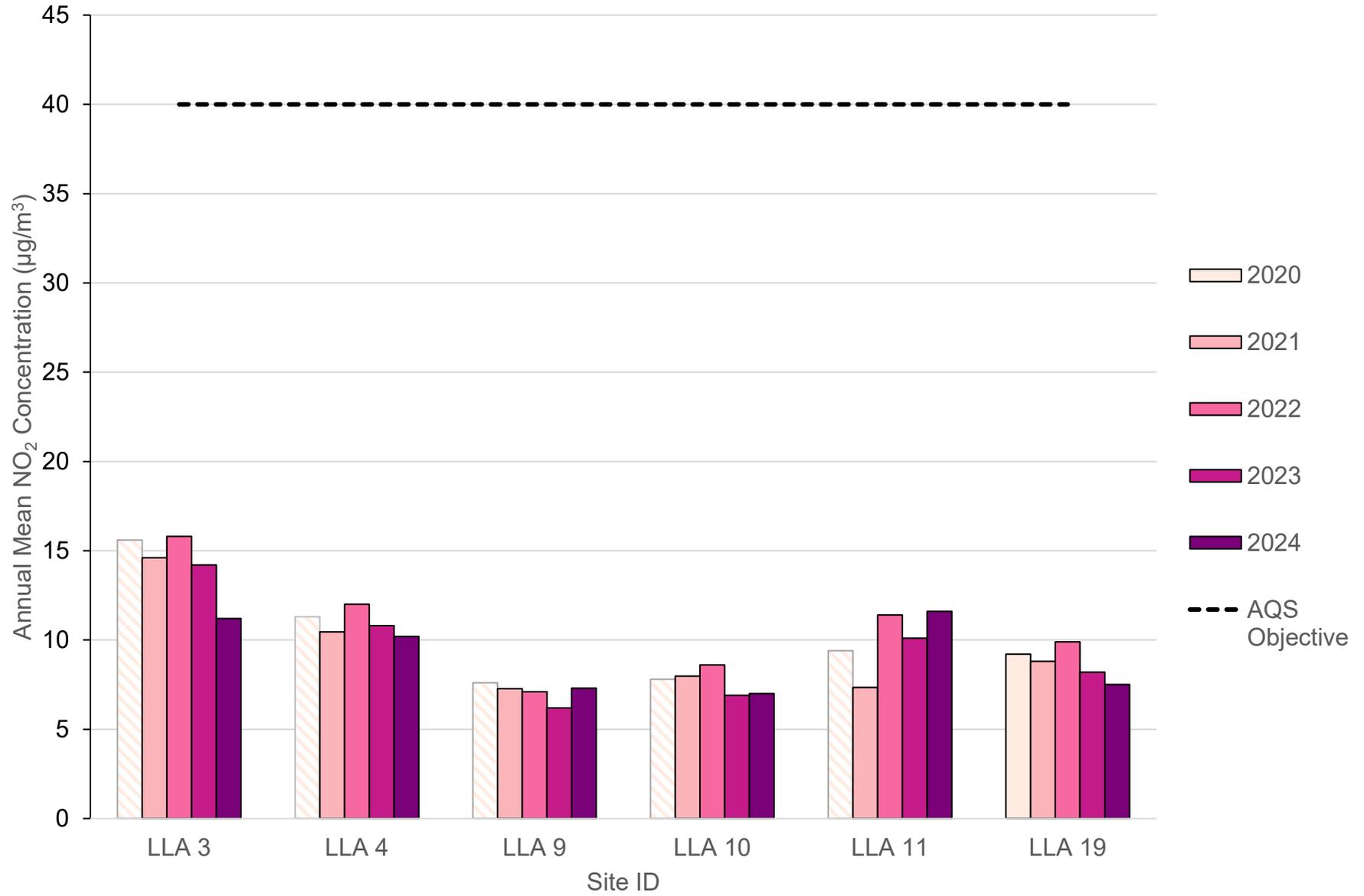
a. Sites established prior to 2023
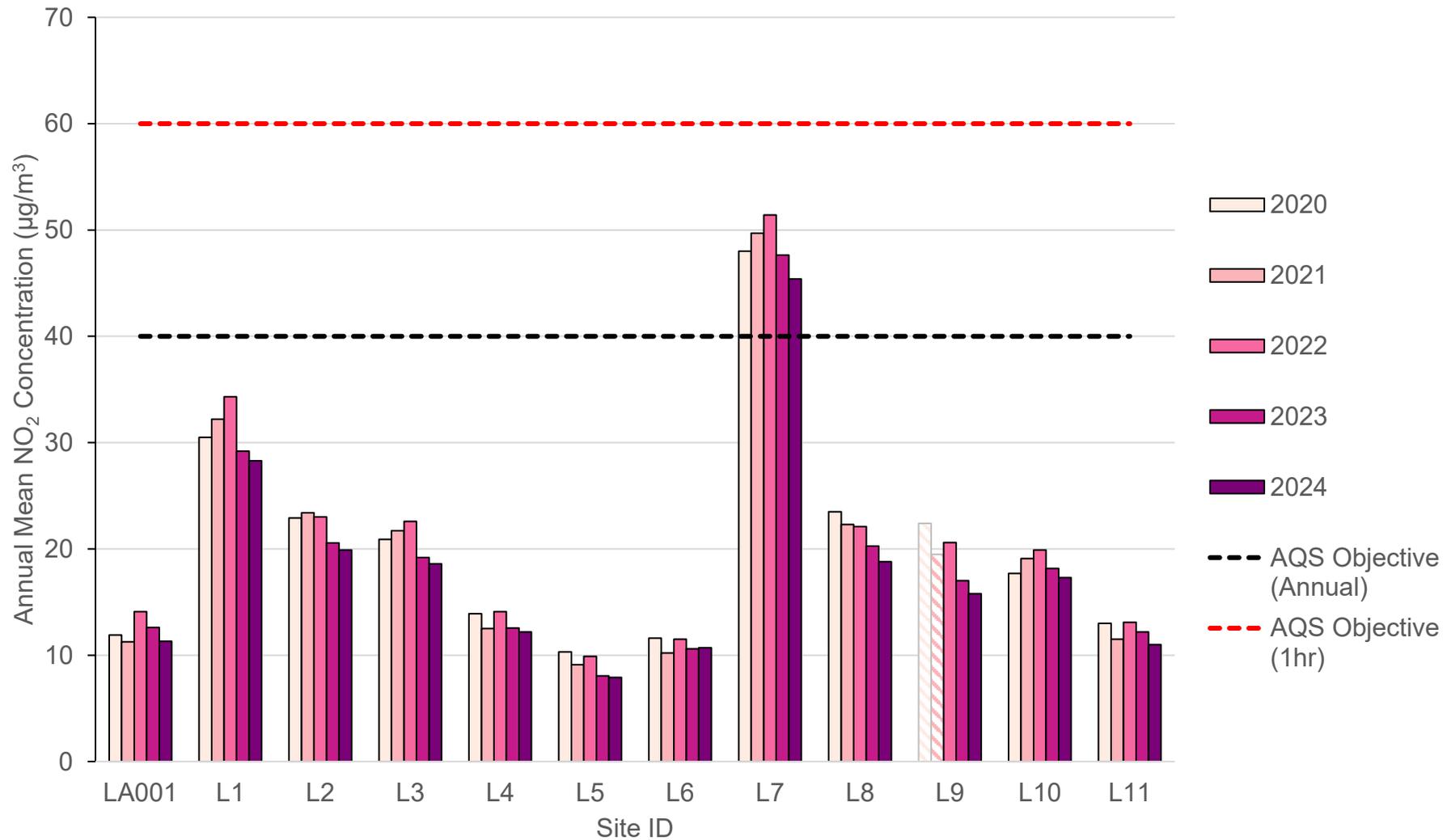
Note: Hatching indicates data from previous locations where L9 has been relocated by Luton Rising within the last 5 years.

b. Sites established in 2023 at local schools
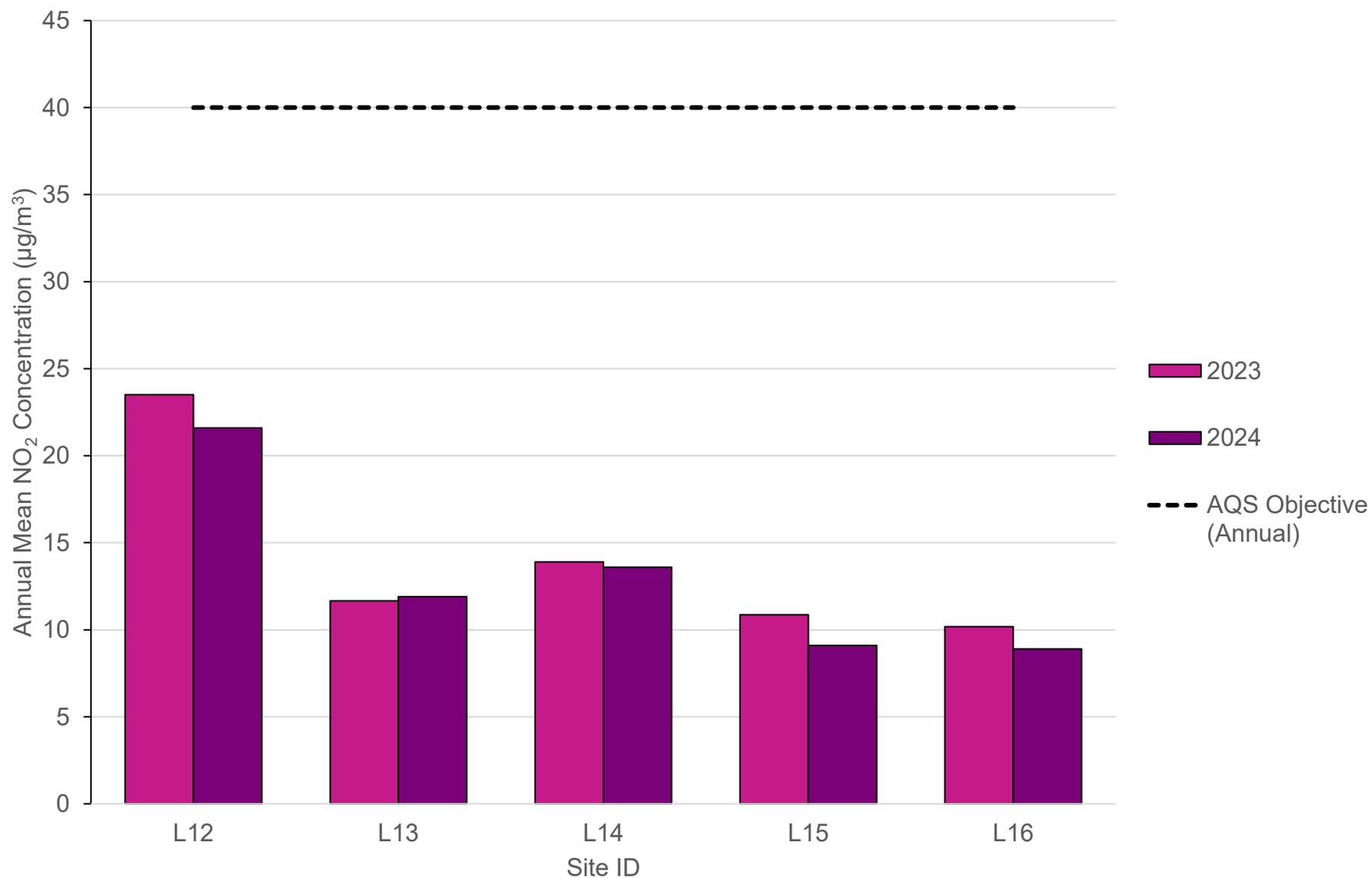
d) Defra AURN sites
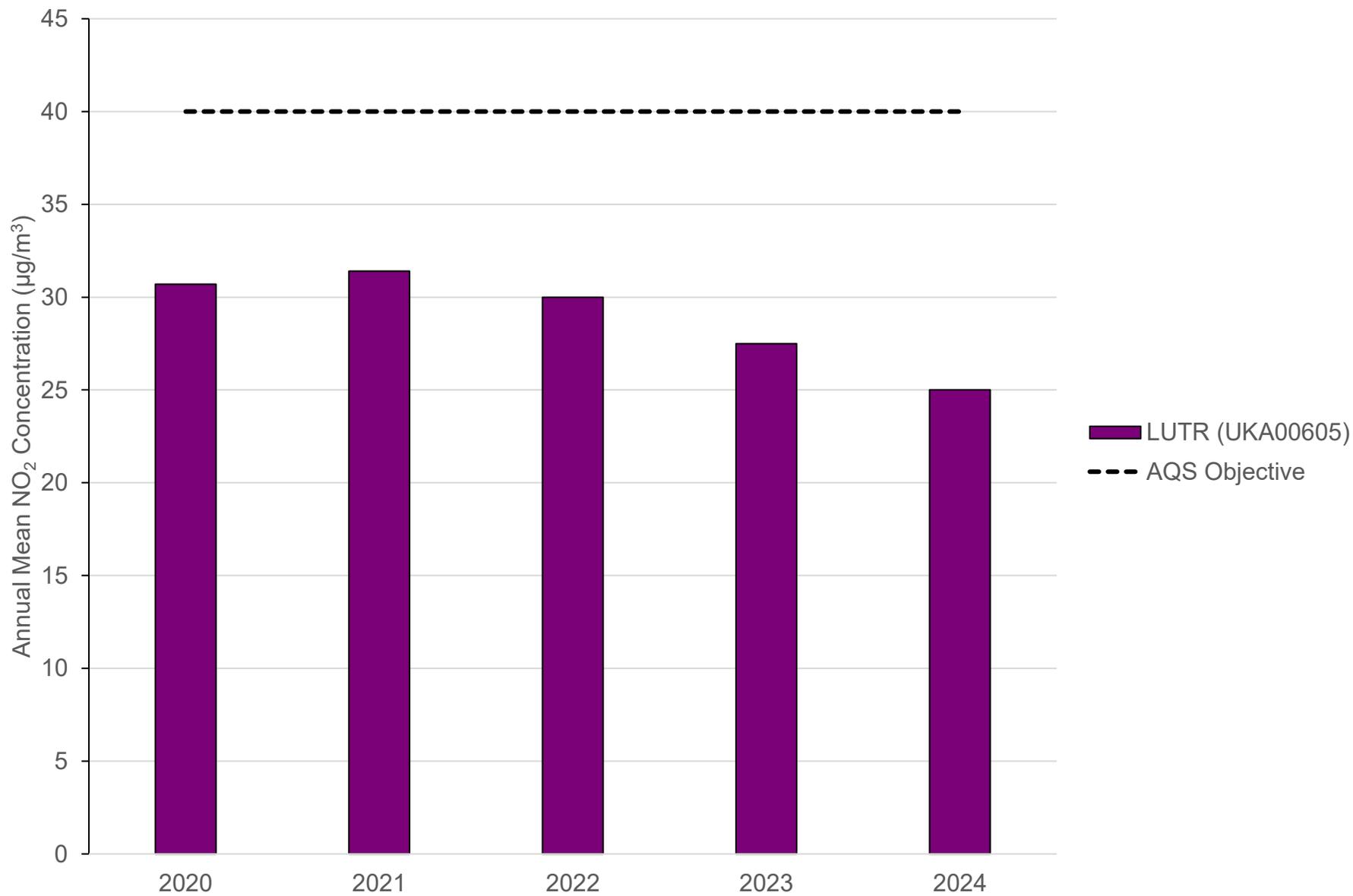
Figure A.2 – Histogram / Density Plots and Descriptive Statistics comparing the distribution of annual mean NO₂ concentrations at all diffusion tube sites in operation at unchanged locations for each of the last five years
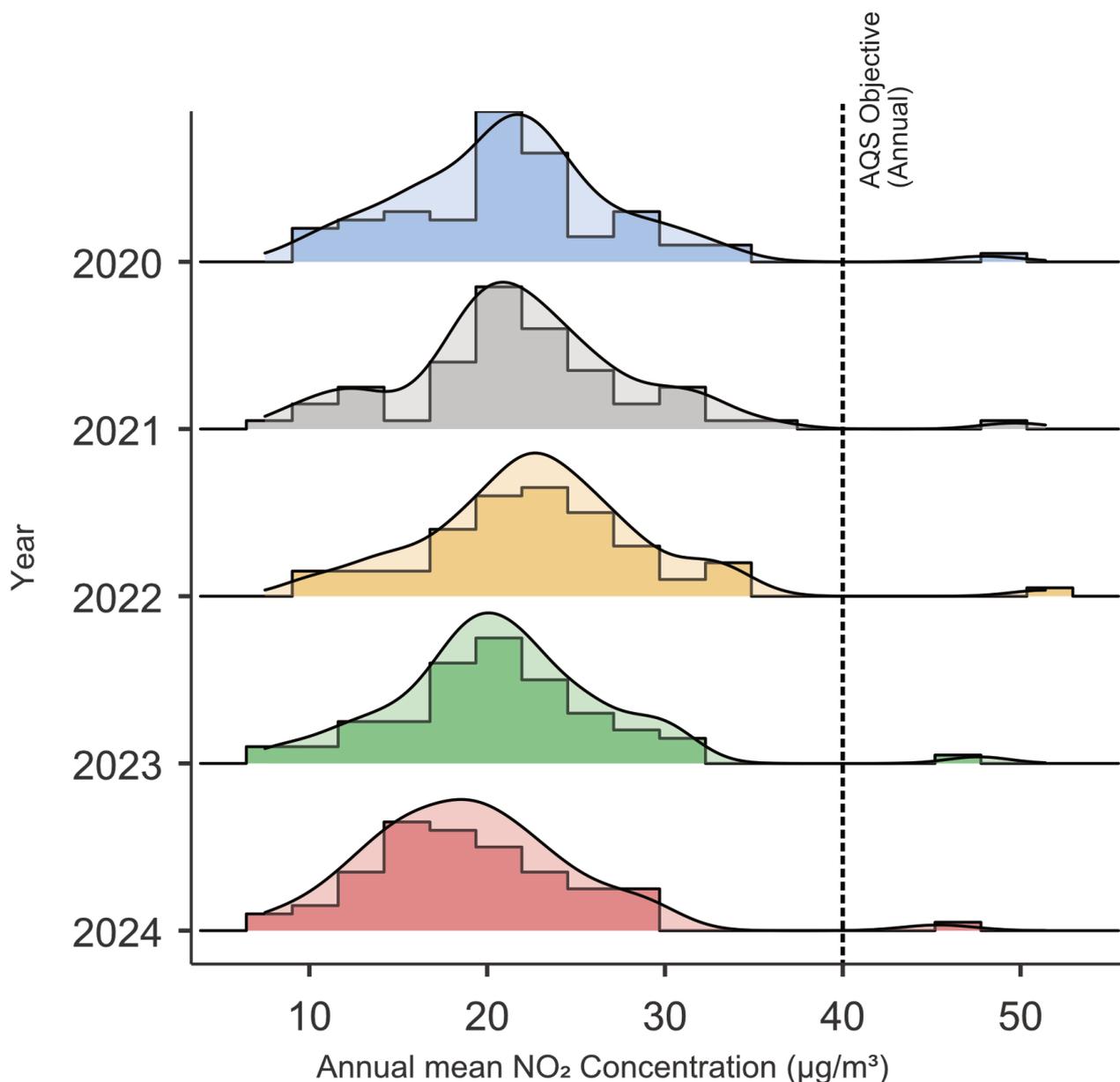
Across the council, LLAOL and Luton Rising monitoring programmes, a total of 65 sites have been in operation at the same location for each of the last five years.

Descriptive Statistics

Mean

- 2020   21.4 μg/m^3
- 2021   22.0 μg/m^3
- 2022   22.9 μg/m^3
- 2023   20.8 μg/m^3
- 2024   19.1 μg/m^3

Median

- 2020   20.9 µg/m^3
- 2021   21.5 µg/m^3
- 2022   22.7 µg/m^3
- 2023   20.5 µg/m^3
- 2024   18.7 µg/m^3

Standard deviation

- 2020   6.34 µg/m^3
- 2021   6.84 µg/m^3
- 2022   6.63 /m^3
- 2023   6.29 µg/m^3
- 2024   6.13 µg/m^3

Range

- 2020   38.8 µg/m^3
- 2021   40.9 µg/m^3
- 2022   41.5 µg/m^3
- 2023   39.6 µg/m^3
- 2024   37.9. µg/m^3

Minimum

- 2020   9.2 µg/m^3
- 2021   8.8 µg/m^3
- 2022   9.9 µg/m^3
- 2023   8.1 µg/m^3
- 2024   7.5 µg/m^3

Maximum

- 2020   48.0 µg/m^3
- 2021   49.7 µg/m^3
- 2022   51.4 µg/m^3
- 2023   47.6 µg/m^3
- 2024   45.4 µg/m^3

