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Cheshire West and Chester Council

2026 Annual Status Report

June 2026



Document Control Sheet

Identification	
Client	Cheshire West and Chester Council
Document Title	2026 Annual Status Report
Bureau Veritas Ref No.	C31181274

Contact Details		
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Version Control				
Version	Date	Author	Reason for Issue/Summary of Changes	Status
1.0	17/06/2025	██████████	Draft for comment	Draft
2.0	29/06/2026	██████████	Draft following CCWC comment	Draft for Issue
3.0	13/10/2026	██████████	Approved by Defra, Approved by Maria Byrne	Final

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Cheshire West
and Chester

2026 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

Date: June 2026

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Date	17/06/2026

Local Responsibilities and Commitment

This ASR was prepared by Bureau Veritas of Cheshire West and Chester Council with the support and agreement of the following officers and departments:

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This ASR has been approved by Maria Byrne, Director of Environment and Communities and signed off by Helen Bromley, Director of Public Health.

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Executive Summary: Air Quality in Our Area

Air Quality in Cheshire West and Chester

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. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

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. PM₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM_{2.5} are particles under 2.5 micrometres.

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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.

The Environmental Improvement Plan² sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harm to human health. The Air Quality Strategy³ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁴ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel, and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Cheshire West and Chester Council is taking proactive steps to address the issue of air pollution within the area. The Council has developed a Low Emission Strategy (LES) that specifically targets the reduction of NO₂, PM₁₀, and PM_{2.5}.

The LES is based upon three key principles for the reduction of vehicles:

- Shift – change mode of transport from cars to public transport, cycling or walking;
- Avoid – reduce the distance driven, reduce emissions from stationary vehicles, chimneys and construction; and
- Improve – improve our use of the latest vehicle technology to reduce emissions (specifically low emission vehicles).

The Council has been successful with a Local Electric Vehicle Infrastructure (LEVI) application and has been awarded £2 million grant funding for the rollout of public Electric Vehicle (EV) changepoints across the Borough. An Invitation to Tender (ITT) closed on 24

² Defra. Environmental Improvement Plan 2023, January 2023

³ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁴ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

June 2025, and the contract has been awarded. A 5-year rollout period will commence in 2026/27.

An analysis of the current Council fleet has determined that approximately 90% of the current fleet could be effectively replaced with electric alternatives. To facilitate this transition, a managed replacement programme has commenced and will run until 2030. At present the fleet (2026) includes 34 electric vehicles and 32 hybrids. Contingent on the continued expansion of charging infrastructure, the Council plans to further accelerate the electrification of its fleet in line with the ongoing replacement program. This strategic approach aligns with the Council's commitment to reducing emissions and transitioning to more sustainable modes of transportation.

In December 2025 the Local Transport Plan 4 (LTP4) Core Strategy was approved at Cabinet. Detailed modal policy papers are to be developed through 2026. The aim of the strategy is to increase modal choice, improve connectivity and health outcomes. See <https://www.cheshirewestandchester.gov.uk/residents/transport-and-roads/transport-strategy> for more information. The Council are also in the process of updating the Local Cycling and Walking Infrastructure Plan in line with new guidance. A walking, wheeling and cycling policy paper will be developed as part of LTP4.

Conclusions and Priorities

In 2025, monitored NO₂ concentrations across Cheshire West and Chester Council increased at all but eight existing monitoring locations compared to 2024, with most of the diffusion tubes increasing in average concentrations by 1-2 µg/m³. It is unknown exactly why this trend was observed, although there were no sites that exceeded the UK Air Quality Objectives for both NO₂ and PM₁₀. There were also no exceedances of the NO₂ hourly objective of 200 µg/m³, with the maximum hourly concentration recorded at Whitby Road automatic monitoring site (119.3 µg/m³) during 2025.

At both Thornton-le-Moors, Park Road (TLP) and Elton (ELT) automatic monitoring sites, SO₂ concentrations remained compliant throughout the year. The 15-minute objective of 266 µg/m³ was not exceeded at either monitoring site during 2025.

Long-term monitoring data shows a noticeable reduction in NO₂ levels over time. AQAP measures, as well as measures from the Low Emission Strategy (LES), may be required to bring forward compliance in coming years. For 2025, the Council's priorities remain as such:

- Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging and gas fuel recharging;
- Procuring low emission vehicles for council-owned fleets;
- Development of the Local Transport Plan 4 – ‘Let’s Talk about Transport’;
- Revoke Chester City Centre AQMA;
- Undertake air quality modelling to reassess Thornton-le-Moor AQMA; and
- Engage with funding opportunities for the adoption of further air quality improvement measures.

How to get Involved

There are many ways that we can all help to reduce outdoor air pollution:

- Leave your car at home and walk, cycle or use public transport instead. Car drivers can be exposed to significantly more air pollution than pedestrians or cyclists using the same streets.
- When choosing your next car, consider alternatives to petrol and diesel such as electric cars or plug-in hybrids. Tailpipe emissions from these vehicles are much lower (or even zero) and running costs are significantly cheaper. Lease costs of electric cars are often similar to an equivalent petrol/diesel model, road tax is zero and the benefit in kind (BIK) tax cost is a fraction of that for traditional models.
- Switch your car's engine off whenever you're not moving and it's safe to do so. You'll improve air quality for yourself and others.
- Keep your car regularly serviced and the tyres correctly inflated.
- Adopt an efficient driving style – anticipate the road ahead, change up the gears earlier and brake smoothly. It could save you a lot of money over the course of a year.
- Burning wood and other solid fuels produces a lot of air pollutants. If you do intend to buy a wood-burning stove, choose a Department for Environment, Food and Rural Affairs (Defra) approved Eco-Design Ready model. Make sure that the wood you use meets the 'Woodsure ready to burn' requirements (seasoned dry wood with moisture content below 20%).
- Compost your garden waste or use green wheelie bins rather than burning it.
- Bikeability campaigns run across the council to help promote travel alternatives. Last year alone the campaign trained 3,392 children, 28 adults and 265 children with special educational needs

Adults and children with lung problems and adults with heart problems may be particularly affected by air pollution. Information on local air quality is available on the Council's websites www.cheshirewestandchester.gov.uk/airquality and <https://cheshirewest-air.info/>. Further information on forecasting and health advice is available on Defra's UK-air website <https://uk-air.defra.gov.uk/>.

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1 Local Air Quality Management

This report provides an overview of air quality in Cheshire West and Chester during 2025. 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 Cheshire West and Chester to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Appendix E: Summary of Air Quality Objectives in England.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMA) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority 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 AQMA declared by Cheshire West and Chester can be found in Table 2.1. The table presents a description of the two AQMA that are currently designated within Cheshire West and Chester. Appendix D: Map(s) of Monitoring Locations and AQMA provides maps of AQMA and the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO₂ annual mean; (Chester City Centre AQMA)
- SO₂ 15-minute mean (Thornton-le-Moors AQMA)

Chester City Centre AQMA has now been compliant following three years of monitoring where annual mean NO₂ concentrations have been below 36 µg/m³ for three years. On 17th June a revocation report was submitted to Defra, with plans to revoke Chester City Centre AQMA within the next reporting year in line with LAQM TG.22.

Thornton-le-Moors AQMA has now been compliant for more than five years with the air quality objective. Consequently, the Council committed to undertaking remodelling of the Thornton-le-Moors AQMA with a view to revoking.

The Council commissioned CERC on 4th September 2025 to undertake dispersion modelling of SO₂ emissions to air from the Stanlow refinery site. The modelling repeated the process undertaken in 2016 that resulted in the determination of the AQMA.

CERC submitted a draft report to the Council on 13th May 2026. The draft report shows a small area of exceedance at the northern end of the village closest to the A5117 and refinery.

Based on the modelling, it is not considered possible to revoke the AQMA in its entirety. Depending on the content of the finalised report, the Council will amend the current AQMA

and designate a smaller area. The Council will review the Thornton-le-Moors Action Plan in 2026 as a priority and reassess monitoring requirements.

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?	Highest Concentration: Declaration	Highest Concentration : Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Chester City Centre AQMA (No.5)	23/05/2017	NO ₂ Annual Mean	An area that incorporates the entire area within the inner ring road and the adjoining sections of Liverpool Road, Parkgate Road, Hoole Way, Boughton gyratory and Watergate Street	NO	50.3 µg/m ³ (T6)	31.3 µg/m ³ (C36)	5 years	Chester City Centre Air Quality Action Plan 2022	https://www.cheshirewestandchester.gov.uk/asset-library/pollution-and-air-quality/chester-air-quality-plan.pdf
Thornton-le-Moors AQMA (No. 4)	30/09/2016	SO ₂ 15 Minute Mean	An area encompassing the entire village of Thornton-le-Moors, its surroundings and parts of the adjacent area of Stanlow	NO	56 exceedances (TLM)	0 exceedances at ELT and TLP	6 years	Thornton-le-Moors Air Quality Action Plan 2023	https://www.cheshirewestandchester.gov.uk/asset-library/aqap-thornton-le-moors-revised-2023-final.pdf

☒ Cheshire West and Chester confirm the information on UK-Air regarding their AQMA(s) is up to date.

☒ Cheshire West and Chester confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in Cheshire West and Chester

Defra's appraisal of last year's ASR concluded – 'The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports.'

The appraisers' comments said:

1. There are several 'Error! Reference source not found' errors throughout the report. These should be fixed so that the correct table, section or figure is referenced.

This has been noted and is rectified in the 2026 ASR.

2. A good discussion of measures to reduce PM_{2.5} emissions has been included. The discussion includes the public health outcomes framework D01 indicator, which shows the borough-wide fraction of mortality attributed to particulate matter (4.6%) is less than that of England (5.2%). The estimation of PM_{2.5} concentrations is also welcomed.

This is continued in the 2026 ASR.

3. The Council have provided a screen capture of the appropriate national bias adjustment factor spreadsheet. This is welcomed.

A screen capture of the appropriate national bias is included in the 2026 ASR.

4. Two background sites have been used for annualisation purposes. Although this is not a requirement, it is recommended that four sites are used for annualisation purposes.

More than two background sites have been used for annualisation in this year's ASR

5. Figures have been provided to highlight the locations of monitoring sites and AQMAs across the borough. The locations of diffusion tube sites are quite difficult to distinguish against the base mapping and may benefit from being displayed in a different colour.

Diffusion tube site locations have been displayed in a different colour in this year's ASR.

6. The Council have demonstrated a good understanding of air quality and the procedures outlined in LAQM.TG(22), particularly with the detailed discussion on QAQC procedures. This is commended.

This is continued in the 2026 ASR.

7. The Council have stated that they intend to revoke the Cheshire City Centre AQMA due to continued compliance. This is supported. Modelling is also to be undertaken to enable the Thornton-le-Moors AQMA to be revoked. Modelling should be discussed in the next ASR.

The Council are currently in the process of drafting the revocation order for Chester AQMA, with a revocation report submitted to Defra on 17th June 2026. CWCC commissioned CERC on 04 September 2025 to undertake dispersion modelling of SO₂ emissions to air from the Stanlow refinery site. Based on the modelling, it is not considered possible to revoke the AQMA in its entirety. Depending on the content of the finalised report, the Council will amend the current AQMA and will significantly reduce the area where objective is exceeded..

Cheshire West and Chester has taken forward a number of direct measures during the current reporting year of 2025 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 40 measures are included within Table 2.2, with the type of measure and the progress Cheshire West and Chester have made during the reporting year of 2025 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures for Chester City Centre AQMA are:

- Improvements to Public Transport infrastructure have been made. Including enhanced bus shelters with accurate electronic timetables and tickets with contactless payment options;
- The implementation of the Low Emissions Strategy, published in 2018; and
- Legislation adopted that enforces anti-idling on all street locations.

Key completed measures for Thornton-le-Moors AQMA are:

- The successful addition of a desox additive to the catalytic cracker unit resulting in significant reduction in sulphur dioxide from the CO Boiler stack;

- Isolation of sulphur recovery units (SRU) to allow independent operation, reducing sour gas flaring;
- Fuel gas scrubbing and fuel substitution to allow for additional capability for removing sulphur from fuel gas; and
- Address fugitive emissions as they are identified.

Cheshire West and Chester expect the following measures to be completed over the course of the next reporting year:

- Development of the Local Transport Plan 4 – “Let’s talk about transport”;
- Improvement of signage at main junctions within the AQMA and major spurs;
- Review active travel policy and strategy to identify opportunities to support delivery, for example: improved signage and cycle route and parking; and
- Work with developers to improve sustainable transport links that serve new developments.

Cheshire West and Chester’s priorities for the coming year are:

- Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging and gas fuel recharging;
- Procuring low emission vehicles for council-owned fleets; and
- Development of the Local Transport Plan 4 – ‘Let’s Talk about Transport’.

Cheshire West and Chester worked to implement these measures in partnership with the following stakeholders during 2025:

- Bus Operators;
- Essar Refinery; and
- Department for Transport.

The principal challenges and barriers to implementation that Cheshire West and Chester anticipate facing are:

- Chester AQAP measure number 14. Funding is needed to be identified to advance the measure both in terms of development infrastructure and implementation; and
- Chester AQAP measure number 23. Presently access for taxis, hotel guests and disabled vehicles appears to be permitted although it is not clear whether this is supported by a traffic order. This is to be reviewed.

Progress on the following measures has been slower than expected due to:

- Chester AQAP measure number 21. Revisions of the Low Emission Strategy were not delivered in 2025 due to recourse issues; and
- Thornton AQAP measures were placed on hold during 2025 whilst further modelling work was undertaken to establish the success of measures implemented to date and to assist in identifying which, if any, measures, required further development.

Cheshire West and Chester anticipate that the measures stated above and in Table 2.2 will achieve compliance in Chester City Centre AQMA, Thornton-le-Moors AQMA and the wider borough.

The measures detailed above and in Table 2.2 will facilitate compliance across both the Chester City Centre and Thornton-le-Moors AQMAs, enabling the Council to advance its plans for revoking Chester AQMA, and designate a smaller area for Thornton-le-Moors. Where the Council has no declared AQMAs, the listed measures can be included within an Air Quality Strategy to further detail progress on reducing polluting activities.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	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
Chester AQAP measure number 5	Alternative fuel (EV) infrastructure development in city centre.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2030	CWCC	CWCC/LEP/DfT/3rd-party	NO	Funded	£500k - £1 million	Implementation	NO ₂ Emission Reduction	Number of alternative fuel (EV) infrastructure development in the city centre	Fast chargers delivered at Brook St & Bishop St car parks, EV hub comprising 21 fast chargers online 2023 at Northgate MSCP. Additional chargers planned as part of major EV charging infrastructure procurement 2024.	The Council has secured over £2m in LEVI funding for the rollout of public EV changepoints across the Borough. An ITT closed on 24 June 2025, and the contract has been awarded. A 5-year rollout period will commence 2026/27.
Chester AQAP measure number 6	Procuring low emission vehicles for council-owned fleets	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2019	2032	CWCC	CWCC	NO	Funded	< £10k	Implementation	NO ₂ Emission Reduction	Number of council-owned low emission fleet vehicles	Procurement policy amended to require ULEV first approach. EV chargers installed at depots	Dependent on fleet renewal dates, replacement has commenced and will run until 2030. Present fleet (2026) includes 34 electric vehicles and 32 hybrids.
Borough-wide measure 1	Development of Local Transport Plan 4 – “Let’s talk about transport”	Promoting Travel Alternatives	Promoting Low Emission Public Transport	2023	2026	CWCC	CWCC	NO	Funded	Existing budgets	In development	Pollutant emission reduction	Increase modal choice, improve connectivity and health outcomes	Ongoing – adoption 2026	The LTP4 Core strategy was approved at Cabinet in December 2025. Detailed modal policy papers to be developed through 2026. See https://www.cheshirewestandchester.gov.uk/news/lets-talk-about-transport-launch-of-local-transport-plan-core-strategy for more information.
Chester AQAP measure number 10	Behaviour change campaigns to reduce single occupancy car trips	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2018	2030	CWCC	CWCC	NO	Funded	£10k – 50k	Planning	NO ₂ Emission Reduction	% modal shift to car share/public transport	Funding has been identified and ring fenced.	A series of promotions have been planned to promote discussion around sustainable transport options.
Chester AQAP measure number 1	Freight delivery and service plans, work with local distribution centres to change delivery emissions	Freight and Delivery Management	Delivery and Service plans	2021	2027	CWCC Transport	Levelling Up Fund	NO	Not Funded	£1 million - £10 million	Planning	Reducing emissions contribution from HGVs, reduced queuing traffic in peak hours	Successful bid to the Levelling Up Fund. Detailed design completion.	Bid not successful.	A freight policy paper will be produced in 2026/27 as part of the Local Transport Plan, setting out the Council's policy position and priorities for engaging with freight distributors.
Chester AQAP measure number 2	HGV/LGV recognition schemes for Council contracts	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2021	2025	CWCC	N/A	NO	Not Funded	£10k - 50k	Planning	NO ₂ Emission Reduction	Amended procurement procedure	Not commenced	To ensure Council contracts require use of FORS or similar in Chester AQMA – no update for 2026
Chester AQAP measure number 3	Collaborating with bus operators to introduce ultra-low emission vehicles into the bus fleet (new or retrofit). Target use of ULEV into the problem areas	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2017	Ongoing	CWCC	N/A	NO	Not Funded	£500k - £1 million	Implementation	Reduced vehicle emissions	Number of ultra-low emission bus fleets introduced	On-going	Falling bus patronage and Covid disruption has impacted on operator priorities and profit. A revised Bus Service Improvement Plan (BSIP) was approved June 2024 – this has focussed on Customer, proposition, network stability and passenger recovery.

