



***Borough Council of King's Lynn and West
Norfolk***

Annual Status Report 2021

Bureau Veritas

July 2021

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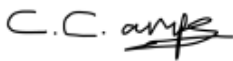

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Borough Council of
**King's Lynn &
West Norfolk**



2021 Air Quality Annual Status Report (ASR)

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

Date: July, 2021

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Executive Summary: Air Quality in Our Area

Air Quality in the Borough Council of King's Lynn and West Norfolk

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

The Borough of King's Lynn and West Norfolk is located in Norfolk, covers approximately 550 square miles and is essentially rural in nature. It is the tenth largest district council area in England and Wales. The Borough comprises two market towns of King's Lynn and Downham Market, the Victorian coastal town of Hunstanton, and more than one hundred villages of varying sizes.

The main source of air pollution in the borough is road traffic emissions from major roads, notably the A148 – Lynn Road, A148 – Wootton Road, A148 – London Road, A47, A10 – Main Road, A148 Nar Ouse Way, Edward Benefer Way and A149 – Hardwick Road. These roads, amongst others, form the main arterial highway network within the borough.

There are currently two Air Quality Management Areas (AQMAs) within the Borough Council of King's Lynn and West Norfolk; Town Centre AQMA and Gaywood Clock AQMA found online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=138. Both of the

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

³ Defra. Air quality appraisal: damage cost guidance, July 2020

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

borough's AQMAs were declared due to exceedances of the nitrogen dioxide (NO₂) air quality standard (AQS) annual mean objective.

During 2020, NO₂ concentrations across the borough decreased substantially and for the first time since the Town Centre AQMA was declared, there have been no exceedances of the NO₂ annual mean objective. In addition, during 2020 there were no NO₂ annual mean concentrations within 10% of the annual mean objective during 2020. This is the first time for over 10 years that this has been achieved. This reduction in the NO₂ annual mean concentrations is likely to have been aided by reduced road traffic during the Covid-19 lockdowns, in line with NO₂ reductions in other UK cities.

Actions to Improve Air Quality

Whilst air quality has seen significant improvements, and will continue to improve due to policy driven from a national perspective, there are a number of areas where local action can be taken to improve air quality within Kings Lynn and West Norfolk.

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of AQMAs are designated due to elevated concentrations heavily influenced by transport emissions.

King's Lynn and West Norfolk Council have implemented a number of measures that are likely to have reduced the concentrations of NO₂ in the borough. The Council have incentivised the use of public transport by making a physically more attractive environment at the King's Lynn Transport Interchange. The Council have also implemented an Urban Traffic Control system, a Selective Vehicle Detection system and a number of other measures, which have contributed to the improved air quality in the borough. Within 2020 the reductions in NO₂ concentrations can't solely be attributed to the measures being implemented. This is because NO₂ concentrations decreased across the country during

⁵ Defra. Clean Air Strategy, 2019

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

2020, this was mainly attributed to reduced traffic numbers as a result of Covid-19 restrictions.

Conclusions and Priorities

No exceedances were identified for NO₂ PM₁₀ or PM_{2.5} during 2020. This is the first year in over 13 years that no exceedances of the NO₂ annual mean objective have occurred. Therefore, there were no exceedances reported within the borough's two existing AQMA's. There has been a significant reduction in annual mean concentrations at all sites across the borough. For the first time in many years, all NO₂ annual mean concentrations at diffusion tube sites were not within 10% of the 40 µg/m³ annual mean objective. The council have introduced four new diffusion tube sites in the borough bringing the total number of diffusion tube sites across the borough to 72.

Throughout the borough, there are a number of new developments that have been granted planning permissions which will be under construction in the coming year, these include but are not limited to; residential developments, poultry breeding and a waste recycling facility. All of the proposed developments have been considered 'not significant' and the impact of their development upon existing air quality conditions were assessed to be 'negligible' by the Borough Council of King's Lynn and West Norfolk.

The Council have noted their intentions of updating their Air Quality Action Plan (AQAP) as a priority following the completion of the King's Lynn Transport Study.

Local Engagement and How to get Involved

The Borough Council of King's Lynn and West Norfolk have carried out a social media campaign for Clean Air Day 2020 during the day itself and in the days leading up to it. The council have also produced new pages on their website in conjunction with Public Health England to inform local residents about how to reduce the air quality impacts from burning wood and coal, solid fuel heating and also the risks of indoor air pollution. Some information on how to reduce these impacts is provided below:

- On closed appliances, e.g. stoves and wood burners, only burn dry wood containing 20% moisture or less, or use seasoned wood;
- Some areas of King's Lynn are in smoke control areas. If your property is in a smoke control area, you must either burn authorised fuel or use an exempted appliance;

- Maintain stoves and chimney sweeps up to twice a year;
- Consider replacing an older, inefficient stove with a modern, efficient one which will burn cleaner; and
- Install a carbon monoxide alarm.

For further information or for details on how to join a campaign, please visit:

- Borough Council of King's Lynn and West Norfolk's website www.west-norfolk.gov.uk/info/20137/air_quality or <https://www.norfolkairquality.net/>
- Asthma UK [Air pollution affects asthma | Asthma UK](#)
- Lung Foundation: [Clean air campaigns hub | British Lung Foundation \(blf.org.uk\)](#)
- Sustrans: [10 things you can do to help reduce air pollution today - Sustrans.org.uk](#)
- Electric Vehicle Association [EVA England A Voice for EV Drivers in England - EVA England](#)
- Environmental Protection UK [About Air Pollution - Environmental Protection UK \(environmental-protection.org.uk\)](#)

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1 Local Air Quality Management

This report provides an overview of air quality in the Borough Council of King's Lynn and West Norfolk during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by the Borough Council of King's Lynn and West Norfolk can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within the Borough Council of King's Lynn and West Norfolk. Both AQMAs that currently enforced have been declared in response to exceedance of the annual mean NO₂ objective. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Gaywood Clock	04/01/2009	NO ₂ Annual Mean	An area encompassing a number of properties at the junction of the A148 (Lynn Road/Wootton Road) and the A1076 (Gayton Road)	NO	45.1 µg/m ³	26.7 µg/m ³	Borough Council of King's Lynn and West Norfolk AQAP, 2015	https://www.west-norfolk.gov.uk/info/20137/air_quality/170/air_quality_management_areas
Town Centre	Declared: 01/11/2003 Amended: 01/02/2007	NO ₂ Annual Mean	A 'P' shaped area encompassing a number of properties comprising the main road to/from the town centre of King's Lynn (London Road and St James' Road) and the town centre one way system (Railway Road, Austin Street and Blackfriars Road)	NO	55.0 µg/m ³	33.2 µg/m ³	Borough Council of King's Lynn and West Norfolk AQAP, 2015	https://www.west-norfolk.gov.uk/info/20137/air_quality/170/air_quality_management_areas