Figure A.3 – Threshold Value Charts; annual mean NO$_2$ at AQMA N$^{o.}$ 1 passive sites relative to 36μg/m^3 threshold
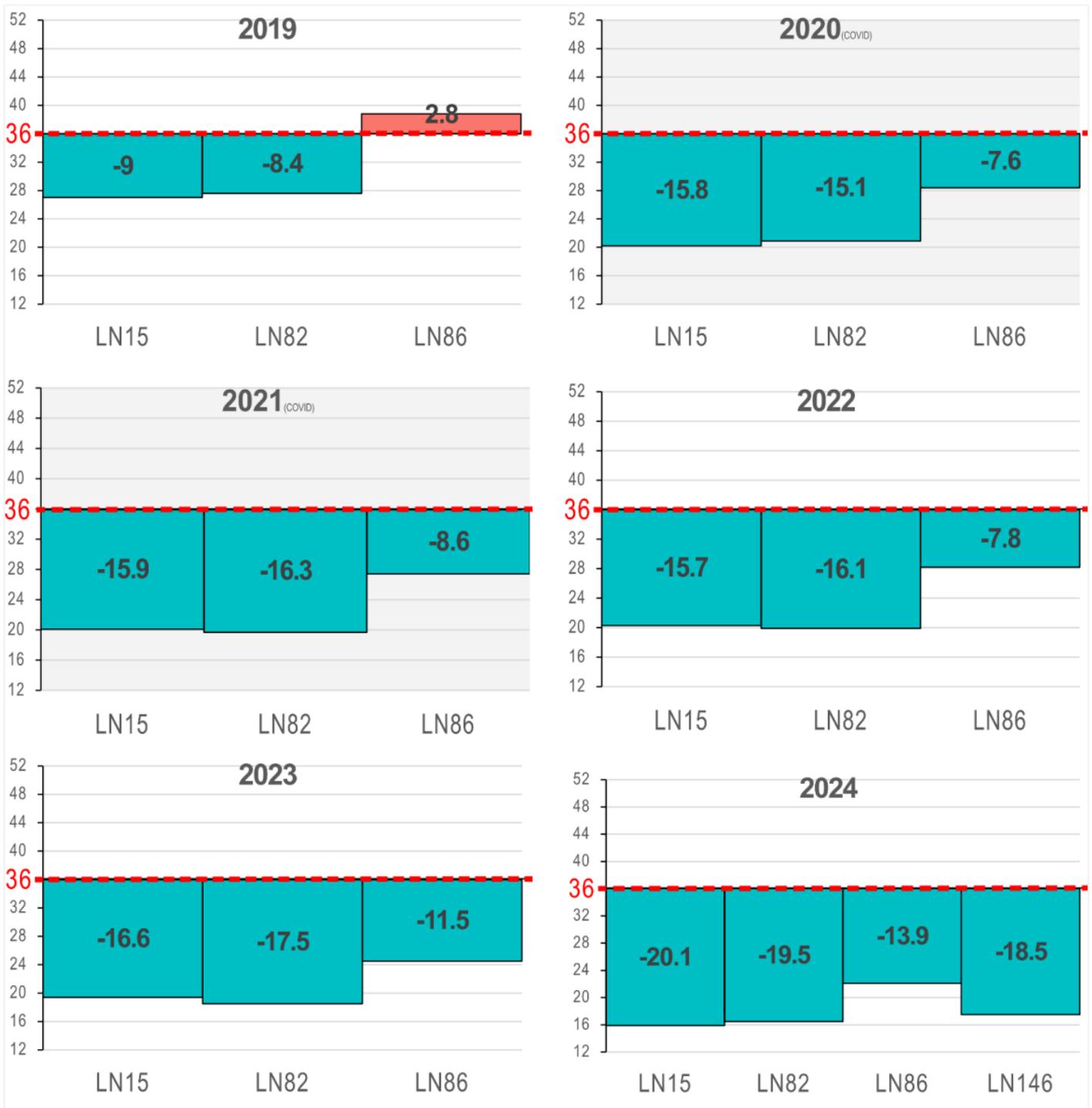
Figure A.4 – Threshold Value Charts; annual mean NO₂ at AQMA Nᵒ· 2 passive sites relative to 36μg/m³ threshold
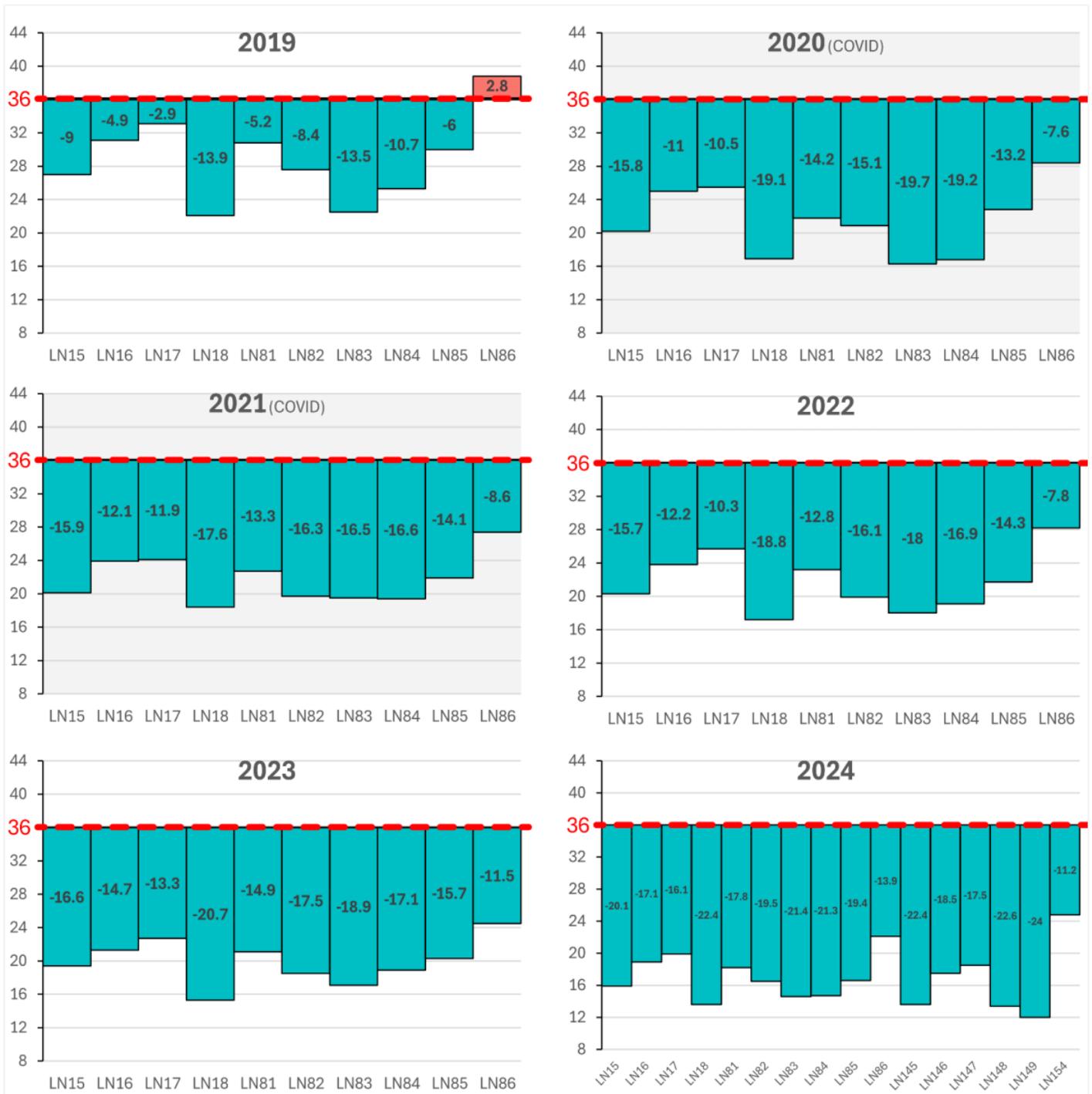
Figure A.5 – Threshold Value Charts; annual mean NO₂ at AQMA N°· 3 passive sites relative to 36µg/m³ threshold
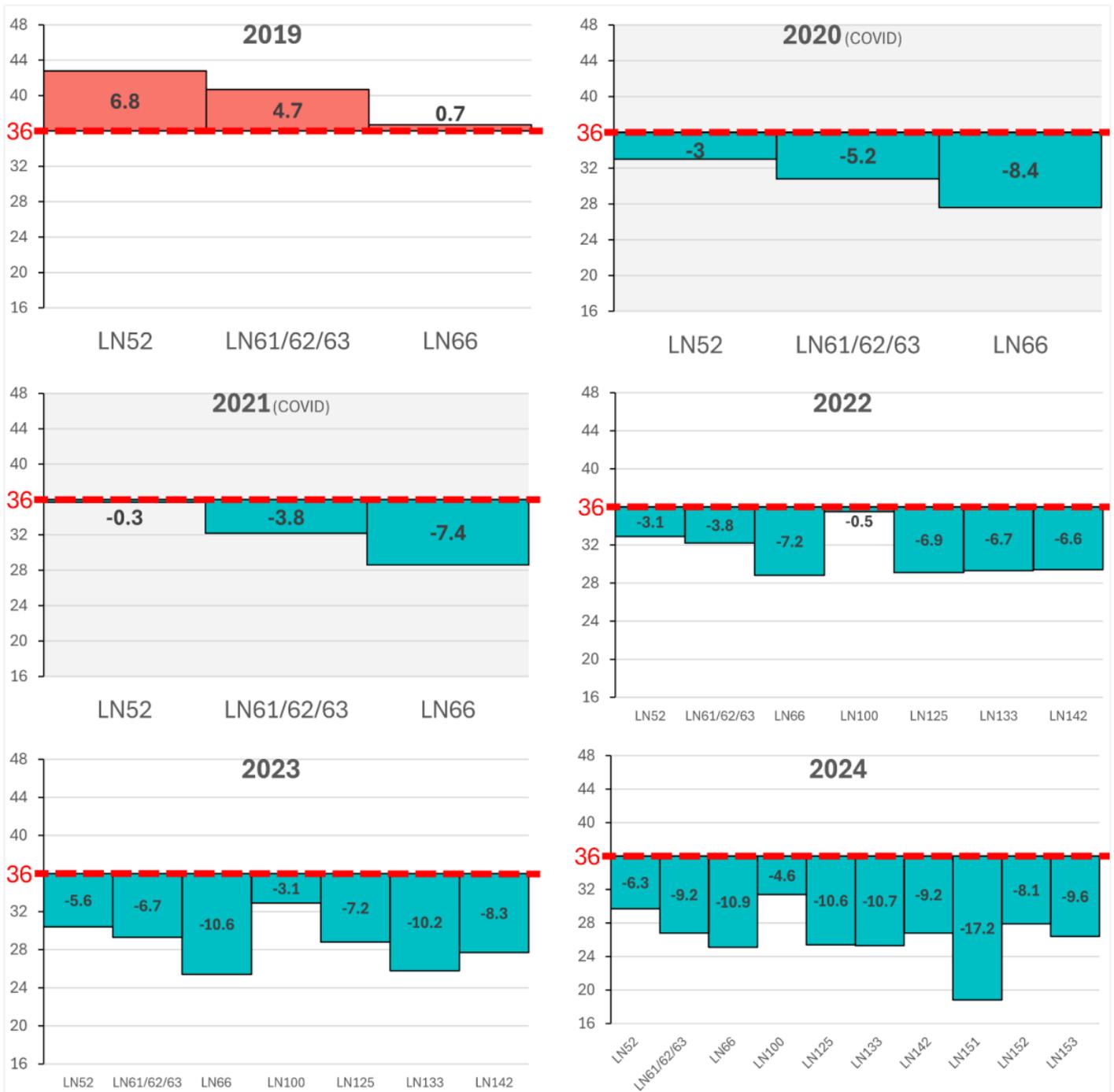
Figure A.6 – Threshold Value Charts; annual mean NO$_2$ at passive sites in area of potential AQMA N$^{o.}$ 3 expansion relative to 36µg/m^3 threshold
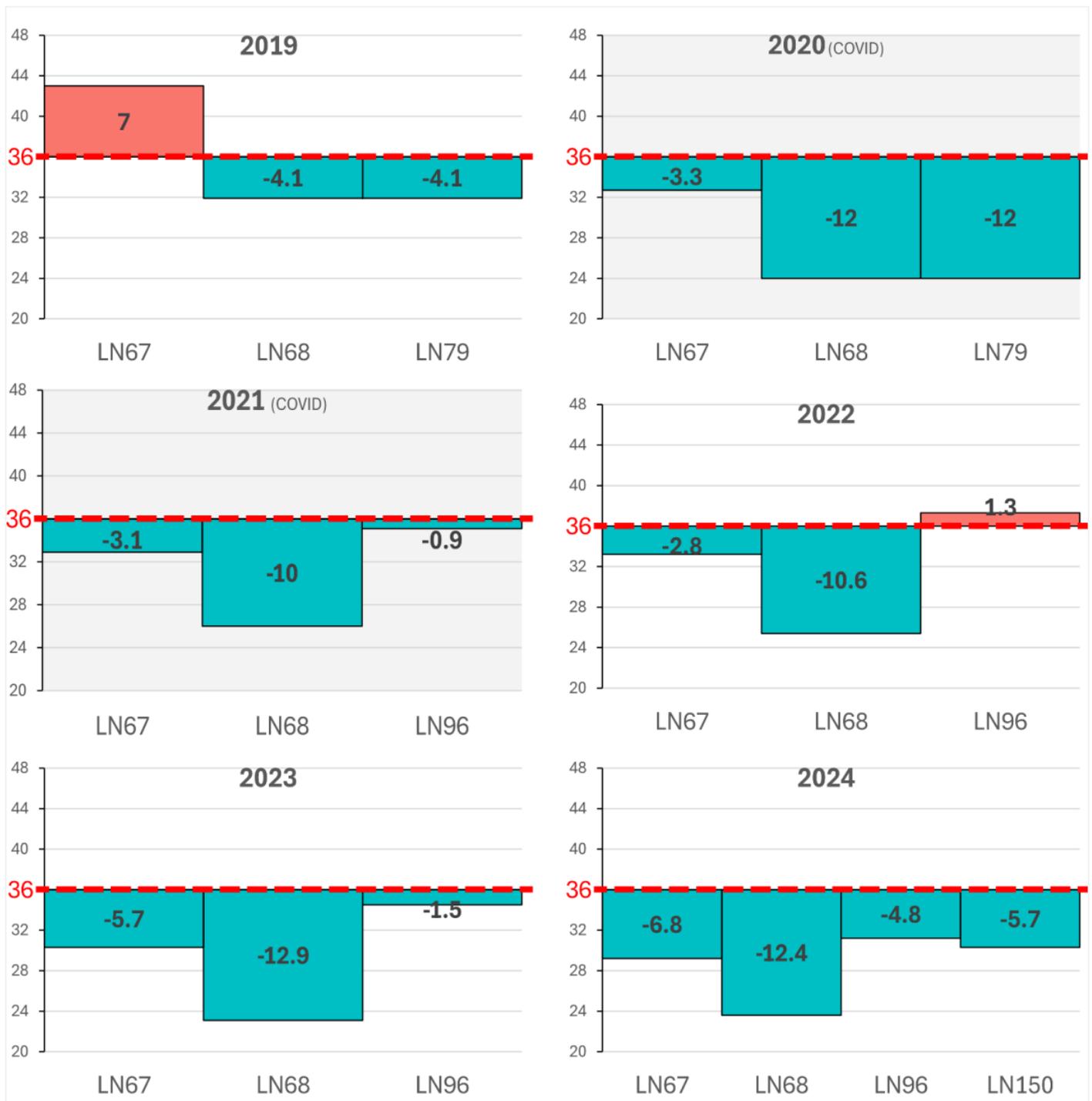
Figure A.7 – Threshold Value Chart; annual mean NO₂ at LN60/HB007 (AQMA Nᵒ· 3 automatic site) relative to 40µg/m³ air quality objective
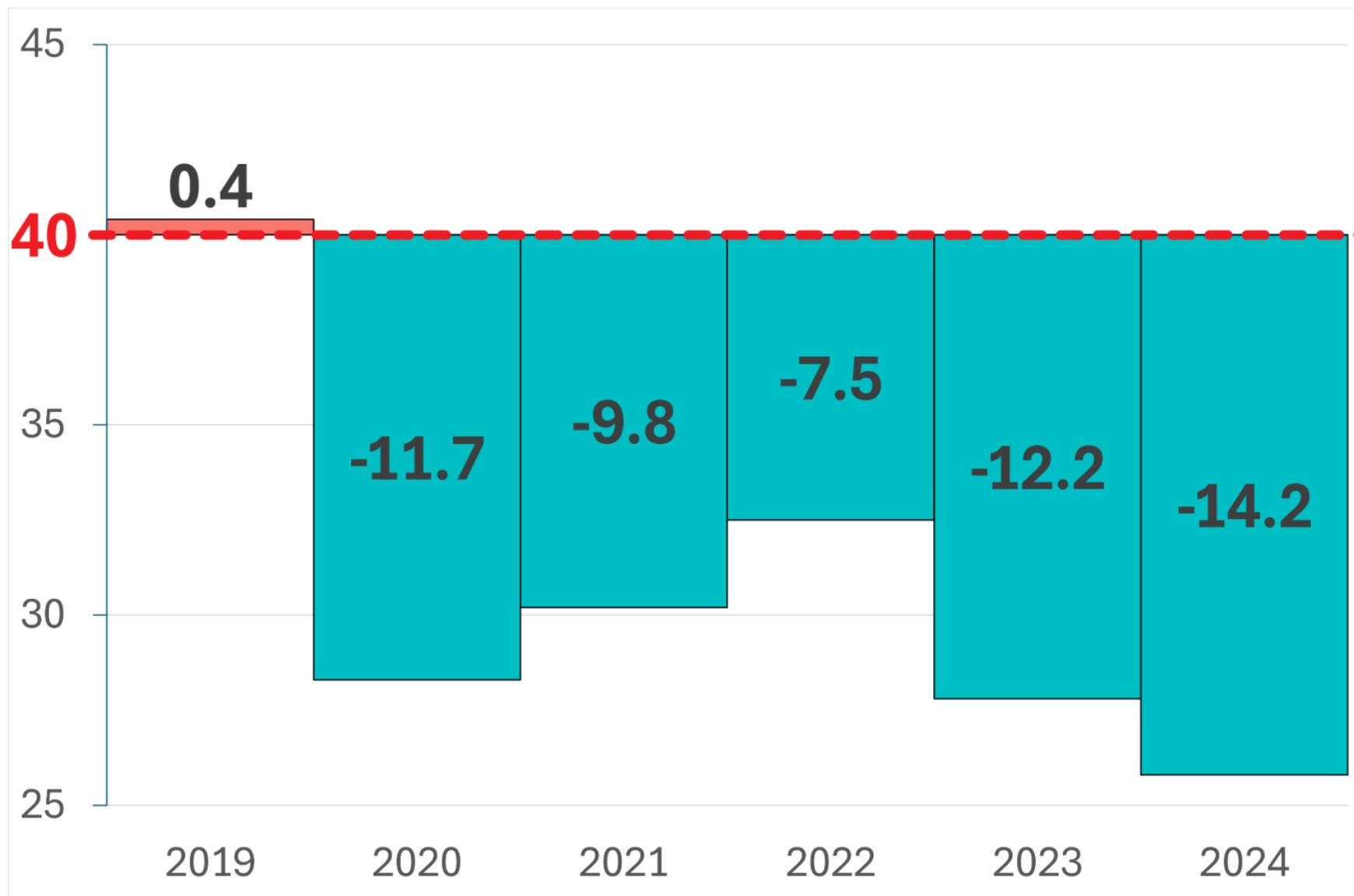
Table A.5 - 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN60 (HB007)	508708	221352	Roadside	99.7	99.7	0 (114.0)	0	0	0	0
LA001	512578	222204	Other	93.8	93.8	0	0	0	0	0
LUTR (UKA00605)	505927	222644	Roadside	98.9	98.9	0	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

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

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

[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%).

Figure A.8 – Trends in Number of NO₂ 1-Hour Means > 200μg/m³
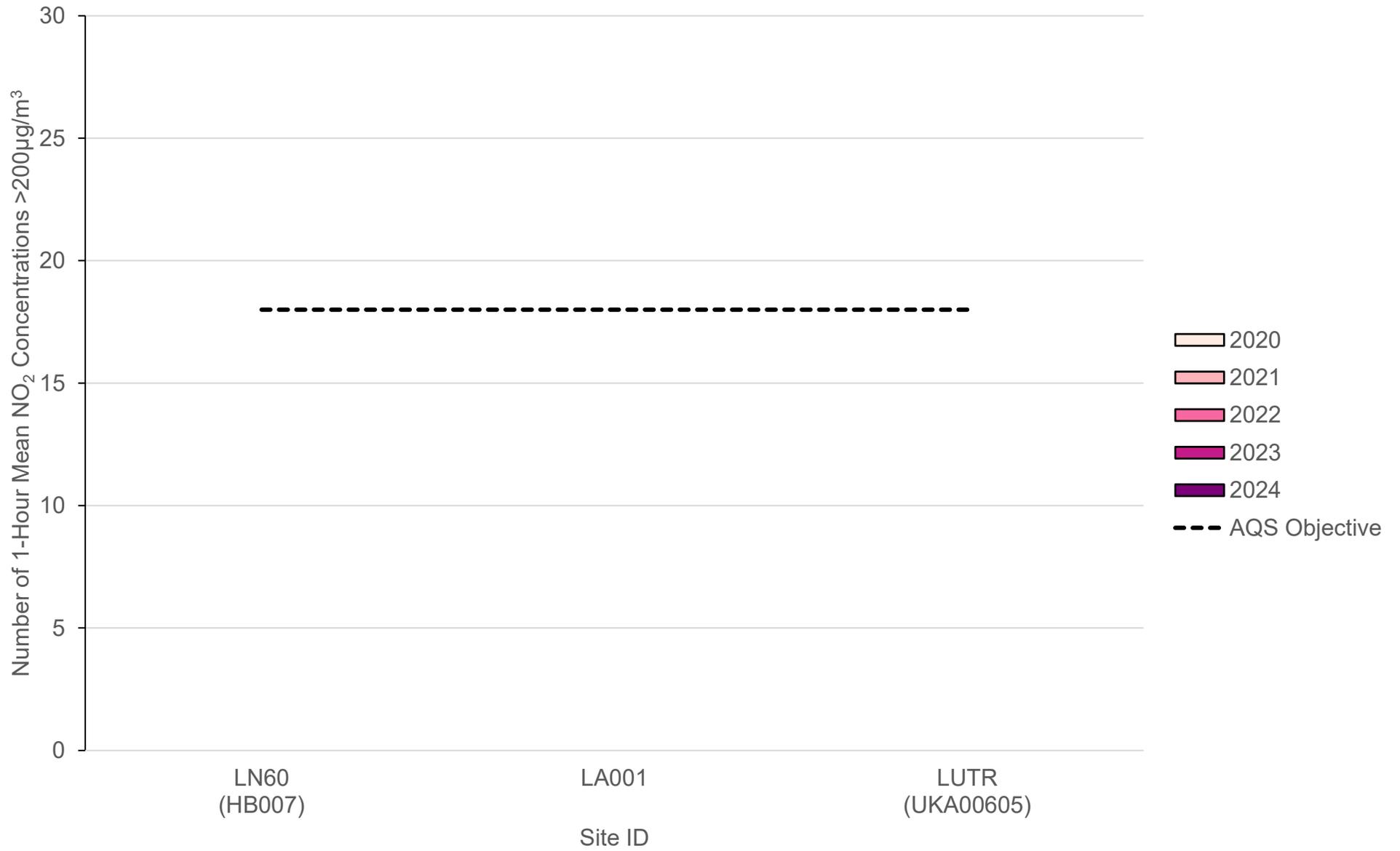
Table A.6 - Annual Mean PM$_{10}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN60 (HB007)	508708	221352	Roadside	99.7	99.7	13.8	15.0	15.1	15.0	12.6
LA08 (HB006)	511868	221144	Other	83.8	83.8	13.7	12.3	15.0	14.3	14.1
LA001	512578	222204	Other	98.3	98.3	11.7	10.3	9.3	9.0	8.9

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the PM$_{10}$ annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

[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%).

**Figure A.9 – Trends in Annual Mean PM$_{10}$ Concentrations**
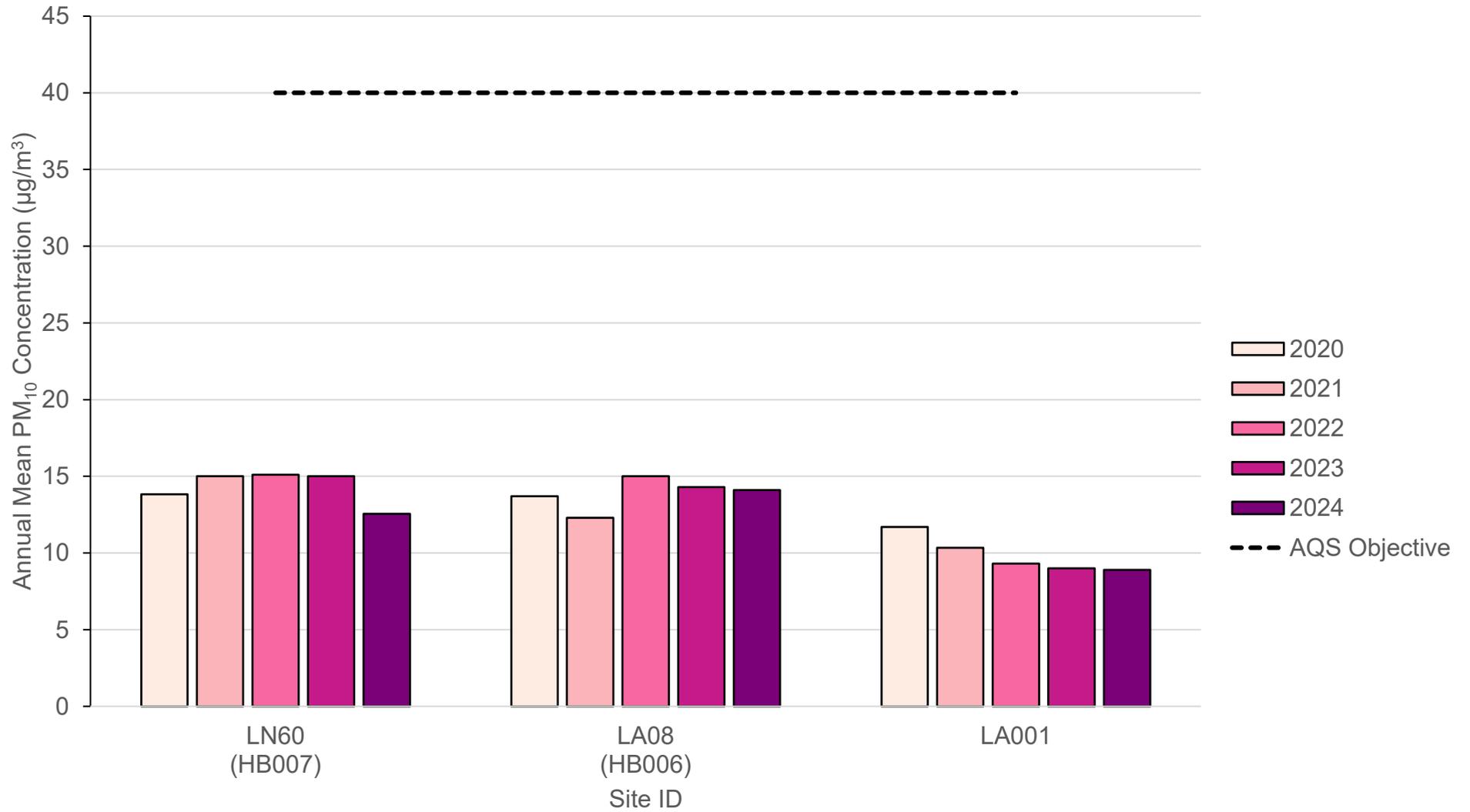
Table A.7 – 24-Hour Mean PM$_{10}$ Monitoring Results, Number of PM$_{10}$ 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN60 (HB007)	508708	221352	Roadside	99.7	99.7	0	2	3	4	0
LA08 (HB006)	511868	221144	Other	83.8	83.8	0	0	0	0 (20.6)	0 (23.3)
LA001	512578	222204	Other	98.3	98.3	1 (20.9)	0	0	0 (14.1)	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

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**.

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

[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%).

Figure A.10 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50μg/m³
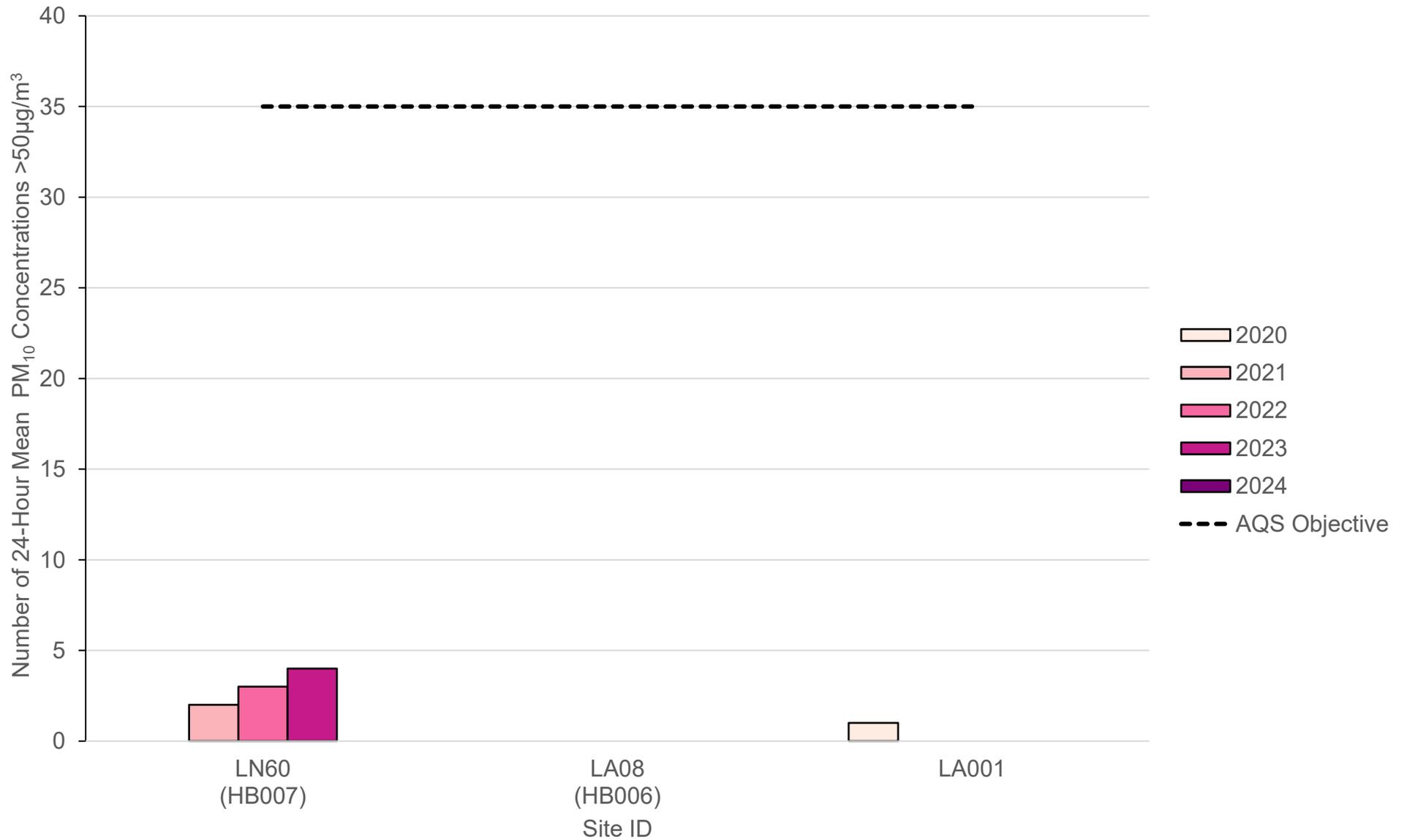
Table A.8 - Annual Mean PM$_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
LN60 (HB007)	508708	221352	Roadside	99.7	99.7	8.3	9.2	9.1	8.7	7.8
LA001	512578	222204	Other	98.3	98.3	10.1	9.4	8.4	8.0	7.6

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

Notes:

The annual mean concentrations are presented as µg/m^3.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

[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%).

Figure A.11 -Trends in Annual Mean PM$_{2.5}$ Concentrations

a) Luton Council's Dunstable Road East automatic monitoring station (LN60/HB007)

LAQM Annual Status Report 2025

b) Luton Rising's Wigmore Valley Park automatic monitoring station (LA001)

Table A.9 - SO₂ 2023 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	Number of 15-minute Means > 266µg/m³	Number of 1-hour Means > 350µg/m³	Number of 24-hour Means > 125µg/m³
LA001	512578	222204	Other	93.3	93.3	0	0	0

Notes:

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

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

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

[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%).