Measure No.	Measure Title	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
Chester AQAP measure number 4	Update taxi / private hiring policy	Promoting Low Emission Transport	Taxi Licensing conditions	2021	2022	CWCC Licensing	CWCC	NO	Funded	£10k - 50k	Implementation	NO ₂ /PM Emission Reduction	Amendment of Taxi Licensing Policy	Amended policy change adopted Nov '21 - require fleet transition to ULEV by 2031/2036, commencing 2025. Age policy also revised	Policy implemented
Chester AQAP measure number 5	Alternative fuel (EV) infrastructure development in town centre	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2030	CWCC Transport	LEVI	NO	Funded	c.£2M	Implementation	NO ₂ /PM Emission Reduction	2025 – appointment of delivery partner Summer 2026	2 stage procurement underway, IIT of approved bidders closed 24/06/2025	EV deployment expected to commence 2026/27. New annual targets will be developed.
Chester AQAP measure number 7	Work together with developers to promote the inclusion of electric charging points for electric/hybrid vehicles at new development sites	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2030	CWCC	CWCC	NO	Funded	< £10k	Implementation	NO ₂ Emission Reduction	Number of properties and premises where charging points have been required through planning condition	Year 2022/23 planning permission issued for 64 residential schemes including 113 charge points, 160 dwellings with infrastructure/cablin g, and 30 commercial schemes including 138 parking spaces with charge points. Now superseded by Approved Document Part S of Building regulations as of 15 June 2023.	As of 15 June 2023, Building Regulations Approved Document S: infrastructure for charging electric vehicles, now imposes a legal duty on all new development to provide a minimum provision.
Chester AQAP measure number 8	Public transport infrastructure improvements, e.g. - Enhanced bus shelters - Accurate electronic timetables - m-tickets / contactless payment options	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2018	2022	CWCC	CWCC	NO	Not Funded	£100k - £500k	Completed	NO ₂ Emission Reduction	% modal shift to car share/public transport	Completed	Real-time passenger info provided at P&R sites, bus interchanges and some bus stops e.g. rail stations. Quarterly timetable updates agreed in the BSIP. Accurate information is available on operators' and Council websites and iTravel Smart app. Contactless payment available on bus and operator apps. Ongoing enhancements underway as part of the Council's Bus Service Improvement Plan programme Support commissioned to review bus stop infrastructure and make accessibility improvements

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Chester AQAP measure number 9	Incentivise public transport usage, e.g. - Provision of information about existing services - Campaigns - Season ticket loan/discounts - Subsidised tickets	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2021	2025	CWCC	tbc	NO	Not Funded	£50k - £100k	Implementation	NO ₂ Emission Reduction	% modal shift to car share/public transport	Fares capped on a number of bus routes at £3.	Promotion of the: - Revised Bus Service Improvement Plan June 2024 – maintained or increased services giving network stability for passengers. BSIP Delivery (including Bus Service Enhancements) - P&R ticketing and fare structures has increase patronage. - Promotion of P&R and itravel service via social media and CWCC website https://cwac.co/E1shB #BetterTransportWeek Cheshire West and Chester Council Facebook £3 Bus Fare Cap - DfT Concessionary Fare Passes - Bus Passenger Charter – setting out the standards our passenger can expect from the Enhance Partnership - Independent Travel Training - Your Bus Journey- Transport Focus Survey
Chester AQAP measure number 11	Flexible working and home working encouraged	Promoting Travel Alternatives	Encourage / Facilitate home-working	2019	2022	CWCC	CWCC	NO	Funded	< £10k	Planning	NO ₂ Emission Reduction	Number of people working from home	Modern workforce programme fully implemented 2022	Staff are now classed as either fully agile, hybrid or fixed workers. Ongoing
Chester AQAP measure number 12	Promoting Car Club / Car Sharing Schemes/ Car Pooling	Promoting Travel Alternatives	Workplace Travel Planning	2021	2025	CWCC	CWCC	NO	Not Funded	< £10k	Planning	NO ₂ Emission Reduction	% modal shift to car share/public transport	Not commenced	To be assessed in Chester Movement Strategy to be developed 2026
Chester AQAP measure number 13	Park and Ride Schemes with Euro VI Vehicles	Alternatives to private vehicle use	Bus based Park & Ride	2017	2028	CWCC / Bus operator	CWCC / Bus operator	NO	Funded	£1 million - £10 million	Implementation	NO ₂ Emission Reduction	% modal shift to car share/public transport	Implemented	Euro VI vehicles on the Park & Ride (P&R) services. The focus is now on growing the passenger base and reducing single occupancy journey into Chester.
Chester AQAP measure number 14	On and off-street parking charges linked to vehicle emission standards - including any residents permits.	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2021	2030	CWCC	bid application required	NO	Not Funded	£100k - £500k	Planning	NO ₂ Emission Reduction	Improve traffic management	2021 funding application to appoint consultants unsuccessful.	This is a substantial work area and there is a need to identify funding to advance it both in terms of development, infrastructure / implementation. No progress 2025
Chester AQAP measure number 15	Restrict long stay parking in AQMA.	Traffic Management	Other	2021	2025	CWCC	CWCC	NO	Not Funded	£10k - 50k	Planning	NO ₂ Emission Reduction	Improve traffic management	Not commenced	To be assessed through the forthcoming Chester Movement Strategy, to be developed in 2026.
Chester AQAP measure number 16	Improve signage at main junctions within the AQMA and major spurs.	Transport Planning and Infrastructure	Other	2021	2026	CWCC	CWCC	NO	Not Funded	£50k - £100k	Planning	NO ₂ Emission Reduction	Improve traffic management	Not commenced	Focus on smart digital signage to assist driver choice. No update 2025

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Chester AQAP measure number 17	Review active travel policy/strategy to identify opportunities to support delivery, for example improved signage and cycle route/parking	Transport Planning and Infrastructure	Cycle network	2020	2026	CWCC	CWCC	NO	Funded	< £10k	Implementation	NO ₂ Emission Reduction	Improve traffic management	LCWIP published July 2020 Section 106 requirements successfully implemented through planning approval	LTN 1/20 published by Government. CWCC updating our Local Cycling and Walking Infrastructure Plan in line with new guidance. A walking, wheeling and cycling policy paper will be developed as part of LTP4. In progress.
Chester AQAP measure number 18	Work together with developers to improve sustainable transport links serving new developments	Transport Planning and Infrastructure	Other	2019	2026	CWCC	CWCC	NO	Funded	< £10k	Implementation	NO ₂ Emission Reduction	To be determined	Local Plan Part 2 adopted 18 July 2019 strengthening planning obligations.	Borough-wide impact. Sustainable criteria are a fundamental requirement of the Local Plan. The Council is developing a boroughwide design code which will embed requirements for sustainable transport into the design of new developments.
Chester AQAP measure number 19	Provision of high quality, bespoke and accessible information on sustainable travel, e.g. on a dedicated travel website with route/mode options	Public Information	Via the Internet	2017	2024	CWCC	CWCC	NO	Funded	£10k - 50k	Implementation	NO ₂ Emission Reduction	Number of hits on upgraded website per annum	Council have produced an app called iTravelsmart	The council has recently developed travel portal on the staff intranet to promote sustainable travel options to council sites. In addition, a public walking and cycling journey planner has been published https://www.cheshirewestandchester.gov.uk/residents/transport-and-roads/active-travel/cycling-and-walking-journey-planner
Chester AQAP measure number 20	Local air quality monitoring within the unitary authority to ensure a high standard of data is achieved	Public Information	Other	2021	2023	CWCC	CWCC	NO	Funded	£10k - 50k	Planning	NO ₂ Emission Reduction	Number of monitoring locations	Funding has been ring fenced to introduced portable real-time monitors	Assessment and selection of appropriate monitoring devices needs to be undertaken – no further progress in 2025.
Chester AQAP measure number 21	Low Emissions Strategy (LES)	Policy Guidance and Development Control	Low Emissions Strategy	2018	2021	CWCC	CWCC	YES	Funded	£10k - 50k	Completed	NO ₂ Emission Reduction	The implementation of Low Emissions Strategy	Published September 2018	Targeting and prioritising implementation of measures on the AQMA. LES applies borough wide. Revisions due but not delivered 2025 due to resource issues
Chester AQAP measure number 22	Anti-idling enforcement at all on-street locations	Traffic Management	Other	2018	2020	CWCC	CWCC	NO	Funded	£10k - 50k	Completed	NO ₂ Emission Reduction	Idling reduction	Legislation adopted, regular patrols in place.	Periodic review of intelligence to enable targeted patrols. Implemented borough wide. Real funding cuts to Council make delivery challenging

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Chester AQAP measure number 23	Review access permissions and use of the Northgate Street traffic barrier.	Traffic Management	Other	2021	2027	CWCC	CWCC	NO	Not Funded	< £10k	Planning	NO ₂ Emission Reduction	Reduction in vehicles accessing the city centre during restricted day time hours.	Work not commenced	Presently access for taxis, hotel guests and disabled vehicles appears to be permitted although it is not clear whether this is supported by a traffic order. To be reviewed through the forthcoming study into the future of Town Hall Square, associated with redevelopment of Chester Northgate Phase 2
Chester AQAP measure number 24	Explore the potential for extension of 20mph zones throughout the Chester AQMA.	Traffic Management	Reduction of speed limits, 20mph zones	2018	2022	CWCC	CWCC	NO	Not Funded	£10k - 50k	Planning	NO ₂ Emission Reduction	Implementation of 20mph zones.	Work not commenced	A detailed scheme for reducing speed limits across the borough has been rolled out very successfully. The case for any further 20 mph schemes within the city will be assessed through the forthcoming Chester Movement Strategy, to be developed in 2026.
Thornton AQAP measure number 1	Remove sulphur compounds in process	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	2017	2025	Essar refinery	Operator	NO	Funded	Implementation	Reduction in 15-min exceedances to less than 35 per year. Potential air quality benefit = medium (in the range of 25-40%)	SO ₂ measured at CCU stack / SO ₂ measured at local AQ monitoring stations	Number of exceedances in 2020 and 2021 significantly lower than previous years. Dosing percentage reformulated 2020 to optimise at 20-30% SO _x reduction. Trial ongoing to assess variables e.g. ambient conditions, operational parameters, feedstock concentrations. Ongoing monitoring.	Trial of 'de-SO _x ' additive on the catalytic cracking unit in progress. Improvement in emissions over last 3 substantially reduced SO _x emissions.	Assessment of success still ongoing. Further modelling in 2025/6 has demonstrated that the area of exceedance has reduced significantly but that the AQMA cannot be revoked yet. This action will be revisited with refinery operator to determine whether further emission reductions are possible.
Thornton AQAP measure number 2	Schedule maintenance / repair on sulphur-critical plant to suit the weather	Environmental Permits	Other	2017	Ongoing	Essar refinery	Operator	NO	Funded	Implementation	SO ₂ Emission Reduction (negligible)	SO ₂ measured at local AQ monitoring stations	Ongoing	Essar uses weather data to plan activities. Essar uses real time AQ monitoring data to respond rapidly to spikes.	Implemented 2023/24 with certain limitations based on time constraints.
Thornton AQAP measure number 3	Isolation of sulphur recovery units (SRU) to allow independent operation	Environmental Permits	Other	2017	2018	Essar refinery	Operator	NO	Funded	Completed	SO ₂ Emission Reduction (negligible)	Reduced sour gas flaring	Complete. Installed during 2018 turnaround	This allows one SRU to be shut down for maintenance while keeping the other online. Reduces sour gas flaring	Completed reducing process contribution within AQMA.
Thornton AQAP measure number 4	Fuel gas scrubbing and fuel substitution	Environmental Permits	Other	2017	2018	Essar refinery	Operator	NO	Funded	Completed	SO ₂ Emission Reduction (negligible)	Sulphur content in refinery fuel gas	Complete. Installed during 2018 turnaround	Additional capability for removing sulphur from fuel gas (in addition to natural gas switch for some boilers)	Completed reducing process contribution within AQMA.

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Thornton AQAP measure number 5	Address fugitive emissions	Environmental Permits	Other	2017	2018	Essar refinery	Operator	NO	Funded	Completed	SO ₂ Emission Reduction (negligible)	SO ₂ measured at local AQ monitoring stations	Completed. Medium pressure (MP) superheater replaced in 2018 turnaround	Fugitive emissions are addressed as they are identified, e.g. MP superheater replaced as it was approaching end of life	Completed reducing process contribution within AQMA.
Thornton AQAP measure number 6	Air quality monitoring	Public Information	Via the Internet	2017	2017	CWCC	CWCC	NO	Funded	< £10k	Implementation	Nil	Real-time data published on website	Ongoing	Results published on Council website, updated hourly. Air Quality in Cheshire West and Chester
Thornton AQAP measure number 7	Real-time data provision to operator (with trigger capability)	Public Information	Via the Internet	2017	2021	CWCC / Essar	CWCC	NO	Funded	£10k - 50k	Implementation	Nil	Ongoing data sharing	Complete. Output data from both SO ₂ monitoring stations shared with Essar	Superseded by Thornton AQPA measure number 6.
Borough-wide measure 2	LEVI grant funding application	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	2028	CWCC / DfT	DfT	No	Funded	£2M	In development	NO _x / Particulates	Number of alternative fuel (EV) infrastructure development throughout borough	Grant application successful, £2M awarded by DfT. Procurement for delivery partner underway.	Two stage procurement completed, following successful bidder event in mid-December 2024. - SQ stage followed by ITT. 20-year contract term. 1 single Service Provider to cover all deployment in Council car parks and on-street. 790 chargepoint units to be deployed 2026 – 2030. As of June 2026 - Delivery partner selected. - EV charger deployment expected to start 1/1/26. 5-year rollout period.
Borough-wide measure 3	Bikeability campaign (schools and adults only schemes)	Promoting Travel Alternatives	Promotion of cycling	2010	Ongoing	CWCC Road safety	CWCC / Active Travel	NO	Funded	£50k - £100k	Implementation	Pollutant emission reduction	Increase in number cyclists	Ongoing. Subject to annual project review	DfT Active Travel / Council funded programmes. Ongoing campaign with 3,392 children, 28 adults (through family courses) and 265 children with special educational needs trained last year.
Borough-wide measure 4	Let's Walk	Promoting Travel Alternatives	Promotion of walking	2015	Ongoing	CWCC Road safety	CWCC	NO	Funded	< £10k	Implementation	Pollutant emission reduction	Improve pedestrian confidence to encourage more sustainable trips	Ongoing. Subject to annual project review	Let's Walk – ongoing campaign - Child training promotes independence. DfT Active Travel / Council / Sustrans funded programmes. Ongoing campaign. 72 primary schools have Instructors. Last year 14 completed last financial year with 980 children trained. Living Streets WoW scheme has received ATE funding and they have contact schools in the borough to take part.
Borough-wide measure 5	Schools crossing patrols	Promoting Travel Alternatives	Promotion of walking	2010	2030	CWCC Road safety	CWCC	NO	Funded	£100k - £500k	Implementation	Pollutant emission reduction	Improve pedestrian confidence to encourage more sustainable trips	Ongoing. Subject to annual project review	Supporting vulnerable road users cross the highway – when arriving and leaving educational establishments

Measure No.	Measure Title	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
Borough-wide measure 6	20mph limits on residential streets (740km)	Traffic Management	Reduction of speed limits, 20mph zones	2015	2021	CWCC	CWCC	NO	Funded	£500k - £1 million	Implementation	Reduced vehicle emissions borough wide	Successful rollout of scheme over four-year programme	Implemented	Promotes smoother driving style. Emissions reduction from vehicles should lead to overall emissions reduction. Programme expanded 2025/26 to include all roads outside schools.
Borough-wide measure 7	Moving traffic offences	Traffic Management	Reducing dangerous manoeuvres, congestion and disruption	2024	2028	CWCC	CWCC	NO	Funded	TBD	Planning	Reduced vehicle emissions borough wide	Successful rollout of scheme over four-year programme	Ongoing	Implemented in 4 locations as part of Phase 1.
Chester	Bus lane enforcement in Chester using automatic number plate recognition (ANPR)	Traffic Management	Strategic highway improvements, re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	2030	CWCC	CWCC	NO	Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Bus patronage	Ongoing	To date over 1800 fines issued.

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 Strategy⁵, 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 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Department of Health's Public Health Outcomes Framework⁶ has a number of public health indicators that are used for public health actions, to identify areas of health inequality and concern, and monitor the differences in health impacts across regions in the UK. This framework includes an indicator "D01- Fraction of Mortality Attributable to Particulate Air Pollution" which is calculated using background annual average PM_{2.5} concentrations, modelled at a 1km² resolution based on measured concentrations from the AURN. Cheshire West and Chester has a 4.5% fraction of mortality calculated for 2023, which is lower than the average for England overall (5.3%), and lower than the Northwest Region (4.9%). The 2024 data is presented as the 2025 dataset has not been made available at the time of writing.

Cheshire West and Chester Council is taking the following measures to address PM_{2.5} pollution within the area:

- Updating taxi and private hiring policy. All new entrants must be ULEVs from 2025, and there is no exit age for ULEVs, provided they pass inspection. To remove existing petrol/diesel vehicles, a phased exit age policy has been implemented, with the aim of phasing them out by 2030 for private hire vehicles and 2035 for hackney carriages. As a result, by 2031 for private hire and 2036 for hackney carriages, the entire fleet will comprise 100% ULEV;
- Redevelopment of alternative fuel (EV) infrastructure in town centres, with EV deployment expected to commence 2026/27; and

⁵ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁶ Public Health Outcomes Framework: D01- Fraction of Mortality Attributable to Particulate Air Pollution

- The Council has been successful with a LEVI application and has been awarded £2 million grant funding. The procurement for a delivery partner is currently underway, with a 5-year rollout period expected to commence June 2026. The LEVI grant will be used for the development of alternative fuel (EV) infrastructure throughout the borough.

The council has developed a Low Emission Strategy (LES) that specifically targets the reduction of NO₂, PM₁₀, and PM_{2.5}. The Council's approach is guided by the action toolbox outlined in LAQM.TG22, which provides a range of measures that can be implemented to address PM_{2.5} pollution. Many of these recommended measures have been incorporated into the council's LES, demonstrating a comprehensive and evidence-based strategy to tackle this important environmental and public health concern.

The Environmental Protection team has a good working relationship with the Public Health team and will continue to work collaboratively to determine how air quality can be prioritised across a wide range of policy areas as well identifying specific measures to address PM_{2.5}.

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

This section sets out the monitoring undertaken within 2025 by Cheshire West and Chester and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2021 and 2025 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Cheshire West and Chester undertook automatic (continuous) monitoring at 6 sites during 2026. Table A.1 in Appendix A shows the details of the automatic monitoring sites. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The [Air Quality in Cheshire West and Chester \(cheshirewest-air.info\)](https://cheshirewest-air.info) page presents automatic monitoring results for Cheshire West and Chester, with automatic monitoring results also available through the UK-Air website .

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

3.1.2 Non-Automatic Monitoring Sites

Cheshire West and Chester Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 34 sites during 2025. Table A.2 in Appendix A presents the details of the non-automatic sites. At the end of 2024 the Council discontinued 17 non-automatic monitoring sites in anticipation of revocation of Chester City Centre AQMA.

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 (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³. 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).