- Borough Council of King's Lynn and West Norfolk confirm the information on UK-Air regarding their AQMA(s) is up to date.
- Borough Council of King's Lynn and West Norfolk confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in the Borough Council of King's Lynn and West Norfolk

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

- *“Automatic monitoring of NO₂ was undertaken at 2 roadside sites during 2019, of which one is located at a site considered to be representative of relevant exposure. The annual mean objective for NO₂ was not exceeded at either site, however site CM2 recorded an annual mean concentration of 37 µg/m³, which falls within 10% of the AQO.”* This year, there were no NO₂ annual mean concentrations within 10% of the AQO.
- *“The Council also undertake monitoring of particulates; the 2019 PM₁₀ network comprised of one PM₁₀ TEOM monitor and four indicative Osiris dust monitors. PM₁₀ concentrations reported at these sites have remained below the annual mean and 24-hour mean AQS objective limits since 2015.”* The PM₁₀ 2020 concentrations remain below the both the annual mean and 24-hour PM₁₀ AQOs.
- *“Annual mean PM_{2.5} concentrations have been below the objective since monitoring began in 2016”.* Indicative PM_{2.5} concentrations remained below the objective during 2020.
- *“Non-automatic monitoring of NO₂ was undertaken via a network of 71 diffusion tubes across 69 monitoring sites... One exceedance of the annual mean objective was recorded during 2019; a maximum concentration of 42.4 µg/m³ was recorded at Site 2, which is located within the Town Centre AQMA.”* Four new diffusion tube sites have been added to the network and one site was removed during 2020. For the first time since the Town Centre AQMA was declared, there have been no exceedances in the annual mean objective at any sites, including Site 2. In 2020, Site 2's annual mean concentration was 33.2µg/m³.

The Borough Council of King's Lynn and West Norfolk has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 20 measures are included within Table 2.2, with the type of measure and the progress the Borough have made during the reporting year of 2020 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 are:

- M2 & M3: Include air quality considerations in the Local Plans and adopt air quality Development Management Policy with regards to National Planning Policy framework
- M6: Incentivise the use of public transport – The King's Lynn Transport Interchange has been completed making a physically better environment for public transport users
- M7: Implement an Urban Traffic Control system (UTC) at principal junctions within and adjacent to AQMA's
- M8: Install a Selective Vehicle Detection system (SVD)
- M11: Introduction of variable message signs – These have been installed on the approach to King's Lynn town centre to indicate where parking spaces are available
- M17: Promotion of travel plans, school travel plans and promotion of car sharing.

The Council expects the following measures to be completed over the course of the next reporting year:

- M14: Changes to the road layout within the King's Lynn Gyratory
- M18: Improve cycle and walking provision by making a number of cycle/ foot path improvements

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
1	Consideration of Air Quality Impacts when providing comments on planning applications within an AQMA or where an AQMA could be impacted or created	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	-	Borough Council (LPA & Env Quality Team)	Borough Council	NO	Funded	< £10k	Implementation	Up to 1	Number of pre application discussions and planning applications responded to	In 2020 80 applications were commented upon which had potential air quality impacts. They were screened according to Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) guidance and air quality assessments required where appropriate. Best practice measures were also recommended.	This will always be an on-going measure as long as relevant planning applications are received
2	With regard to National Planning Policy Framework, include air quality considerations in the Local Plans and adopt an air quality Development Management Policy.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	2016	Borough Council (LPA & Env Quality Team)	Borough Council	NO	Funded	< £10k	Completed	Up to 1	Production of documents	Completed	The King's Lynn and West Norfolk Local Plan – Site Allocations & Development Management Policies (SADMP) Plan was formally adopted on 29 September 2016. This includes policy DM15 Environment, Design and Amenity, which provides for the assessment of air quality in planning applications. This policy approach is continued in the Local Plan Review (March 2019) as Policy LP18. The July 2011 Adopted Core Strategy's Transport Policy CS11 aimed to achieve improvements where there were air quality issues in the towns of Downham Market, Hunstanton and

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
															King's Lynn. The Local Plan Review (March 2019) Policy LP13 continues this approach, particularly with reference to the approved King's Lynn Transport Study and Strategy.
3	With regard to National Planning Policy Framework, adopt Norfolk Technical Guidance on Air Quality and provide preapplication advice on planning applications	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	2015	Borough Council (LPA & Env Quality Team)	Borough Council	NO	Funded	< £10k	Completed	Up to 1	Production of documents	Completed	Norfolk Technical Guidance now superseded by IAQM EPUK Guidance.
4	Develop Parking Management Plan	Transport Planning and Infrastructure	Other	2014	2022	County Council/ Borough Council	Future High Streets Fund	NO	Funded	£10k - 50k	Implementation	Up to 2	Publication of and implementation of plan	A King's Lynn Parking Study is currently underway, which will consider car parking arrangements in the town centre.	
5	New access road from Wisbech Road through Friars to Boal Street.	Traffic Management	UTC, Congestion management, traffic reduction	2010	2022	County Council/ Borough Council	County Council/ Borough Council	NO	Partially Funded	£100k - £500k	Planning	2 to 3	Continued air quality monitoring. Bus flow counts on London Road and new route	The access road has been completed and is well used by buses	Further consideration is being given to the road as part of the King's Lynn Transport Study with the Harding's Way Feasibility Study due to be completed in 2021/2022.
6	Incentivise the use of public transport.	Alternatives to private vehicle use	Other	2014	2017	County Council	County Council	NO	Funded	< £10k	Completed	Up to 1	Continued air quality monitoring. Bus usage figures	The King's Lynn Transport Interchange has been completed making a physically nicer environment for public transport users. New air conditioned and Wi-Fi enabled train carriages were introduced on routes between King's Lynn and London in May 2017.	Consideration is being given to public transport, and encouraging it's use, as part of the King's Lynn Transport Study
7	Implementation of Urban Traffic	Traffic Management	Strategic highway	2010	-	County Council	County Council	NO	-	-	Completed	2 to 5	Continued air quality	Completed	Will be reviewed within the Kings