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 - NO$_2$ 2024 Diffusion Tube Results (µg/m^3)

a) Luton Council sites

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN07	509227	221455	27.7	25.2	20.5	18.0	19.5	16.9	18.9	18.2	23.3	25.2	29.6	19.8	21.9	18.4	-	-
LN11	508910	221321	34.4	33.2	28.0	27.1	31.5	25.7	24.5	24.1	34.2	30.9	34.6	26.3	29.5	24.8	-	-
LN15	505557	222325	22.9	21.0	19.5	-	-	12.9	15.8	14.9	18.2	23.8	25.3	14.6	18.9	15.9	-	-
LN16	505492	222607	29.3	26.2	22.8	21.7	19.4	18.7	19.6	17.9	22.5	23.2	25.7	22.7	22.5	18.9	-	-
LN17	505324	222812	27.6	27.1	26.7	18.5	23.6	17.0	20.8	18.4	-	32.2	29.9	18.8	23.7	19.9	-	-
LN18	505014	223538	21.5	18.0	18.3	13.7	15.7	9.4	11.0	10.8	16.3	21.2	23.3	14.4	16.1	13.6	-	-
LN22	511341	221864	20.3	20.3	17.3	13.4	13.5	13.2	-	13.5	16.2	22.7	6.4	14.4	15.6	13.1	-	-
LN23	511377	221814	29.7	25.9	29.6	24.0	26.6	27.8	30.7	26.6	30.1	34.0	30.5	23.0	28.2	23.7	-	-
LN24	511902	222144	23.5	22.7	19.1	15.1	11.9	10.9	14.6	12.9	14.6	21.0	22.6	18.8	17.3	14.5	-	-
LN25	511893	222068	28.5	29.0	28.9	20.4	20.1	-	21.3	20.7	-	27.3	27.6	-	24.9	20.9	-	-
LN26	512109	222234	19.6	19.4	17.6	13.2	11.8	11.3	14.0	13.6	13.7	19.5	19.4	15.2	15.7	13.2	-	-
LN27	512134	222198	26.1	28.9	26.0	21.0	18.9	19.2	22.6	22.1	23.0	27.3	20.1	-	23.2	19.5	-	-
LN28	507798	219832	35.0	32.9	30.4	27.5	27.4	29.4	27.1	26.6	29.1	30.9	33.2	24.4	29.5	24.8	-	-
LN52	508689	221379	40.6	32.9	35.9	34.5	41.5	32.2	30.8	28.6	44.5	35.1	40.5	27.1	35.4	29.7	-	-
LN53	507717	219923	23.9	21.4	-	15.1	15.1	16.0	16.8	14.8	18.3	24.5	27.5	17.3	19.1	16.1	-	-
LN54	507712	219915	-	-	10.6	10.7	6.5	-	19.4	17.6	16.1	26.5	21.0	19.5	16.4	13.8	-	-
LN55	507732	219886	23.7	20.4	20.3	15.0	16.6	16.9	16.3	14.7	18.6	-	25.1	17.2	18.6	15.6	-	-

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN56	507747	219894	22.8	19.1	19.5	14.7	15.5	15.3	16.2	14.5	17.0	22.3	24.4	16.6	18.2	15.3	-	-
LN61	508708	221352	36.8	33.8	34.7	28.3	33.5	28.0	31.2	27.3	36.0	36.7	35.0	28.0	-	-	-	Triplicate Site with LN61, LN62 and LN63 - Annual data provided for LN63 only
LN62	508708	221352	36.5	34.2	34.8	29.7	32.7	28.3	30.9	27.9	32.2	34.0	24.5	25.9	-	-	-	Triplicate Site with LN61, LN62 and LN63 - Annual data provided for LN63 only
LN63	508708	221352	37.4	36.1	33.5	29.0	33.0	28.5	29.4	26.6	35.9	36.1	37.2	26.3	31.9	26.8	-	Triplicate Site with LN61, LN62 and LN63 - Annual data provided for LN63 only
LN64	509563	220952	32.8	-	26.8	22.2	22.4	21.2	20.4	19.3	21.0	-	-	-	23.3	21.7	-	-
LN65	509486	220865	26.7	19.1	18.8	17.2	18.7	16.1	15.7	14.0	23.4	19.2	25.6	19.2	19.5	16.4	-	-
LN66	509288	220925	37.0	35.7	27.7	26.4	25.1	29.9	27.9	25.2	31.4	30.5	32.0	30.2	29.9	25.1	-	-
LN67	509083	220709	38.8	37.5	38.3	32.0	36.0	31.1	33.5	30.7	37.3	39.0	34.7	27.8	34.7	29.2	-	-
LN68	508969	220487	34.4	31.0	26.0	26.8	25.9	26.8	27.1	24.5	29.6	28.6	29.5	26.2	28.0	23.6	-	-
LN69	509326	221357	30.4	29.6	27.0	22.7	24.2	23.8	24.5	22.4	28.8	28.4	33.5	23.4	26.6	22.3	-	-
LN70	509813	221161	-	30.0	28.4	24.7	23.3	23.8	25.6	23.5	29.6	32.0	30.4	25.0	26.9	22.6	-	-
LN71	509549	221623	30.4	26.7	24.4	22.4	23.8	25.3	25.2	23.3	27.8	27.7	28.7	21.6	25.6	21.5	-	-
LN72	508937	221745	29.5	29.3	24.9	-	24.0	26.2	24.3	-	29.3	-	-	23.3	26.3	22.7	-	-
LN73	508959	221633	34.5	36.9	36.8	29.3	27.8	31.8	33.4	33.0	-	37.0	34.2	21.5	32.4	27.2	-	-
LN74	508165	222002	33.9	36.1	33.5	-	31.4	30.3	30.3	31.0	33.0	33.9	33.7	28.4	32.3	27.1	-	-
LN75	508745	222122	-	-	36.5	33.1	35.2	33.2	32.5	30.5	37.3	36.2	41.2	27.8	34.3	28.8	-	-
LN76	507574	222948	32.5	27.4	26.2	23.2	-	22.7	22.9	22.5	29.7	29.9	32.0	21.9	26.4	22.2	-	-
LN77	506496	224018	31.9	33.3	32.6	27.6	27.4	27.6	31.2	26.6	31.4	32.7	33.0	25.5	30.1	25.3	-	-
LN78	509109	220676	29.3	-	26.5	19.9	19.5	20.9	21.8	19.4	25.1	18.9	-	20.5	22.2	18.6	-	-

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN80	509038	220719	30.6	25.6	26.1	20.2	24.5	-	22.3	22.0	29.6	31.8	30.5	23.2	26.1	21.9	-	-
LN81	505034	223729	26.4	26.0	-	18.0	16.5	17.4	18.9	18.2	20.9	26.6	30.9	19.1	21.7	18.2	-	-
LN82	504828	223999	22.9	23.2	19.3	16.1	14.9	17.1	17.2	-	18.1	23.5	24.9	18.9	19.7	16.5	-	-
LN83	505116	223467	20.7	-	18.7	-	16.7	11.9	12.9	13.6	19.1	22.9	23.0	14.0	17.3	14.6	-	-
LN84	505230	223304	23.9	18.2	18.4	15.0	17.3	11.8	12.9	13.7	19.0	20.8	25.8	13.9	17.5	14.7	-	-
LN85	505481	222545	25.4	23.4	3.9	19.5	18.1	19.0	19.3	17.8	19.9	26.3	24.3	20.0	19.7	16.6	-	-
LN86	505586	222235	29.6	28.8	27.7	23.7	23.0	23.5	23.3	21.7	27.5	28.5	32.5	25.8	26.3	22.1	-	-
LN87	510170	223162	24.9	22.0	17.5	16.4	15.1	16.0	16.4	15.6	19.0	23.2	13.1	19.3	18.2	15.3	-	-
LN88	510107	223087	25.6	25.9	22.8	20.8	20.1	21.6	19.7	19.6	23.3	24.0	30.8	20.3	22.9	19.2	-	-
LN89	510515	222612	26.7	21.9	17.3	15.4	16.6	15.1	17.0	14.4	19.9	22.3	27.3	17.6	19.3	16.2	-	-
LN90	510846	222209	27.0	20.7	-	18.3	20.9	20.4	21.5	19.4	22.1	25.1	24.6	17.3	21.6	18.1	-	-
LN91	511122	221721	23.0	24.2	20.5	16.1	17.9	18.5	20.8	19.2	18.7	25.3	22.5	17.9	20.4	17.1	-	-
LN92	511037	221657	22.2	23.3	18.1	14.3	15.3	14.2	17.3	14.4	17.3	22.4	20.1	13.7	17.7	14.9	-	-
LN93	511332	223069	17.3	14.7	11.7	9.2	9.2	8.5	9.5	8.9	12.3	16.7	13.6	12.2	12.0	10.1	-	-
LN94	511327	222588	18.2	16.8	15.1	11.0	10.3	9.7	11.9	10.7	12.9	20.2	20.5	13.6	14.2	12.0	-	-
LN95	511996	222534	20.0	20.3	15.5	11.5	10.6	9.8	11.6	11.4	13.2	20.3	21.9	13.7	15.0	12.6	-	-
LN96	509059	220656	38.8	42.9	41.5	34.1	38.9	33.8	39.2	35.6	39.9	41.8	33.2	26.5	37.2	31.2	-	-
LN98	506411	222554	-	30.8	28.9	26.4	29.2	20.0	23.9	21.7	30.3	31.0	30.4	22.5	26.8	22.5	-	-
LN100	508380	221764	-	44.6	35.8	37.6	33.4	37.4	37.1	36.6	37.4	35.6	40.3	35.3	37.4	31.4	-	-

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN102	508000	222078	29.3	28.8	26.8	24.0	24.5	22.0	19.3	24.1	26.3	28.8	28.0	23.4	25.5	21.4	-	-
LN104	504987	222805	-	-	-	-	-	-	-	-	31.1	-	38.1	26.2	31.8	24.0	-	-
LN106	509339	222128	24.1	23.4	19.6	14.4	13.7	13.6	15.9	14.5	17.3	21.4	24.2	18.1	18.3	15.4	-	-
LN107	511573	221897	22.9	24.0	22.5	16.1	15.6	15.2	18.2	17.1	17.0	27.2	23.6	17.3	19.7	16.6	-	-
LN108	512473	222295	-	20.0	18.3	15.0	11.5	12.0	14.9	14.7	14.5	21.7	20.4	18.5	16.5	13.9	-	-
LN109	512915	222308	18.3	15.9	14.2	10.5	8.2	9.5	11.0	10.9	11.7	14.6	17.4	13.5	13.0	10.9	-	-
LN110	512738	222385	22.8	18.4	17.0	12.2	11.5	11.0	13.4	13.7	14.2	-	19.0	16.7	15.4	13.0	-	-
LN111	511521	222203	22.3	19.9	17.1	14.0	13.5	11.7	13.8	12.6	16.5	22.1	23.4	13.0	16.7	14.0	-	-
LN112	511254	221466	-	18.3	15.8	10.5	13.2	11.2	14.0	12.6	15.2	20.5	-	13.7	14.5	12.2	-	-
LN113	505005	222696	25.5	24.0	25.2	21.2	23.3	-	20.6	19.3	25.8	27.6	31.3	21.1	24.1	20.2	-	-
LN114	509293	223741	18.3	16.0	13.2	9.4	9.1	8.4	9.2	9.1	12.0	14.8	19.2	-	12.6	10.6	-	-
LN115	509995	220892	30.4	23.4	23.2	23.5	24.6	20.2	20.6	16.1	27.0	28.0	25.4	21.1	23.6	19.8	-	-
LN116	509655	221842	41.6	44.8	39.8	41.0	39.7	-	41.3	40.1	45.5	41.8	48.9	31.7	41.5	34.8	-	-
LN117	509136	223217	34.6	28.9	27.1	30.7	32.2	32.3	27.7	-	36.4	30.4	35.9	25.8	31.1	26.1	-	-
LN118	506407	222732	25.4	24.1	22.9	17.3	18.9	17.6	19.4	19.6	22.8	-	29.3	19.6	21.5	18.1	-	-
LN119	505588	222871	-	19.1	19.6	14.1	14.5	13.1	15.2	14.3	17.5	25.3	25.8	16.0	17.7	14.8	-	-
LN120	505723	223787	26.4	26.7	26.9	20.6	24.5	18.8	21.0	21.0	24.3	28.7	28.1	20.3	23.9	20.1	-	-
LN121	506990	223425	22.2	26.0	21.6	17.2	16.1	22.1	23.2	21.4	20.8	26.9	26.2	19.0	21.9	18.4	-	-
LN122	506918	223295	26.4	23.4	22.2	20.9	22.7	20.8	18.6	20.4	27.3	26.0	23.5	19.9	22.7	19.1	-	-

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN123	508413	221918	35.5	22.7	30.0	26.9	29.8	24.0	-	-	-	-	35.5	27.9	29.0	23.5	-	-
LN124	508253	222053	26.8	27.1	24.4	20.4	22.1	20.2	21.5	21.0	24.9	-	29.6	22.2	23.7	19.9	-	-
LN125	508321	221839	32.2	34.5	36.7	28.2	28.0	25.8	27.8	27.7	30.0	35.0	30.0	26.7	30.2	25.4	-	-
LN126	508140	222103	30.8	30.9	30.3	28.1	32.1	27.4	27.4	27.6	33.2	-	33.5	25.3	29.7	24.9	-	-
LN127	508095	222127	29.1	29.4	28.7	26.3	25.2	24.6	25.4	24.5	-	28.9	26.5	24.4	26.6	22.4	-	-
LN128	508065	222182	32.7	31.3	33.0	30.7	33.0	25.5	26.4	25.9	33.0	32.4	31.6	25.2	30.1	25.2	-	-
LN129	507973	222289	32.2	31.3	28.0	27.7	31.5	27.9	27.4	26.7	31.8	31.0	34.7	25.9	29.7	24.9	-	-
LN130	507918	222560	29.7	26.7	25.0	23.2	25.8	22.5	22.1	21.1	28.7	30.8	29.4	20.5	25.5	21.4	-	-
LN131	507666	222143	27.6	25.2	24.8	20.5	22.5	20.7	21.0	20.8	26.5	28.0	32.7	2.4	22.7	19.1	-	-
LN132	507228	222511	45.4	43.4	46.1	29.1	22.6	21.5	27.8	19.2	24.0	40.3	48.8	32.3	33.4	28.0	-	-
LN133	508381	221795	32.9	29.8	30.9	28.4	33.4	25.1	26.4	26.8	36.4	34.1	32.7	24.1	30.1	25.3	-	-
LN134	508156	222053	36.4	-	37.2	34.1	32.6	33.8	33.9	34.3	36.3	36.7	34.1	32.1	34.7	29.1	-	-
LN135	508136	222040	34.5	29.8	32.1	28.9	33.2	25.8	26.4	26.6	35.3	33.4	33.2	26.8	30.5	25.6	-	-
LN136	508059	222080	32.5	28.2	27.9	26.1	29.6	23.2	22.5	23.8	33.8	30.1	33.7	24.3	28.0	23.5	-	-
LN137	507948	222337	30.3	26.9	26.1	24.7	29.6	22.5	22.1	20.5	29.6	29.5	30.4	21.1	26.1	21.9	-	-
LN138	508021	222248	32.9	-	32.0	29.2	35.3	25.7	-	26.9	35.8	-	-	27.4	30.6	27.7	-	-
LN139	508270	221939	35.6	-	35.3	34.0	39.2	29.2	-	28.3	40.4	37.9	42.8	29.8	35.3	29.6	-	-
LN140	508279	221903	35.5	35.5	31.9	31.1	-	-	33.7	30.0	34.8	33.0	36.5	31.6	33.4	28.0	-	-
LN141	508450	221790	-	27.6	24.7	-	21.8	20.2	20.9	19.1	24.1	25.7	29.0		23.7	19.9	-	-

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LN142	508751	221714	33.7	36.6	36.8	28.2	30.9	28.4	30.8	28.8	34.2	36.0	32.0	26.6	31.9	26.8	-	-
LN143	504993	222790	34.4	31.5	-	34.4	34.1	28.2	28.6	-	-	-	-	-	31.9	28.3	-	-
LN145	504565	224563	-	-	15.7	12.7	-	12.5	12.7	12.7	14.9	19.4	22.4	15.5	15.5	13.6	-	-
LN146	505268	223404	-	-	23.0	18.7	17.2	17.4	18.9	18.3	20.6	23.9	28.8	22.3	20.9	17.5	-	-
LN147	505350	222727	-	-	16.3	26.9	26.5	18.6	18.0	17.8	29.1	25.1	23.1	19.3	22.0	18.5	-	-
LN148	505400	222478	-	-	14.5	18.1	20.1	11.0	13.3	14.3	23.9	22.5	21.3	1.8	15.9	13.4	-	-
LN149	505337	222547	-	-	13.4	14.0	15.7	10.4	10.1	11.1	16.7	18.3	21.0	12.3	14.3	12.0	-	-
LN150	509008	220544	-	-	36.0	36.3	37.8	34.4	34.4	32.3	41.0	40.5	38.4	30.8	36.1	30.3	-	-
LN151	508623	221416	-	-	-	22.0	-	16.4	18.2	-	25.2	28.8	-	15.7	21.1	18.8	-	-
LN152	508913	221128	-	-	-	31.1	-	30.9	31.1	26.6	34.7	36.0	38.9	28.9	32.2	27.9	-	-
LN153	509159	220841	-	-	-	27.6	28.8	24.2	28.3	22.8	29.0	35.2	-	-	28.1	26.4	-	-
LN154	505607	222693	-	-	-	28.8	27.1	28.1	25.9	24.1	32.0	30.0	33.6	28.0	28.5	24.8	-	-

☒ **All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Luton Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

b) London Luton Airport Operations Ltd sites

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted[1] (Jan: 0.78 Feb - Dec: 0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LLA 1	511920	221334	36.8	26.7	-	-	-	25.1	25.3	-	26.1	29.1	27.1	22.7	27.4	19.7	-	-
LLA 2	511586	220978	38.2	25.7	21.1	24.2	28.1	22.1	22.9	21.3	-	26.9	26.8	-	25.7	22.4	-	-
LLA 3	511156	220437	21.5	13.0	9.9	9.4	-	10.4	10.1	11.0	13.0	13.6	16.8	11.9	12.8	11.2	-	-
LLA 4	513634	221198	22.2	11.5	8.1	7.5	10.4	-	9.8	10.9	9.4	10.9	13.6	11.5	11.4	10.2	-	-
LLA 5	511703	221320	-	37.4	34.8	33.3	37.0	33.0	34.0	35.0	-	-	33.8	32.3	34.5	29.0	-	-
LLA 6	511645	221679	33.6	29.4	23.8	20.9	22.4	18.7	23.3	20.8	21.5	31.1	26.2	21.6	24.4	21.0	-	-
LLA 8	511871	221142	-	23.9	18.9	19.4	20.3	19.8	-	19.1	21.3	25.2	22.8	19.1	21.0	17.6	-	-
LLA 9	517637	222554	17.7	10.2	7.4	5.8	6.8	-	6.6	-	-	9.0	-	-	9.1	7.3	-	-
LLA 10	507623	217724	17.2	7.7	5.8	5.0	5.5	-	6.6	5.6	5.5	8.8	9.9	7.0	7.7	7.0	-	-
LLA 11	513125	220664	34.7	10.5	7.9	8.7	9.9	-	6.5	10.5	10.7	10.7	14.2	10.2	12.2	11.6	-	-
LLA 12	511861	221579	56.0	39.0	28.0	27.0	31.3	31.5	34.9	36.7	32.9	39.4	29.9	29.8	34.7	30.2	-	-
LLA 13	511899	222051	32.3	23.7	17.5	16.9	16.2	14.6	17.1	-	15.8	23.4	21.2	20.4	19.9	17.4	-	-
LLA 15	511168	221706	36.0	28.9	21.9	20.8	21.9	21.5	21.9	18.8	-	-	26.0	18.4	23.6	20.6	-	-
LLA 16	512275	221115	35.2	27.8	21.5	20.3	18.0	19.0	22.9	20.0	24.8	25.7	28.3	24.2	24.0	20.7	-	-
LLA 17	509489	219237	34.5	23.9	19.4	19.1	20.5	19.5	19.2	17.5	20.6	21.5	23.4	18.7	21.5	18.7	-	-
LLA 18	510779	220279	34.0	23.3	18.1	19.2	21.4	18.5	19.2	18.8	25.0	24.3	26.6	19.0	22.3	19.3	-	-
LLA 19	515109	221933	17.6	9.1	6.5	5.3	5.9	5.8	6.5	6.8	-	-	-	9.1	8.1	7.5	-	-

☒ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☐ Local bias adjustment factors used.

☒ National bias adjustment factors used.

☒ Where applicable, data has been distance corrected for relevant exposure in the final column.

☒ **Luton Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

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 **<u>bold and underlined</u>**.

See Appendix C for details on bias adjustment and annualisation.

[1.] Supplier and preparation changed within calendar year (Jan: SOCOTEC, 50%TEA v/v in acetone; Feb onwards: Gradko 20% TEA/water). Bias adjustment undertaken in accordance with LAQM.TG(22) Box 7-14

c) Luton Rising sites

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Simple Annual Mean: Raw Data	Simple Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
L1(i)	508710	221353	35.7	37.3	35.4	31.4	31.6	23.3	32.2	27.0	36.0	38.4	43.3	31.3	-	-	-	Triplicate Site with L1(i), L1(ii) and L1(iii) - Annual data provided for L1(iii) only
L1(ii)	508710	221353	34.0	35.4	35.1	31.5	31.2	33.2	35.2	26.8	35.9	38.0	41.5	32.4	-	-	-	Triplicate Site with L1(i), L1(ii) and L1(iii) - Annual data provided for L1(iii) only
L1(iii)	508710	221353	35.6	39.1	34.0	29.7	29.7	28.0	33.2	28.6	34.3	40.8	36.5	28.9	33.6	28.3	-	Triplicate Site with L1(i), L1(ii) and L1(iii) - Annual data provided for L1(iii) only
L2(i)	511155	222445	29.5	26.0	22.5	20.5	-	18.4	20.5	16.8	25.2	27.2	27.4	22.4	-	-	-	Duplicate Site with L2(i) and L2(ii) - Annual data provided for L2(ii) only
L2(ii)	511155	222445	29.0	27.0	23.8	20.1	-	19.4	19.9	18.2	24.8	26.7	31.6	24.9	23.7	19.9	-	Duplicate Site with L2(i) and L2(ii) - Annual data provided for L2(ii) only
L3(i)	511780	222760	27.7	27.2	24.3	18.1	17.7	15.0	18.2	16.4	20.0	29.1	29.5	21.6	-	-	-	Duplicate Site with L3(i) and L3(ii) - Annual data provided for L3(ii) only
L3(ii)	511780	222760	30.0	25.5	25.7	19.7	17.5	14.1	18.8	16.3	19.8	26.8	30.4	21.6	22.1	18.6	-	Duplicate Site with L3(i) and L3(ii) - Annual data provided for L3(ii) only
L4(i)	513223	222397	18.5	18.5	14.2	10.2	10.8	11.4	12.7	12.8	13.6	19.1	20.2	15.8	-	-	-	Duplicate Site with L4(i) and L4(ii) - Annual data provided for L4(ii) only
L4(ii)	513223	222397	18.4	17.5	8.9	10.5	11.4	11.6	13.3	11.9	12.6	18.4	21.1	15.4	14.5	12.2	-	Duplicate Site with L4(i) and L4(ii) - Annual data provided for L4(ii) only
L5(i)	515047	221904	13.0	11.2	13.9	5.8	6.6	6.2	6.6	6.5	7.6	12.7	12.9	10.2	-	-	-	Duplicate Site with L5(i) and L5(ii) - Annual data provided for L5(ii) only
L5(ii)	515047	221904	13.6	11.2	10.0	6.0	7.1	6.2	6.7	6.9	8.6	12.6	13.9	-	9.4	7.9	-	Duplicate Site with L5(i) and L5(ii) - Annual data provided for L5(ii) only
L6(i)	513773	221752	18.3	16.8	13.2	9.8	9.8	-	-	-	-	-	15.3	12.7	-	-	-	Duplicate Site with L6(i) and L6(ii) - Annual data provided for L6(ii) only
L6(ii)	513773	221752	17.5	15.0	14.1	10.2	10.4	-	-	-	-	-	15.6	13.9	13.8	10.7	-	Duplicate Site with L6(i) and L6(ii) - Annual data provided for L6(ii) only
L7(i)	511057	221386	58.2	62.1	53.2	51.3	52.4	-	64.3	43.9	56.0	54.1	62.7	41.3	-	-	-	Duplicate Site with L7(i) and L7(ii) - Annual data provided for L7(ii) only
L7(ii)	511057	221386	57.7	53.8	53.0	48.4	45.5	-	59.9	48.3	58.2	59.6	60.9	44.1	54.0	**45.4**	-	Duplicate Site with L7(i) and L7(ii) - Annual data provided for L7(ii) only
L8(i)	510543	220706	28.0	21.8	24.4	17.9	18.1	16.8	-	17.4	23.4	25.0	28.0	25.0	-	-	-	Duplicate Site with L8(i) and L8(ii) - Annual data provided for L8(ii) only
L8(ii)	510543	220706	26.9	26.4	23.7	17.3	17.8	15.9	-	17.6	22.9	26.3	26.2	-	22.4	18.8	-	Duplicate Site with L8(i) and L8(ii) - Annual data provided for L8(ii) only
L9(i)	510553	220682	24.9	25.4	18.7	13.0	14.1	13.9	15.9	14.9	18.0	21.0	24.7	21.7	-	-	-	Duplicate Site with L9(i) and L9(ii) - Annual data provided for L9(ii) only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Simple Annual Mean: Raw Data	Simple Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
L9(ii)	510553	220682	24.2	21.4	17.9	13.3	13.3	14.2	16.0	13.3	20.6	24.2	25.7	21.4	18.8	15.8	-	Duplicate Site with L9(i) and L9(ii) - Annual data provided for L9(ii) only
L10(i)	506541	219854	24.8	23.0	21.1	18.8	19.5	18.1	16.2	14.5	20.9	23.3	26.8	17.4	-	-	-	Duplicate Site with L10(i) and L10(ii) - Annual data provided for L10(ii) only
L10(ii)	506541	219854	22.7	25.1	21.1	19.3	19.3	19.1	16.6	14.6	18.1	24.9	26.4	20.9	20.5	17.3	-	Duplicate Site with L10(i) and L10(ii) - Annual data provided for L10(ii) only
L11(i)	512569	222207	18.1	17.6	12.2	9.9	9.2	7.8	10.5	10.0	11.1	17.0	18.0	14.2	-	-	-	Triplicate Site with L11(i), L11(ii) and L11(iii) - Annual data provided for L11(iii) only
L11(ii)	512569	222207	18.5	15.7	14.3	11.1	9.2	8.7	11.0	10.1	11.3	16.9	18.1	15.6	-	-	-	Triplicate Site with L11(i), L11(ii) and L11(iii) - Annual data provided for L11(iii) only
L11(iii)	512569	222207	17.1	16.0	13.4	9.1	9.7	8.1	11.3	10.3	11.3	17.4	17.8	14.2	13.1	11.0	-	Triplicate Site with L11(i), L11(ii) and L11(iii) - Annual data provided for L11(iii) only
L12(i)	510256	220599	31.0	24.9	24.5	24.1	23.7	24.4	21.1	20.5	28.2	30.4	33.0	26.9	-	-	-	Duplicate Site with L12(i), and L12(ii) - Annual data provided for L12(ii) only
L12(ii)	510256	220599	29.9	26.4	23.3	22.9	22.9	21.5	19.5	20.7	29.4	29.9	32.0	25.7	25.7	21.6	-	Duplicate Site with L12(i), and L12(ii) - Annual data provided for L12(ii) only
L13(i)	509744	220103	19.5	16.1	15.4	10.0	11.9	7.8	10.8	9.8	15.0	19.5	20.0	15.0	-	-	-	Duplicate Site with L13(i), and L13(ii) - Annual data provided for L13(ii) only
L13(ii)	509744	220103	19.3	15.1	14.4	10.3	11.5	8.5	11.1	10.1	14.6	18.8	19.8	14.6	14.1	11.9	-	Duplicate Site with L13(i), and L13(ii) - Annual data provided for L13(ii) only
L14(i)	509195	220264	22.1	18.0	18.3	11.3	13.9	11.6	13.4	12.2	14.9	20.1	22.9	17.2	-	-	-	Duplicate Site with L14(i) and L14(ii) - Annual data provided for L14(ii) only
L14(ii)	509195	220264	21.7	19.0	16.7	12.4	-	-	13.9	12.4	-	16.4	21.8	-	16.2	13.6	-	Duplicate Site with L14(i) and L14(ii) - Annual data provided for L14(ii) only
L15(i)	506794	219467	16.5	11.5	11.0	8.1	8.9	5.1	6.6	5.9	11.0	15.3	19.9	-	-	-	-	Duplicate Site with L15(i) and L15(ii) - Annual data provided for L15(ii) only
L15(ii)	506794	219467	16.0	-	10.3	7.5	9.8	5.9	6.8	6.2	-	14.1	20.3	-	10.9	9.1	-	Duplicate Site with L15(i) and L15(ii) - Annual data provided for L15(ii) only
L16(i)	515284	222038	15.4	-	10.3	7.2	8.1	7.1	8.3	8.5	9.8	13.9	16.6	12.0	-	-	-	Duplicate Site with L16(i) and L16(ii) - Annual data provided for L16(ii) only
L16(ii)	515284	222038	16.0	-	10.6	6.9	8.0	7.5	8.2	8.6	10.2	14.9	14.1	12.0	10.6	8.9	-	Duplicate Site with L16(i) and L16(ii) - Annual data provided for L16(ii) only

☒ **All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Luton Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m^3 are shown in **bold**.