In 2025, monitored NO₂ concentrations across Cheshire West and Chester Council increased at all but 8 existing monitoring locations compared to 2024. The eight diffusion tube locations where annual NO₂ concentrations decreased were: CBI, MCC, OW, PG, SR, TA, TG, and WCR. Annual NO₂ concentrations stayed the same at diffusion tube site FM. There were no large spikes in concentrations across the sites, with most of the diffusion tubes only increasing in average concentrations by 1-2 µg/m³. It is unknown why this trend was observed. The highest monitored NO₂ concentration in 2025 was 33.2 µg/m³ at TBV. The lowest monitored NO₂ concentration in 2025 was 16.7 µg/m³ at GR. There were no sites that were within 10% of the NO₂ annual mean UK National Objective for in 2025.

Five-year trends in the annual mean NO₂ are presented in the bar charts in to Figure A. 1 - Figure A. 11. Most sites, particularly those at roadside locations, show a noticeable reduction in NO₂ levels over time. Generally, concentrations are the same level or lower as to those recorded during COVID-19 in 2021. The general reduction in NO₂ concentrations across the five years shows that the downward trend in annual mean NO₂ concentrations is likely caused by the measures implemented by CW&C to decrease congestion and improve traffic flows, which includes support for remote and hybrid working.

For diffusion tubes, the full 2025 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 NO₂ hourly mean concentrations for the past five years with the air quality objective of 200 µg/m³, not to be exceeded more than 18 times per year.

3.2.2 Particulate Matter (PM₁₀)

Monitored PM₁₀ concentrations were well below the annual mean PM₁₀ air quality objective 40 µg/m³ at all three automatic monitoring locations in 2025. Concentrations of PM₁₀ have shown a decreasing trend in observed annual mean concentrations at CBI and TLP from 2021 - 2024. In the past year observed PM₁₀ concentrations have increased slightly at both sites. Concentrations of PM₁₀ at FMH have fluctuated over the past five years with concentrations in 2024 slightly higher than levels in 2025. CBI recorded the highest concentration in 2025 of PM₁₀ of 17.8 µg/m³ among the three automatic monitoring sites. Overall, concentrations of PM₁₀ are well below the annual mean PM₁₀ air quality objective of 40 µg/m³.

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50 µg/m³, not to be exceeded more than 35 times per year.

3.2.3 Particulate Matter (PM_{2.5})

Cheshire West and Chester Council does not currently undertake monitoring of PM_{2.5}. However, PM_{2.5} concentrations can be estimated from monitored PM₁₀ concentrations, as per LAQM.TG(22) guidance. Three automatic monitoring sites; CBI, FMH and TLP monitor PM₁₀ concentrations in Cheshire West and Chester.

The methodology detailed within Box 7.7 of LAQM.TG(22) has been followed to calculate a national derived PM_{coarse} value of 6.7 for Roadside sites and 5.0 for Background sites. Estimated annual mean PM_{2.5} concentrations have been calculated for CBI and FMH monitoring stations in Table 3.1 below. The estimated annual mean concentration at both monitoring stations is below to the indicative stage II annual mean limit value for PM_{2.5} (20 µg/m³). PM₁₀ concentrations from Thornton-le-Moors were not included due to the monitoring site being characterised as industrial.

Table 3.1 – Estimated Annual Mean PM_{2.5} Concentrations

Monitoring Station	PM _{coarse} Value (µg/m ³)	PM ₁₀ Annual Mean Concentration (µg/m ³)	Estimated PM _{2.5} Annual Mean Concentration (µg/m ³)
CBI	6.7 (Roadside)	17.8	11.1
FMH	5.0 (Background)	13.3	8.3

In April 2023, the UK Department for Environment, Food and Rural Affairs (Defra) published a new Air Quality Strategy (AQS) for local authorities. This strategy includes two legally binding targets for PM_{2.5} concentrations that local authorities are responsible for working towards:

1. A nationwide annual mean PM_{2.5} concentration of 10 micrograms per cubic meter (µg/m³) by 2040, with an interim target of 12 µg/m³ by January 2028.
2. A 35% reduction in average population exposure to PM_{2.5} by 2040, with an interim target of a 22% reduction by January 2028, compared to a 2018 baseline.

From latest available 1 km x 1 km background maps for PM_{2.5} for 2025 (using 2021 baseline) the Cheshire West and Chester area has an average background annual mean PM_{2.5} concentration of 5.8 µg/m³, which currently satisfies both PM_{2.5} objectives. This is an improvement on the average background annual mean PM_{2.5} concentration of 5.9 µg/m³ in 2024. Considering each data point at 1 km resolution from 2025 background concentration projections, the entire area under Council's jurisdiction is still below the 12 µg/m³ concentration objective for 2028 and only one exceedance above the 10 µg/m³ concentration objective for 2040.

As there is disparity between the PM_{2.5} calculations using PM₁₀ measurements and the Defra modelled background PM_{2.5} concentrations for 2025, this suggests CW&C should deploy PM_{2.5} monitors in the future to ensure compliance with the new Environmental Targets for PM_{2.5}.

3.2.4 Sulphur Dioxide (SO₂)

Table A.8 in Appendix A compares the ratified continuous monitored SO₂ concentrations for 2025 with the air quality objectives for SO₂.

In 2025, there were zero exceedances at both ELT and TLP automatic monitoring stations for the 15-minute objective of 266 µg/m³. Both sites were compliant, as the air quality

objective allows for 35 exceedances of the 15-min mean each year. Despite zero exceedances, the Council plans to keep the AQMA in place. During 2025 modelling of SO₂ concentrations for Thornton-le-Moors AQMA was undertaken and revealed that concentrations were too high to revoke the AQMA on its entirety. At the time of writing this report it was suggested that a reduction in the footprint of the AQMA would be progressed. Five-year trends in the number of 15-minute mean SO₂ results exceeding 266 µg/m³ are presented in the bar charts in Figure A. 15. In 2025, the number of exceedances significantly decreased at both monitoring sites from 2024 values.

Both the hourly and daily mean standard were not exceeded at either Thornton-le-Moors or Elton in 2025. Overall, all sites complied with the UK national air quality objectives.

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? ⁽¹⁾	Monitoring Technique	Distance to Relevant Exposure (m) ^(1,2)	Distance to kerb of nearest road (m) ⁽¹⁾	Inlet Height (m)
BO	Boughton	Roadside	341864	366444	NO2	Yes	Chester City Centre	Chemiluminescent	25.0	3.0	1.0
CBI	Chester Bus Interchange	Roadside	340645	366802	NO2, PM10	Yes	Chester City Centre	Chemiluminescent, BAM	5.1	6.6	1.6
ELT	Elton	Industrial	345642	375522	SO2	No	N/A	UV-fluorescent	0.0	N/A	2.0
FMH	Frodsham	Urban Background	352445	378031	NO2, PM10	No	N/A	Chemiluminescent, TEOM	24.0	7.0	2.5
TLP	Thornton-le-Moors, Park Road	Industrial	344103	374330	PM10, SO2	Yes	Thornton-le-Moors	Chemiluminescent UV-fluorescent BAM	38.0	N/A	2.5
WH	Whitby Road	Roadside	340197	376363	NO2	No	N/A	Chemiluminescent	15.0	2.5	3.5

Notes:

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

Table A.2 – Details of Non-Automatic Monitoring 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)
C11	Christleton Road (11)	Roadside	341915	366427	NO2	Yes, Chester City Centre AQMA	0.0	1.0	No	2.0

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)
C36	Christleton Road (36)	Roadside	342000	366374	NO2	Yes, Chester City Centre AQMA	0.5	1.4	No	2.5
CA	Castle St Northwich	Roadside	364982	373307	NO2	No	3.1	2.4	No	2.5
CBI1, CBI2, CBI3	Bus Interchange coll. triplicate	Other	340647	366803	NO2	Yes, Chester City Centre AQMA	5.1	6.6	Yes	1.6
CN	Chester Way, Northwich	Roadside	366070	373905	NO2	No	3.8	1.6	No	3.0
FH	72 High St Frodsham	Roadside	352146	378139	NO2	No	0.2	2.0	No	2.5
FJ	Fluin Lane (r/o 76 Chester Rd).	Roadside	352171	378140	NO2	No	0.5	2.0	No	2.5
FM	Fluin Lane (r/o 10 Manor Fm Ct)	Roadside	352189	378094	NO2	No	0.3	2.0	No	2.5
GR	Griffths Road, Lostock	Roadside	368634	374714	NO2	No	0.2	8.0	No	1.8
GSW	Gorse Stacks (Waterside)	Roadside	340700	366687	NO2	Yes, Chester City Centre AQMA	1.0	1.6	No	2.1
HHB	Holme Bank Cott. Holme St	Roadside	347953	366723	NO2	No	5.3	2.9	No	2.5
HIN	Upper Raby Road/Chester High Road	Roadside	330317	378536	NO2	No	9.5	1.6	No	2.2
HTC	The Cottage, Holme St	Roadside	348333	366763	NO2	No	3.1	2.0	No	2.0

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)
KR	King St. Rudheath	Roadside	368432	372988	NO2	No	4.5	2.2	No	2.0
LI2	Liverpool Road (2)	Roadside	343785	365502	NO2	Yes, Chester City Centre AQMA	0.5	2.4	No	2.2
MCC	Christleton (Mill Cottages)	Roadside	343785	365502	NO2	No	0.5	2.4	No	2.0
NSR	Station Rd crossroads, Northwich	Roadside	366796	373984	NO2	No	0.6	1.7	No	2.2
NWH	Winnington Hill, Northwich	Roadside	365590	373904	NO2	No	2.4	0.7	No	2.4
OSQ	Over Square, Winsford	Roadside	364053	365977	NO2	No	5.5	2.2	No	2.4
OW	St Oswalds Way	Roadside	340623	366823	NO2	Yes, Chester City Centre AQMA	2.3	2.3	No	2.3
PG	Parkgate Road (5)	Roadside	340322	366989	NO2	Yes, Chester City Centre AQMA	0.2	1.8	No	2.0
QRN	Quarry Road, Neston	Roadside	330565	378063	NO2	No	0.0	3.0	No	2.0
RIV	Carisbrooke House, Rivacre Road	Roadside	337242	378569	NO2	No	14.4	4.5	No	1.8
RM	Rock Mount, Parkgate Road	Roadside	340291	367108	NO2	Yes, Chester City Centre AQMA	0.0	3.8	No	2.2
RPS	Rudheath Primary School	Roadside	367856	372667	NO2	No	19.0	5.2	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)
SR	68 Station Rd	Roadside	340435	376790	NO2	No	0.0	1.6	No	2.5
T44	Tarvin Road (44)	Roadside	342085	366446	NO2	Yes, Chester City Centre AQMA	3.5	1.0	No	2.5
T6	Tarvin Road (6)	Roadside	341926	366446	NO2	Yes, Chester City Centre AQMA	0.2	2.0	No	2.0
TA	Tarvin Road (52)	Roadside	344519	366898	NO2	No	6.0	2.0	No	2.0
TBV	1 Tarvin Rd (Barnhouse Vets)	Roadside	344013	366830	NO2	No	14.4	1.4	No	2.5
TG	The Green Hartford	Roadside	363743	372186	NO2	No	2.1	1.0	No	2.0
WCR	Whitchurch Road (58)	Roadside	342951	366029	NO2	No	7.2	1.5	No	2.0
WG	Watergate St.	Roadside	340217	366209	NO2	Yes, Chester City Centre AQMA	0.2	1.5	No	2.0
WH1, WH2, WH3	Whitby Rd collocated triplicate tubes	Roadside	340196	376363	NO2	No	15.0	1.2	Yes	3.5

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/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 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
BO	341864	366444	Roadside	98.7	98.5	19	18	15.5	16.0	15.0
CBI	340645	366802	Roadside	99.6	99.5	30	32	31.6	31.6	27.9
FMH	352445	378031	Urban Background	98.5	98.5	15	14	9.7	8.6	8.8
WH	340197	376363	Roadside	97.3	97.3	29	29	27.9	28.5	24.5

☒ **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.**

☒ **Where exceedances of the NO₂ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2025.**

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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)

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 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
C11	341915	366427	Roadside	92.3	92.3	31.8	30.6	29.9	26.0	29.0
C36	342000	366374	Roadside	100.0	100.0	33.6	36.4	32.7	30.5	31.3
CA	364982	373307	Roadside	92.3	92.3				27.0	27.5
CBI1, CBI2, CBI3	340647	366803	Other	100.0	100.0	28.2	29.5	28.3	27.6	26.6
CN	366070	373905	Roadside	92.3	92.3	25.3	26.0	23.3	22.7	23.8
FH	352146	378139	Roadside	90.4	90.4	28.8	28.2	25.9	23.8	25.9
FJ	352171	378140	Roadside	100.0	100.0	28.3	28.4	26.5	26.5	26.6
FM	352189	378094	Roadside	100.0	100.0	28.5	27.5	22.4	23.7	23.7
GR	368634	374714	Roadside	100.0	100.0	17.2	18.1	16.4	15.6	16.7
GSW	340700	366687	Roadside	92.3	92.3	28.1	27.9	25.6	24.9	25.3
HHB	347953	366723	Roadside	100.0	100.0	22.0	24.6	22.7	21.1	21.2
HIN	330317	378536	Roadside	84.6	84.6			24.3	22.3	23.8

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 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
HTC	348333	366763	Roadside	100.0	100.0	25.1	24.3	20.5	22.9	25.4
KR	368432	372988	Roadside	84.6	84.6	25.9	25.7	22.6	22.0	22.9
LI2	343785	365502	Roadside	100.0	100.0	29.9	30.9	28.9	29.1	30.9
MCC	343785	365502	Roadside	100.0	100.0	27.4	25.8	23.7	23.5	23.4
NSR	366796	373984	Roadside	100.0	100.0	31.0	30.1	27.1	26.2	27.8
NWH	365590	373904	Roadside	100.0	100.0	34.6	35.9	30.2	30.2	30.4
OSQ	364053	365977	Roadside	69.2	69.2	29.0	29.4	26.0	25.3	28.6
OW	340623	366823	Roadside	75.0	75.0	32.2	33.7	31.1	32.5	28.9
PG	340322	366989	Roadside	100.0	100.0	33.1	32.6	30.1	29.3	29.1
QRN	330565	378063	Roadside	80.8	80.8	29.3	27.2	25.9	25.1	26.9
RIV	337242	378569	Roadside	92.3	92.3			28.0	28.2	28.3
RM	340291	367108	Roadside	75.0	75.0	31.4	30.6	29.9	28.8	30.4
RPS	367856	372667	Roadside	100.0	100.0	29.5	30.8	26.5	26.9	27.9

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 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
SR	340435	376790	Roadside	90.4	90.4	29.3	27.3	25.7	26.0	25.9
T44	342085	366446	Roadside	100.0	100.0	28.5	30.5	27.5	24.4	25.4
T6	341926	366446	Roadside	100.0	100.0	34.1	35.1	32.0	30.0	32.3
TA	344519	366898	Roadside	92.3	92.3	27.6	28.0	27.2	26.4	25.7
TBV	344013	366830	Roadside	82.7	82.7	30.9	33.4	31.8	30.8	33.2
TG	363743	372186	Roadside	100.0	100.0				20.6	20.0
WCR	342951	366029	Roadside	100.0	100.0	30.1	29.2	26.5	28.3	26.4
WG	340217	366209	Roadside	90.4	90.4	25.4	27.0	26.0	27.0	27.8
WH1, WH2, WH3	340196	376363	Roadside	100.0	100.0	27.4	27.0	25.7	25.4	25.6

☒ 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 $\mu\text{g}/\text{m}^3$.

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

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, 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%).

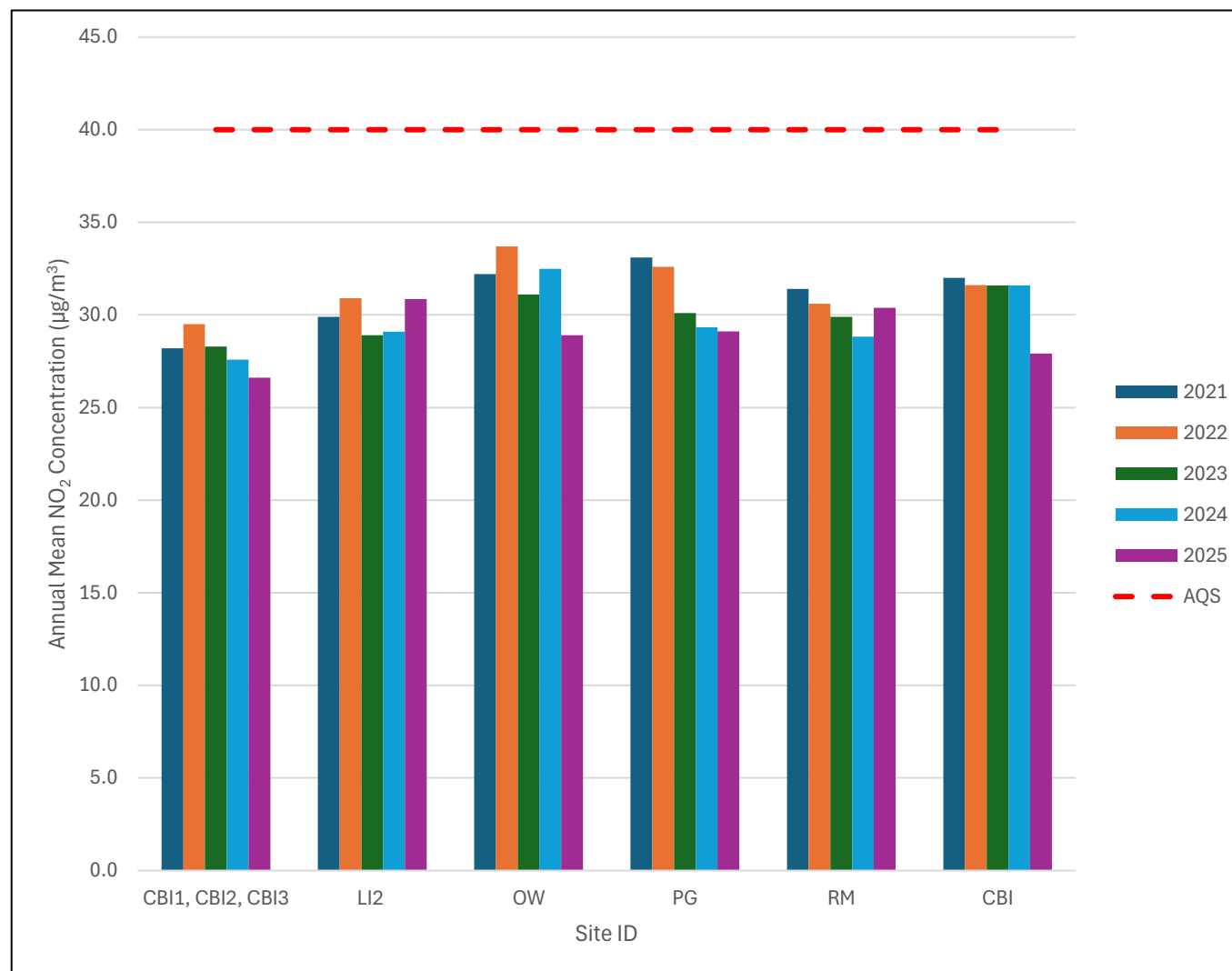
Figure A. 1 – Trends in Annual Mean NO₂ Concentrations - Within Chester City Centre AQMA (North)