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
	Control system (UTC) at principal junctions within AQMA and adjacent to AQMA		improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane										monitoring. Queue length at junctions at peak times		Lynn Transport Study currently underway
8	Installation of selective vehicle detection (SVD) system	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2011	-	County Council	County Council	NO	-	-	Completed	Up to 1	Number of vehicles fitted with SVD Annual average daily traffic numbers	Completed	
9	Decriminalisation of parking. Review of parking controls and enforcement in AQMAs and King's Lynn Town Centre	Transport Planning and Infrastructure	Other	December 2010 option validation Jan-March 2011	2022	Borough Council/ County Council	Borough Council/ County Council/ Future High Streets Fund	NO	Funded	£10k - 50k	Planning	Up to 1	Implementation of enforcement in AQMAs and Town Centre. Continued air quality monitoring.	Will be considered within the Kings Lynn Transport Study and Parking Strategy currently underway.	
10	Variable car parking rates	Transport Planning and Infrastructure	Other	2014	2022	Borough Council	Future High Streets Fund	NO	Funded	£10k - 50k	Planning	Up to 1	Continued air quality monitoring, car park usage and queue lengths	Parking will be considered within the Car Parking Strategy currently in draft.	
11	Variable message signs	Traffic Management	Other	2014	2022	Borough Council/ County Council	Borough Council/ County Council/ Future High	NO	Funded	£10k - 50k	Completed	Up to 1	Peak hour parking usage, car park usage and continued air quality	Signs have been installed on approach to King's Lynn town centre to indicate where spaces are available.	These will be reviewed as part of the King's Lynn Parking Study currently in draft.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
							Streets Fund						monitoring queue lengths		
12	Investigate potential for residents only parking in or close to AQMAs	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2014	2022	Borough Council	Borough Council/ Future High Streets Fund	NO	Funded	£10k - 50k	Planning	Up to 1	Peak hour parking usage Car park usage Continued air quality monitoring	Residents parking permits have been introduced in South Quay area, on Portland Road (the link between the railway station and the King's Lynn Transport Interchange), Highgate and Archdale Street which are all close to the town centre AQMA. This had made these areas unavailable for commuter parking.	A King's Lynn Parking Study is currently underway, which will consider car parking arrangements in the town centre.
13	Support the use of West Lynn ferry	Promoting Travel Alternatives	Promote use of rail and inland waterways	2012	2022	Borough Council	Borough Council	NO	Not Funded	-	Planning	Up to 1	Number of passengers using ferry	The West Lynn ferry will be considered as part of the King's Lynn Transport and Car Parking Strategy.	
14	Changes to the Road Layout within the King's Lynn Gyratory as proposed by Kings Lynn Transport Study	Traffic Management	UTC, Congestion management, traffic reduction	2011 (Linked to measure 3)	2021	County Council	County Council/ Business Rates Pool	NO	Funded	£50k - £100k	Planning	2 to 10	Continued air quality monitoring. Daily traffic flow data and queue lengths.	A King's Lynn Transport Study is underway, this will identify possible transport schemes and develop a model to test them and develop a preferred strategy.	The Gyratory Scheme Feasibility Study describing implementable schemes, setting out budget cost estimates, a high-level project plan, and programme for delivery will be completed by 2021.
15	Traffic Management at London Road and Southgates	Traffic Management	UTC, Congestion management, traffic reduction	2014	2022	County Council	County Council	NO	Not Funded	-	Planning	1 to 5	Continued air quality monitoring. Queue length at junctions at peak times	The King's Lynn Transport Study includes London Road and the Southgates area. Feasibility work for the Southgates area has now been completed.	Feasibility work was carried out looking at London Road and the Southgates area. This priority area from the Transport Strategy gave rise to the submission of the South Gate Gateway project in the Future High Street Fund (FHSF) bid. Unfortunately, the project wasn't prioritised, and no other funding sources have

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
															been identified yet for the project or the Southgates Roundabout improvements.
16	Traffic Management at Gaywood clock	Traffic Management	UTC, Congestion management, traffic reduction	2014	2026	County Council	County Council	NO	Not Funded	-	Planning	1 to 5	Continued air quality monitoring. Traffic queue lengths.	The King's Lynn Transport Study will include the Gaywood Clock area. Planning permission has also been granted for the Parkway development which includes the bridge over the sand line.	Traffic management at Gaywood Clock will be aided by the construction of the bridge over the sand line as part of the Parkway development. No funding has been obtained for the project yet. Traffic management at Gaywood Clock is also considered within measure STS11 within the King's Lynn Transport Study Implementation Plan.
17	Promotion of travel plans, school travel plans and promotion of car sharing	Promoting Travel Alternatives	Personalised Travel Planning	2014	2015	County Council/ Borough Council	County Council/ Borough Council	NO	Partially Funded	< £10k	Completed	Up to 1	Continued air quality monitoring. Number of travel plans	Travel plans are requested by BCKLWN and County Council in response to relevant planning application. Whilst Norfolk County Council no longer provide staff support to help schools create/ implement travel plans, they pay for a licence for a school travel plan platform which can be used.	The promotion of travel plans for schools are considered within measure STM17 of the King's Lynn Transport Study Implementation Plan.
18	Improved cycling and walking provision	Promoting Travel Alternatives	Promotion of cycling	2014	2021	County Council/ Borough Council	County Council/ Borough Council	NO	Funded	£10k - 50k	Planning	Up to 1	Cycle usage and walking provision. Number of cycle/foot path improvements.	A Local Cycling and Walking Infrastructure Plan (LCWIP) is being drawn up as part of the transport strategy work. Active transport will be considered in the King's Lynn Transport Study.	Improved cycling and walking provision are considered within measures SAM5, SAM6, SAM7, SAM8, and MAM4 within the King's Lynn Transport Study Implementation Plan.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
19	Investigate feasibility and if viable, provide Electric Vehicle charging points in car parks and in new developments	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2014	2022	Borough Council	Borough Council/ Future High Streets Fund	NO	Funded	£10k - 50k	Implementation	Up to 1	Number & use of EV charging points installed	Charging points are recommended on new developments as a mitigation measure in line with IAQM guidance Principles of Good Practice. Options are being considered as part of the Climate Change district carbon emission reduction plan. A number of housing and commercial developments are being constructed with EV charging in place or are 'EV ready'. The emerging Local Plan includes Policy LP14 – Parking Provision in New Development which specifies one secure electric vehicle charging point wherever possible in new dwellings.	The introduction of electric charging points within car parks will be considered within the draft Parking Strategy and the King's Lynn Transport Study.
20	Quality Bus Partnerships and Contracts	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2014	2022	County Council	County Council	NO	Not Funded	-	Planning	Up to 1	Continued air quality monitoring. % buses Euro 3 or better. Installation of SVD	A quality bus partnership is in place but there are still a high number of older vehicles used on King's Lynn Town Centre routes. New targets will be set on bus fleets and engines as part of the National Bus Strategy later in the year.	Bus providers have been included within stakeholder engagement as part of the King's Lynn Transport Study.