NO₂ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **<u>bold and underlined</u>**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Luton During 2024

Luton Council has not identified any new sources relating to air quality within the reporting year of 2024/25.

Additional Air Quality Works Undertaken by Luton Council during 2024

During 2024, an additional ten NO_2 passive monitoring sites have been established in the vicinity of AQMA Nos. 1 & 2 and AQMA No. 3;

QA/QC of Diffusion Tube Monitoring

At the end of the first monitoring period (January 2024), LLAOL swapped from using 50% Triethanolamine (TEA) in acetone tubes prepared by SOCOTEC Didcot to using 20% TEA in deionised water tubes supplied by Gradko. As a result, for most of 2024, diffusion tubes of the same preparation from the same supplier were used across all three passive monitoring programmes in Luton. Once exposed, these tubes were analysed following Gradko's documented in-house *Laboratory Method GLM7,* which complies with the guidelines set out in Defra's *'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance'* [https://tinyurl.com/j6976rah]. The analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is within the scope of Gradko's UKAS schedule.

Gradko participates in the AIR NO_2 PT scheme, with the most recently published results at the time of writing indicating that during 2024, 100% of QC samples were analysed satisfactorily[10]. For the same year, reported nitrogen dioxide diffusion tube co-location studies indicate that the laboratory achieved good precision in all but one of 27 studies (96%) where tubes prepared with 20% TEA in water were used[11].

The tubes used by LLAOL during January 2024 were analysed following SOCOTEC's standard

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[10] Defra / LGC (February 2025) - Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (February 2023 – February 2025); https://tinyurl.com/f36a663j

[11] Defra (April 2025) – National Diffusion Tube Bias Adjustment Factor Spreadsheet version 04/25; https://tinyurl.com/enmcmcj2

operating procedure ANU/SOP/1015. During 2024, the laboratory achieved good precision in 30 out of 33 reported co-location studies (91%) where 50% TEA in acetone tubes were used. Also, as a participant in the AIR NO_2 PT scheme, during 2024, all 100% of the QC samples tested by SOCOTEC were deemed to have been analysed satisfactorily.

Using the *Diffusion Tube Data Processing Tool v5.4* [https://tinyurl.com/e9zdbnxr] to check the precision of replicate tube data, the results for the triplicate LBC tubes (LN61/62/63) co-located with the continuous analyser on Dunstable Road East were shown to demonstrate *"Good Overall Precision"* [a) Luton Council co-location study]. Undertaking a similar check on the triplicate sets of Luton Rising tubes co-located with the continuous analysers on both Dunstable Road East (*L1*) and Wigmore Valley Park (*L11*), a similar result was obtained with both sets also being shown to have *"Good Overall Precision"* [b) Luton Rising co-location studies].

During 2024, 94.7% of the 1,148 valid tube exposures made as part of the Council's monitoring programme were undertaken within a ±2 day tolerance of the *Diffusion Tube Monitoring Calendar* [https://tinyurl.com/kawdzjmu] as recommended in the *Important Notes* tab of the *Diffusion Tube Processing Tool*. Only ten exposures fell outside the target duration range of 24 to 35 days ±4 days' tolerance, all occurring due to shortened initial exposures following the establishment of new monitoring sites (*i.e.* sites LN145 to LN154). This deviation has been accounted for by processing the data from these new sites separately from the pre-existing sites using the *Diffusion Tube Data Processing Tool v5.4*.

During the same period, 57.0% of the 179 valid tube exposures made by LLAOL were deployed and collected within ±2 days of the calendar date. Whilst 15 tubes were exposed for longer than the 39-day upper limit targeted by the calendar. This occurred during December, when all tubes were exposed for six weeks rather than the scheduled five. This exceedance of the recommended five-week maximum may affect the reliability of that month's data.

All 380 of the valid tube exposures undertaken by Luton Rising were completed in accordance with the monitoring calendar dates.

Diffusion Tube Annualisation

Annualisation was required for sites with between 25% and 75% annual data capture in each of the LBC, LLAOL and Luton Rising datasets. This was undertaken using whole-year data sets obtained from the *UK Air Data Selector* [https://tinyurl.com/s6fpm8xx] for the following *Automatic Urban & Rural Network* (AURN) monitoring sites (all of which are within a 50-mile radius of Luton and have data capture rates of over 85% for the calendar year):

- London Bloomsbury (*UKA00211*) – Type: Urban Background

- London Hillingdon (*UKA00266*) – Type: Urban Background

- London Westminster (*UKA00435*) – Type: Urban Background

- Oxford St Ebbes (*UKA00518*) – Type: Urban Background

All annualisation was undertaken using the *Diffusion Tube Processing Tool v5.3* (https://tinyurl.com/bd2bz5bb). The output of these corrections is presented in Table C.1.

Table C.1 - Annualisation Summary (concentrations presented in µg/m³)

a) Luton Council sites

Site ID	Annualisation Factor London Bloomsbury	Annualisation Factor London Hillingdon	Annualisation Factor London Westminster	Annualisation Factor Oxford St Ebbes	Average Annualisation Factor	Raw Data Simple Annual Mean	Annualised Data Simple Annual Mean	Comments
LN64	1.0813	1.0881	1.1209	1.1504	1.1102	23.3	25.8	-
LN72	0.9894	1.0267	1.0176	1.0701	1.0260	26.3	27.0	-
LN104	0.8951	1.0144	0.8378	0.8480	0.8988	31.8	28.6	-
LN123	0.9558	0.9924	0.9569	0.9568	0.9655	29.0	28.0	-
LN138	1.0300	1.0904	1.0726	1.1073	1.0751	30.6	32.9	-
LN143	1.0393	1.0432	1.0743	1.0714	1.0571	31.9	33.7	-

Site ID	Annualisation Factor London Bloomsbury	Annualisation Factor London Hillingdon	Annualisation Factor London Westminster	Annualisation Factor Oxford St Ebbes	Average Annualisation Factor	Raw Data Time Weighted Annual Mean	Annualised Data Time Weighted Annual Mean	Comments
LN145	1.0662	1.0286	1.0536	1.0348	1.0458	15.5	16.2	-
LN151	1.0297	1.0810	1.0594	1.0632	1.0583	21.1	22.3	-
LN152	1.0513	1.0432	1.0292	1.0056	1.0323	32.2	33.2	-
LN153	1.1068	1.0864	1.1388	1.1391	1.1178	28.1	31.4	-
LN154	1.0492	1.0482	1.0332	1.0244	1.0388	28.5	29.6	-

b) London Luton Airport Operations Ltd sites

Site ID	Annualisation Factor London Bloomsbury	Annualisation Factor London Hillingdon	Annualisation Factor London Westminster	Annualisation Factor Oxford St Ebbes	Average Annualisation Factor	Raw Data Time Weighted Annual Mean	Annualised Data Time Weighted Annual Mean	Comments
LLA 1$_{Jan}$	0.7798	0.9263	0.7474	0.7274	0.7952	36.8	29.3	Supplier and preparation changed within calendar year (Jan: SOCOTEC, 50%TEA v/v in acetone)
LLA 1$_{Feb-Dec}$	0.9587	0.9634	0.9418	0.9356	0.9499	26.0	24.7	Supplier and preparation changed within calendar year (Feb onwards: Gradko 20% TEA/water).
LLA 9$_{Jan}$	0.7798	0.9263	0.7474	0.7274	0.7952	17.7	14.1	Supplier and preparation changed within calendar year (Jan: SOCOTEC, 50%TEA v/v in acetone)
LLA 9$_{Feb-Dec}$	1.0376	0.9706	1.0581	1.0782	1.0361	7.7	8.0	Supplier and preparation changed within calendar year (Feb onwards: Gradko 20% TEA/water).

Annualised values bias corrected and combined in accordance with LAQM.TG22 Box 7-14:

$$\text{Annual mean } NO_2 \text{ concentration} = \left(\text{period average}_{SOCOTEC} \times \text{bias factor}_{SOCOTEC} \times \frac{\text{period duration (days)}_{SOCOTEC}}{\text{Total combined duration (days)}} \right) + \left(\text{period average}_{Gradko} \times \text{bias factor}_{Gradko} \times \frac{\text{period duration (days)}_{Gradko}}{\text{Total combined duration (days)}} \right)$$

$$\text{Annual mean } NO_2 \text{ concentration } \textbf{LLA 1} = \left(29.3 \times 0.78 \times \frac{28}{245} \right) + \left(24.7 \times 0.84 \times \frac{217}{245} \right) = \textbf{19.7μg/m}^3$$

$$\text{Annual mean } NO_2 \text{ concentration } \textbf{LLA 9} = \left(14.1 \times 0.78 \times \frac{28}{217} \right) + \left(8.0 \times 0.84 \times \frac{189}{217} \right) = \textbf{7.3μg/m}^3$$

c) London Rising sites

Site ID	Annualisation Factor London Bloomsbury	Annualisation Factor London Hillingdon	Annualisation Factor London Westminster	Annualisation Factor Oxford St Ebbes	Average Annualisation Factor	Raw Data Simple Annual Mean	Annualised Data Simple Annual Mean	Comments
L6(i)	0.9160	0.9645	0.9156	0.9088	0.9262	-	-	*Duplicate Site with L6(i) and L6(ii) - Annual data provided for L6(ii) only*
L6(ii)	0.9160	0.9645	0.9156	0.9088	0.9262	13.8	12.7	*Duplicate Site with L6(i) and L6(ii) - Annual data provided for L6(ii) only*

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NOx/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Luton Council have applied a national bias adjustment factor of 0.84 to the 2024 monitoring data. (National Spreadsheet version 04/25 [https://tinyurl.com/2uskzcn9]; Gradko; 20% TEA in water; 27 studies). Adopting a precautionary approach, this figure was selected in preference to the lower locally derived value of 0.79 obtained from a triplicate co-location study undertaken at LN60/HB007. By selecting the higher of the two values, the correction output presents a worst-case picture of NO_2 concentrations. The impact of applying the national factor in preference to the local figure has been characterised (Table C.3) and shown graphically relative to last year's results (Figure C.1). The selection of the national factor has no effect in terms of compliance, with all sites remaining below 40µg/m^3 regardless of which factor was applied.

A similar approach was also adopted when processing the Luton Rising data, with Luton Council electing to use the same national factor of 0.84 in preference to a combined local bias adjustment factor of 0.82 obtained from co-location studies at LN60/HB007 and LA001.

The analysis of co-location study data to calculate local bias adjustment factors for both the LBC and Luton Rising monitoring programmes was undertaken using the Diffusion Tube Data Processing Tools v5.4 (https://tinyurl.com/4dy6jpf4). The output from this analysis is presented in Table C.4.

LLAOL changed both tube supplier and preparation during 2024. As its monitoring programme does not include a co-location study, the 2024 LLAOL monitoring data has been bias-corrected in accordance with LAQM.TG22 Box 7-14 using the relevant national bias adjustment factors obtained from version 04/25 of the National Spreadsheet; i.e. 0.78 (SOCOTEC Didcot; 50% TEA in acetone; 33 studies) and 0.84 (Gradko; 20% TEA in water; 27 studies).

A summary of bias adjustment factors used by Luton Council over the past five years is presented in Table C.2.

Table C.2 - Bias Adjustment Factor

a) Luton Council sites

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	04/25	0.84
2023	National	03/24	0.81
2022	Local	-	0.85
2021	National	03/22	0.84
2020	National	03/21	0.81

b) London Luton Airport Operations Ltd sites

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	04/25	0.78 (Jan; SOCOTEC) 0.84 (Feb onwards; Gradko)
2023	National	03/24	0.77
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.82 (Gradko) 0.77 (SOCOTEC)

c) Luton Rising sites

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	04/25	0.84
2023	National	03/24	0.81
2022	Local / National*	03/23	0.83
2021	National	03/22	0.84
2020	National	03/21	0.81

*   Local and National adjustment factors are equal.

Table C.3 – Comparison of LBC diffusion tube output obtained using local and national bias correction factors

	Local	National
Bias Correction Factor	0.79	0.84
Percentage Difference	6.1%	6.1%
Number of exceedances (excluding co-location sites)	0	0
Number of sites above 36µg/m³ (excluding co-location sites)	0	0
Number of sites above 10µg/m³ (excluding co-location sites)	100	102
Max	32.8µg/m³	34.8µg/m³
Min	9.5µg/m³	10.1µg/m³
Range	23.3µg/m³	24.8µg/m³
Average	19.4µg/m³	20.6µg/m³
Median	18.9µg/m³	20.1µg/m³
Standard Deviation	5.30µg/m³	5.63µg/m³
Higher than previous year (when rounded to 1 decimal place)	0 (0%)	7 (7.5%)
Lower than previous year (when rounded to 1 decimal place)	93 (100%)	85 (91.4%)
Unchanged (when rounded to 1 decimal place)	0 (0%)	1 (1.1%)
Max increase (cf. 2023)	N/A	1.5µg/m³ (LN143, 6%)
Max decrease (cf. 2023)	-7.8µg/m³ (LN54, -38%)	-7.0µg/m³ (LN54, -34%)
Average change (cf. 2023)	-2.6µg/m³	-1.4µg/m³
Median change (cf. 2023)	-2.6µg/m³	-1.3µg/m³

Figure C.1 – Differences in 2024 LBC NO₂ concentrations relative to reported 2023 annual mean values (µg/m³)

a) 2024 data adjusted using locally derived correction factor (0.79)
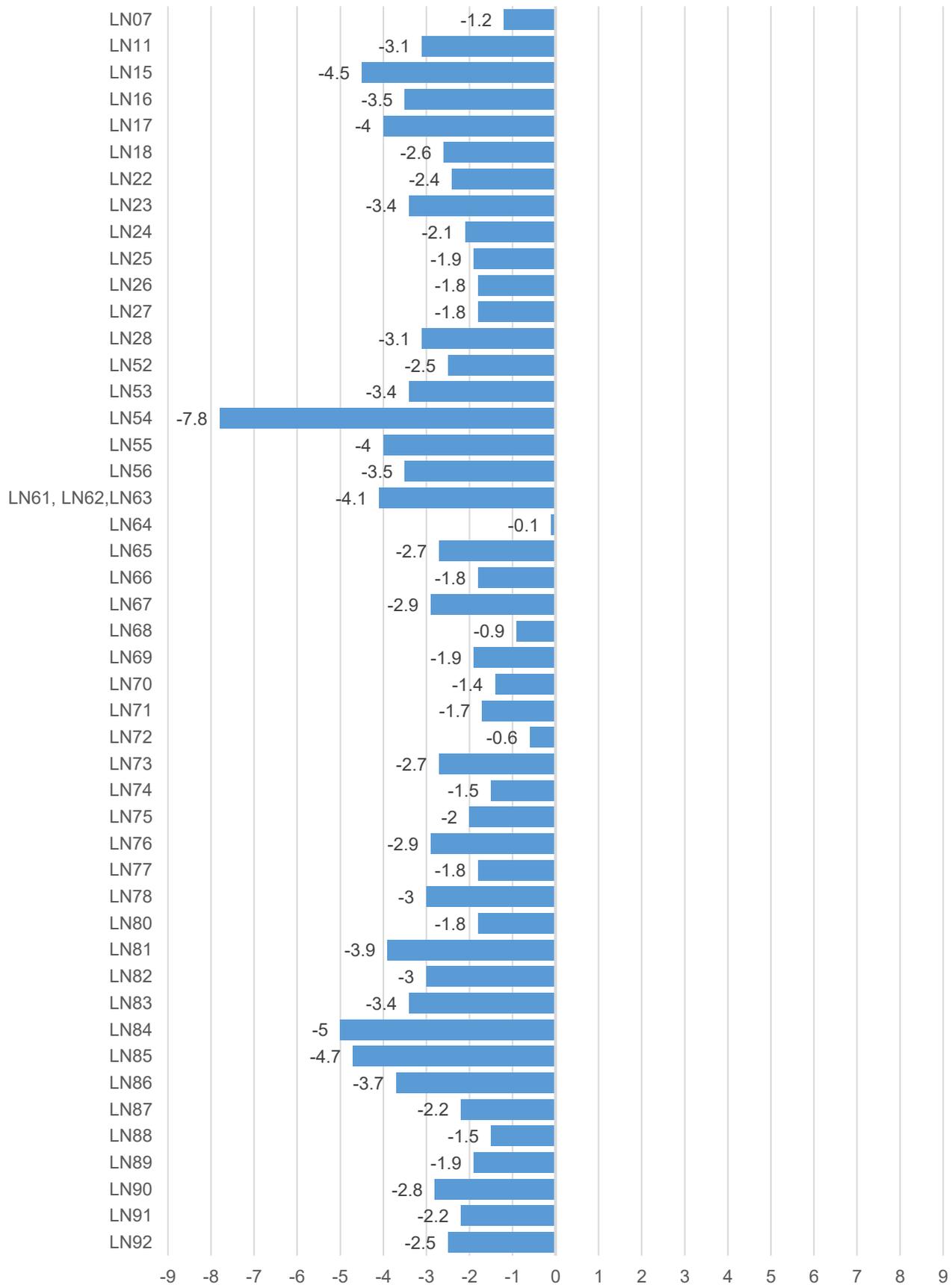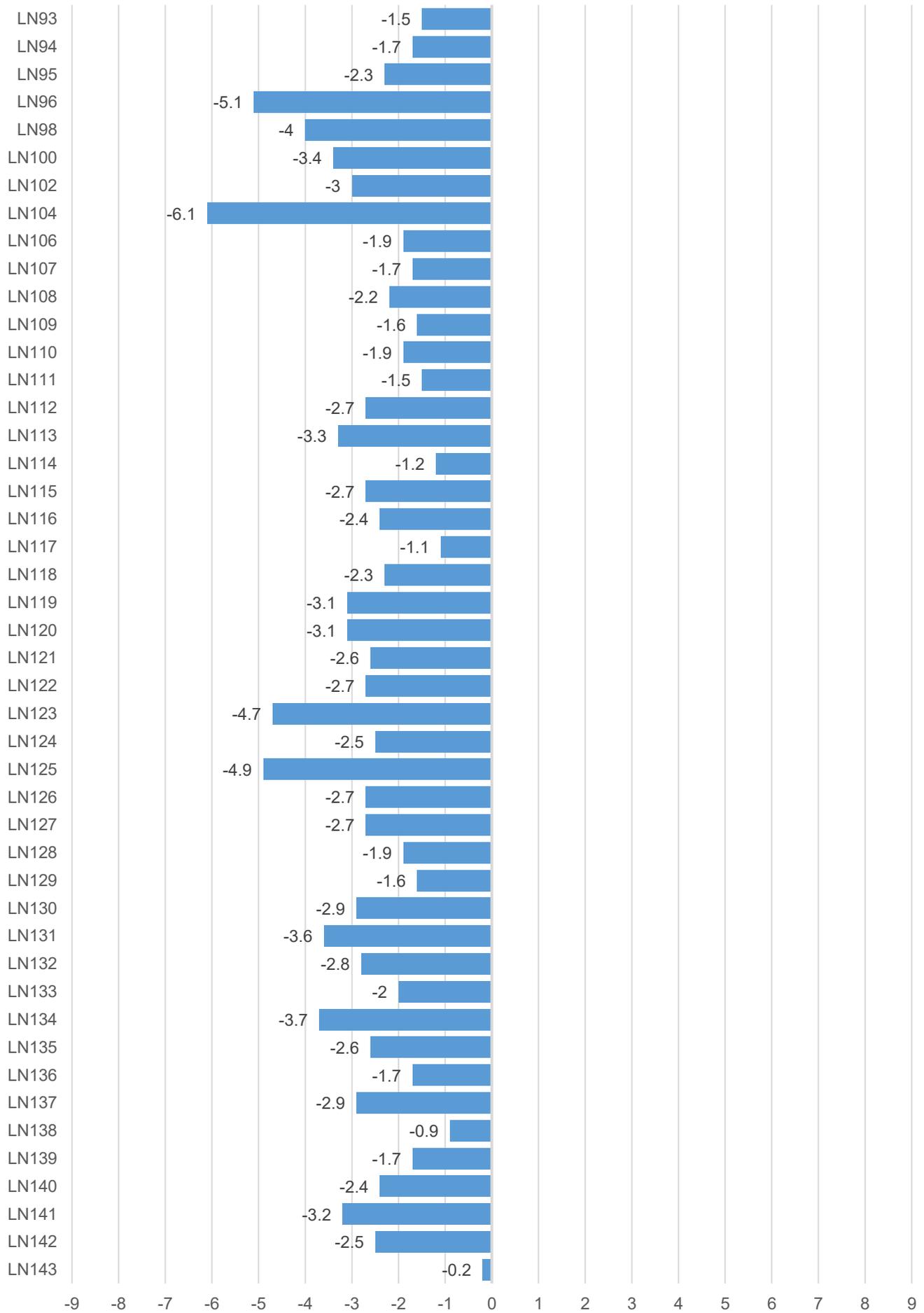
b) 2024 data adjusted using national correction factor (0.84)

Site	Value
LN07	-0.1
LN11	-1.6
LN15	-3.5
LN16	-2.4
LN17	-2.8
LN18	-1.7
LN22	-1.6
LN23	-2
LN24	-1.3
LN25	-0.7
LN26	-1
LN27	-0.6
LN28	-1.6
LN52	-0.7
LN53	-2.4
LN54	-7
LN55	-3.1
LN56	-2.5
LN61, LN62,LN63	-2.5
LN64	1.2
LN65	-1.7
LN66	-0.3
LN67	-1.1
LN68	0.5
LN69	-0.6
LN70	-0.1
LN71	-0.4
LN72	0.7
LN73	-1.1
LN74	0.1
LN75	-0.3
LN76	-1.6
LN77	-0.3
LN78	-1.9
LN80	-0.5
LN81	-2.9
LN82	-2
LN83	-2.5
LN84	-4.2
LN85	-3.7
LN86	-2.4
LN87	-1.3
LN88	-0.4
LN89	-0.9
LN90	-1.7
LN91	-1.2
LN92	-1.6

LAQM Annual Status Report 2025

Table C.4 - Local Bias Adjustment Calculation

a) Luton Council co-location study

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4
Periods used to calculate bias	11	-	-	-
Bias Factor A	0.79 (0.75 – 0.84)	-	-	-
Bias Factor B	26% (19% - 33%)	-	-	-
Diffusion Tube Mean (µg/m³)	31.9	-	-	-
Mean CV (Precision)	2.8%	-	-	-
Automatic Mean (µg/m³)	25.4	-	-	-
Data Capture	100%	-	-	-
Adjusted Tube Mean (µg/m³)	25 (24 – 27)	-	-	-
Overall Diffusion Tube Precision	Good Overall Precision	-	-	-
Overall Continuous Monitor Data Capture	Good Overall Data Capture	-	-	-

Local Bias Adjustment Factor = 0.79

Note:

Adopting a precautionary approach, a national bias adjustment factor (0.84) has been used to bias adjust the 2024 diffusion tube results in preference to this local bias adjustment factor.

b) Luton Rising co-location studies

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4
Periods used to calculate bias	12	12	-	-
Bias Factor A	0.77 (0.72 – 0.82)	0.88 (0.83 – 0.92)	-	-
Bias Factor B	30% (22% - 38%)	14% (9% - 20%)	-	-
Diffusion Tube Mean (µg/m³)	33.6	13.1	-	-
Mean CV (Precision)	5.3%	4.3%	-	-
Automatic Mean (µg/m³)	25.9	11.5	-	-
Data Capture	100%	94%	-	-
Adjusted Tube Mean (µg/m³)	26 (24 – 28)	12 (11 – 12)	-	-
Overall Diffusion Tube Precision	Good Overall Precision	Good Overall Precision	-	-
Overall Continuous Monitor Data Capture	Good Overall Data Capture	Good Overall Data Capture	-	-

Combined Local Bias Adjustment Factor = 0.82

Note:

Adopting a precautionary approach, a national bias adjustment factor (0.84) has been used to bias adjust the 2024 diffusion tube results in preference to this combined local bias adjustment factor.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO$_2$ monitoring locations within Luton required distance correction during 2024.