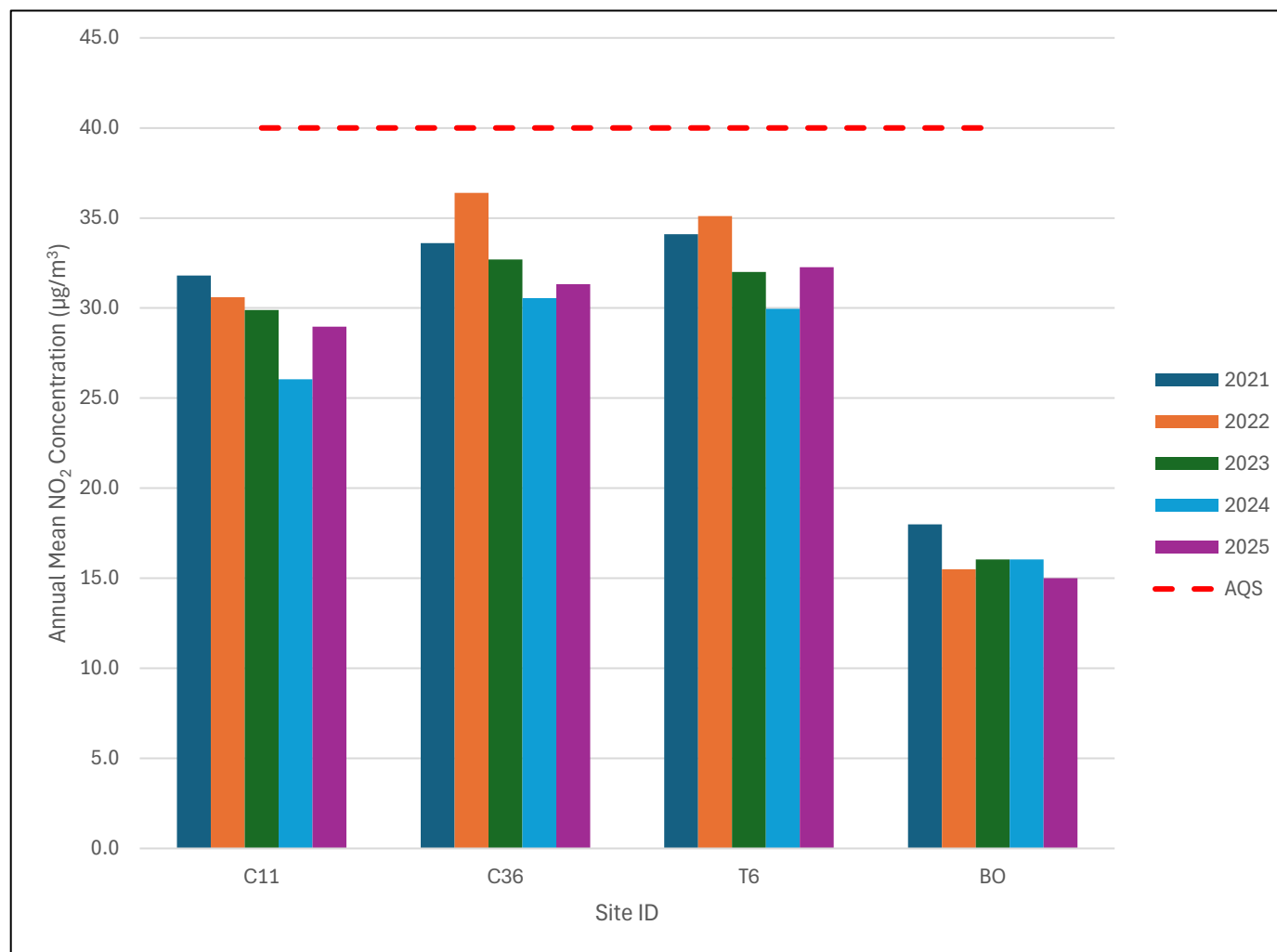
Figure A. 2 – Trends in Annual Mean NO₂ Concentrations - Within Chester City Centre AQMA (East and South)

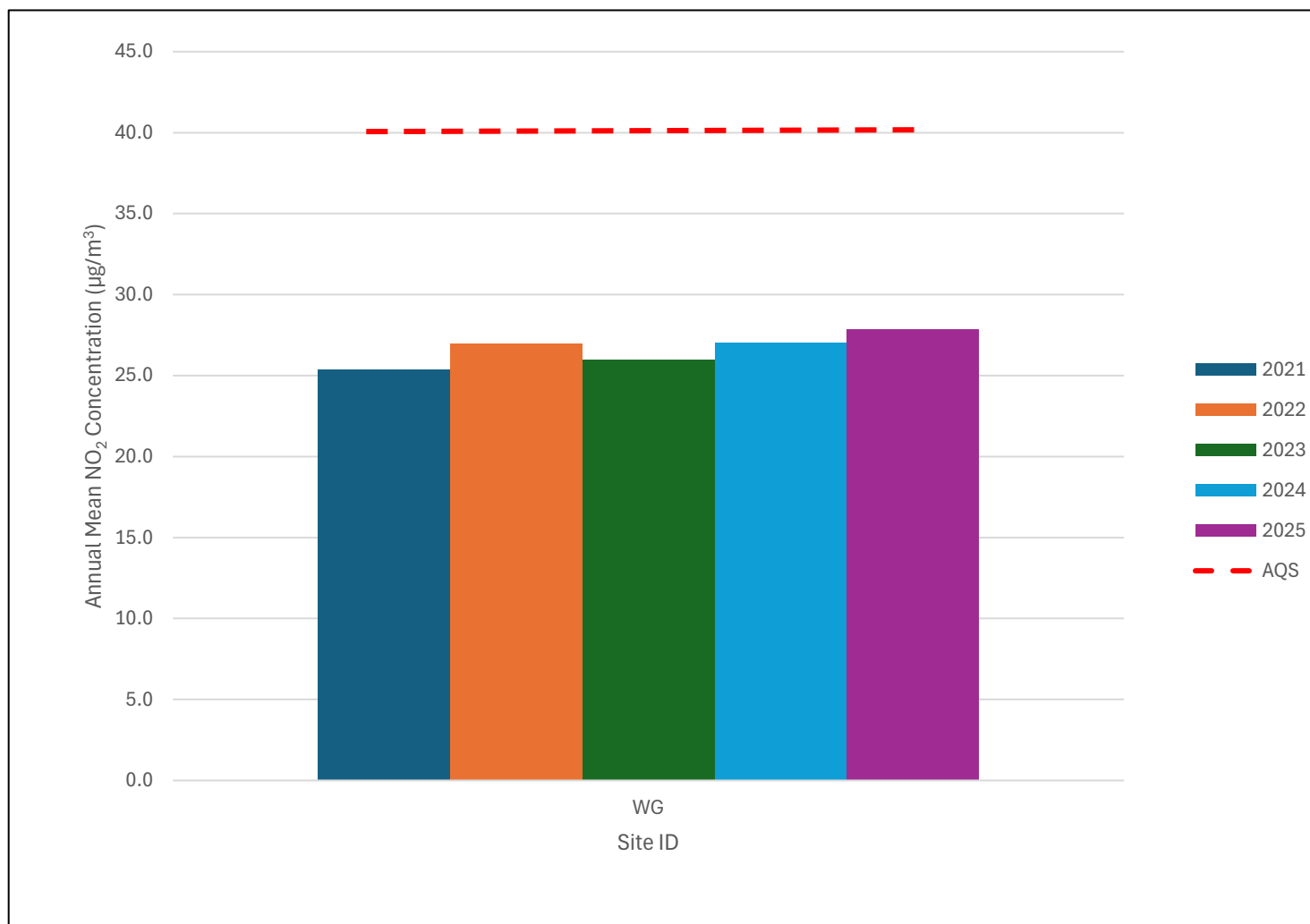
Figure A. 3 – Trends in Annual Mean NO₂ Concentrations - Within Chester City Centre AQMA (West)

Figure A. 4 – Trends in Annual Mean NO₂ Concentrations - Whitby Road/Station Road

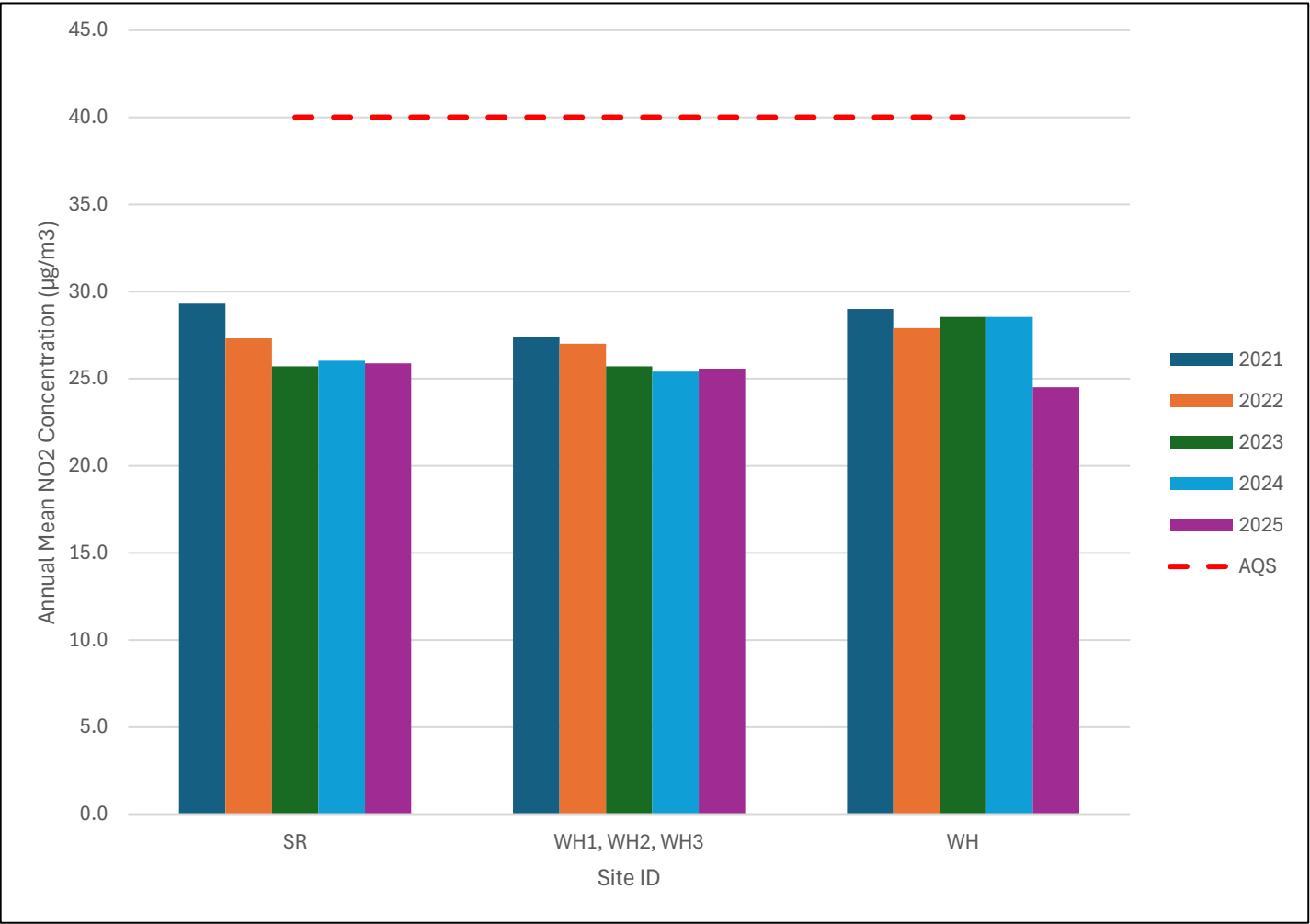


Figure A. 5 – Trends in Annual Mean NO₂ Concentrations - Frodsham

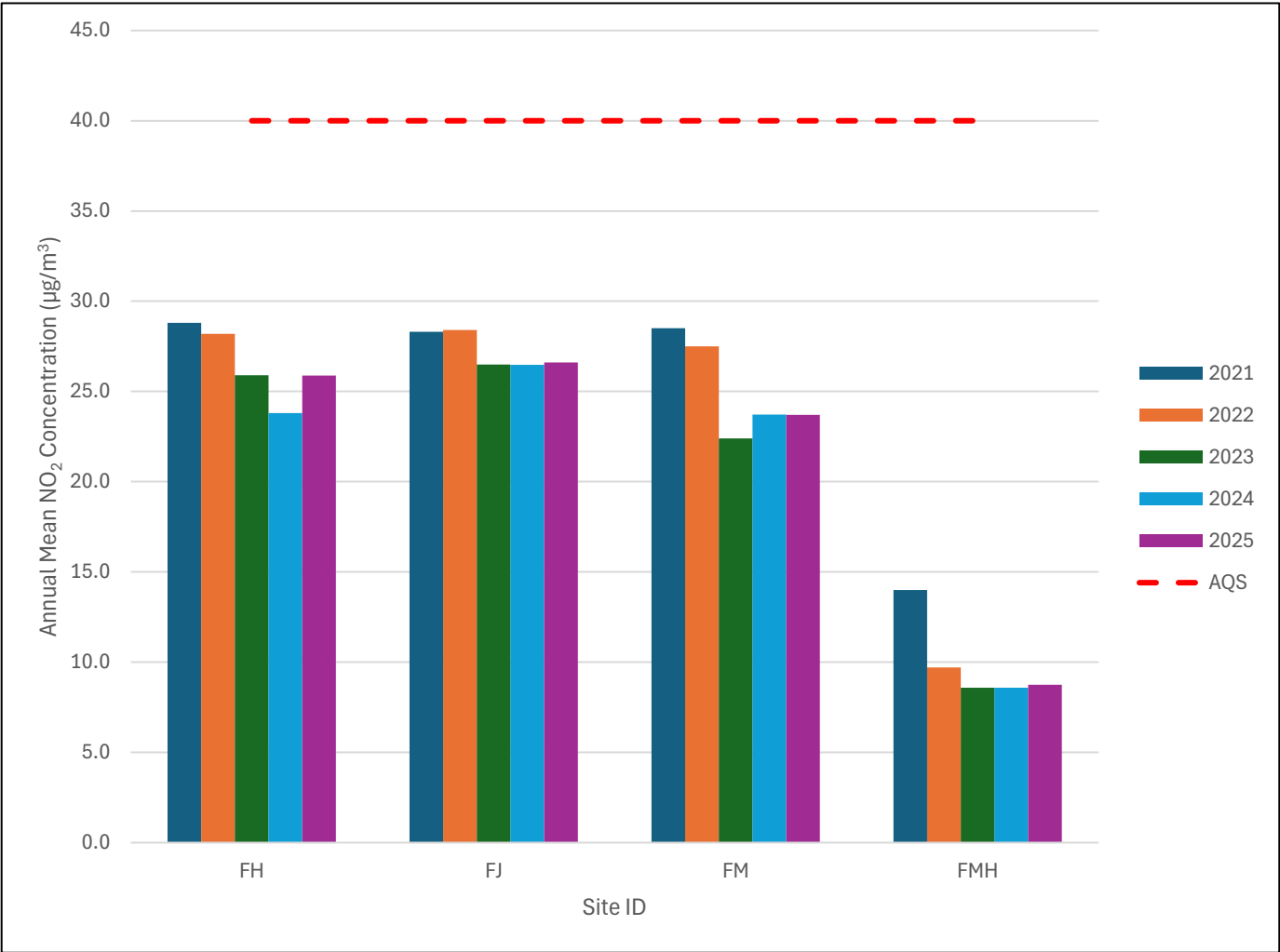


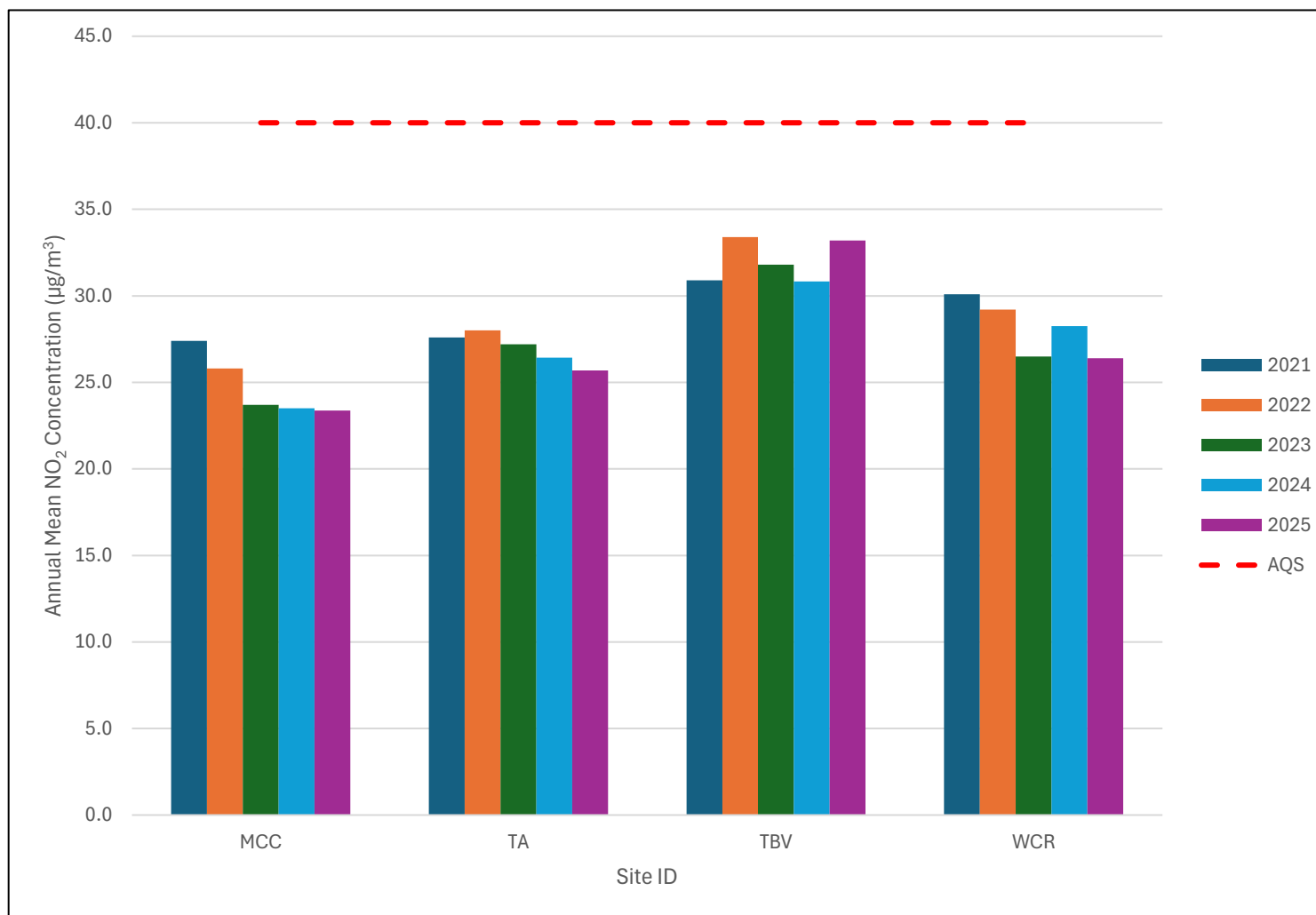
Figure A. 6 – Trends in Annual Mean NO₂ Concentrations – Christleton/Littleton/Boughton Heath