Notes:

Measure 19 – Number of EV charging points across the borough:

- Total Chargers (Oct 2020): 34
- Total Rapid Chargers (Oct 2020): 5
- (source: maps.dft.gov.uk/ev-charging-map/)
- BKLWN had the third most EV charging points of any local authority in Norfolk in 2020.

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

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

The highest annual mean PM_{2.5} concentration reported within the borough during 2020 was 10.3µg/m³ located at 563500 318500, based on 2018 estimated background air pollution maps. This is well below the annual mean PM_{2.5} objective of 25µg/m³, although it should be noted that the Osiris monitors utilised by the Council are only rated as indicative in terms of their accuracy.

The Borough Council of King's Lynn and West Norfolk is taking the following measures to address PM_{2.5}:

- M1: Consideration of air quality impacts when providing comments on planning applications within an AQMA or where an AQMA could be impacted or created;
- M2 & M3: Include air quality considerations in the Local Plans and adopt air quality Development Management Policy with regards to National Planning Policy framework; and
- The council have declared a number of smoke control areas within the borough: https://www.west-norfolk.gov.uk/homepage/309/smoke_control_areas.

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

This section sets out the monitoring undertaken within 2020 by King's Lynn and West Norfolk and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

King's Lynn and West Norfolk undertook automatic (continuous) monitoring at seven sites during 2020. The Council's automatic monitoring network comprises two NO₂ chemiluminescent analysers, one PM₁₀ TEOM monitor, and four indicative Osiris dust monitors recording both PM_{2.5} and PM₁₀ concentrations. Two years of monitoring have now been undertaken at CM4 since the CM3 TEOM monitor was relocated to CM4. The TEOM at Stoke Ferry was taken out of service in August 2020 as it was considered no longer repairable. Options for replacements are now being considered. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

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

3.1.2 Non-Automatic Monitoring Sites

King's Lynn and West Norfolk undertook non-automatic (i.e. passive) monitoring of NO₂ at 72 sites during 2020. After the non-automatic network was reviewed following 2019 results, changes to the non-automatic monitoring network were made, including the addition of 3 new passive monitoring sites.

Table A.2 in Appendix A presents the details of the non-automatic sites. Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and

any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (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 40µg/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).

2020 data capture for all but three passive monitoring sites was above 75%, meaning that in accordance with TG16, only three sites required annualisation. The 2020 results have been bias adjusted using a nationally derived bias adjustment factor of 0.81. Full details of the bias adjustment and QA/QC procedure are provided in Appendix C.

For diffusion tubes, the full 2020 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.

During 2020 there were no exceedances in the NO₂ annual mean objective. 2020 is the first year in over 10 years that there have been no exceedances of the NO₂ annual mean objective. In the past four years there have only been exceedances at site 2 located in the Town Centre AQMA, which in 2020 was below 40 µg/m³. No NO₂ annual means within the borough were within 10% of the annual mean objective during 2020.

Monitoring Sites 1, 2, and 3 are located within the boundary of the Town Centre AQMA and CM2 is located within the Gaywood Clock AQMA, with Site 15 located adjacent to the Town Centre AQMA. Sites 1, 2, 3, and CM2 were considered to represent relevant exposure and therefore were directly comparable with the AQS objective limit. Site 15

however is located on the kerbside to monitor background concentrations from changes in traffic emissions. The site therefore does not represent relevant exposure.

Site 2 has reported the highest annual mean NO₂ concentration within the borough for five out of the past six years. Site 2 is located along a stretch of Railway Road – an arterial one-way route passing through the Town Centre where congestion is considered to be prevalent.

Over the past five years, only sites CM2 and Site 2 have recorded exceedances of the annual mean AQS objective. The last exceedance of the annual mean AQS objective at CM2 occurred in 2016 and in 2019 at Site 2. The number of sites recording concentrations within 10% of the AQS objective has remained consistent over the last five years, however this year there were no concentrations within 10% of the AQS objective. Overall, annual mean NO₂ concentrations have remained stable, with decreases recorded at all sites during 2020, with the most significant being Site 2, where concentrations are no longer exceeding the annual mean objective.

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 200µg/m³, not to be exceeded more than 18 times per year. During 2020, there were no exceedances of the hourly mean objective at either of the two automatic monitoring sites.

Within the borough there have also been no NO₂ annual means greater than 60µg/m³, indicating there have been no exceedances of the 1-hour mean objective. In particular, the diffusion tube located at Site 5 (King's Lynn Transport Interchange) which is where short term exposure is most relevant, has reported concentrations well below 60µg/m³.

Furthermore, both automatic NO₂ monitors installed within King's Lynn have reported no exceedance of the short term NO₂ 1-hour objective since 2015.

Town Centre AQMA

The annual mean concentration results for the NO₂ diffusion tubes located within Town Centre AQMA are presented in Figure A.1-A.6. NO₂ monitoring within the Town Centre AQMA was undertaken at 25 sites during 2020, comprising of 27 diffusion tubes and one continuous monitor (CM1), including the provision of a triplicate co-location site.

Exceedances of the NO₂ annual mean AQS objective did not occur at any sites and no reported concentrations came within 10% of the AQS objective.

Site 2 is the only site to record an exceedance of the annual mean AQS objective within the Town Centre AQMA over the last five years. This year Site 2 hasn't exceeded the annual mean AQS objective for NO₂.

As shown in Figure A.1, concentrations of NO₂ have remained steady over the last five years within the AQMA, with some sites experiencing a decrease in annual mean concentrations; most importantly Site 2 which, is no longer exceeding the AQS objective.

Based on historical and 2020 monitoring data, it is recommended that the AQMA remain in force. However, it is suggested that the Council continue to review the effectiveness of the current monitoring network within the AQMA, with the view to relocate monitoring locations reporting concentrations to be well below the AQS annual mean objective, to further improve confidence in air quality reporting.

Gaywood Clock AQMA

The annual mean concentration results for the NO₂ diffusion tubes located within the Gaywood Clock AQMA are presented in Figure A.5. NO₂ monitoring within the Gaywood Clock AQMA was undertaken at seven sites during 2020, comprising of six diffusion tubes and one continuous monitor (CM2). No sites reported an exceedance of the NO₂ annual

mean AQS objective limit, with Site CM2 reporting the highest recorded concentration in the AQMA during 2020 ($26.7\mu\text{g}/\text{m}^3$).