QA/QC of Automatic Monitoring

As far as possible, the nitrogen dioxide analyser on Dunstable Road East (LN60 / HB007) is calibrated by a Luton Council officer on a fortnightly basis. However, during 2024 there was a hiatus between the end of August and the beginning of October due to staff availability. The co-located FIDAS particulate analyser does not require calibration. Acoem maintains both instruments and routinely services them on a six-monthly basis. Additionally, the site is audited twice a year by Ricardo AEA.

Figure C.2 presents a timeline showing the purpose and dates of all the site visits made to the Dunstable Road East monitoring site during 2024. Figure C.3 and Figure C.4 reproduce the Certificates of Calibration issued by Ricardo following the site audits undertaken in January and August 2024.

All automatic monitoring data collected at the Dunstable Road East, London Luton Airport (LA08) and Luton A505 Roadside (LUTR) sites is managed by Ricardo Energy & Environment using the quality control procedures utilised by Defra's national air quality network stations. These procedures represent best practice and fully meet the requirements set out in LAQM.TG22. Ricardo Energy & Environment provides UKAS-accredited quality control audits and data management services to all Defra national network (AURN) air quality monitoring stations.

All data collected at the above sites is screened and scaled (based on site calibrations). The final data sets presented within this report (Figure C.5, Figure C.6 and Figure C.7) have benefitted from a full process of data ratification, including thorough additional data quality checks and a ratification process that corrects data for instrument sensitivity drift between routine calibrations.

All automatic monitoring data collected at Luton Rising's London Luton Airport FutureLuToN (LA001) site during 2024 has been validated and ratified to the standards described in LAQM.TG22. The site datasets published online (summarised in Figure C.8) are managed by Ricardo Energy & Environment in full compliance with the requirements of LAQM.TG22, including the screening, validation, and ratification of the raw data.

Live and historical data for all automatic monitoring sites is available via the Herts & Beds Air Quality Network pages on the Air Quality England website [https://tinyurl.com/khvpphd5].

Figure C.2 – Timeline of site visits made to the air monitoring station at Dunstable Road East (LN60 / HB007) during 2024
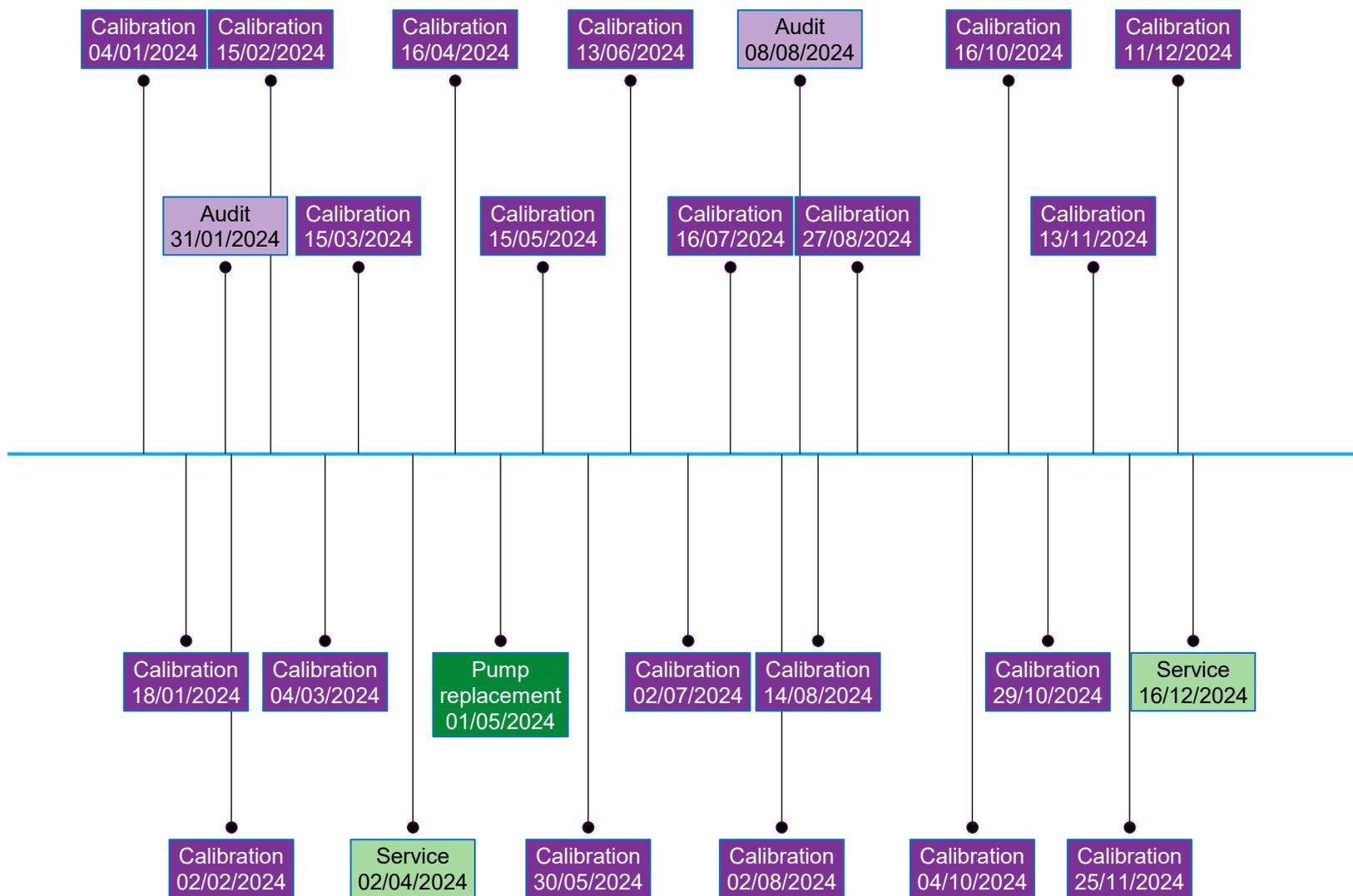
Figure C.3 – Certificate of Calibration issued for air monitoring station at Luton Dunstable Road East (LN60 / HB007) following site audit on 31 January 2024

CERTIFICATE OF CALIBRATION

Ricardo Energy and Environment, Gemini Building, Fermi Avenue Harwell, Didcot, Oxfordshire OX11 0QR. Telephone 01235 753692

Page 1 of 3

Approved Signatories:

- ☐ S. Eaton
- ☐ S Copsey
- ☐ N Rand
- ☐ B Davies
- ☑ D Lane
- ☐ B Stacey
- ☐ S Stratton
- ☐ S Telfer
- ☐ S Gray
- ☐ T Green

Signed: ▮▮▮▮

Date of issue: 01 Feb 24

Certificate Number: 6656

Customer Name and Address:

Luton Borough Council
Environmental Health
Town Hall
George Street
Luton
LU1 2BQ

Description: Calibration results for the air monitoring station at Luton Dunstable Road East

Ricardo Energy & Environment ID: ED79001211/January 2024

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95% The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory

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Luton Dunstable Road East_Cert 6656_Jan 2024 1 of 3

CERTIFICATE OF CALIBRATION

Date of issue: 01 Feb 24

Certificate Number: 6656

Ricardo Energy & Environment ID: ED79001211/January 2024

Luton Dunstable Road East
Date of audit: 31 Jan 2024

Species	Analyser Serial no	Zero Response[1]	Zero uncertainty nmol/mol	Calibration Factor[2]	Factor uncertainty %	Converter efficiency (%)[3]	Converter uncertainty (%)
NOx	1426962911	0.0	2.6	1.2364	3.5	98.5 (248ppb)	0.9
NO	1426962911	0.3	2.6	1.2331	3.5	99.1 (131ppb)	0.9

Luton Dunstable Road East
Date of audit: 31 Jan 2024

	Species	Analyser Serial no	Parameter	Specified Value	Measured Value	Deviation %	Uncertainty %
FIDAS	PM	6178	Total Flow[4]	4.8	4.65	-3.1	2.25

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Luton Dunstable Road East_Cert 6656_Jan 2024 2 of 3

CERTIFICATE OF CALIBRATION

Date of issue:	01 Feb 24
Certificate Number:	6656
Ricardo Energy & Environment ID:	ED79001211/January 2024

The gaseous ambient analysers listed above have been tested for zero response, calibration factor, linearity and converter efficiency (NOx analysers) by documented methods. The factors have been calculated using certified gas standards. The particulate analysers listed above have been tested for sample flow rates and k0(where appropriate) by documented methods. Note that the test results are valid on the day of test only, as analyser drift over time cannot be quantified. All results for gaseous species are reported in concentration units of nmol/mol or µmol/mol.

[1] The zero response is the zero reading on the data logging system of the analyser when audit zero gas was introduced to the analysers under test.

[2] The calibration factor is the multiplying factor required to scale the reading on the data logging system of the analyser into reported concentration units (nmol/mol for NO, NOx, SO2, O3 and µmol/mol for CO). It should be used in conjunction with the zero response. A corrected concentration is calculated using the following equation:

Concentration = F(Output - Zero Response)
Where F = Calibration Factor provided on this certificate
   Output = Reading on the data logging system of the analyser
   Zero Response = Zero Response provided on this certificate

[3] Converter eff. is the measured efficiency of the NO2 to NO converter within the oxides of nitrogen analyser under test.

[4] The measured main flow rate (where this is applicable) is the flow rate through the sensor unit of the TEOM particulate analyser under test. The measured aux flow rate (where this is applicable) is the flow rate through the bypass tubing of the TEOM particulate analyser under test. The measured total flow rate is the total flow rate through the particulate analyser under test. Units of flow are l.min^{-1}, reported at prevailing ambient conditions unless otherwise specified. Where flow rates are highlighted in bold, it indicates that measurements were not made at the analyser sample inlet. These measurements therefore may not accurately reflect analyser performance in normal operation.

The calibration results shaded are those that fall within our scope of accreditation, all other results on this certificate are not UKAS accredited, but have been included for completeness.

End of certificate

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Luton Dunstable Road East_Cert 6656_Jan 2024 3 of 3

Figure C.4 – Certificate of Calibration issued for air monitoring station at Luton Dunstable Road East (LN60 / HB007) following site audit on 8 August 2024

CERTIFICATE OF CALIBRATION

RICARDO

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Fermi Avenue Harwell, Didcot, Oxfordshire OX11 0QR.
Telephone: 01235 753000

Page 1 of 3

Approved Signatories:

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- ☐ A. Nash
- ☐ B. Stacey
- ☐ S. Stratton
- ☐ S. Telfer
- ☐ S. Gray
- ☐ T. Green

Signed:

Date of Issue: 09 Aug 2024

Certificate Number: 06947

Customer Name and Address:
Luton Borough Council
Environmental Health
Town Hall
George Street
Luton
LU1 2BQ

Description: Calibration results for the air monitoring station at
Luton Dunstable Road East

Ricardo Energy & Environment ID: ED79001211/August 2024

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95% The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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CERTIFICATE OF CALIBRATION

Date of issue: 09 Aug 2024

Certificate Number: 06947

Ricardo Energy & Environment ID: ED79001211/August 2024

Luton Dunstable Road East
Date of audit: 08 Aug 2024

Species	Analyser Serial no	Zero Response[1]	Zero uncertainty nmol/mol	Calibration Factor[2]	Factor uncertainty %	Converter efficiency (%)[3]	Converter uncertainty (%)
NOx	1426962911	1.0	2.5	0.9403	3.5	98.3 (271nmol/mol)	1.0
NO	1426962911	1.0	2.5	0.9481	3.5	98.6 (131nmol/mol)	1.0

Luton Dunstable Road East
Date of audit: 08 Aug 2024

	Species	Analyser Serial no	Parameter	Specified Value	Measured Value	Deviation %	Uncertainty %
Fidas 200	PM	6178	Total Flow[4]	4.80	4.78	-0.4	2.25
			Zero (μg/m³)[5]		0.00	n/a	n/a
			Caldust channel deviation[6]		1.72	n/a	n/a

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CERTIFICATE OF CALIBRATION

Date of issue: 09 Aug 2024

Certificate Number: 06947

Ricardo Energy & Environment ID: ED79001211/August 2024

The gaseous ambient analysers listed above have been tested for zero response, calibration factor, linearity, and converter efficiency (NOx analysers) by documented methods. The factors have been calculated using certified gas standards. The zero calibration is achieved using a traceable cylinder of zero air. The air from the cylinder contains no water vapour and this change in humidity from ambient air may well affect the response characteristics of certain analysers when compared to a zero calibration performed using chemical scrubbers. The traveling standard photometer used to test the O_3 analyser has been calibrated against the primary standard, using the cross-section given by Hearn (1961). The particulate analysers listed above have been tested for sample flow rates and k_0 (where appropriate) by documented methods. Note that the test results are valid on the day of test only, as analyser drift over time cannot be quantified. All results for gaseous species are reported in concentration units of nmol/mol or μmol/mol.

[1] The zero response is the zero reading on the data logging system of the analyser when audit zero gas was introduced to the analysers under test.

[2] The calibration factor is the multiplying factor required to scale the reading on the data logging system of the analyser into reported concentration units (nmol/mol for NO, NOx, SO_2, O_3 and μmol/mol for CO). It should be used in conjunction with the zero response. A corrected concentration is calculated using the following equation:

Concentration = F(Output - Zero Response)
Where F = Calibration Factor provided on this certificate
        Output = Reading on the data logging system of the analyser
        Zero Response = Zero Response provided on this certificate

[3] Converter eff. is the measured efficiency of the NO_2 to NO converter within the oxides of nitrogen analyser under test.

[4] The measured main flow rate (where this is applicable) is the flow rate through the sensor unit of the TEOM particulate analyser under test. The measured aux flow rate (where this is applicable) is the flow rate through the bypass tubing of the TEOM particulate analyser under test. The measured total flow rate is the total flow rate through the particulate analyser under test. Units of flow are $l.min^{-1}$, reported at prevailing ambient conditions unless otherwise specified. Where flow rates are highlighted in bold, it indicates that measurements were not made at the analyser sample inlet. These measurements therefore may not accurately reflect analyser performance in normal operation.

[5] The zero response (specifically for Fidas analysers) is the stable mass concentration reported by the analyser when a HEPA filter is placed on the sample inlet.

[6] The caldust channel deviation (specifically for Fidas analysers) is the response of the analyser to calibration dust of a known particle size. For the analyser to pass this test, the deviation result must be less than ±1.5 channels.

The calibration results shaded are those that fall within our scope of accreditation, all other results on this certificate are not UKAS accredited, but have been included for completeness.

End of certificate.

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Source: https://tinyurl.com/mrycaavr

09/05/2025, 09:58   Air Quality England Pollution Report

Air Pollution Report

1st January to 31st December 2024

AQE Air Quality England

Luton Dunstable Road East (Site ID: HB007)

These data have been fully ratified
Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	NO $\mu g/m^3$	NO$_2$ $\mu g/m^3$	NO$_x$asNO$_2$ $\mu g/m^3$	PM$_{10}$ $\mu g/m^3$	PM$_{25}$ $\mu g/m^3$
Number Days Low	-	366	-	366	365
Number Days Moderate	-	0	-	0	1
Number Days High	-	0	-	0	0
Number Days Very High	-	0	-	0	0
Max Daily Mean	120	63	248	45	37
Annual Max	431	114	766	67	55
Annual Mean	19	26	54	13	8
98th Percentile of daily mean	-	-	-	33	-
90th Percentile of daily mean	-	-	-	21	-
99.8th Percentile of hourly mean	-	95	-	-	-
98th Percentile of hourly mean	83	67	187	38	27
95th Percentile of hourly mean	54	55	134	29	21
50th Percentile of hourly mean	12	23	42	10	6
% Annual data capture	99.67	99.67	99.67	99.67	99.67

Instruments:
PM$_{10}$: FIDAS (01/01/2024 to 31/12/2024)
PM$_{25}$: FIDAS (01/01/2024 to 31/12/2024)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO$_X$ mass units are NO$_X$ as NO$_2$ μg m-3

https://www.airqualityengland.co.uk/statistics-report/view-report?database=aqengland&year=2024&site_id=HB007&dlink=link   1/3

Pollutant	Air Quality Standards regulations 2010	Exceedances	Days
PM₁₀ particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	0	0
PM₁₀ particulate matter (Hourly measured)	Annual mean > 40 microgrammes per metre cubed	0	-
PM₂.₅ particulate matter (Hourly measured)	Annual mean > 25 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	0	0
Nitrogen dioxide	**Annual Mean > 40 microgrammes per metre cubed**	**0**	-

Annual Graph

Luton Dunstable Road East 01/01/2024 - 31/12/2024
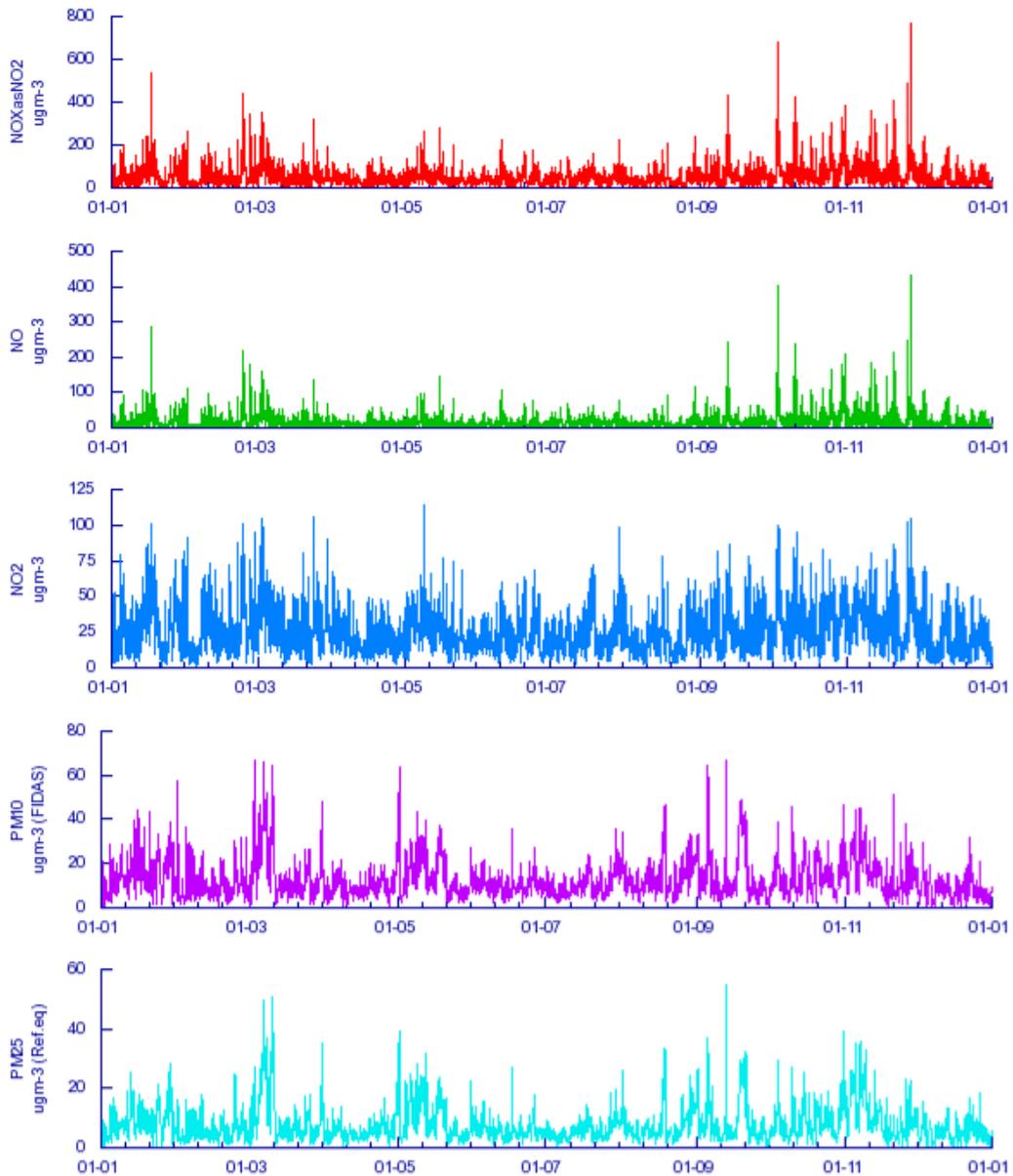
Figure C.6 – 2024 Air Pollution Report – LA08: London Luton Airport (Site ID: HB006)

Source: https://tinyurl.com/mjhs2m4c

Air Pollution Report

1st January to 31st December 2024

Air Quality England

London Luton Airport (Site ID: HB006)

These data have been fully ratified
Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	PM₁₀ µg/m³
Number Days Low	300
Number Days Moderate	0
Number Days High	0
Number Days Very High	0
Max Daily Mean	39
Annual Max	67
Annual Mean	14
98th Percentile of daily mean	30
90th Percentile of daily mean	21
98th Percentile of hourly mean	34
95th Percentile of hourly mean	27
50th Percentile of hourly mean	12
% Annual data capture	83.79

Instruments:
PM_{10}: BAM Gravimetric Equivalent (correction applied) (01/01/2024 to 31/12/2024)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NO_X mass units are NO_X as NO_2 µg m-3
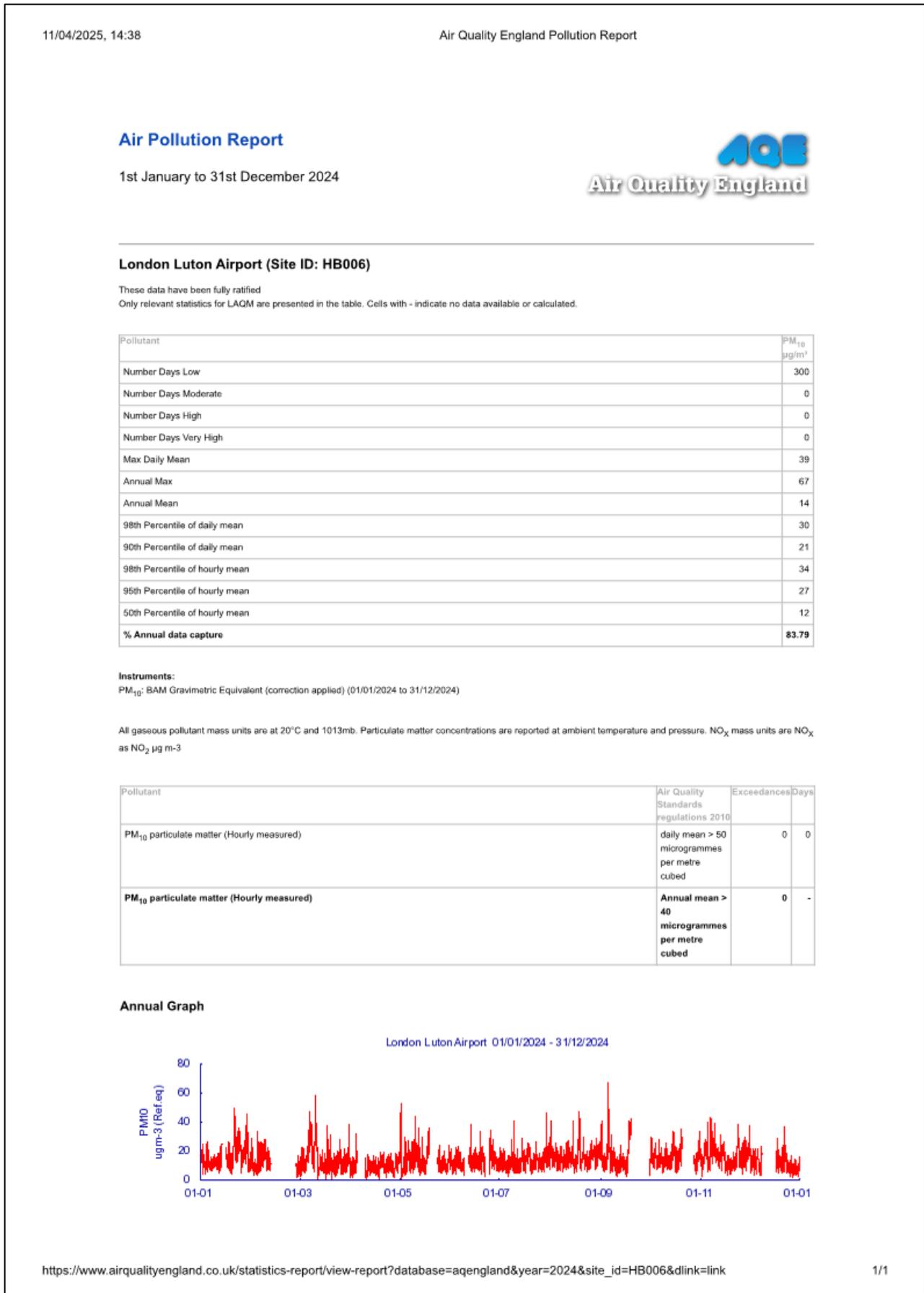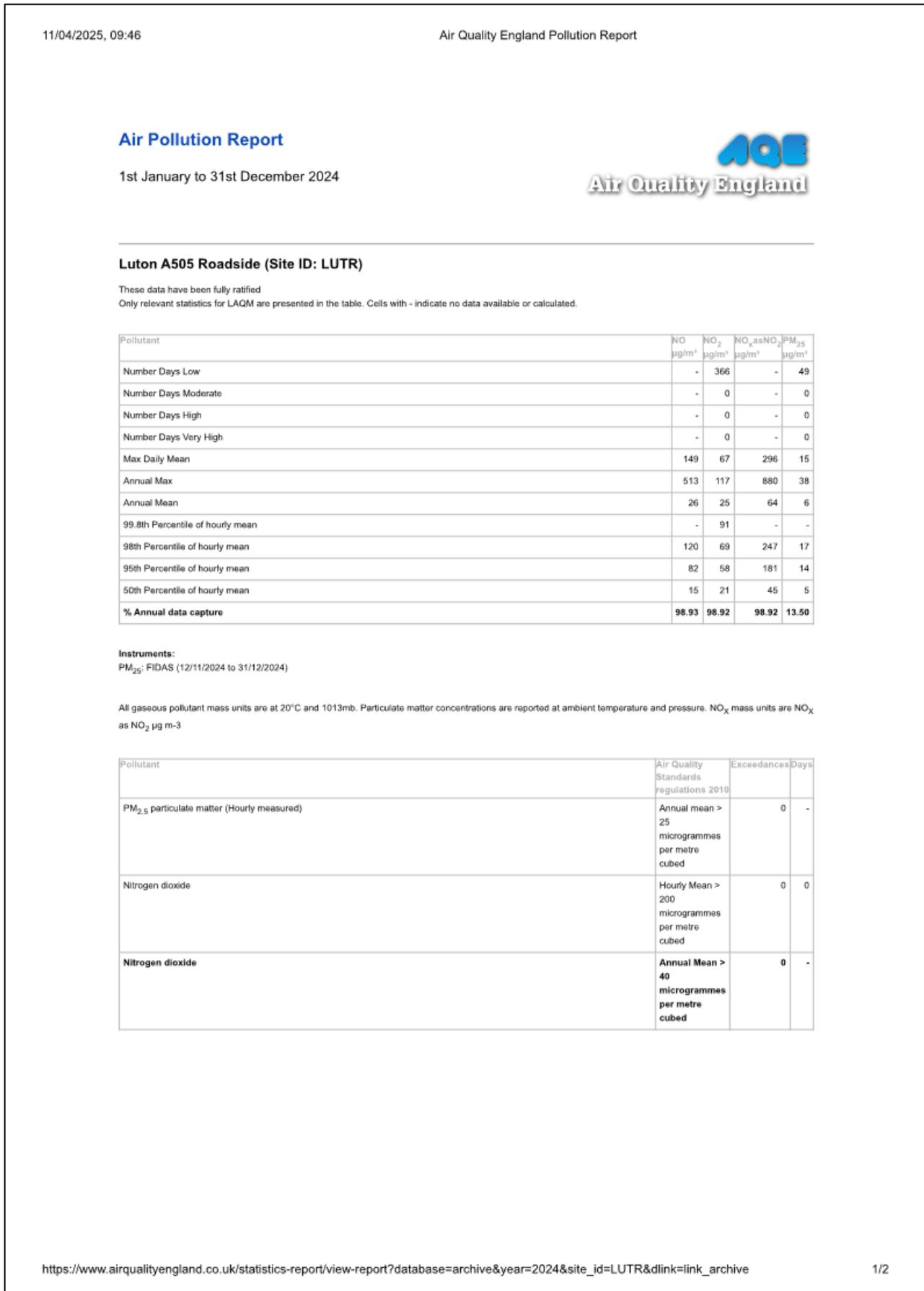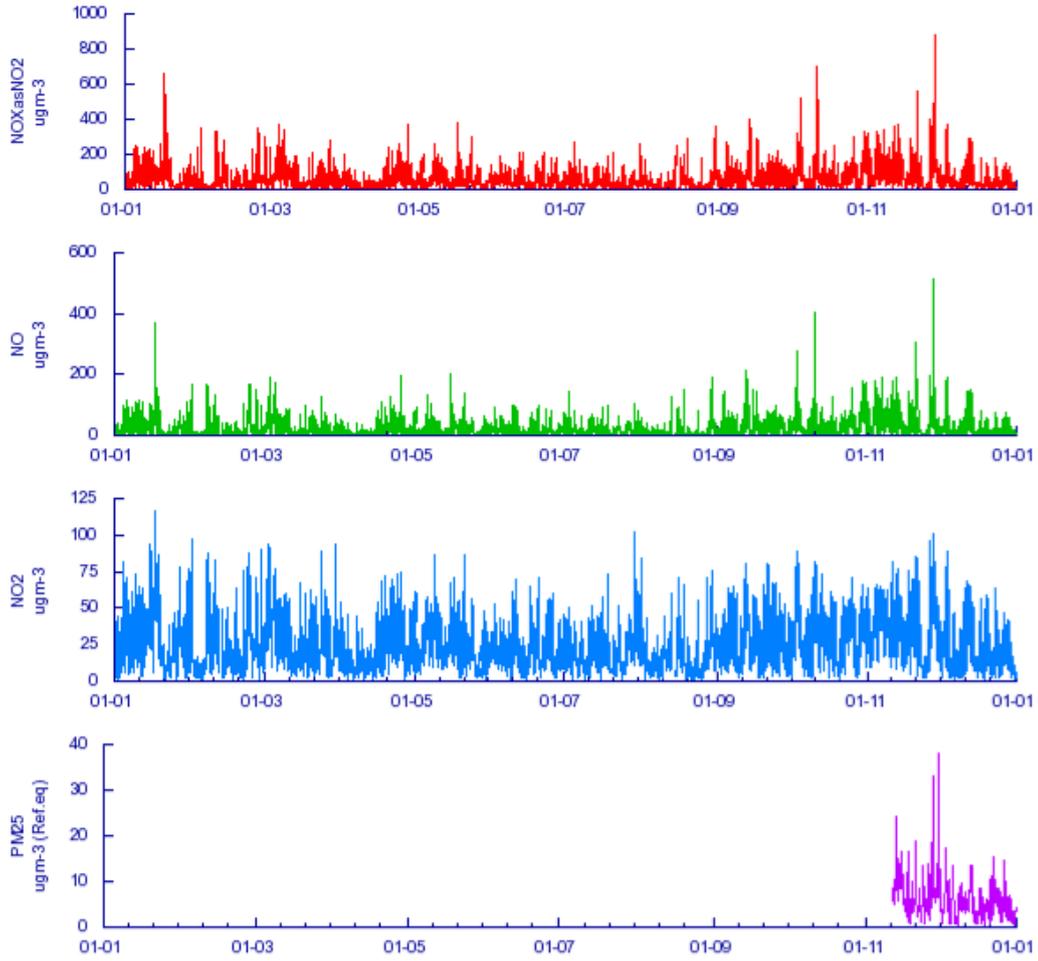
Pollutant	Air Quality Standards regulations 2010	Exceedances	Days
PM_{10} particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	0	0
PM_{10} particulate matter (Hourly measured)	Annual mean > 40 microgrammes per metre cubed	0	-