Figure A. 7 – Trends in Annual Mean NO₂ Concentrations – Tarvin

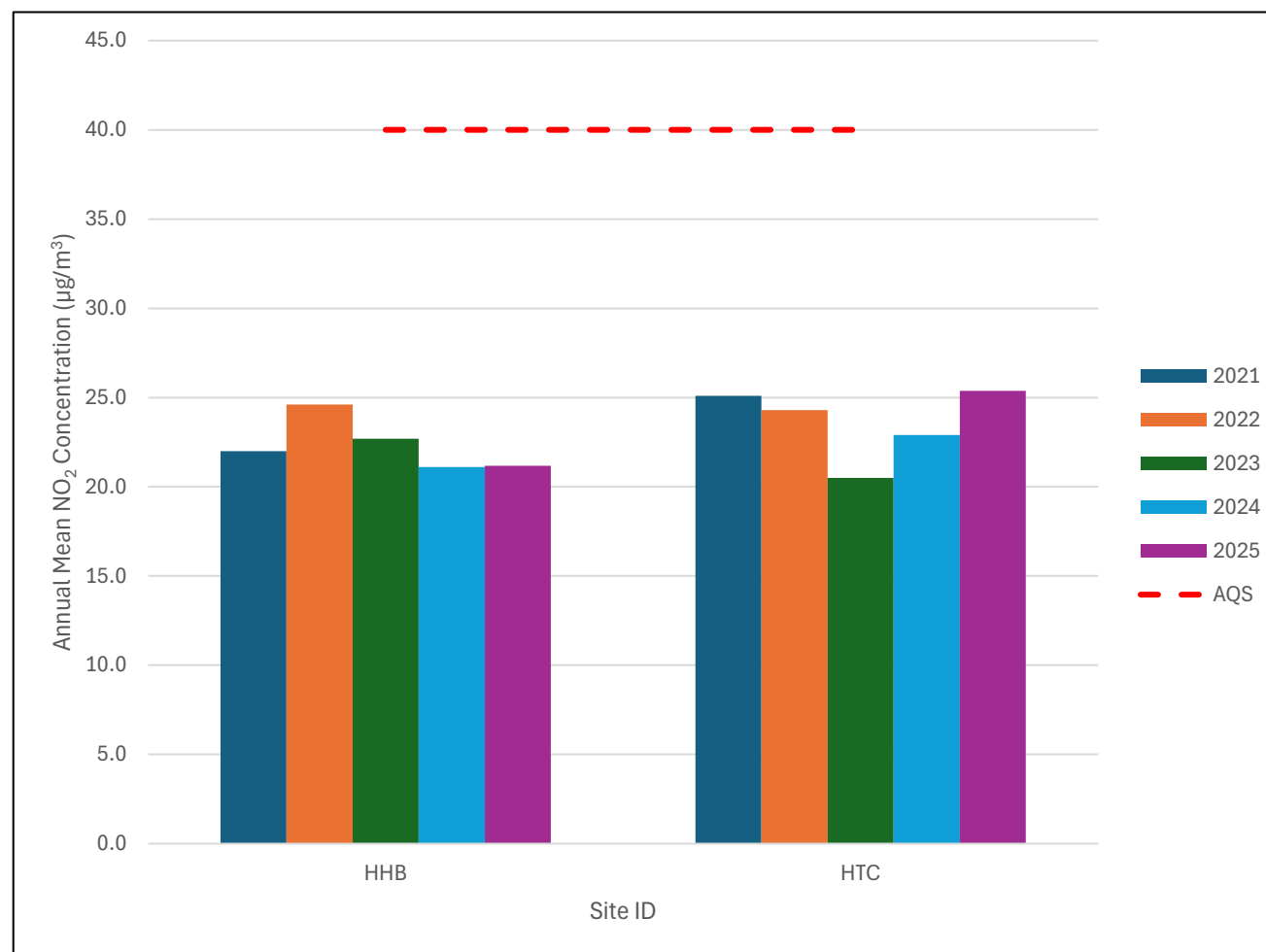


Figure A. 8 – Trends in Annual Mean NO₂ Concentrations – Neston

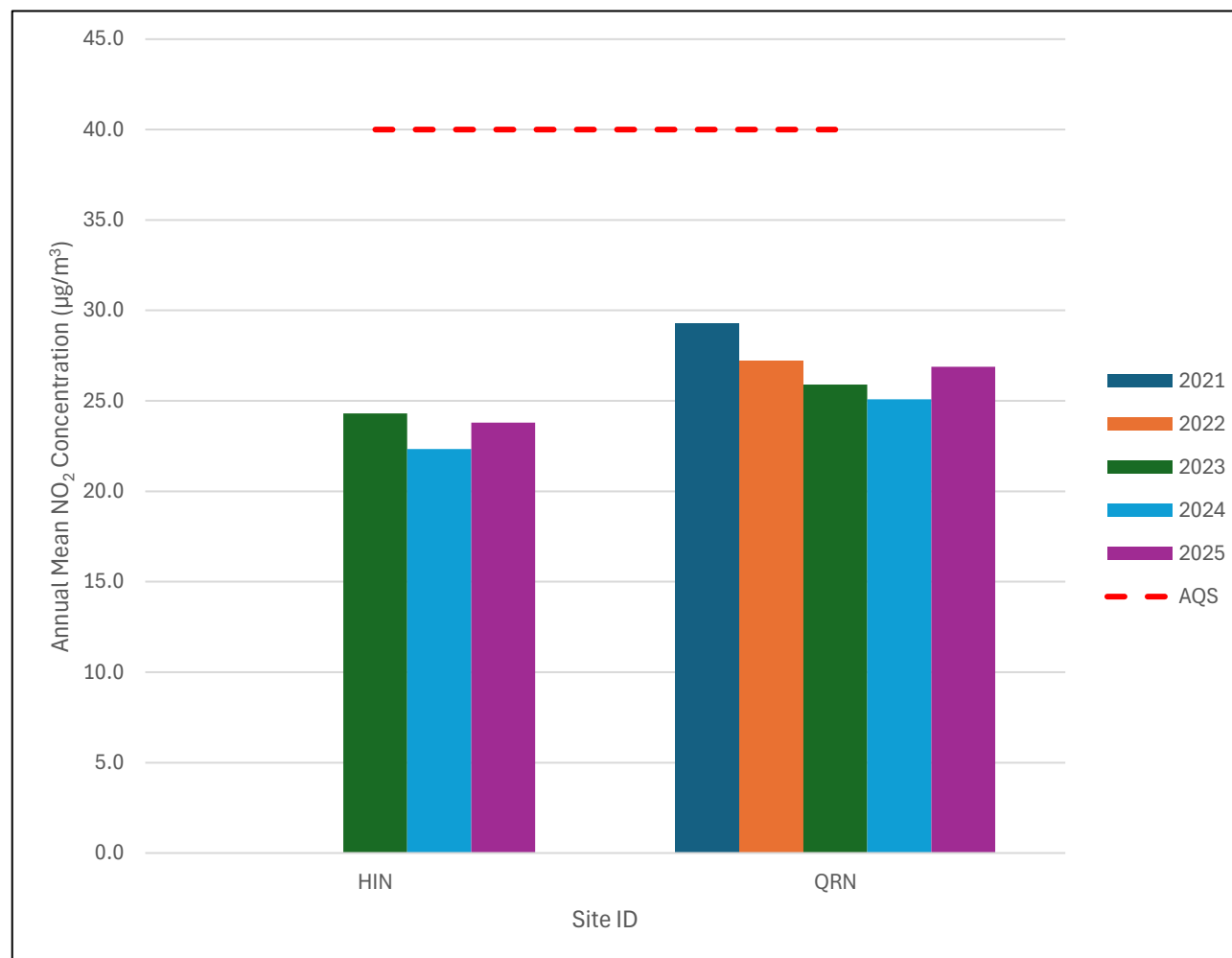


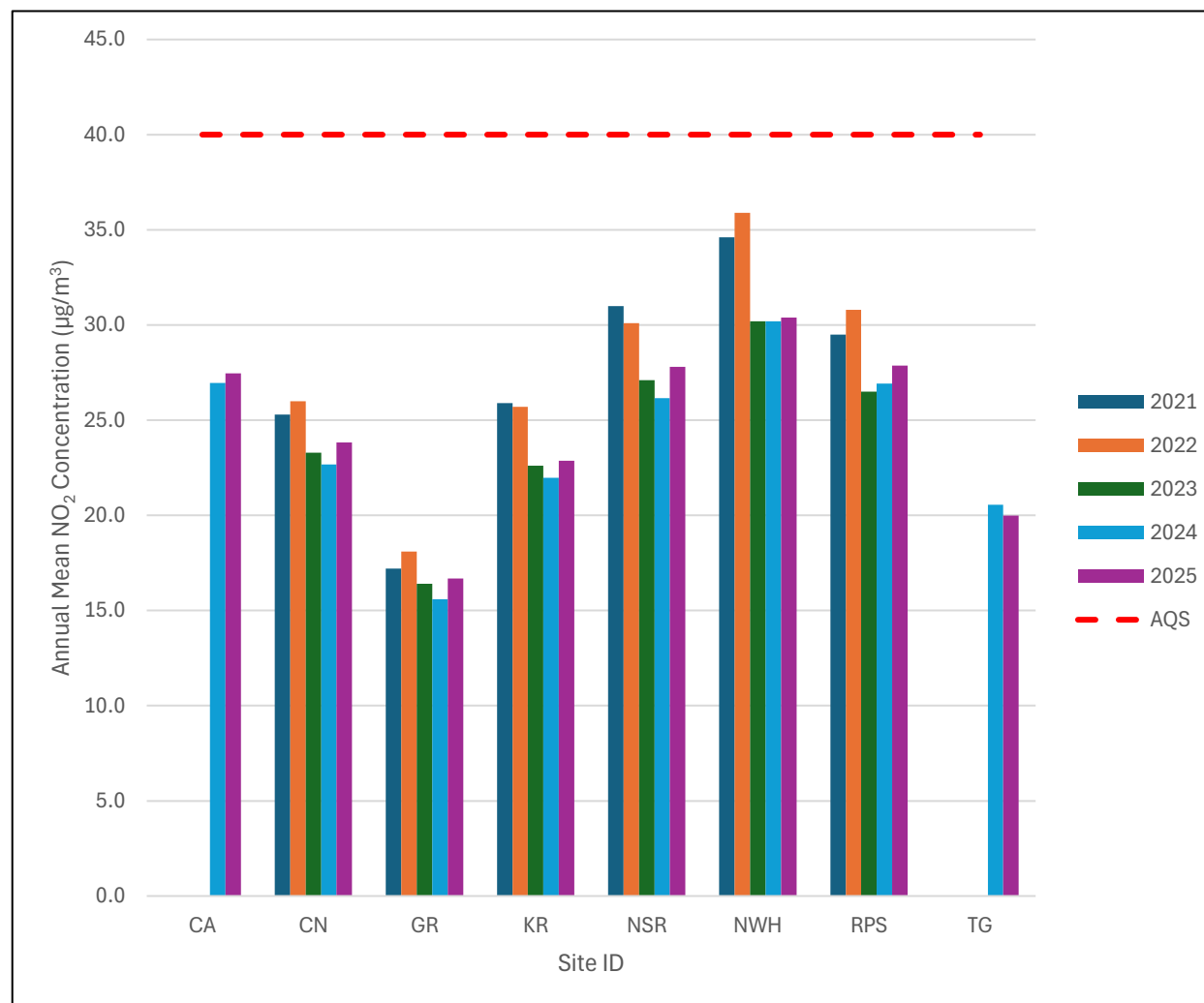
Figure A. 9 – Trends in Annual Mean NO₂ Concentrations – Northwich

Figure A. 10 – Trends in Annual Mean NO₂ Concentrations – Winsford

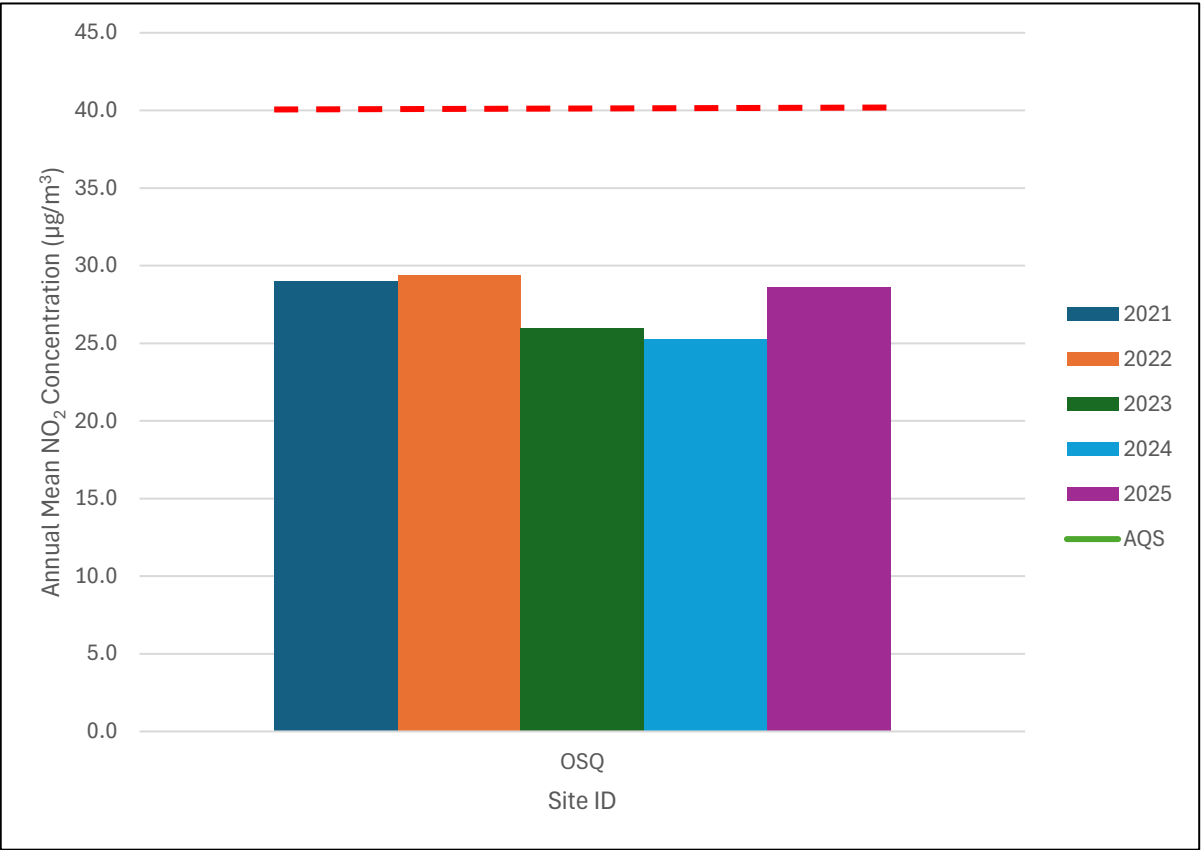


Figure A. 11 – Trends in Annual Mean NO₂ Concentrations – Ellesmere Port

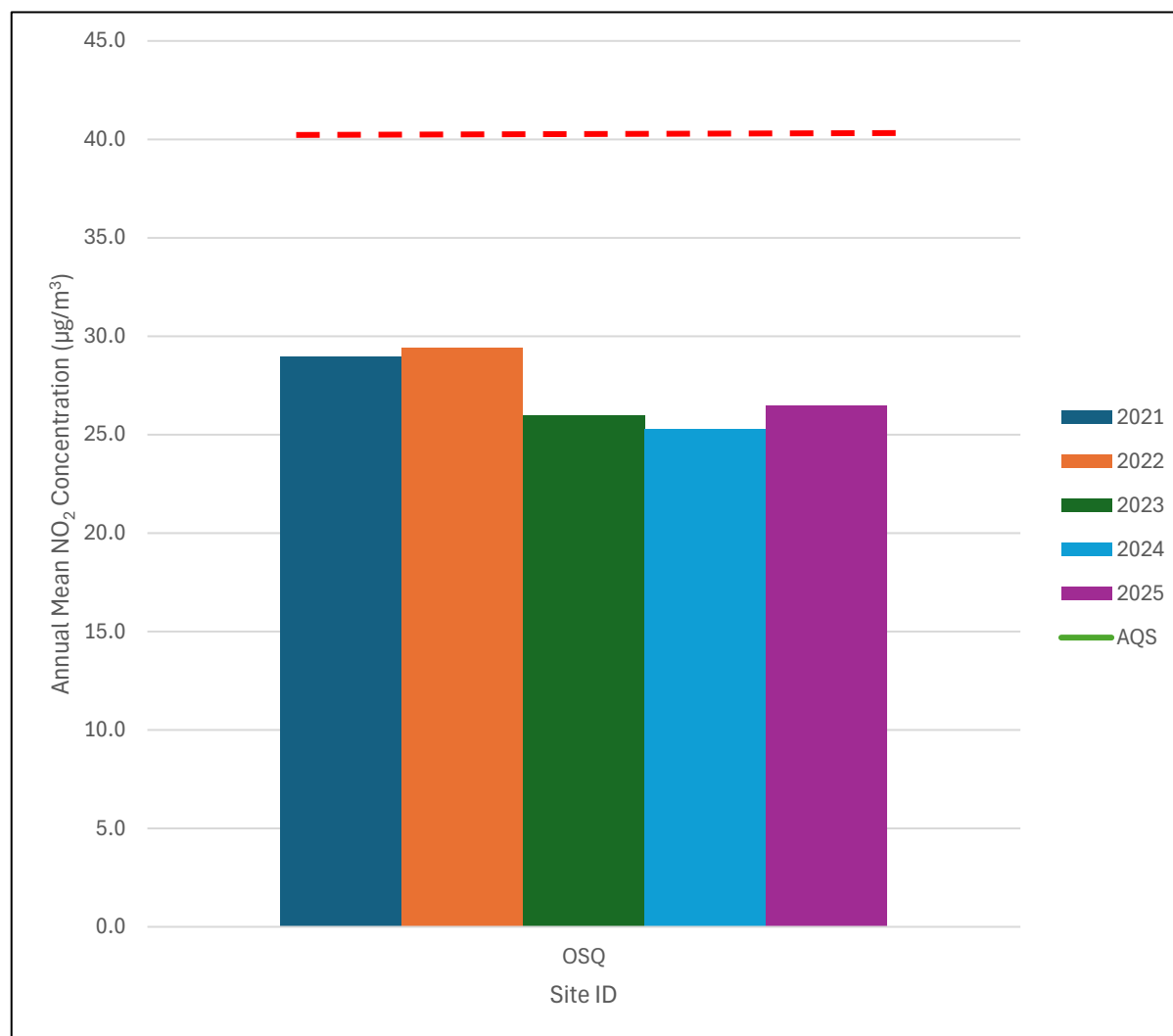


Table A.5– 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
BO	341864	366444	Roadside	98.7	98.5	2	0	0	0	0
CBI	340645	366802	Roadside	99.6	99.5	0	0	2	0	0
FMH	352445	378031	Urban Background	98.5	98.5	0	0	0	0	0
WH	340197	376363	Roadside	97.3	97.3	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. 12 – Trends in Number of NO₂ 1-Hour Means > 200µg/m³