Site CM2 is an automatic monitor located on Lynn Road, an arterial route through the Gaywood Clock junction. Annual mean concentrations recorded at Site CM2 have exhibited a downwards trend over the last five years, decreasing from $45.0\mu\text{g}/\text{m}^3$ in 2016 to $26.7\mu\text{g}/\text{m}^3$ in 2020. Furthermore, Site CM2 is the only site within the Gaywood Clock AQMA to record an exceedance of the AQS objective over the last five years, the last being in 2016.

All sites reported NO_2 annual mean concentrations to be between $22.0\mu\text{g}/\text{m}^3$ and $26.7\mu\text{g}/\text{m}^3$ for 2020, with NO_2 concentrations remaining steady overall within the AQMA over the last five years. No sites recorded any concentrations within 10% of the annual mean AQS objective during 2020.

Based on historical and 2020 monitoring data, it is recommended that the AQMA remain in force, with the view of revocation if NO_2 annual mean concentrations stabilise below the AQS objective limit.

Outside of Declared AQMA's

NO_2 monitoring was undertaken at 41 sites outside of an AQMA boundary during 2020. NO_2 concentrations have remained overall stable below the AQS objective limit over the last five years and during 2020, no sites recorded concentrations within 10% of the annual mean NO_2 AQS objective.

During 2020, King's Lynn and West Norfolk Council added 4 new roadside diffusion tube monitoring sites to their network, Sites 94, 95, 96 and 97. The four sites are located around Wisbech Road, King's Lynn to assess proposed road layout changes as part of the King's Lynn Active Transport Study. Site 97 at Low Road, South Wootton is to validate air quality modelling completed as part of the Knights Hill residential planning application.

Sites 90, 91, 92 and 93 were commissioned to monitor potential emissions from the new road; Lynnsport Way. The road is now open with results showing minimal impact.

Site 76 was commissioned in 2013 to monitor emissions from the addition of Sainsbury's and Tesco superstores to the Hardwick retail park. Concentrations recorded at Site 76 continue to remain well below the AQS NO_2 annual mean objective limit.

Eight new sites (Sites 61, 62, 63, 64, 72, 73, 74, and 83) were commissioned in 2016 (funded by Palm Paper Ltd), to monitor NO_2 concentrations surrounding the Palm Paper

facility, located off the Saddlebow Industrial Estate. Site 73, at Main Road West Winch is located due to concerns raised about the potential traffic emissions from the A10.

Monitoring shows the level is well under the NO₂ annual mean objective at this location. Annual mean NO₂ concentrations recorded at the eight sites have remained well below the annual mean AQS objective limit since commission, with Site 73 reporting the highest concentration of 16.2µg/m³ in 2020 and is located on Main Road, West Winch.

Based on historical and 2020 monitoring data, the AQMA boundaries are considered to be of relevance, due to the absence of any reported exceedances at monitoring sites located outside of a declared AQMA boundary since 2015.

3.2.2 Particulate Matter (PM₁₀)

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 40µg/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 50µg/m³, not to be exceeded more than 35 times per year.

During 2020 there were no exceedances in PM₁₀ mean objectives or 24-hour mean objectives, which is consistent with the past five years.

Figure A.10 presents trends in annual mean PM₁₀ concentrations measured at the five automatic monitoring sites over the past five years. The annual mean PM₁₀ concentration has seen an overall decrease over the past five years. During 2020, concentrations have increased at OS1 and OS5 when compared to 2019 data. The highest recorded concentration over the past five years was reported at Sites OS1 and OS2 (21µg/m³) for 2016. OS1 is located along Page Stair Lane, King's Lynn, whilst OS2 was located along Furlong Road, Stoke Ferry. OS2 was decommissioned in 2018 and relocated to Buckenham Drive, Stoke Ferry as a new site; OS5.

Table A.7 shows the number of exceedances of the PM₁₀ daily mean air quality objective of 50µg/m³ at the five automatic monitoring sites. It can be seen that the number of exceedances have been significantly below the limit of 35 exceedances a year for the past five years, with the maximum number of daily exceedances recorded by OS1 in 2020 (four days).

Within Stoke Ferry, due to previous recorded levels of PM₁₀ and local concerns, particulate monitoring is being undertaken at three locations within the village using two Osiris dust monitors and a TEOM (OS4, OS5 and CM4). No exceedances of the PM₁₀ annual mean or 24-hour mean AQS objective limit have been recorded within 2020 or since the three sites were commissioned. Therefore, the declaration of an AQMA within the village is not required.

3.2.3 Particulate Matter (PM_{2.5})

PM_{2.5} is regulated by standards in the UK which presently places no statutory duty on Local Authorities to report against the annual mean objective limit. King's Lynn and West Norfolk Council undertake monitoring of PM_{2.5} via four Osiris dust monitors. The MCERTs accreditation for the Osiris instrument is only for the indicative measurement of PM₁₀ and not PM_{2.5}, therefore, the PM_{2.5} concentrations should not be taken as absolute.

Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years, since monitoring began. During 2020 PM_{2.5} annual mean concentrations increased slightly at three sites and decreased at one site when compared to 2019 data. There were no exceedances of the annual mean objective of 25µg/m³ at any of the monitoring sites.

Figure A.11 presents trends in annual mean PM_{2.5} concentrations visually, measured at the four automatic monitoring sites for the past five years since monitoring began. Annual mean PM_{2.5} concentrations have been below the annual mean objective of 25µg/m³ for the previous five years and have remained largely consistent across all four sites.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	Southgates Park, King's Lynn	Roadside	562225	319191	NO ₂	TC	Chemiluminescent	N/A	5	1.7
CM2	Gaywood, King's Lynn	Roadside	563437	320472	NO ₂	GC	Chemiluminescent	5	1	1.7
CM3	North Lynn, King's Lynn (discontinued)	Roadside	562086	321325	PM ₁₀	No	TEOM	35	17	3
CM4	Lynn Road, Stoke Ferry	Roadside	570339	300083	PM ₁₀	No	TEOM	5	1	3
OS1	Page Stair Lane, King's Lynn	Roadside	561527	320437	PM ₁₀ / PM _{2.5}	No	Osiris	5	3.3	3.5
OS2	Lynn Road, Stoke Ferry (discontinued)	Roadside	570339	300083	PM ₁₀ / PM _{2.5}	No	Osiris	5	1	3.5
OS3	Estuary Road, King's Lynn	Roadside	561593	321466	PM ₁₀ / PM _{2.5}	No	Osiris	2	1	3.5
OS4	Wretton Road, Stoke Ferry	Roadside	570438	299905	PM ₁₀ / PM _{2.5}	No	Osiris	24	19	3.5
OS5	Buckenham Drive, King's Lynn	Roadside	570264	299943	PM ₁₀ / PM _{2.5}	No	Osiris	12	1	3.2