Annual Graph

London Luton Airport 01/01/2024 - 31/12/2024

https://www.airqualityengland.co.uk/statistics-report/view-report?database=aqengland&year=2024&site_id=HB006&dlink=link   1/1

Figure C.7 – 2024 Air Pollution Report – Luton A505 Roadside (Site ID: LUTR)

Source: https://tinyurl.com/4j26dxu3

Air Pollution Report

1st January to 31st December 2024

AQE Air Quality England

Luton A505 Roadside (Site ID: LUTR)

These data have been fully ratified
Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	NO µg/m³	NO₂ µg/m³	NOₓasNO₂ µg/m³	PM₂₅ µg/m³
Number Days Low	-	366	-	49
Number Days Moderate	-	0	-	0
Number Days High	-	0	-	0
Number Days Very High	-	0	-	0
Max Daily Mean	149	67	296	15
Annual Max	513	117	880	38
Annual Mean	26	25	64	6
99.8th Percentile of hourly mean	-	91	-	-
98th Percentile of hourly mean	120	69	247	17
95th Percentile of hourly mean	82	58	181	14
50th Percentile of hourly mean	15	21	45	5
% Annual data capture	98.93	98.92	98.92	13.50

Instruments:
PM₂₅: FIDAS (12/11/2024 to 31/12/2024)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NOₓ mass units are NOₓ as NO₂ µg m-3

Pollutant	Air Quality Standards regulations 2010	Exceedances	Days
PM₂.₅ particulate matter (Hourly measured)	Annual mean > 25 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	0	0
Nitrogen dioxide	Annual Mean > 40 microgrammes per metre cubed	0	-

Annual Graph

Luton A505 Roadside 01/01/2024 - 31/12/2024

Source: https://tinyurl.com/4787abwm

01/05/2025, 15:06   Air Quality England Pollution Report

Air Pollution Report

1st January to 31st December 2024

Air Quality England

Luton Airport FutureLuToN (Site ID: LA001)

These data have been fully ratified
Only relevant statistics for LAQM are presented in the table. Cells with - indicate no data available or calculated.

Pollutant	O₃ µg/m³	NO µg/m³	NO₂ µg/m³	NOₓasNO₂ µg/m³	SO₂ µg/m³	CO mg/m³	PM₁₀ µg/m³	PM₂₅ µg/m³	BC µg/m³	C₆H₆ µg/m³	TOLUENE µg/m³	ETHBENZ µg/m³	mpXYLENE µg/m³	oXYLENE µg/m³	NAPHTH µg/m³
Number Days Low	363	-	350	-	349	0	358	357	0	0	0	0	0	0	0
Number Days Moderate	16	-	0	-	0	0	0	1	0	0	0	0	0	0	0
Number Days High	0	-	0	-	0	0	0	0	0	0	0	0	0	0	0
Number Days Very High	0	-	0	-	0	0	0	0	0	0	0	0	0	0	0
Max 15 min SO2	-	-	-	-	63	-	-	-	-	-	-	-	-	-	-
Max 8 Hour CO	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-
Max 8 Hour Ozone	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Max Daily Mean	105	18	38	64	3	0	38	36	1	12	8	3	14	5	3
Annual Max	155	159	65	307	44	1	56	49	3	186	136	36	94	36	38
Annual Mean	55	1	11	14	1	0	9	8	0	0	0	0	1	0	0
98th Percentile of daily mean	-	-	-	-	-	-	29	-	-	-	-	-	-	-	-
90th Percentile of daily mean	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-
99.9th Percentile of 15 minute mean	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
99.8th Percentile of hourly mean	-	-	57	-	-	-	-	-	-	-	-	-	-	-	-
99.7th Percentile of hourly mean	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
98th Percentile of hourly mean	96	7	39	48	2	0	31	28	1	1	2	2	9	3	0
95th Percentile of hourly mean	84	4	30	35	2	0	23	21	1	0	1	1	3	1	0
50th Percentile of hourly mean	56	1	9	10	1	0	7	6	0	0	0	0	0	0	0
% Annual data capture	97.80	93.78	93.78	93.78	93.34	94.02	98.32	98.32	97.75	68.39	65.51	62.61	67.99	51.67	68.37

Instruments:
PM₁₀: GRIMM (01/01/2024 to 31/12/2024)
PM₂₅: GRIMM (01/01/2024 to 31/12/2024)

All gaseous pollutant mass units are at 20°C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure. NOₓ mass units are NOₓ as NO₂ µg m-3

https://www.airqualityengland.co.uk/statistics-report/view-report?database=aqengland&year=2024&site_id=LA001&dlink=link   1/3

Pollutant	Air Quality Standards regulations 2010	Exceedances	Days
Carbon monoxide	Daily maximum 8-hour running mean > 10 milligrammes per metre cubed	0	0
PM₁₀ particulate matter (Hourly measured)	daily mean > 50 microgrammes per metre cubed	0	0
PM₁₀ particulate matter (Hourly measured)	Annual mean > 40 microgrammes per metre cubed	0	-
PM₂.₅ particulate matter (Hourly measured)	Annual mean > 25 microgrammes per metre cubed	0	-
Nitrogen dioxide	Hourly Mean > 200 microgrammes per metre cubed	0	0
Nitrogen dioxide	Annual Mean > 40 microgrammes per metre cubed	0	-
Ozone	8-hour running mean > 100 microgrammes per metre cubed	106	16
Sulphur dioxide	15 Minute mean > 266 microgrammes per metre cubed	0	0
Sulphur dioxide	Hourly mean > 350 microgrammes per metre cubed	0	0
Sulphur dioxide	Daily Mean > 125 microgrammes per metre cubed	0	0
Sulphur dioxide	Annual mean > 20 microgrammes per metre cubed	0	-
Sulphur dioxide	**Winter Mean > 20 microgrammes per metre cubed**	**0**	**-**

Annual Graph

Luton Airport FutureLuToN 01/01/2024 – 31/12/2024
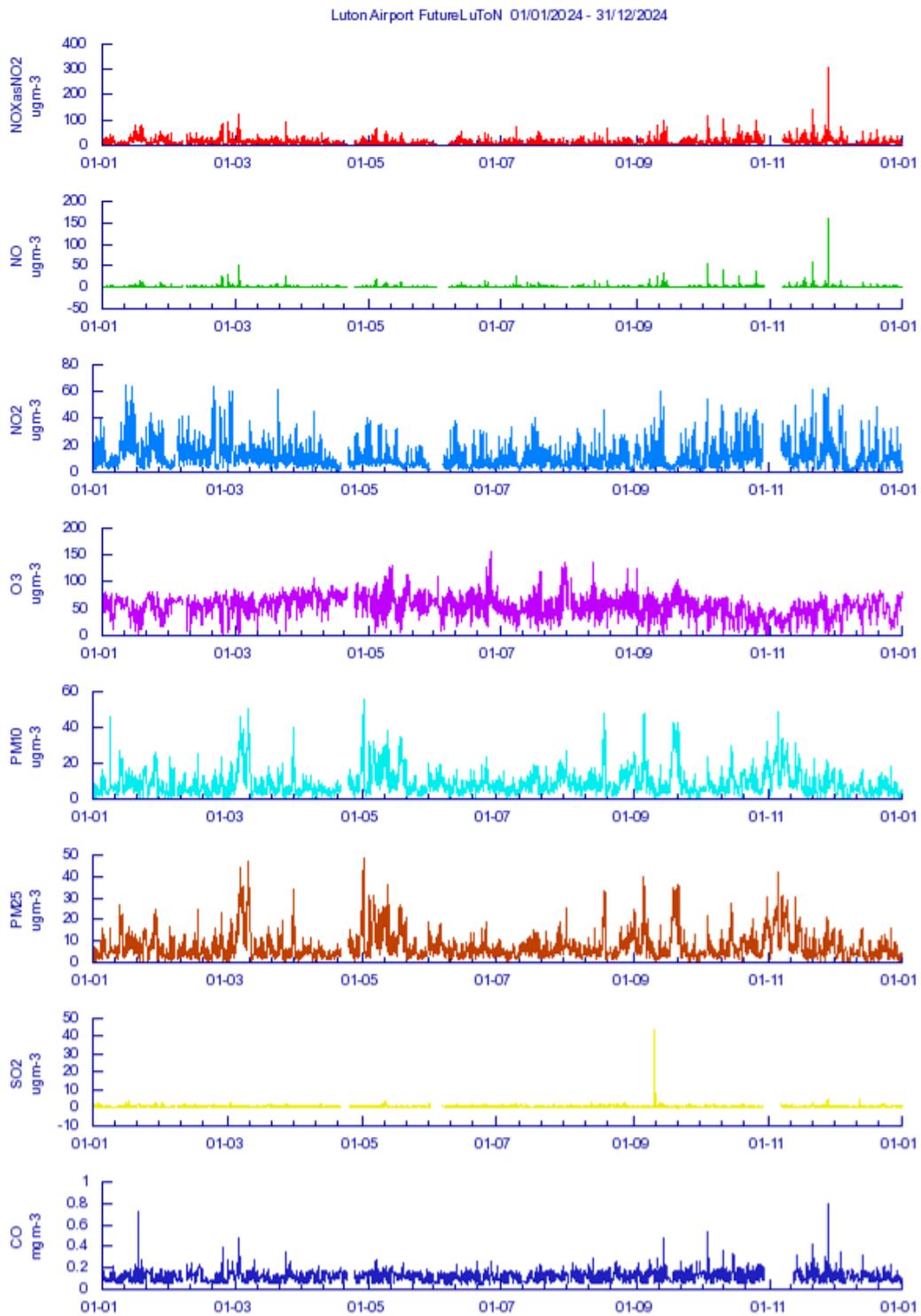
PM$_{10}$ and PM$_{2.5}$ Monitoring Adjustment

Particulate monitoring is undertaken at three sites within Luton:

i) **LN60 (HB007)** – Dunstable Road East [https://w3w.co/final.much.shots]; Luton Council operated Palas Fidas 200 measuring both PM$_{10}$ and PM$_{2.5}$. No correction applied to PM$_{10}$ data. Correction factor of 0.9434 applied to PM$_{2.5}$ data (i.e. divide by 1.06).

ii) **LA08 (HB006)** – London Luton Airport [https://w3w.co/client.taxi.super]; LLAOL operated unheated Beta Attenuation Mass Monitor (BAM) measuring PM$_{10}$, correction factor of 0.8333 applied (i.e. divide by 1.2)**.**

iii) **LA001** – London Luton Airport FutureLuTon (Wigmore Valley Park) [https://w3w.co/feared.same.format]; LLAL operated GRIMM EDM 180 measuring both PM$_{10}$ and PM$_{2.5}$. No correction factor applied to either PM$_{10}$ or PM$_{2.5}$ data. It should be noted that the instrument used at this location is not of a type approved by Defra (as detailed in LAQM.TG22 Para 7.176).

Automatic Monitoring Annualisation

All automatic monitoring locations within Luton recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table A.3.

No automatic NO$_2$ monitoring locations within Luton required distance correction during 2024.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitor Sites - Overview.

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Luton

Environmental Protection
Luton Borough Council
1st Floor Annexe, Town Hall
George Street
Luton
LU1 2BQ

Operator:	Andrew Loosley
Department:	Env. Protection
Drawing No:	ASR-2025/1
Date: 06/05/2025	

Figure D.3 – Map of Non-Automatic Monitor Sites in Beech Hill, Challney and Saints wards.

Figure D.4 – Map of Non-Automatic Monitor Sites in and around Bury Park (Beech Hill, Biscot and Central wards).

Figure D.5 – Map of Non-Automatic Monitor Sites in Barnfield, Round Green and Stopsley wards.
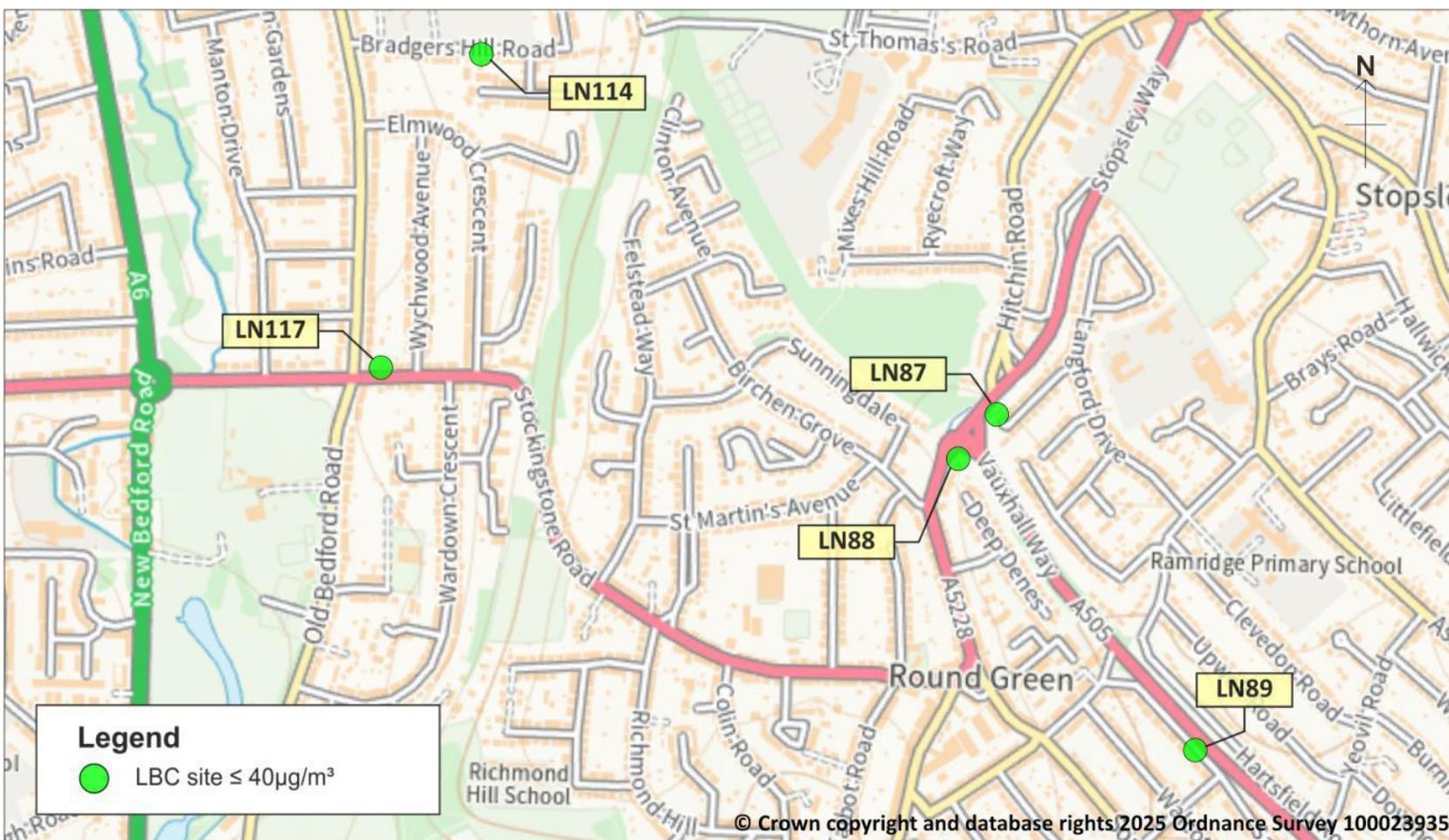
LAQM Annual Status Report 2025

Figure D.6 – Map of Non-Automatic Monitor Sites near London Luton Airport (Stopsley, Vauxhall and Wigmore wards).
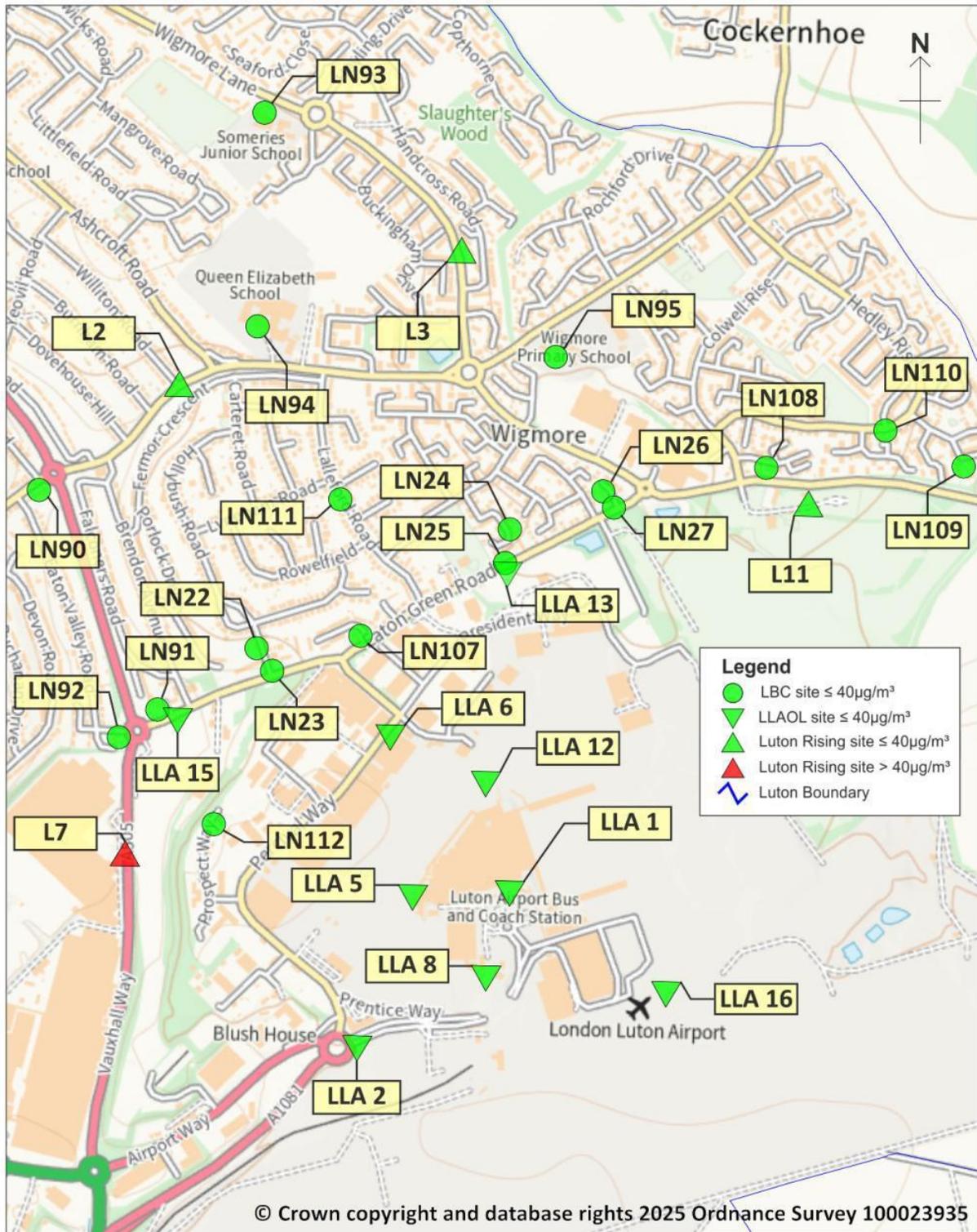
LAQM Annual Status Report 2025

Figure D.7 – Map of Non-Automatic Monitor Sites to the East of Luton Airport (Wigmore ward and out of borough).