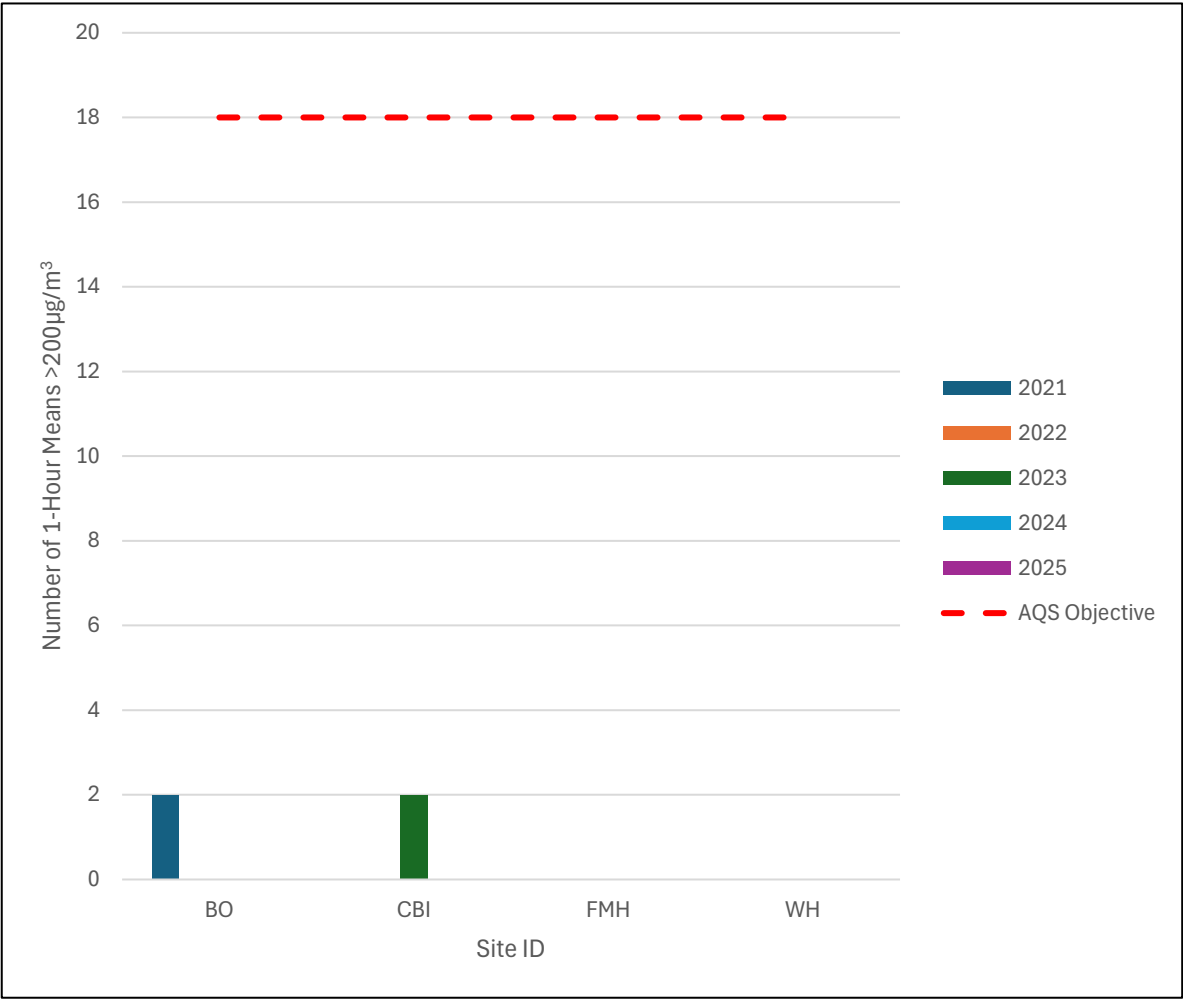


Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
CBI	340645	366802	Roadside	99.5	99.3	22.0	20.0	18.3	15.9	17.8
FMH	352445	378031	Urban Background	96.6	96.6	13.0	15.0	13.6	14.0	13.3
TLP	344103	374330	Industrial	98.5	98.4	13.0	13.0	11.9	10.6	11.8

☒ **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/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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%).

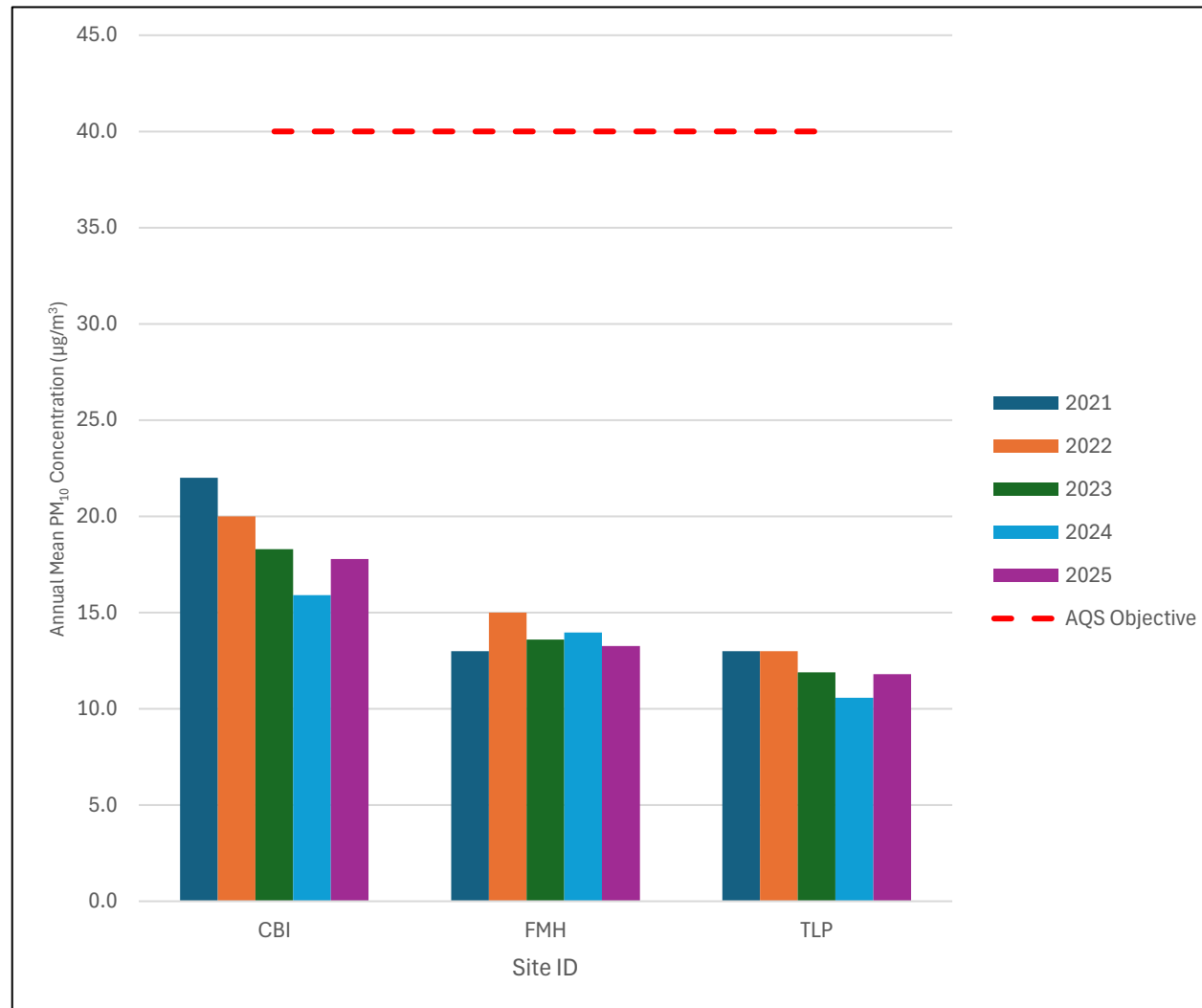
Figure A. 13 – Trends in Annual Mean PM₁₀ Concentrations

Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/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 2025 (%) ⁽²⁾	2021	2022	2023	2024	2025
CBI	340645	366802	Roadside	99.5	99.3	2	5	0	0	1
FMH	352445	378031	Urban Background	96.6	96.6	0	2	0	1	0
TLP	344103	374330	Industrial	98.5	98.4	0	0	0	0	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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. 14 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

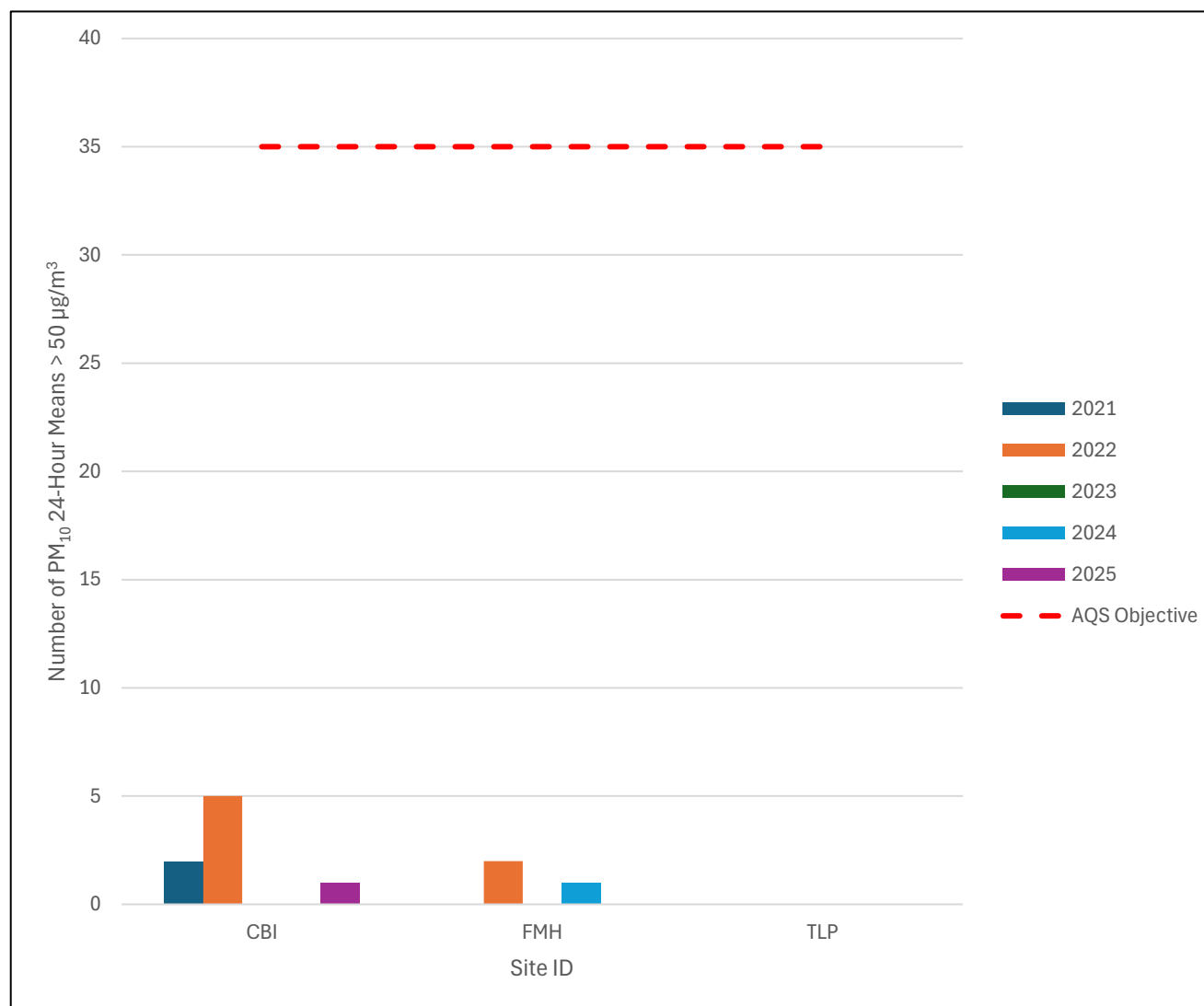


Table A.8 – SO₂ 2025 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2025 (%) ⁽²⁾	Number of 15-minute Means > 266µg/m ³	Number of 1-hour Means > 350µg/m ³	Number of 24-hour Means > 125µg/m ³
TLP	344103	374330	Industrial	99.6	99.6	0	0	0
ELT	345642	375522	Industrial	86.2	86.2	0	0	2

Notes:

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

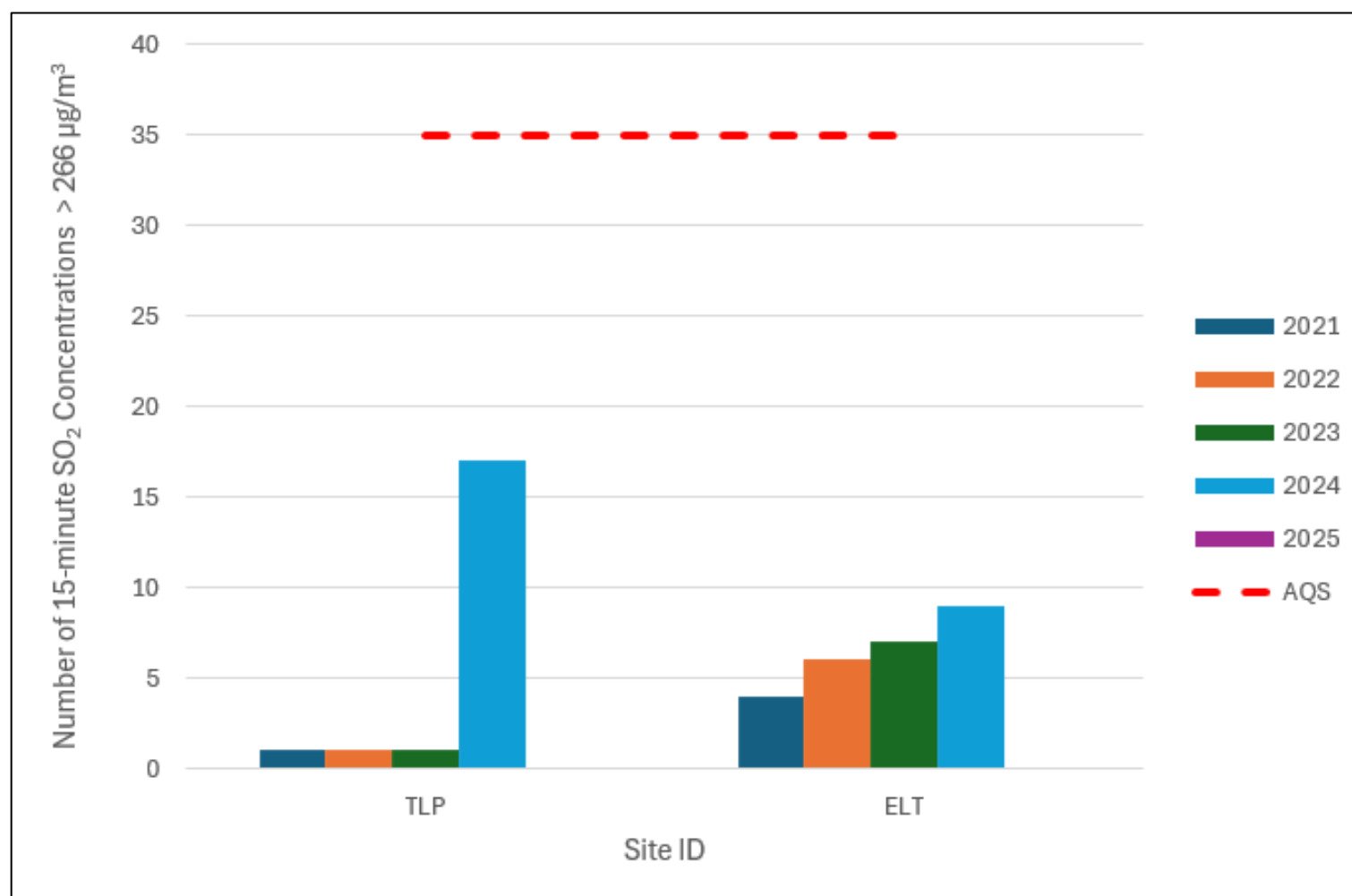
Exceedances of the SO₂ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

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%).