Notes:

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

(2) N/A if not applicable

Table A.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)
1	Railway Road 1	Roadside	562073	320304	NO ₂	TC	2.0	2.0	NO	2.5
2	Railway Road 4	Roadside	562100	320222	NO ₂	TC	0.0	2.0	NO	2.4
3	Railway Road 5	Roadside	562117	320095	NO ₂	TC	0.0	1.5	NO	2.4
5	Bus Station - Shelters, Bay D	Roadside	562003	320099	NO ₂	N	N/A	N/A	NO	2.2
6,7,8	Southgates Monitoring Station	Roadside	562226	319191	NO ₂	TC	No but property façade 4m from kerb further north	5.0	YES	3.2
9	Mill Fleet	Roadside	561912	319711	NO ₂	N	0.0	4.0	NO	2.5
10	London Road 1	Roadside	562101	319679	NO ₂	TC	0.0	3.0	NO	1.4
11	London Road 2	Roadside	562165	319575	NO ₂	TC	0.0	3.0	NO	2.2
12	London Road 3	Roadside	562243	319452	NO ₂	TC	1.0	3.0	NO	2.1
13	London Road 4	Roadside	562264	319375	NO ₂	TC	0.0	4.5	NO	2.2
14	London Road 5	Roadside	562227	319266	NO ₂	TC	0.5	4.0	NO	2.2
15	Southgates	Roadside	562190	319102	NO ₂	N	1.0	0.5	NO	2.4
18	Hardwick Rd	Roadside	562266	319043	NO ₂	N	0.0	7.0	NO	1.6
19	Vancouver Avenue	Roadside	562277	319098	NO ₂	N	0.0	6.0	NO	1.5
20	London Road 10	Roadside	562244	319261	NO ₂	TC	0.0	3.5	NO	2.2
22	London Road 6	Roadside	562285	319386	NO ₂	TC	0.0	5.0	NO	1.3
23	London Road 7	Roadside	562162	319614	NO ₂	TC	0.0	4.5	NO	2.1
24	London Road 8	Roadside	562136	319651	NO ₂	TC	0.0	5.5	NO	2.2
25	The Walks	Roadside	562191	319695	NO ₂	N	0.0	75.0	NO	1.7
26	Railway Road 7	Roadside	562131	319996	NO ₂	TC	0.0	2.0	NO	2.3
27	St John's Terrace	Roadside	562178	319999	NO ₂	TC	3.0	2.0	NO	2.1
28	St John's Terrace/ Blackfriar's	Roadside	562253	320015	NO ₂	TC	0.0	1.5	NO	2.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
29	Waterloo Street	Kerbside	562175	320055	NO ₂	N	2.5	1.0	NO	1.6
30	Portland Street	Kerbside	562204	320108	NO ₂	N	2.5	1.0	NO	2.4
31	Railway Road 2	Roadside	562129	320132	NO ₂	TC	0.0	2.0	NO	2.3
32	Railway Road 3	Roadside	562119	320216	NO ₂	TC	0.0	2.0	NO	2.4
33	Wellsley Street	Roadside	562203	320159	NO ₂	N	2.5	0.5	NO	2.4
34	Blackfriars 2	Roadside	562244	320129	NO ₂	TC	0.0	2.5	NO	2.4
35	Blackfriars 1	Roadside	562245	320238	NO ₂	TC	3.0	1.5	NO	2.3
36	Norfolk Street	Roadside	562219	320319	NO ₂	N	0.0	2.0	NO	2.2
37	Blackfriars 3	Roadside	562254	320259	NO ₂	TC	N/A	2.0	NO	2.5
38	Littleport Street	Roadside	562257	320323	NO ₂	TC	0.0	2.5	NO	2.4
39	Gaywood Road 2	Roadside	562822	320427	NO ₂	N	0.0	7.0	NO	5.0
40	The Swan (1) Gayton Road	Roadside	563490	320469	NO ₂	GC	0.0	2.0	NO	2.5
41	Wotton Road 2 showed a level of 39	Roadside	563478	320515	NO ₂	GC	0.0	2.0	NO	3.4
42	Wootton Road 1	Roadside	563480	320582	NO ₂	GC	0.0	3.0	NO	1.7
43	Lynn Road 1	Roadside	563412	320477	NO ₂	GC	0.0	5.0	NO	3.4
44	Lynn Road 2	Roadside	563377	320484	NO ₂	GC	0.0	2.0	NO	3.4
45	Gaywood Road 3	Roadside	563202	320488	NO ₂	N	0.0	4.5	NO	2.2
46	Gaywood Road 1	Roadside	562565	320509	NO ₂	N	0.0	6.5	NO	2.1
47	Austin Street 1	Roadside	562186	320376	NO ₂	TC	0.5	1.0	NO	1.7
48	Austin Street 2	Roadside	562180	320365	NO ₂	TC	0.0	2.0	NO	2.6
51	Wootton Road 3	Roadside	563521	320628	NO ₂	N	6.0	1.5	NO	1.8
52	Lynn Road 3	Roadside	563289	320504	NO ₂	N	5.5	1.0	NO	1.6
58	NORR	Roadside	562171	319019	NO ₂	N	18.0	2.0	NO	2.5
61	Sydney Terrace	Roadside	561854	318272	NO ₂	N	0.0	3.5	NO	1.6
62	Burney Road	Roadside	561604	318601	NO ₂	N	0.0	7.0	NO	1.6
63	High Road, Saddlebow 1	Roadside	560593	315712	NO ₂	N	0.0	15.0	NO	1.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
64	High Road, Saddlebow 2	Roadside	560917	316766	NO ₂	N	0.0	22.0	NO	1.7
66	Gaywood Road	Urban Background	562595	320527	NO ₂	N	0.0	N/A	NO	2.4
67	Greyfriars, London Road	Urban Background	562236	319579	NO ₂	N	0.0	N/A	NO	2.3
68	Nursery, London Road	Urban Background	562143	319838	NO ₂	N	0.0	N/A	NO	1.6
69	Whitefriars 1, Whitefriars Road	Urban Background	561994	319395	NO ₂	N	0.0	N/A	NO	2.2
70	Whitefriars 2, Whitefriars Road	Urban Background	561930	319355	NO ₂	N	0.0	N/A	NO	2.4
72	Ferry Square, West Lynn	Roadside	561223	320295	NO ₂	N	0.5	1.5	NO	2.2
73	Main Road, West Winch	Roadside	563161	315848	NO ₂	N	10.0	11.0	NO	1.7
74	Saddlebow Caravan Park	Roadside	561754	317910	NO ₂	N	0.0	1.0	NO	2.2
75	The Swan (2) Gayton Road	Roadside	563469	320469	NO ₂	GC	0.0	2.0	NO	2.8
76	Hardwick Road	Roadside	562597	318740	NO ₂	N	1.0	8.0	NO	1.6
79	Tennyson Ave	Roadside	562804	320423	NO ₂	N	0.0	2.0	NO	3.8
83	The Elms	Suburban	560779	318509	NO ₂	N	0.0	115.0	NO	1.7
86	Bus Station - Taxi Rank	Other	562019	320139	NO ₂	N	0.0	N/A	NO	2.2
87	Albion Street	Roadside	562103	320164	NO ₂	TC	0.0	2.6	NO	2.1
89	Whitefriars Terrace	Roadside	561888	319467	NO ₂	N	0.0	1.0	NO	2.4
90	Spenser Road	Roadside	563366	322065	NO ₂	N	0.0	8.0	NO	1.8
91	Reid Way	Roadside	563255	321613	NO ₂	N	0.0	8.0	NO	2.5
92	Garden Court	Roadside	563256	321589	NO ₂	N	0.0	16.0	NO	2.0
93	Front Way	Roadside	563213	321283	NO ₂	N	0.0	9.7	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)
94	Wisbech Road 1	Roadside	561957	318963	NO ₂	N	0.0	6.5	NO	1.7
95	Wisbech Road 2	Roadside	562058	319038	NO ₂	N	1.0	7.5	NO	2.0
96	Carp Terrace, King's Lynn	Roadside	562042	319011	NO ₂	N	0.0	6.5	NO	2.0
97	Low Road, King's Lynn	Roadside	564503	322411	NO ₂	N	0.0	7.5	NO	1.7