Figure D.8 – Map of Non-Automatic Monitor Sites in Farley Fields (Farley ward).
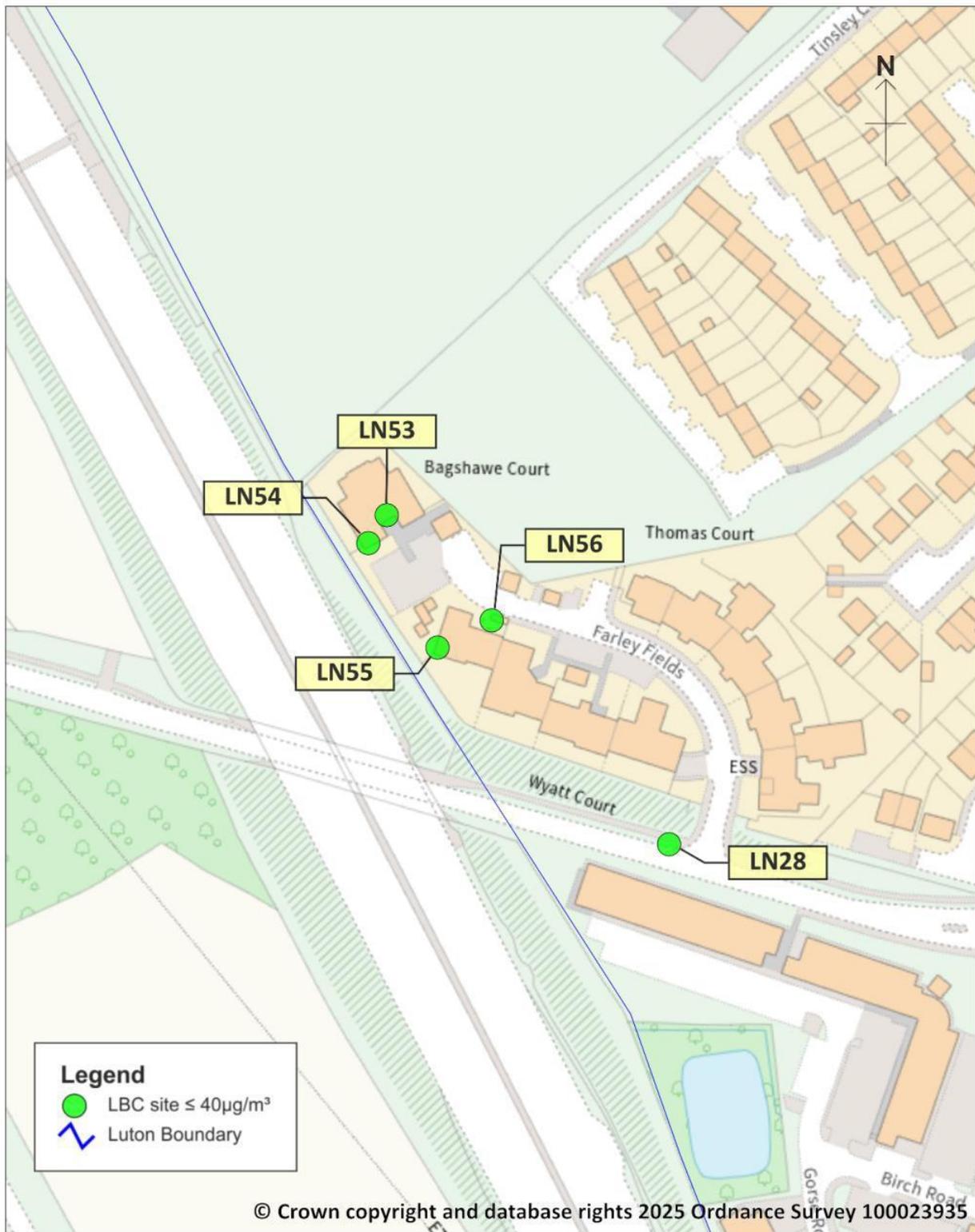
Figure D.9 – Map of Non-Automatic Monitor Sites in the town centre and AQMA No. 3 (Beech Hill, Central, High Town and South wards).
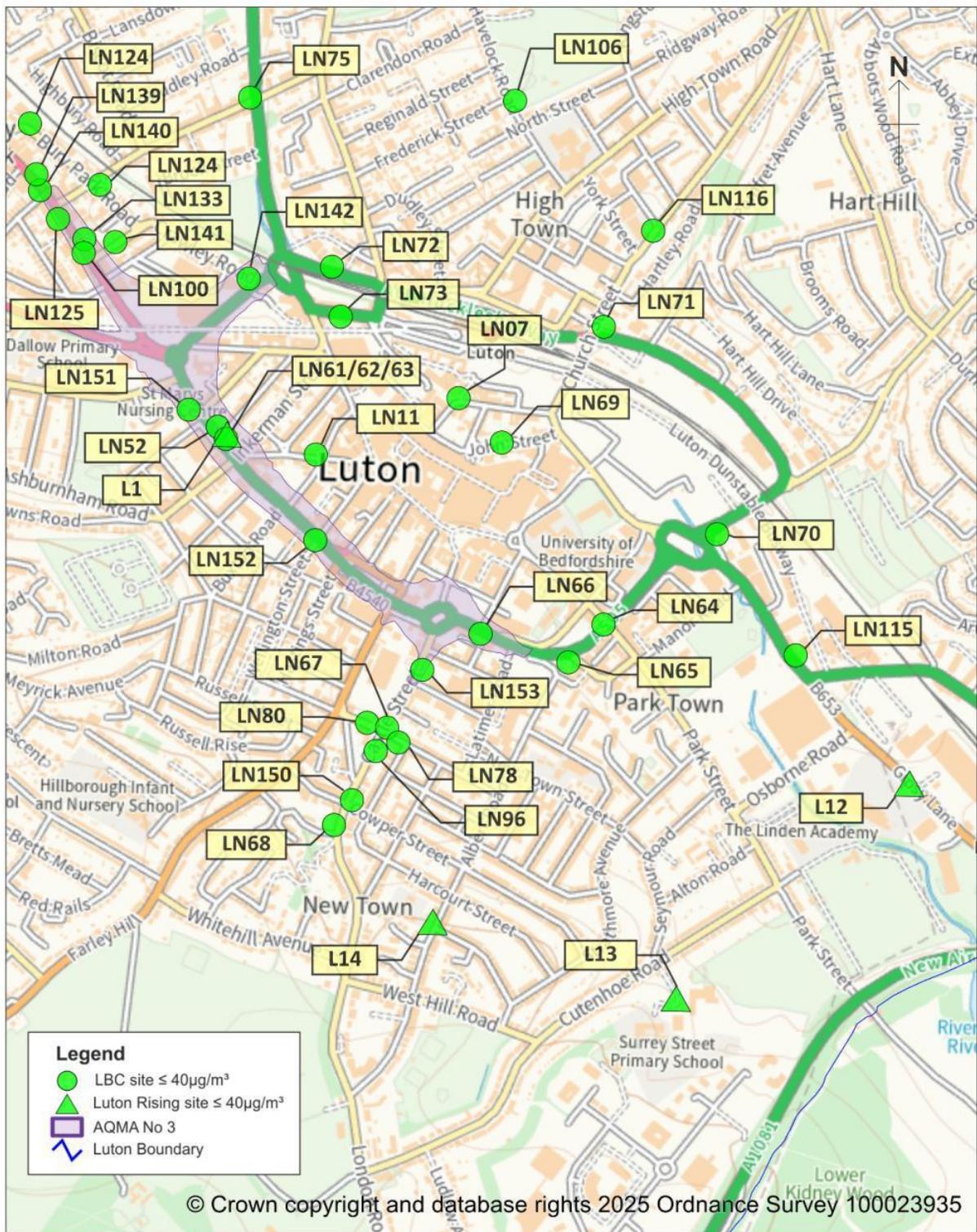
**Figure D.10 – Map of Non-Automatic Monitor Sites in South, Vauxhall and Wigmore wards.**

Figure D.11 – Map of Automatic and Indicative Monitor Sites – Overview.
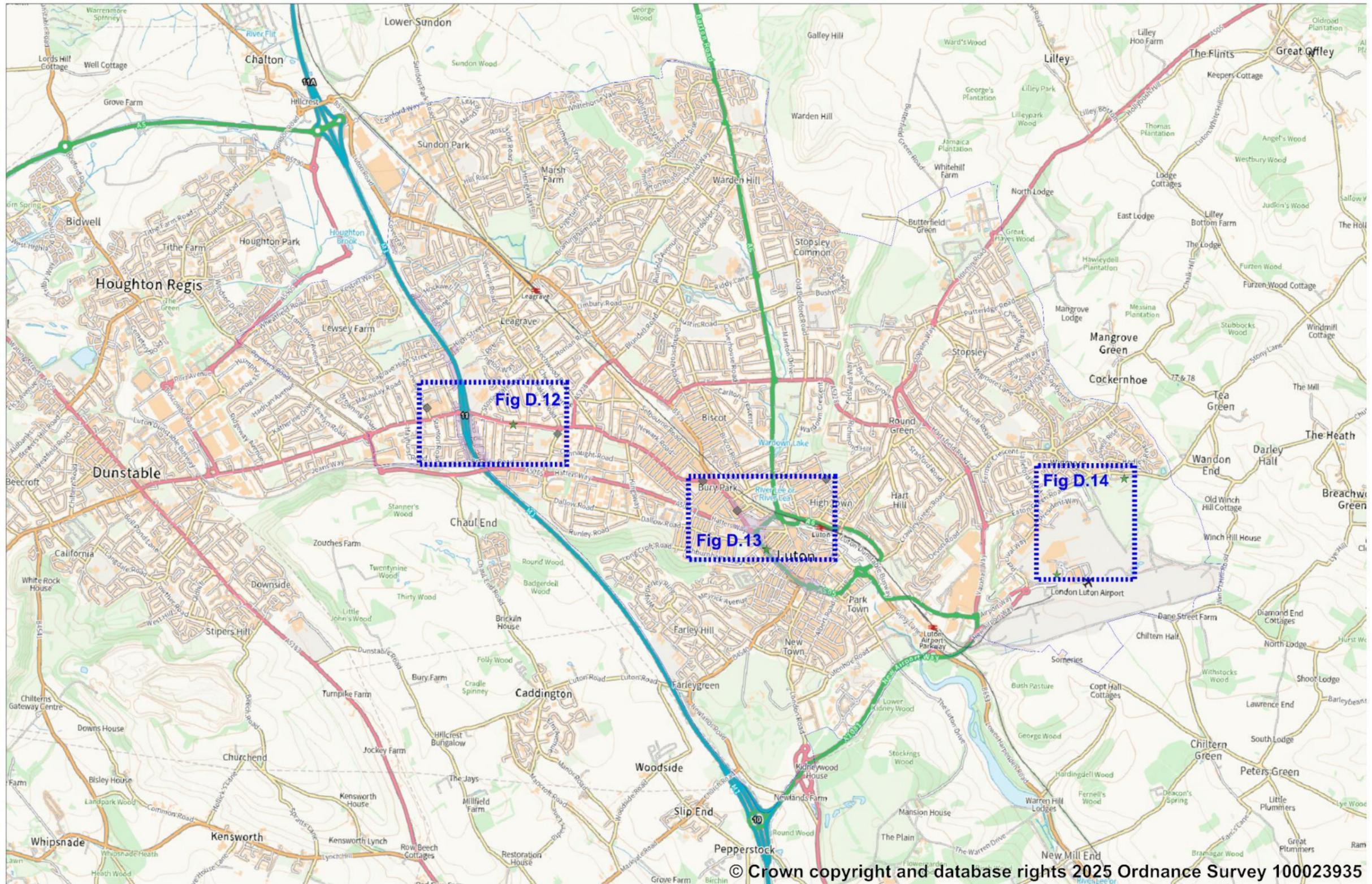
Environmental Protection
Luton Borough Council
1st Floor Annexe, Town Hall
George Street
Luton
LU1 2BQ

Operator:	Andrew Loosley
Department:	Env. Protection
Drawing No:	ASR-2025/c0
Date:	02/05/2025

Figure D.12 – Map of Automatic and Indicative Monitor Sites in Challney ward.
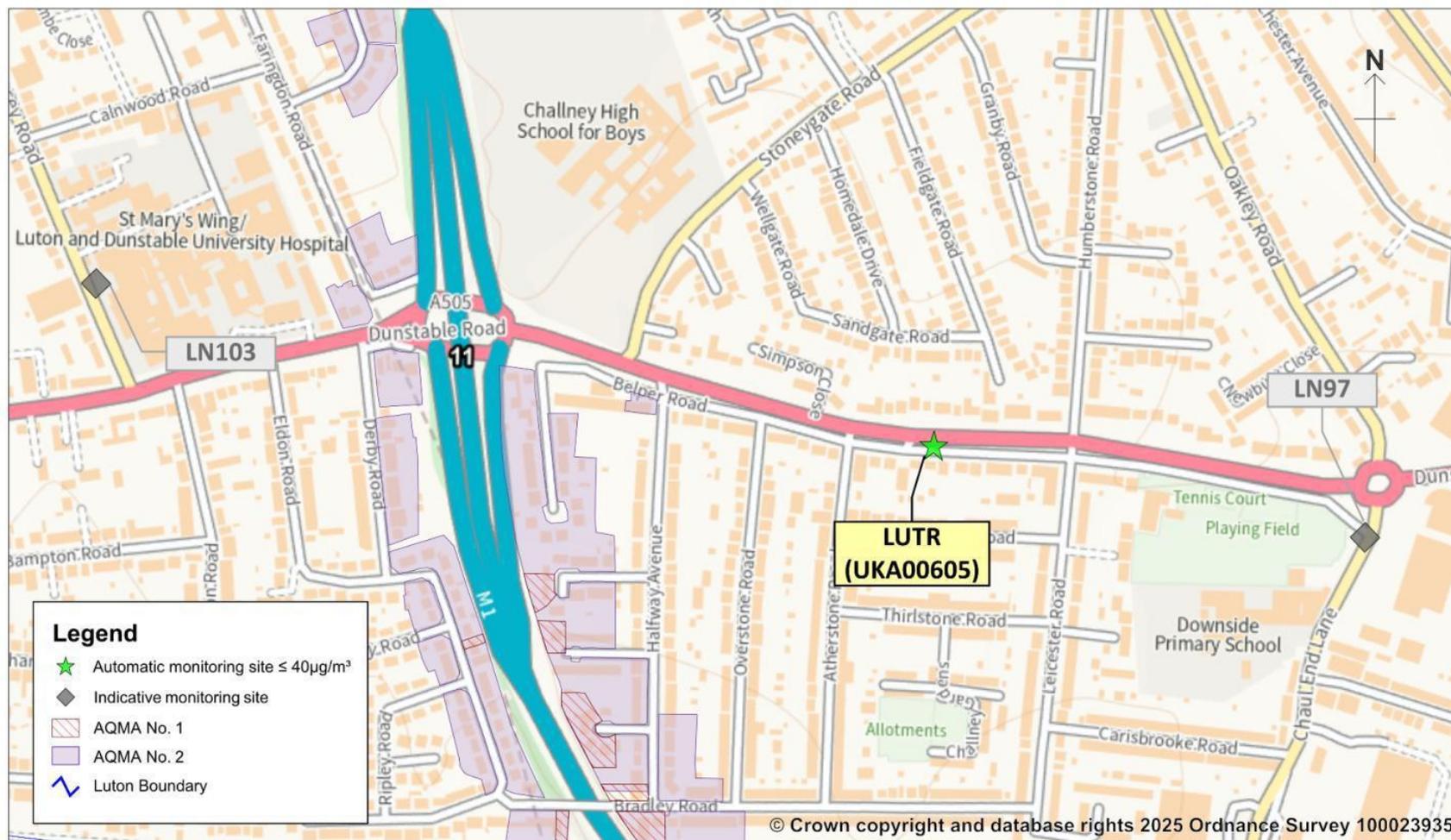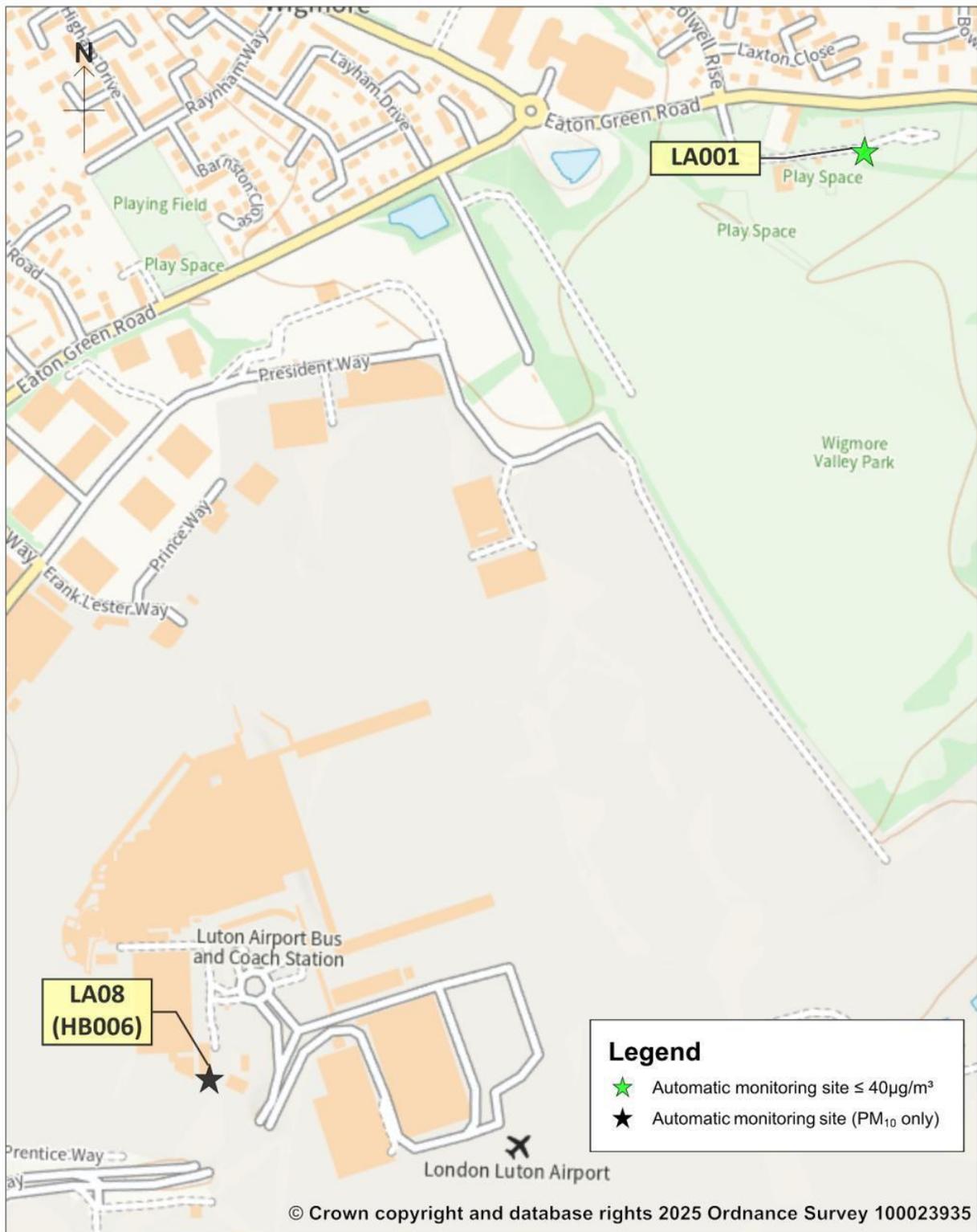
Figure D.13 – Map of Automatic and Indicative Monitor Sites in Beech Hill and Central wards.
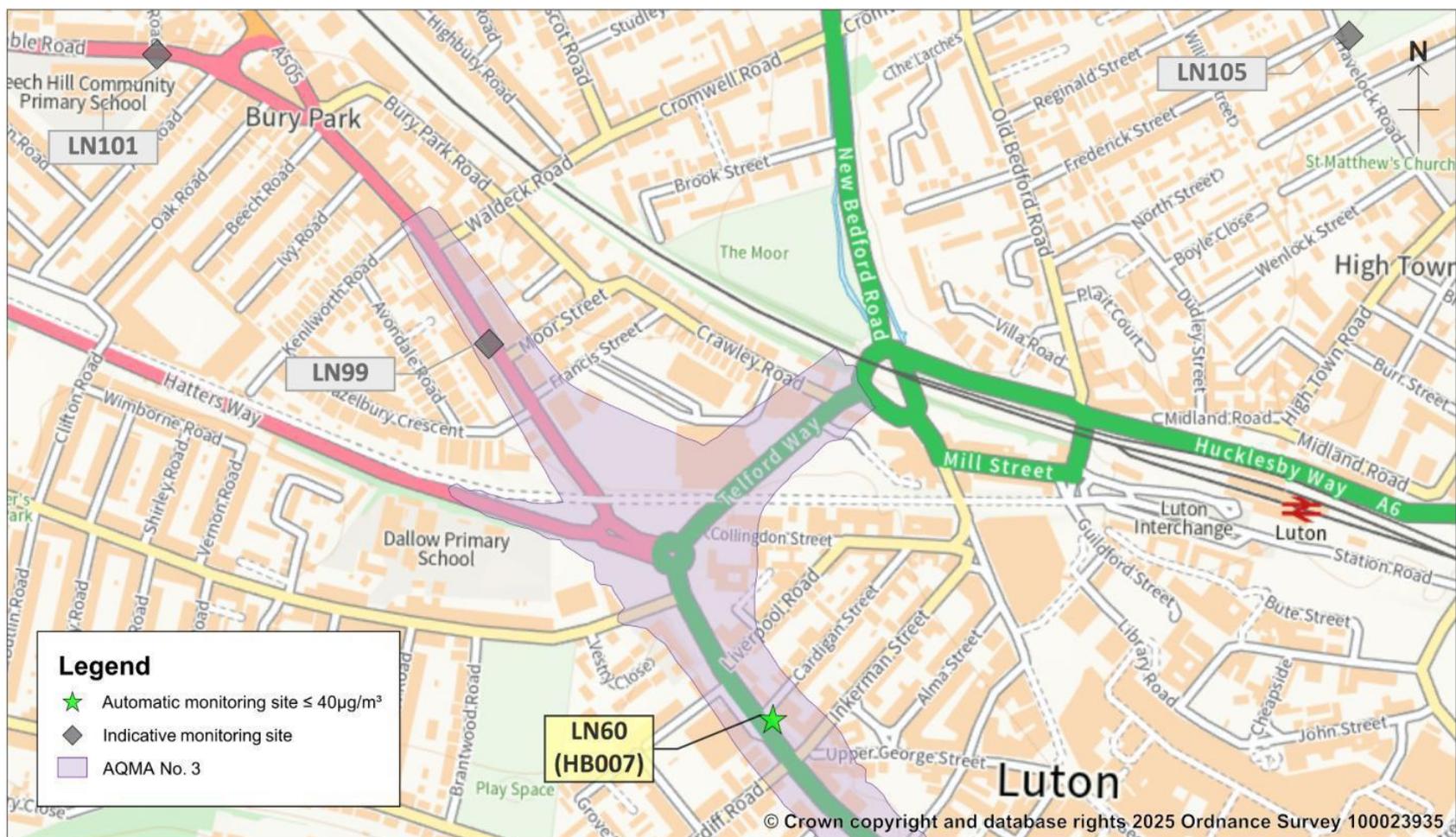
Environmental Protection
Luton Borough Council
1st Floor Annexe, Town Hall
George Street
Luton
LU1 2BQ

Operator:	Andrew Loosley
Department:	Env. Protection
Drawing No:	ASR-2025/c2
Date: 06/05/2025	Scale: 1:10000

Figure D.14 – Map of Automatic Monitor Sites in Wigmore ward.

Appendix E: Summary of Air Quality Objectives in England

Table E.1 - Air Quality Objective in England[12]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

---

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

Appendix F: Time Variation Plots for Automatic Monitoring Sites

Consistent with the output of the Openair Time Variation tool implemented on the UK Air website for AURN monitoring site data (https://tinyurl.com/4zn5xfx2), for each automatic monitoring site within the borough the following panel charts show the average variation of NO_2, PM_{10} or $PM_{2.5}$ by:

    (i)   day of the week and hour of the day combined (the uppermost pane);

    (ii)   hour of the day (diurnal variation, lower left pane);

    (iii)   day of the week (lower middle pane); and

    (iv)   month of the year (seasonal variation, centre right pane).

Additionally, the charts also include:

    (v)   a plot of monthly percentage data capture (lower right pane).

For each chart, the shading on panes (i) to (iv) shows the 95% confidence intervals of the mean and the line of the mean.

Finally, the plot showing seasonal variation in NO_2 levels at HB007 also shows the average uncorrected value obtained for the three co-located diffusion tubes for the same month (shown in orange).

Nitrogen Dioxide (NO₂)

Figure F.1 – NO₂ data trends at LN60 (HB007) – Luton Dunstable Road East during 2024

| Site: | HB007 - Luton Dunstable Road East | Pollutant: | NO₂ | Data Status: | R - Ratified Data |

Start Date: 01/01/2024   **Finish Date:** 31/12/2024   *Data are provided as hour ending, so it contains the preceding hour's data.*

[Webportal]   https://tinyurl.com/3zk7ptzs
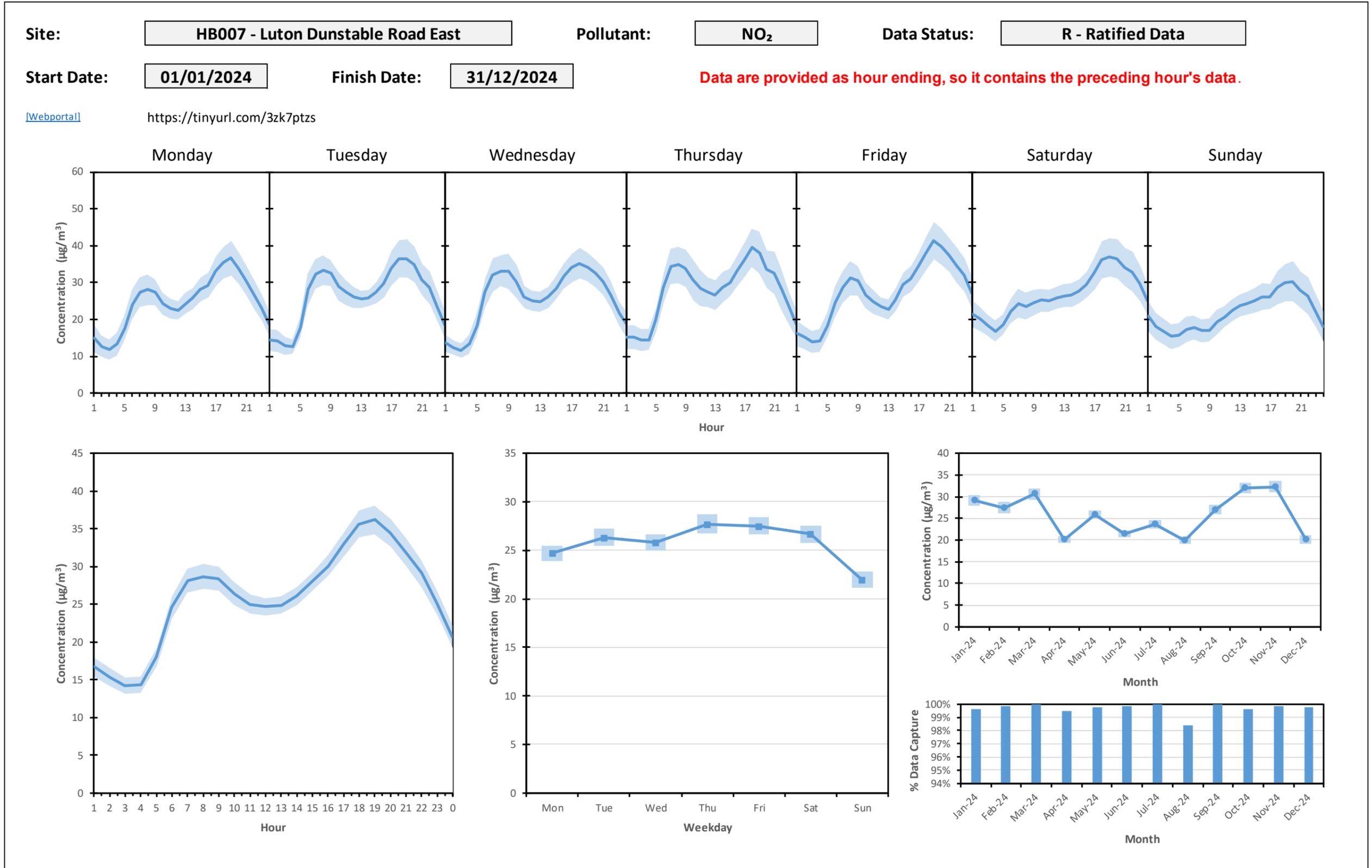
Figure F.2 – NO₂ data trends at LA001 – Luton Airport FutureLuToN during 2024

Site:	LA001 - Luton Airport FutureLuToN		Pollutant:	NO₂	Data Status:	R - Ratified Data

Start Date:	01/01/2024	Finish Date:	31/12/2024	**Data are provided as hour ending, so it contains the preceding hour's data**.