Figure A. 15 – SO₂ 2025 Monitoring Results, Number of Relevant Instances



Appendix B: Full Monthly Diffusion Tube Results for 2025

Table B.1 – NO₂ 2025 Diffusion Tube Results (µg/m³)

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 (0.96)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C11	341915	366427	34.3	36.7	37.0	32.8	28.8	25.1	23.8		27.8	28.4	28.4	29.9	30.3	29.0		
C36	342000	366374	39.2	37.5	37.3	31.3	31.5	29.9	26.9	31.2	31.3	29.0	35.2	32.4	32.7	31.3		
CA	364982	373307	34.5	31.5	29.4	27.1	29.7	29.7	25.6		25.8	28.1	29.1	25.1	28.7	27.5		
CBI1	340647	366803	32.3	29.7	28.8	27.9	25.4	26.6	22.6	26.1	26.6	27.3	28.0	29.4	-	-		Triplicate Site with CBI1, CBI2 and CBI3 - Annual data provided for CBI3 only
CBI2	340647	366803	31.7	31.6	31.7	31.0	23.3	25.6	23.2	26.2	25.2	27.9	28.2	29.8	-	-		Triplicate Site with CBI1, CBI2 and CBI3 - Annual data provided for CBI3 only
CBI3	340647	366803	31.7	29.5	31.7	28.3	23.9	26.6	21.3	25.4	28.2	28.0	29.1	31.3	27.8	26.6		Triplicate Site with CBI1, CBI2 and CBI3 - Annual data provided for CBI3 only
CN	366070	373905	34.0	29.8	27.8	23.7	19.5	22.1	17.0	24.0		23.9	26.9	25.3	24.9	23.8		
FH	352146	378139	32.2	31.1	29.8	29.1	24.9	24.1	18.8	26.4	25.4		27.8	28.1	27.1	25.9		
FJ	352171	378140	32.8	31.4	27.8	25.8	27.3	29.0	23.4	25.6	26.6	26.8	28.6	28.7	27.8	26.6		
FM	352189	378094	29.3	28.8	32.1	25.9	25.6	18.3	18.2	23.7	21.5	23.7	24.6	25.3	24.8	23.7		
GR	368634	374714	25.9	21.5	19.3	17.8	14.4	13.1	11.9	16.1	15.5	17.2	19.5	17.2	17.4	16.7		
GSW	340700	366687	31.7	31.6	27.1	22.6	24.2	26.3	21.2		24.0	26.7	27.4	27.8	26.4	25.3		
HHB	347953	366723	24.5	23.7	25.5	23.0	21.4	20.8	19.1	21.7	21.2	21.8	21.7	21.0	22.1	21.2		
HIN	330317	378536		26.5	28.7	30.2	27.3	23.0	15.1		25.7	23.9	26.2	22.1	24.9	23.8		
HTC	348333	366763	32.6	30.7	30.3	31.7	23.3	24.9	18.8	24.9	22.2	24.7	26.5	27.6	26.5	25.4		
KR	368432	372988	37.2	27.8	23.6		17.9	18.5	16.1	22.0		22.5	29.3	24.3	23.9	22.9		
LI2	343785	365502	38.3	34.5	34.8	33.5	34.2	28.0	23.1	29.2	27.5	30.4	37.3	36.2	32.2	30.9		
MCC	343785	365502	25.5	30.5	28.9	26.2	21.8	20.0	19.4	23.3	21.8	23.7	26.2	25.9	24.4	23.4		

NSR	366796	373984	35.1	33.5	36.8	35.2	25.9	21.9	21.4	29.1	24.2	24.6	31.0	30.0	29.1	27.8		
NWH	365590	373904	37.4	32.0	34.2	31.4	28.3	31.3	29.2	31.3	28.6	30.7	34.6	32.2	31.8	30.4		
OSQ	364053	365977				28.7	30.1	20.0	19.1	23.4	26.5	26.5		25.3	25.0	28.6		
OW	340623	366823	35.1	32.5	30.5	29.1		29.0	22.5	29.4		33.9	29.9		30.2	28.9		
PG	340322	366989	38.3	34.3	32.7	32.2	26.1	27.6	23.0	26.7	30.9	28.5	29.8	34.8	30.4	29.1		
QRN	330565	378063	31.9	32.8	31.3	28.0	25.1	20.2		23.3	25.6		34.5	28.2	28.1	26.9		
RIV	337242	378569	39.5	33.3	34.1	28.8	27.5	24.5	23.4	25.0		25.3	35.2	29.0	29.6	28.3		
RM	340291	367108	37.9	35.8	34.9	33.8	Void	24.2	21.2	30.6			34.7	32.7	31.8	30.4		
RPS	367856	372667	41.3	36.3	29.8	31.8	24.0	28.4	15.5	26.7	29.0	27.0	31.3	28.6	29.1	27.9		
SR	340435	376790	33.1	29.2	31.3	27.9	12.9	24.3		24.1	25.6	27.6	32.9	28.5	27.0	25.9		
T44	342085	366446	31.5	33.3	29.5	23.3	22.1	23.7	18.7	25.9	25.9	26.5	27.7	30.2	26.5	25.4		
T6	341926	366446	42.8	39.1	36.6	37.3	29.9	28.9	24.4	32.0	27.7	32.7	38.2	35.1	33.7	32.3		
TA	344519	366898		32.9	32.0	29.5	24.3	21.9	20.6	25.8	24.2	26.5	25.3	32.2	26.8	25.7		
TBV	344013	366830	43.3	35.0	32.7	34.6	30.5	35.2			34.5	35.0	35.4	30.9	34.7	33.2		
TG	363743	372186	26.5	25.1	25.2	20.0	18.4	18.5	17.0	15.6	19.4	21.8	22.2	20.9	20.9	20.0		
WCR	342951	366029	34.4	34.8	33.9	31.3	22.3	23.6	18.2	25.5	27.2	23.9	25.3	30.8	27.6	26.4		
WG	340217	366209	32.0	35.0	34.5	32.3	27.2	24.6		27.8	24.0	26.6	27.1	29.1	29.1	27.8		
WH1	340196	376363	35.0	32.5	31.6	28.5	28.2	23.7	21.9	24.3	24.6	26.2	31.2	28.8	-	-		Triplicate Site with WH1, WH2 and WH3 - Annual data provided for WH3 only
WH2	340196	376363	33.6	29.2	29.6	27.0	25.7	23.4	19.2	24.4	24.8	25.0	28.0	27.3	-	-		Triplicate Site with WH1, WH2 and WH3 - Annual data provided for WH3 only
WH3	340196	376363	31.8	31.0	27.1	24.5	25.6	22.8	19.0	22.2	25.1	23.5	28.3	27.2	26.7	25.6		Triplicate Site with WH1, WH2 and WH3 - Annual data provided for WH3 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.

☒ Cheshire West and Chester confirm that all 2025 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.

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

New or Changed Sources Identified Within Cheshire West and Chester During 2025

Cheshire West and Chester Council has not identified any new sources relating to air quality within the reporting year of 2025.

QA/QC of Diffusion Tube Monitoring

Environmental Protection staff follow internal QA/QC procedures relating to the use of diffusion tubes for the purpose of air quality monitoring. The procedures cover key stages in the monitoring process including storage, deployment, record keeping and management of NO₂ diffusion tube data.

The diffusion tubes for the year 2025 were supplied and analysed by Gradko Ltd Laboratory, the tubes were prepared using the 20% TEA in water preparation method.

Gradko is a UKAS accredited laboratory and participates in the AIR-PT Scheme for NO₂ tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre. The latest available AIR-PT results in 2025 are AIR-PT AR068 (January – February 2025), AIR-PT AR069 (April – June 2025), AIR-PT AR071 (July – September 2025) and AIR-PT AR072 (October – December 2025), in which Gradko International scored 50%, 75%, 100% and 100% respectively across the four periods. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

The precision of the current 28 local authority co-location studies in 2025 detailed within the national bias adjustment factor spreadsheet (version 04/25) were rated as 'good'. The tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%. Further information on the precision summary results can be found on the LAQM website.

Monitoring in 2025 had been completed in adherence with the 2025 Diffusion Tube Monitoring Calendar, whereby all changeovers were completed within ± 2 days of the specified date.

The 2025 national bias adjustment factor for Gradko 20% TEA in water preparation method is 0.89.

Figure C. 1 – National Bias Adjustment Factor Database

National Diffusion Tube Bias Adjustment Factor Spreadsheet					Spreadsheet Version Number: 03/26						
Follow the steps below in the correct order to show the results of relevant co-location studies					This spreadsheet will be updated at the end of June 2026						
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods					LAQM Helpdesk Website						
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet											
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.											
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.					Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.						
Step 1:		Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor: shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote*. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953							
Analysed By		Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
		To undo your selection, choose (Alt) from the pop-up list	To undo your selection, choose (Alt)								
Gradko		20% TEA in water	2025	R	The Highland Council	11	15	12	22.9%	G	0.81
Gradko		20% TEA in water	2025	R	Eastleigh Borough Council	12	29	25	17.1%	G	0.85
Gradko		20% TEA in water	2025	UB	Eastleigh Borough Council	12	19	18	1.1%	G	0.99
Gradko		20% TEA in water	2025	R	Eastleigh Borough Council	12	20	19	8.5%	G	0.92
Gradko		20% TEA in water	2025	R	Cheshire West And Chester	12	28	28	-0.5%	G	1.00
Gradko		20% TEA in water	2025	R	Cheshire West And Chester	12	27	25	8.4%	G	0.92
Gradko		20% TEA in water	2025	R	Liverpool City Council	11	32	26	24.0%	G	0.81
Gradko		20% TEA in water	2025	KS	Liverpool City Council	10	46	40	15.9%	G	0.86
Gradko		20% TEA in water	2025	R	Nottingham City Council	10	25	24	3.3%	G	0.97
Gradko		20% TEA in water	2025	R	Belfast City Council	12	40	34	17.2%	G	0.85
Gradko		20% TEA in water	2025	R	Belfast City Council	12	33	31	6.5%	G	0.94
Gradko		20% TEA in water	2025	R	Wychavon District Council	12	27	26	5.5%	G	0.95
Gradko		20% TEA in water	2025	R	Worcestershire	12	12	13	-6.6%	G	1.07
Gradko		20% TEA in water	2025	KS	Brighton & Hove City Council	10	37	29	28.0%	G	0.78
Gradko		20% TEA in water	2025		Overall Factor* (28 studies)				Use		0.89

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. 2025 data from one non-automatic monitoring sites in Table C.1. The Diffusion Tube Data Processing Tool was used for these calculations.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Chester Boughton	Annualisation Factor Chester Bus Interchange	Annualisation Factor Frodsham	Annualisation Factor Crewe Copenhall	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
OS Q	1.1228	1.0946	1.2770	1.2882	1.1956	25.0	29.8

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 NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Cheshire West and Chester has applied a local bias adjustment factor of 0.96 to the 2025 monitoring data. A local bias adjustment was selected due to its good overall diffusion tube precision and good overall continuous monitor data capture. The local bias adjustment factor was found to be higher than the national bias adjustment factor and so was also chosen as a more conservative approach. A summary of bias adjustment factors used by Cheshire West and Chester over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2025	Local	N/A	0.96
2024	National	04/25	0.84
2023	National	03/24	0.81
2022	National	06/23	0.84
2021	National	03/22	0.84

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	12	12
Bias Factor A	1 (0.95 - 1.07)	0.92 (0.84 - 1.01)
Bias Factor B	0% (-6% - 6%)	9% (-1% - 19%)
Diffusion Tube Mean (µg/m ³)		
Mean CV (Precision)	27.8	26.7
Automatic Mean (µg/m ³)	3.4%	5.2%
Data Capture		
Adjusted Tube Mean (µg/m ³)	27.9	24.6

Notes:

A single local bias adjustment factor has been used to bias adjust the 2025 diffusion tube results.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

Distance correction was not required at any NO₂ diffusion tube monitoring locations within Cheshire West and Chester during 2025.

QA/QC of Automatic Monitoring

The council staff perform routine calibrations on the air quality monitoring equipment at the BO, CBI, and WH roadside sites. Fortnightly span and zero calibrations are carried out on the chemiluminescent analysers at these locations. The remaining chemiluminescent and UV-fluorescent analysers at other sites undergo four-weekly span and zero calibrations. All calibrations use certified gas standards provided by BOC.

The resulting span and offset values from these calibrations are used in the ratification of the air quality datasets. Automated internal zero checks are also run daily overnight on the monitoring equipment.

To ensure data quality, comparisons are made regularly between measurements from the different monitoring sites. Data management and the overall ratification process is performed by an independent contractor, AQDM Ltd. This includes the production of weekly, quarterly, and annual data summaries, as well as any necessary notifications of air quality exceedance episodes.

The ratification process also involves comparing the local data against measurements from the national air quality monitoring network to identify regional patterns and trends.

All automatic analysers are serviced and calibrated at six-monthly intervals by Cura Terrae Air Ltd.

Air quality monitoring data for Cheshire West and Chester Council⁷ includes daily updates of the automatic monitoring data, presented as both air quality index gauges and static time series graphs. Historical datasets spanning over 10 years can also be downloaded from the site. In addition, diffusion tube data is also available on the website.

PM₁₀ and PM_{2.5} Monitoring Adjustment

PM₁₀ monitoring data recorded by the BAM analysers at Thornton-le-Moors (TLP) and Chester bus interchange (CBI) have been adjusted by the factor 0.833, to give the indicative gravimetric equivalent figure.

The volatile correction model (VCM) was used to correct TEOM monitoring data at Frodsham (FMH) to produce a gravimetric equivalent figure.

Automatic Monitoring Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. No data from automatic monitoring stations needed to be annualised in 2025.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO₂ concentrations corrected for distance are presented in Table A.3.

Distance correction was not required at any NO₂ automatic monitoring locations within Cheshire West and Chester during 2025.