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1	562225	319191	Roadside	98.5	98.5	25	25	23.9	21	14.2
CM2	563437	320472	Roadside	91.2	91.2	45	38	34.5	37	26.7

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

All means have been “annualised” as per LAQM.TG16 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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
1	562073	320304	Roadside	100	100.0	35.5	35.9	33.8	36.3	25.8
2	562100	320222	Roadside	100	100.0	44.6	45.5	43.2	42.4	33.2
3	562117	320095	Roadside	100	100.0	38.6	38.5	37.4	37.5	26.4
5	562003	320099	Roadside	92.3	92.3	32.4	30.4	28.8	28.8	17.5
6,7,8	562226	319191	Roadside	100	100.0	24.6	24.6	23.9	24.3	17.8
9	561912	319711	Roadside	100	100.0	20.8	19.5	19.9	20.5	13.7
10	562101	319679	Roadside	100	100.0	36.3	37.2	36.2	35.5	26.6
11	562165	319575	Roadside	100	100.0	27.9	27.7	28.1	28.4	21.2
12	562243	319452	Roadside	100	100.0	32.0	33.5	29.8	31.4	22.5
13	562264	319375	Roadside	100	100.0	31.0	29.9	28.8	29.0	21.7
14	562227	319266	Roadside	100	100.0	33.1	33.6	33.6	33.2	25.9
15	562190	319102	Roadside	100	100.0	35.4	34.9	35.3	36.7	27.0
18	562266	319043	Roadside	100	100.0	24.5	25.9	24.1	25.1	18.9
19	562277	319098	Roadside	100	100.0	23.0	24.0	21.9	23.9	19.9
20	562244	319261	Roadside	100	100.0	30.6	28.2	30.0	28.2	21.7
22	562285	319386	Roadside	100	100.0	32.6	30.1	34.0	31.0	21.8
23	562162	319614	Roadside	100	100.0	32.5	29.6	32.6	31.2	23.1
24	562136	319651	Roadside	100	100.0	28.9	26.4	30.5	29.7	21.4
25	562191	319695	Roadside	100	100.0	14.4	15.3	15.9	15.3	11.4
26	562131	319996	Roadside	73.1	73.1	31.5	31.4	32.9	31.5	23.0
27	562178	319999	Roadside	100	100.0	28.5	27.8	28.5	27.6	20.0
28	562253	320015	Roadside	90.4	90.4	30.0	30.5	28.9	29.8	19.5
29	562175	320055	Kerbside	100	100.0	18.3	18.7	19.0	18.9	12.7
30	562204	320108	Kerbside	100	100.0	20.4	19.7	19.4	20.5	13.8
31	562129	320132	Roadside	100	100.0	28.2	28.3	30.2	29.1	21.2
32	562119	320216	Roadside	92.3	92.3	29.0	28.3	28.8	27.8	21.3
33	562203	320159	Roadside	100	100.0	26.1	27.8	27.4	28.5	20.3
34	562244	320129	Roadside	100	100.0	28.7	28.9	31.1	28.8	22.9
35	562245	320238	Roadside	100	100.0	27.2	28.2	27.7	27.6	20.7
36	562219	320319	Roadside	100	100.0	27.3	27.6	27.4	27.7	19.4
37	562254	320259	Roadside	84.6	84.6	26.5	26.5	30.6	29.7	23.3
38	562257	320323	Roadside	100	100.0	31.5	33.2	34.0	34.2	24.9