[Webportal]   https://tinyurl.com/u66ayv8e
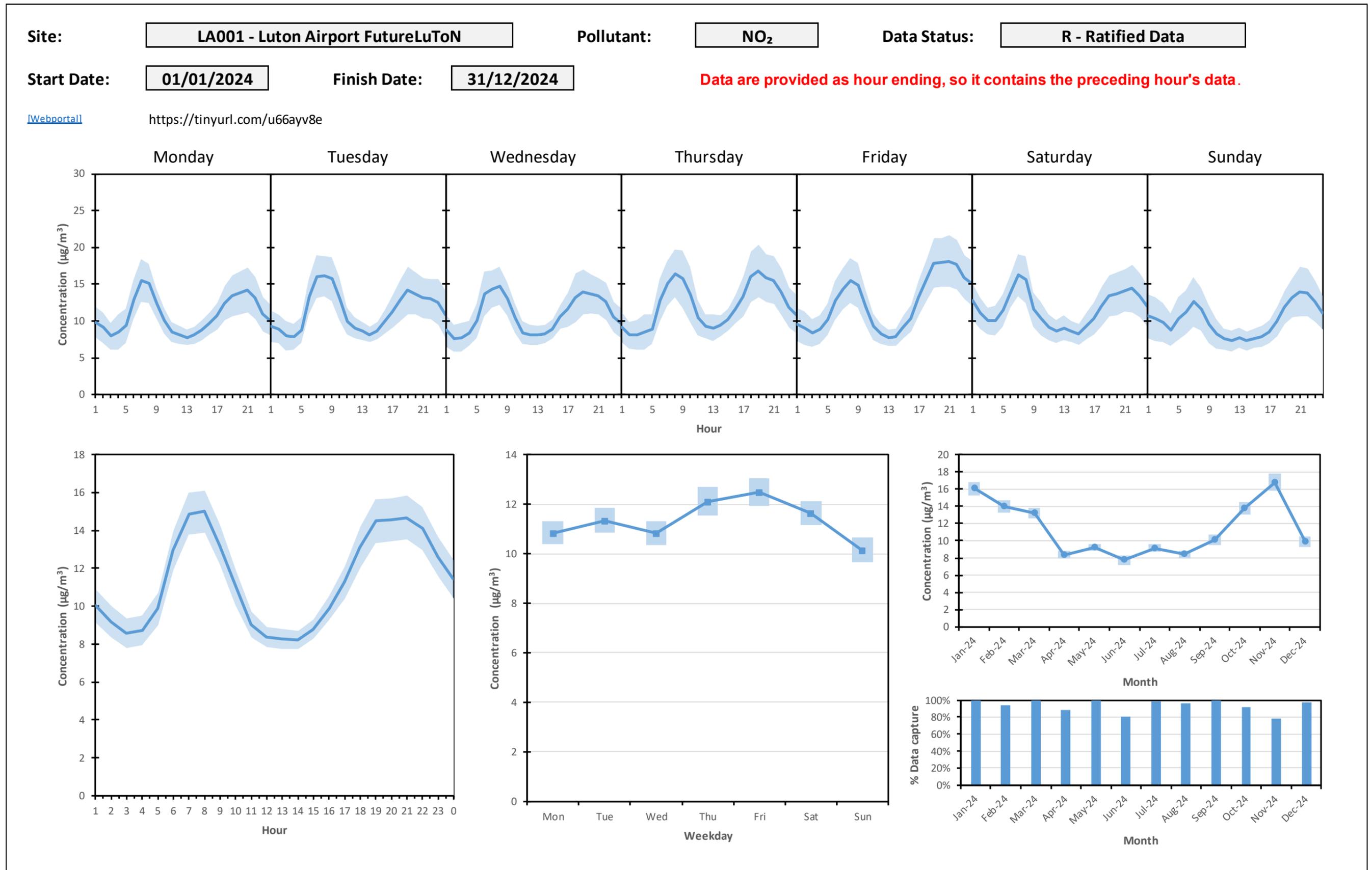
Figure F.3 – NO₂ data trends at LUTR – Luton A505 Roadside during 2024

| Site: | LUTR - Luton A505 Roadside | Pollutant: | NO₂ | Data Status: | R - Ratified Data |

Start Date: **01/01/2024**   Finish Date: **31/12/2024**

Data are provided as hour ending, so it contains the preceding hour's data.

[Webportal]   https://tinyurl.com/2p98pr45
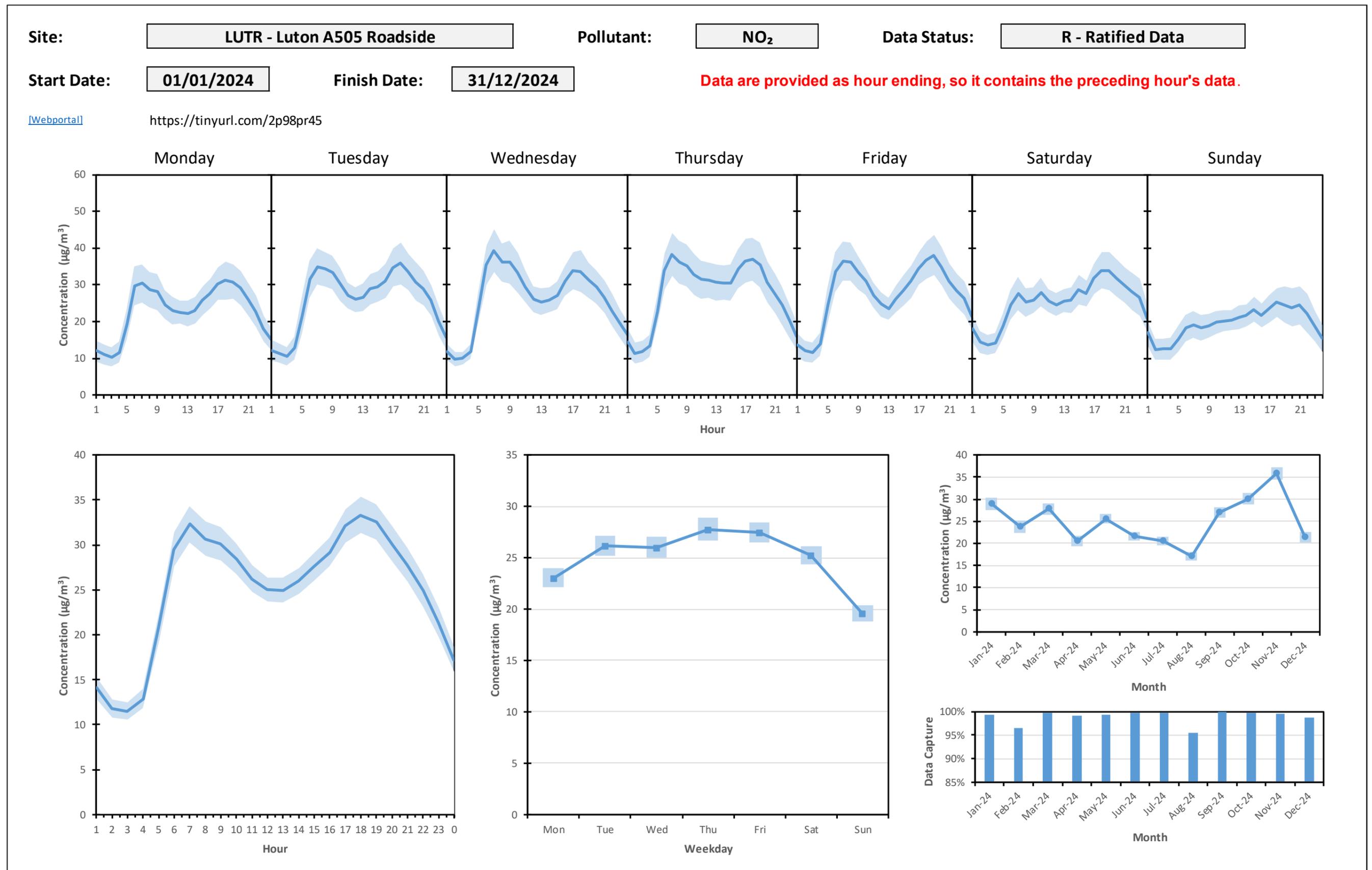
Particulate Matter (PM₁₀)

Figure F.4 – PM₁₀ data trends at LN60 (HB007) – Luton Dunstable Road East during 2024
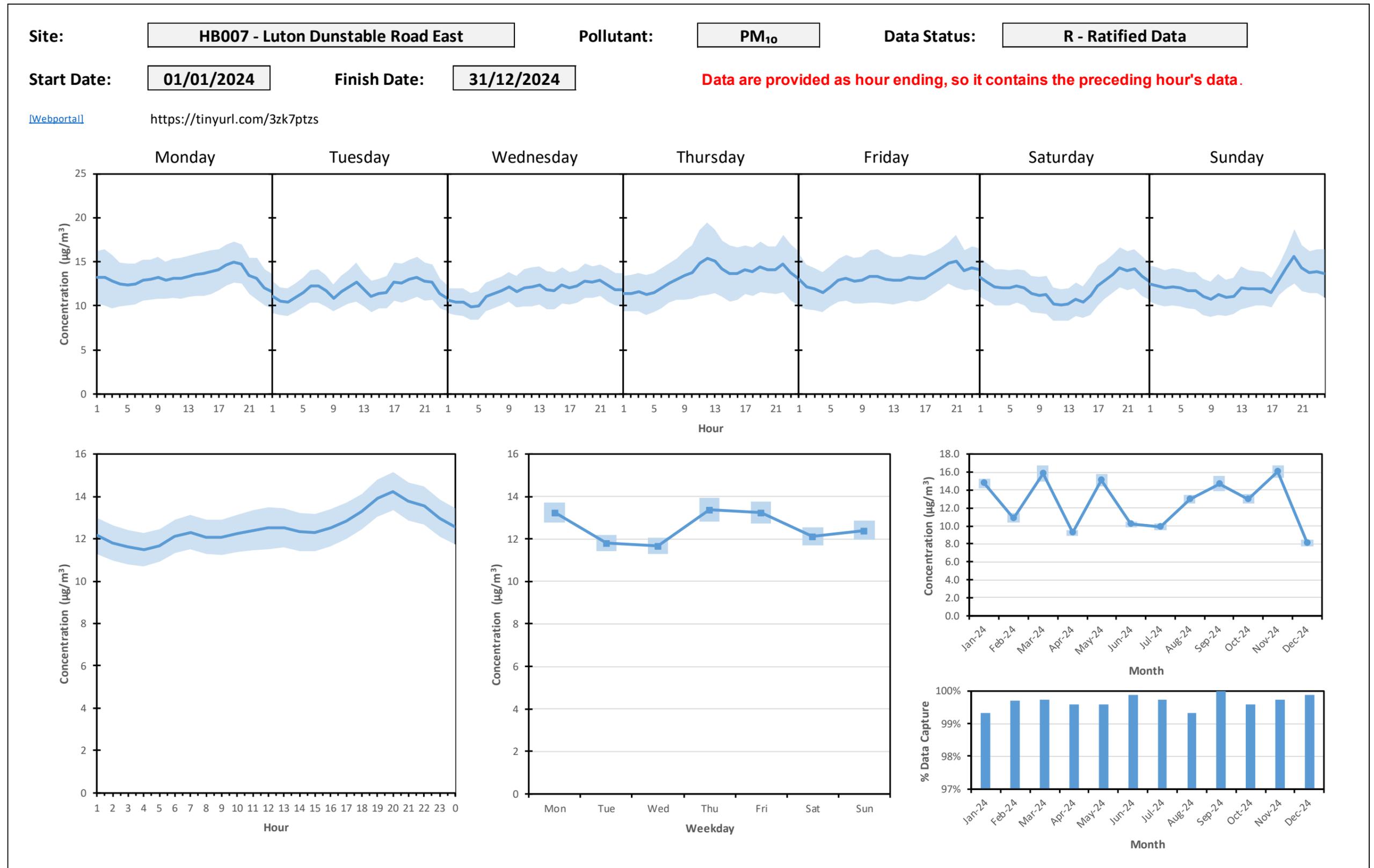
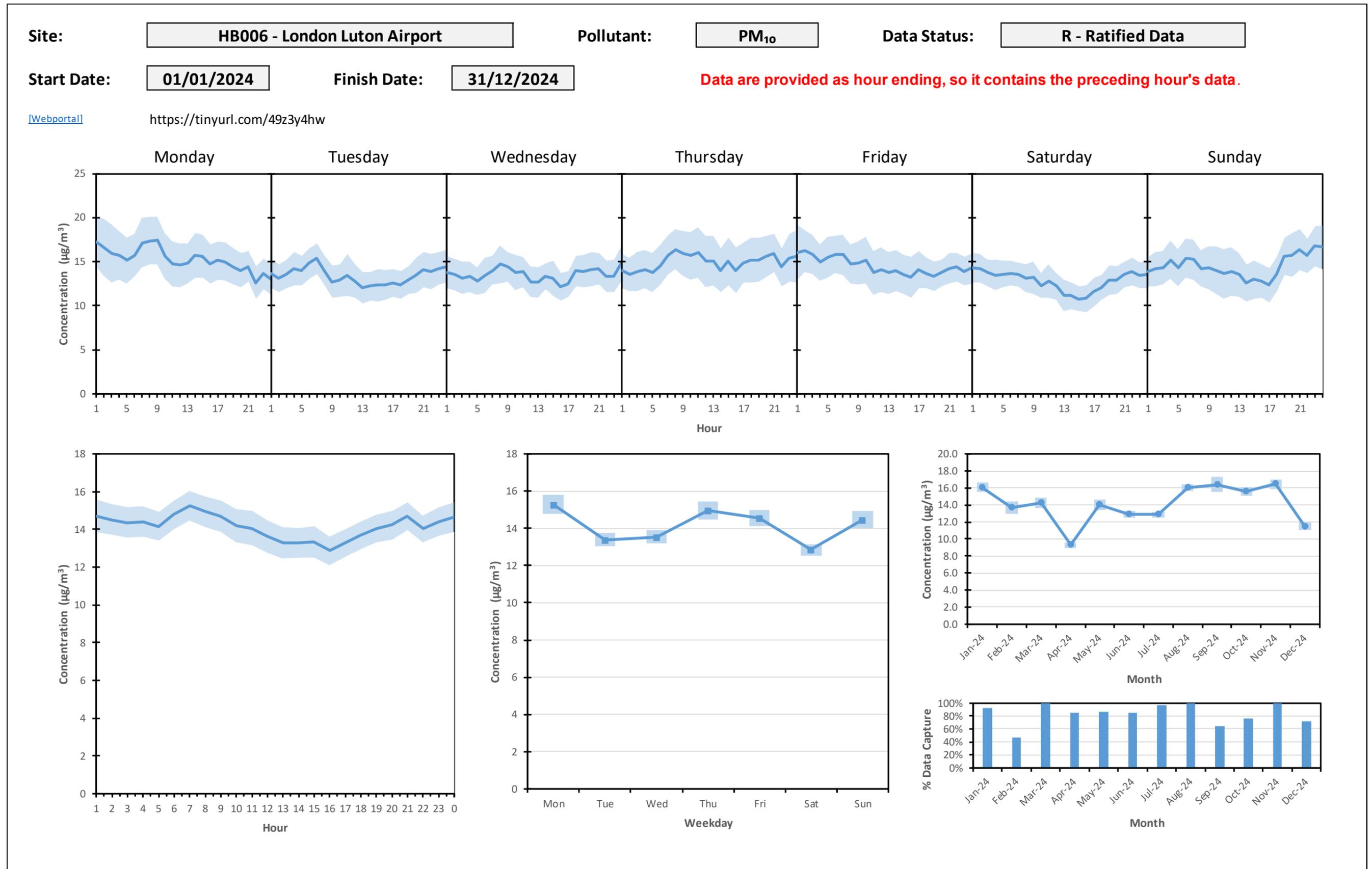**Figure F.5 – PM₁₀ data trends at LA08 (HB006) – London Luton Airport during 2024**

Site:	HB006 - London Luton Airport	Pollutant:	PM₁₀	Data Status:	R - Ratified Data

Start Date: 01/01/2024   Finish Date: 31/12/2024   **Data are provided as hour ending, so it contains the preceding hour's data.**

[Webportal]   https://tinyurl.com/49z3y4hw

Particulate Matter (PM₂.₅)

Figure F.7 – PM₂.₅ data trends at LN60 (HB007) – Luton Dunstable Road East during 2024

| Site: | HB007 - Luton Dunstable Road East | Pollutant: | PM₂.₅ | Data Status: | R - Ratified Data |

Start Date: 01/01/2024   Finish Date: 31/12/2024   Data are provided as hour ending, so it contains the preceding hour's data.

[Webportal]   https://tinyurl.com/3zk7ptzs
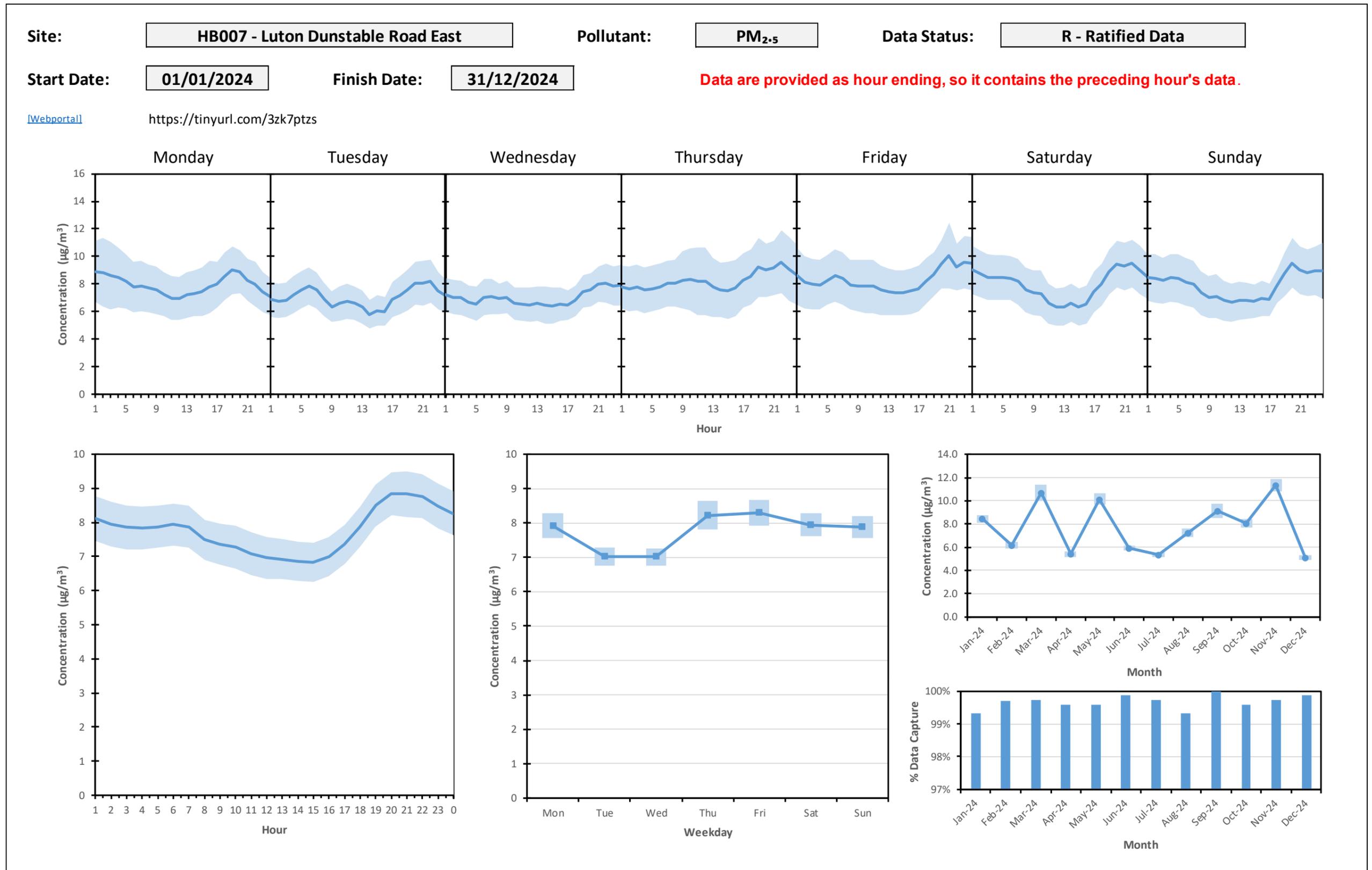
Figure F.8 – PM₂.₅ data trends at LA001 – Luton Airport FutureLuToN during 2024

| Site: | LA001 - Luton Airport FutureLuToN | Pollutant: | PM₂.₅ | Data Status: | R - Ratified Data |

| Start Date: | 01/01/2024 | Finish Date: | 31/12/2024 | Data are provided as hour ending, so it contains the preceding hour's data. |

[Webportal] https://tinyurl.com/u66ayv8e
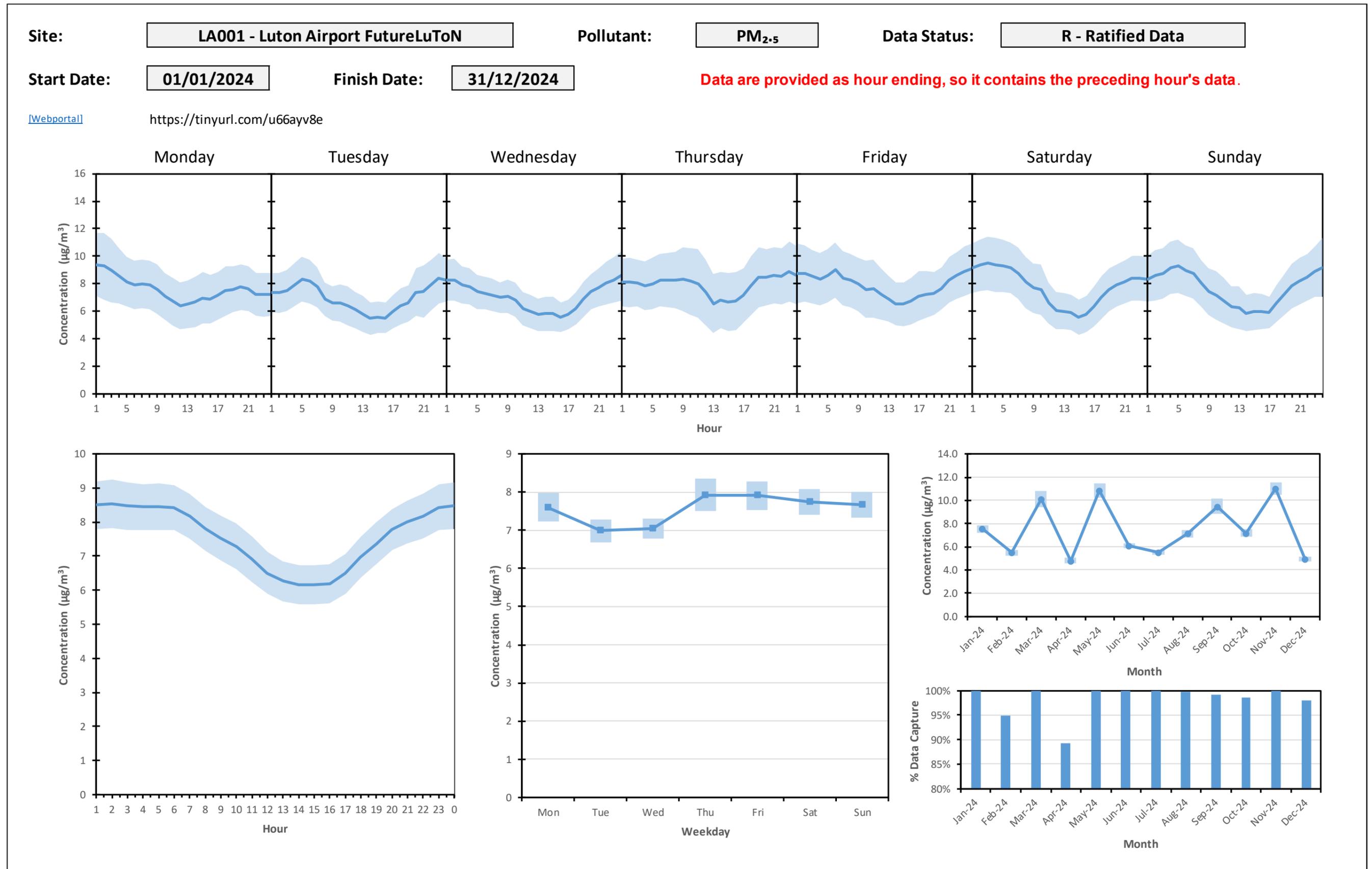
Appendix G: Indicative Low-Cost Sensor-based monitoring

Installed in late 2021 and funded by LBC Highways, Luton Council operates a network of five EMSOL Praxis/Urban sensor-based indicative air quality monitors to measure NO_2, PM_{10} and $PM_{2.5}$ levels in near real-time. With one monitor deployed in an urban background location and the remainder installed at roadside sites flagged for investigation by the Highways Team, full details of these sites are presented in Table G.1, and their locations are shown in Figures D.11, D.12, and D.13.

Unlike in previous years, the data obtained at these sites has not been appended to this report, as the council's data management service provider has yet to ratify these datasets. At the time of writing, only provisional 2024 data is available for the five indicative sites via the Herts & Beds Air Quality Network web portal (https://tinyurl.com/w73r7gz).

Table G.1 – Details of Indicative Low-Cost Sensor-based Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Co-located NO$_2$ Diffusion Tube?	Inlet Height (m)
LN97	Chaul End Road	Roadside	506411	222554	NO$_2$; PM$_{10}$; PM$_{2.5}$	No	N/A		Yes (LN98)	
LN99	Dunstable Road – Bury Park 2	Roadside	508380	221764	NO$_2$; PM$_{10}$; PM$_{2.5}$	Yes AQMA 3	6.5	3.2	Yes (LN100)	2.6
LN101	Beech Hill Community Primary School	Roadside	508000	222078	NO$_2$; PM$_{10}$; PM$_{2.5}$	No	9.0	3.5	Yes (LN102)	
LN103	L&D Hospital, Lewsey Road	Roadside	504987	222805	NO$_2$; PM$_{10}$; PM$_{2.5}$	No	12.5	2.0	Yes (LN104)	2.6
LN105	Peoples Park	Urban Background	509339	222128	NO$_2$; PM$_{10}$; PM$_{2.5}$	No	N/A		Yes (LN106)	2.6

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

Glossary of Terms

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. Annual Status Report.

Defra. Department for Environment, Food and Rural Affairs.

DMRB. Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways.

EU. European Union.

FDMS. Filter Dynamics Measurement System.

LAQM. Local Air Quality Management.

NO_2. Nitrogen Dioxide.

NOx. Nitrogen Oxides.

PM_{10}. Airborne particulate matter with an aerodynamic diameter of 10µm 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

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.