⁷ Available at: www.cheshirewestandchester.gov.uk/airquality

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

Figure D.1 – Map of Monitoring sites and Chester City Centre AQMA

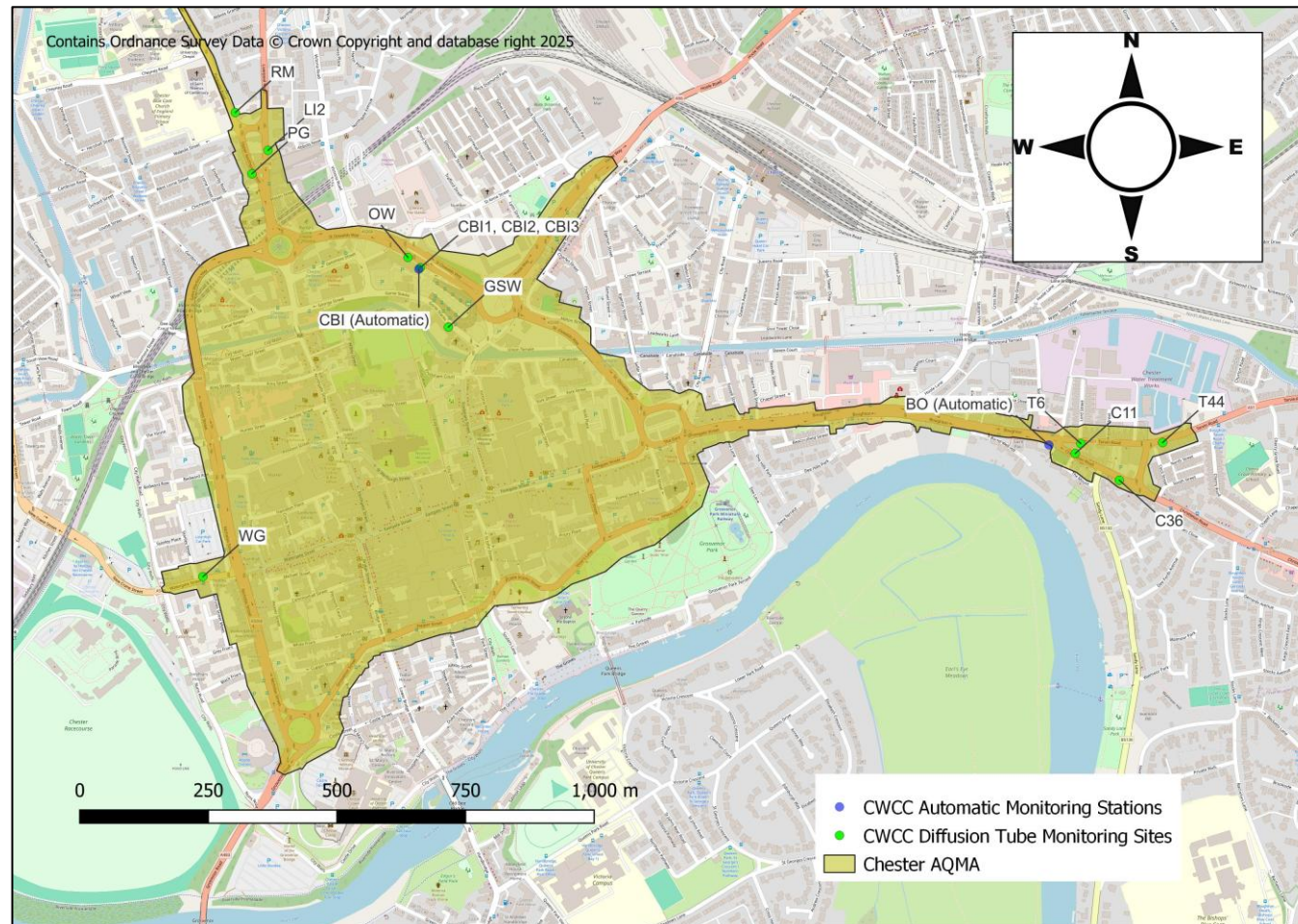


Figure D.2 – Map of Monitoring Sites, Whitby Road/Station Road Port

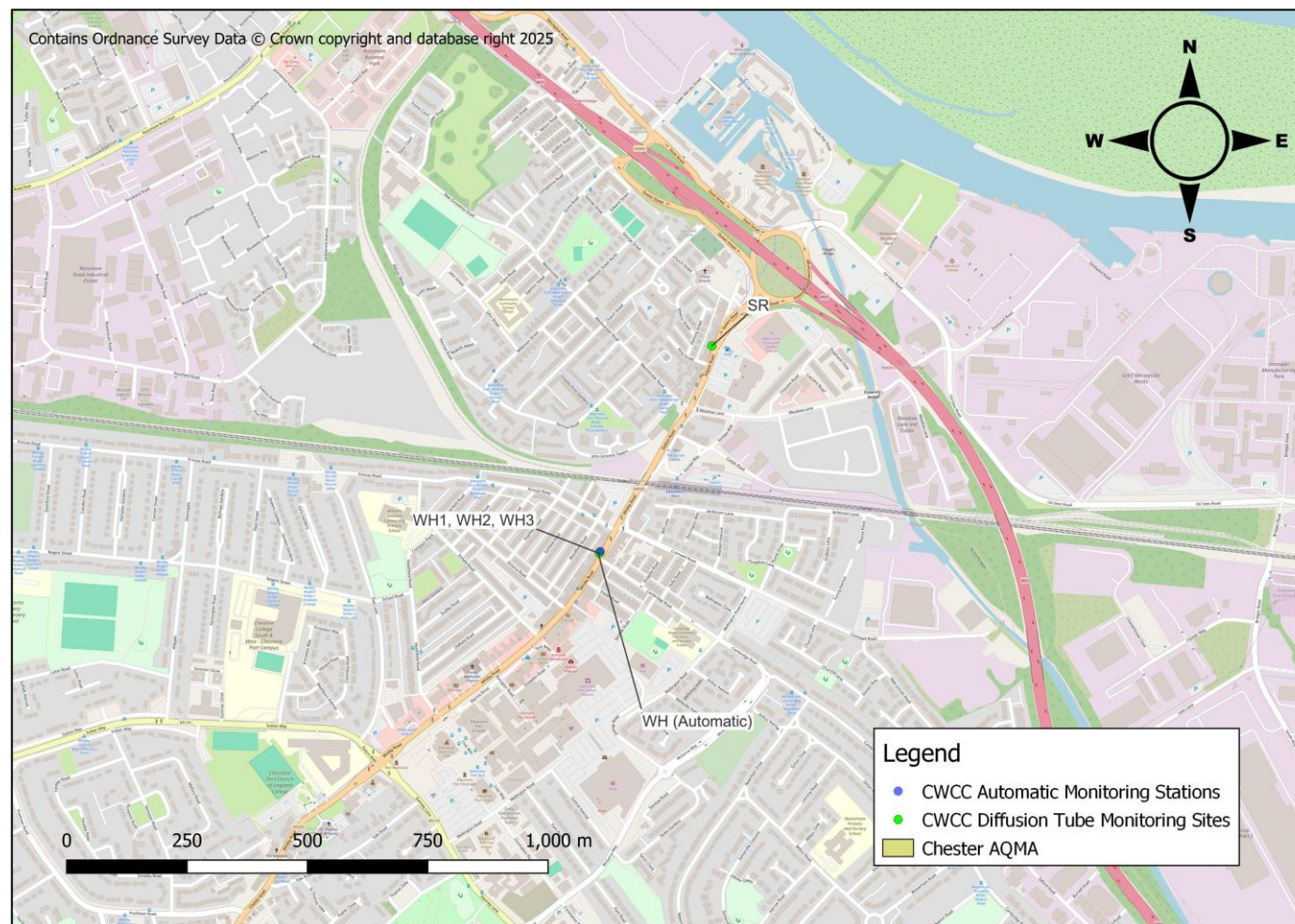


Figure D.3 – Map of Monitoring Sites, Frodsham

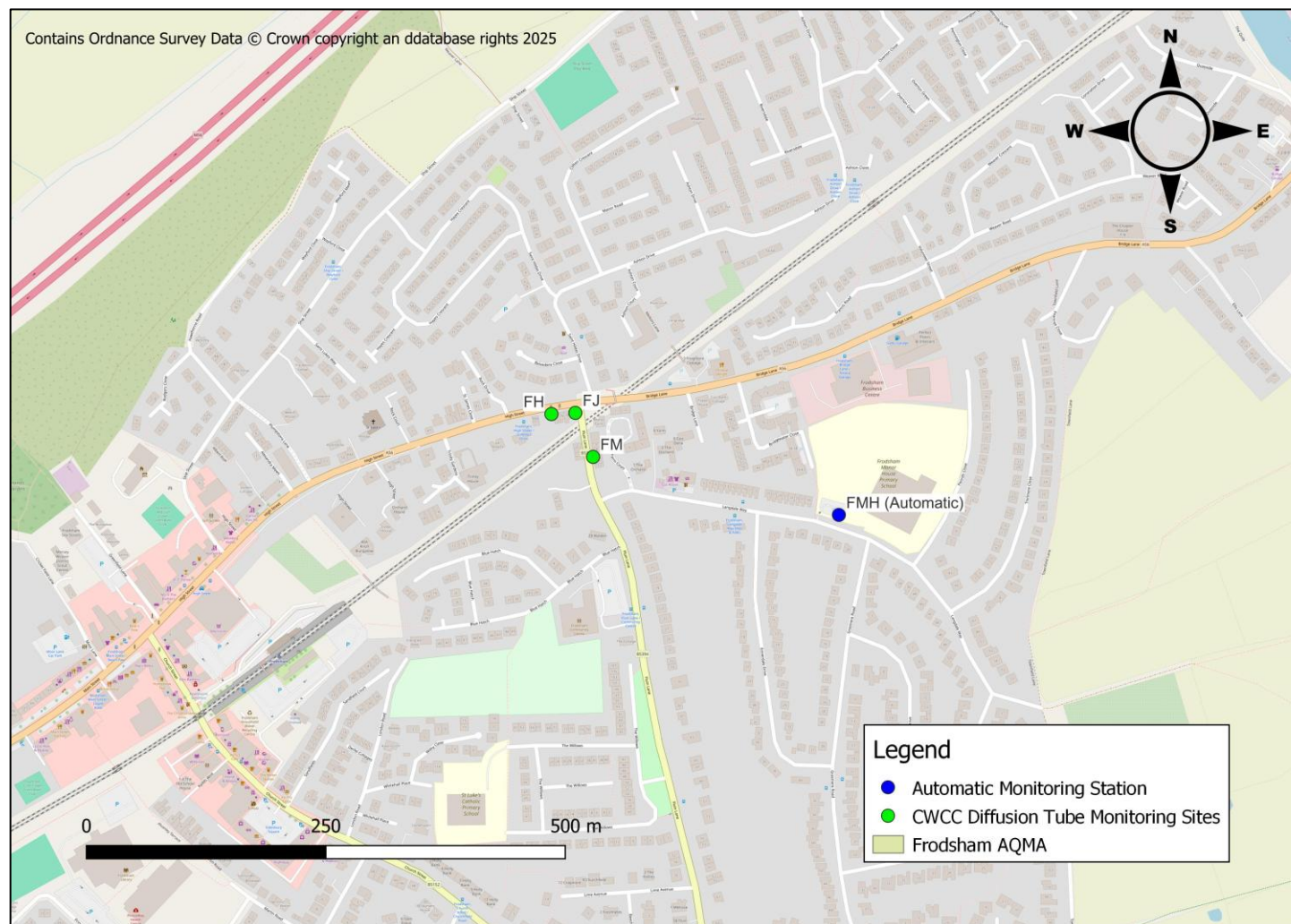


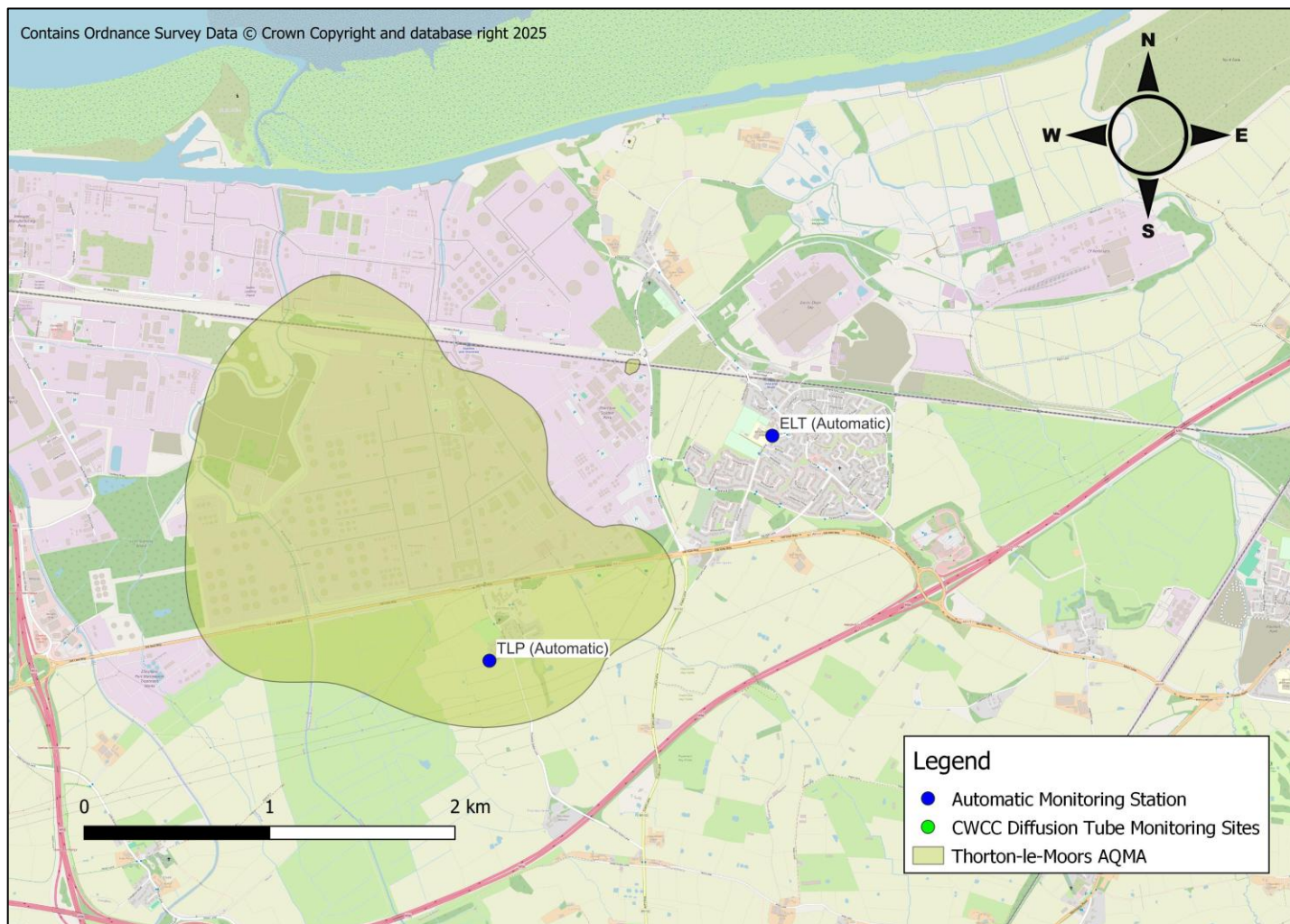
Figure D.4 – Map of Monitoring Sites and Thornton-le-Moors AQMA

Figure D.5 – Map of Monitoring Sites, Christleton / Littleton / Boughton Heath / Tarvin



Figure D.6 – Map of Monitoring Sites, Neston

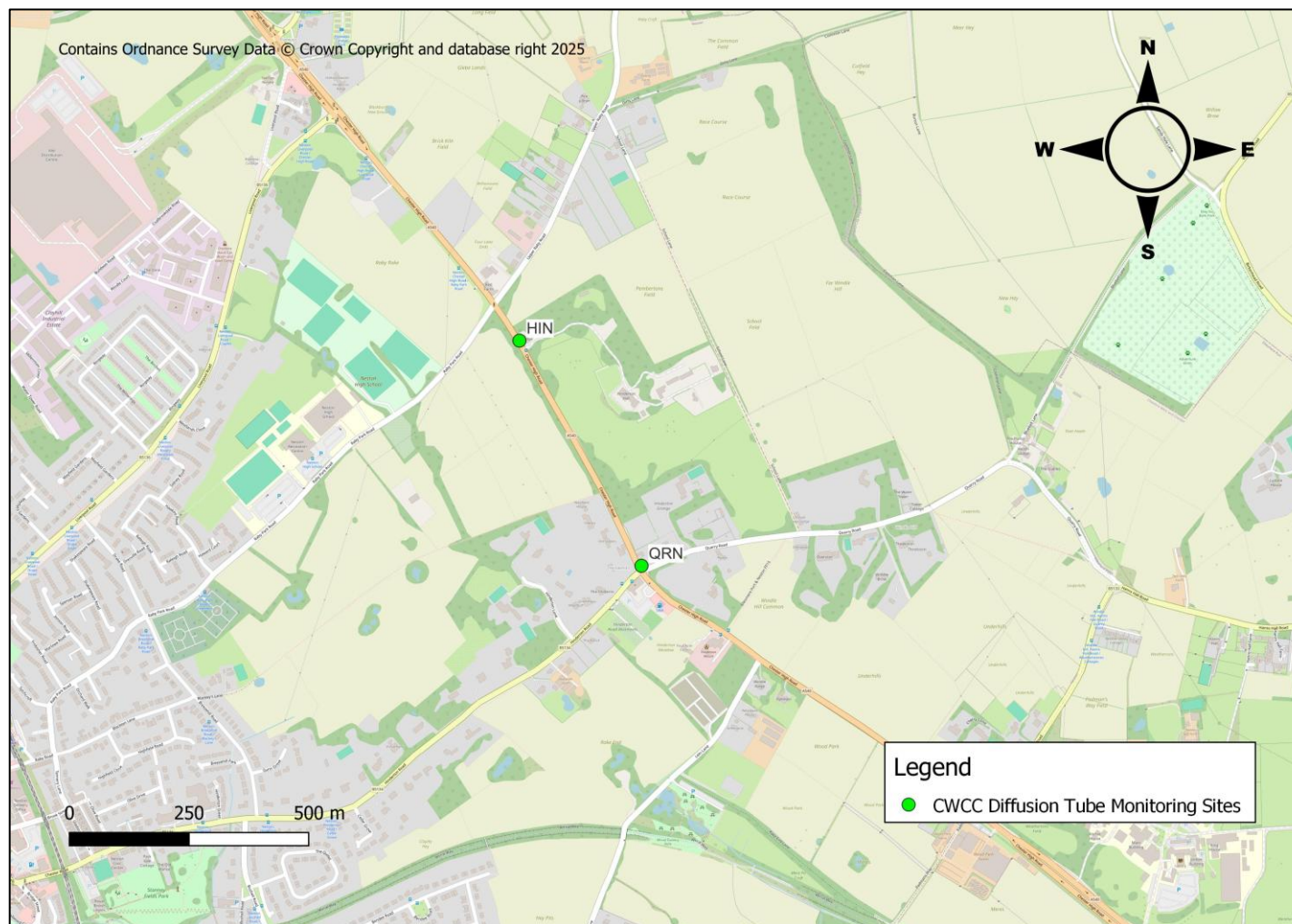
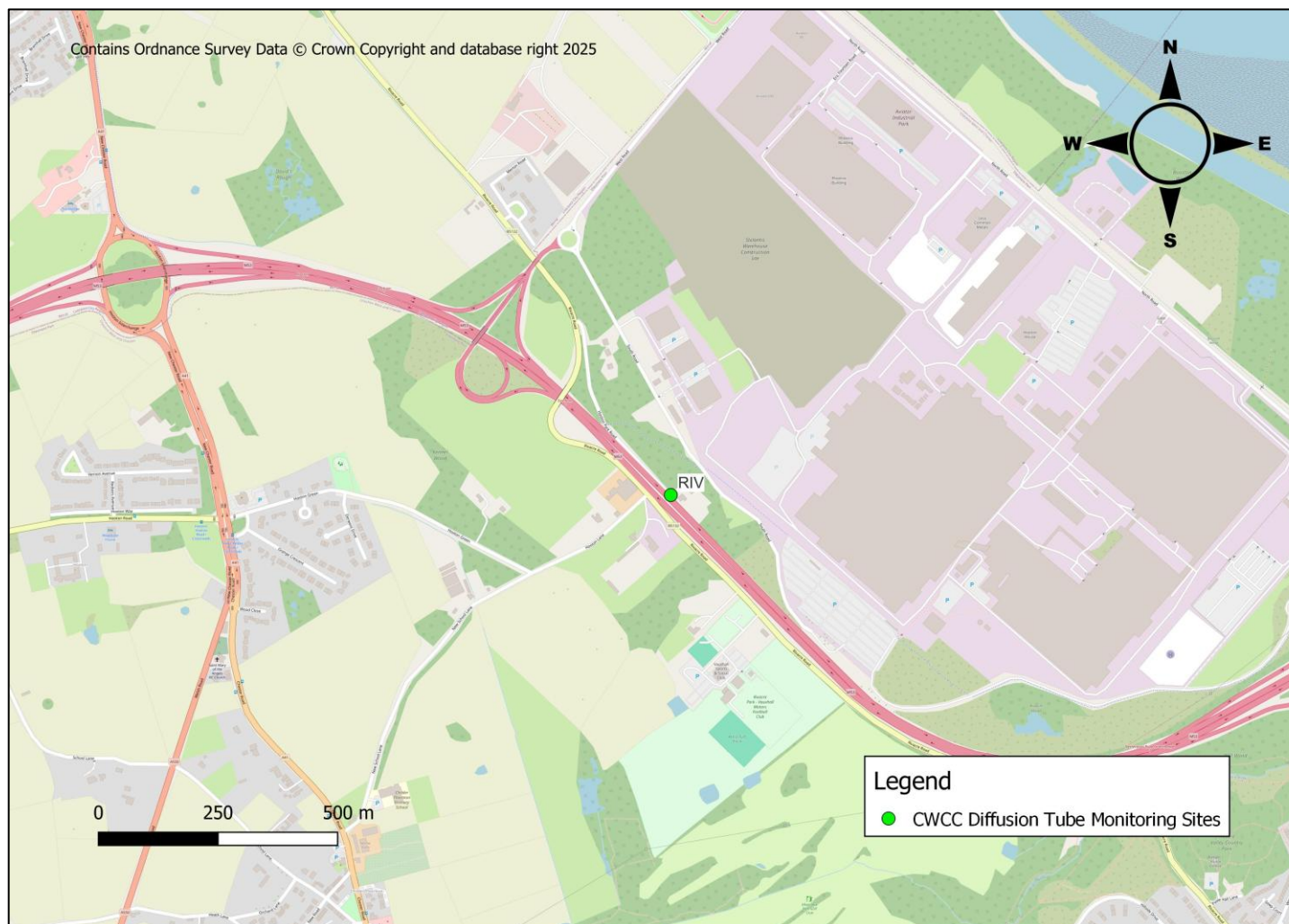


Figure D.7 – Map of Monitoring Sites, Childer Thornton, Ellesmere Port



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁸

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

⁸ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	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.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023.
Published by Defra.