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
39	562822	320427	Roadside	100	100.0	24.1	24.3	24.5	24.5	17.7
40	563490	320469	Roadside	100	100.0	30.2	31.2	31.3	32.0	24.6
41	563478	320515	Roadside	100	100.0	32.2	32.1	36.7	34.9	24.5
42	563480	320582	Roadside	100	100.0	29.3	30.5	30.0	29.7	22.9
43	563412	320477	Roadside	100	100.0	30.0	29.2	30.9	29.4	22.0
44	563377	320484	Roadside	100	100.0	32.8	32.4	36.0	34.6	26.3
45	563202	320488	Roadside	100	100.0	27.0	25.2	28.8	26.8	19.5
46	562565	320509	Roadside	100	100.0	24.0	22.5	24.6	24.1	17.6
47	562186	320376	Roadside	100	100.0	30.3	29.3	30.6	29.7	21.5
48	562180	320365	Roadside	92.3	92.3	26.8	27.8	27.7	27.2	19.1
51	563521	320628	Roadside	100	100.0	18.3	19.0	18.8	18.6	13.6
52	563289	320504	Roadside	100	100.0	27.3	28.7	30.1	28.4	21.7
58	562171	319019	Roadside	100	100.0	28.2	24.7	28.2	27.4	19.7
61	561854	318272	Roadside	100	100.0	-	16.9	16.7	17.1	12.1
62	561604	318601	Roadside	90.4	90.4	-	14.9	13.9	14.1	9.9
63	560593	315712	Roadside	100	100.0	-	9.7	10.2	9.7	7.3
64	560917	316766	Roadside	100	100.0	-	10.4	10.5	10.3	7.6
66	562595	320527	Urban Background	75	75.0	20.4	18.5	20.6	22.1	16.7
67	562236	319579	Urban Background	100	100.0	15.7	17.2	16.4	16.8	12.1
68	562143	319838	Urban Background	65.4	65.4	19.0	19.5	20.5	19.1	13.2
69	561994	319395	Urban Background	100	100.0	12.7	12.5	13.7	13.3	9.4
70	561930	319355	Urban Background	50	50.0	12.3	12.7	12.7	13.5	9.5
72	561223	320295	Roadside	75	75.0	-	12.3	12.3	11.6	8.6
73	563161	315848	Roadside	82.7	82.7	-	19.6	24.3	22.1	16.2
74	561754	317910	Roadside	100	100.0	-	14.2	14.2	13.4	10.3
75	563469	320469	Roadside	100	100.0	32.2	31.6	34.1	35.8	26.5
76	562597	318740	Roadside	100	100.0	18.2	19.6	18.8	19.8	13.9
79	562804	320423	Roadside	92.3	92.3	34.6	32.8	32.7	33.2	23.8
83	560779	318509	Suburban	100	100.0	-	11.8	12.9	13.0	9.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
86	562019	320139	Other	90.4	90.4	27.7	27.6	27.1	27.7	19.5
87	562103	320164	Roadside	100	100.0	30.5	29.3	32.0	30.0	19.3
89	561888	319467	Roadside	100	100.0	13.0	13.2	13.2	13.5	9.7
90	563366	322065	Roadside	100	100.0	14.0	15.0	15.9	16.1	11.5
91	563255	321613	Roadside	90.4	90.4	13.6	13.7	14.4	14.5	11.0
92	563256	321589	Roadside	100	100.0	12.9	12.6	12.9	13.0	9.2
93	563213	321283	Roadside	67.3	67.3	13.1	11.9	13.3	12.7	10.9
94	561957	318963	Roadside	100	100.0	-	-	-	-	15.9
95	562058	319038	Roadside	100	100.0	-	-	-	-	12.0
96	562042	319011	Roadside	100	100.0	-	-	-	-	14.4
97	564503	322411	Roadside	100	100.0	-	-	-	-	14.1

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

☒ 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 NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 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.TG16 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 and adjacent to the Town Centre AQMA

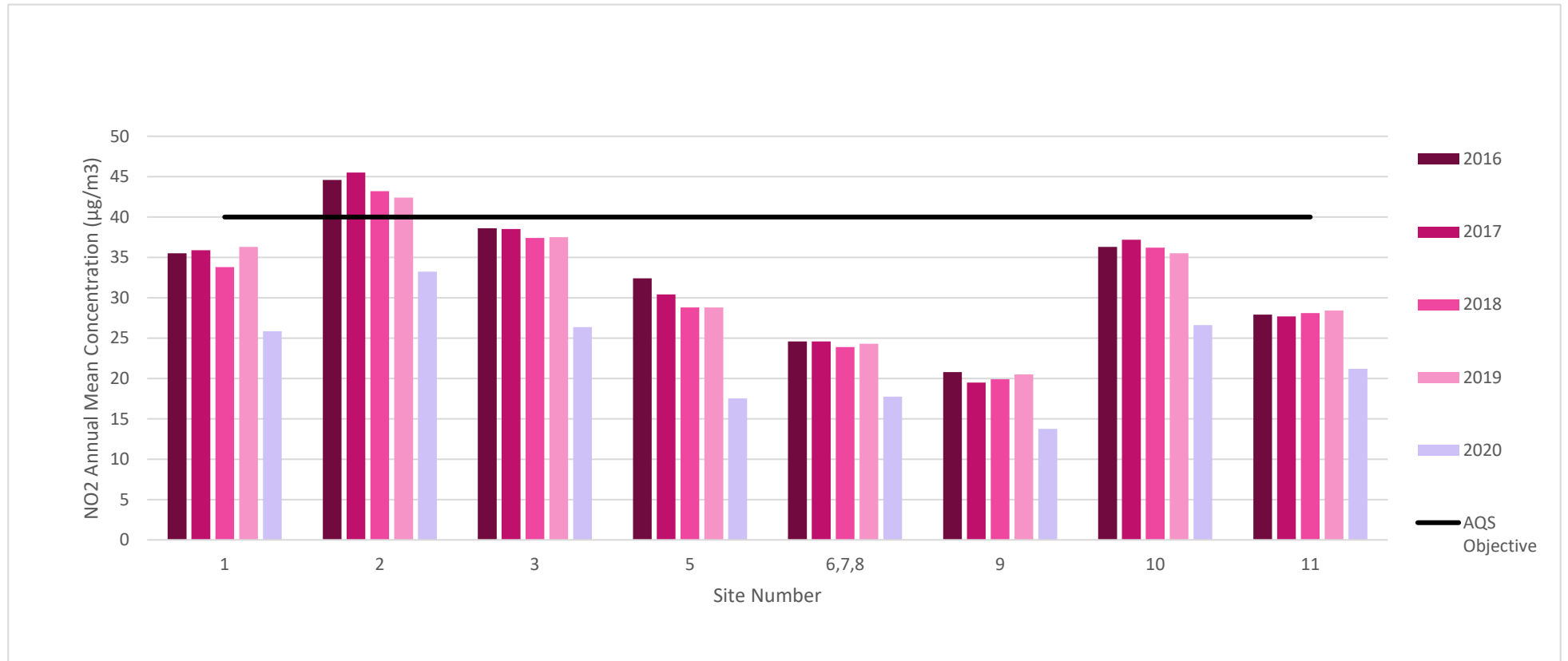


Figure A.2 – Trends in Annual Mean NO₂ Concentrations within and adjacent to the Town Centre AQMA

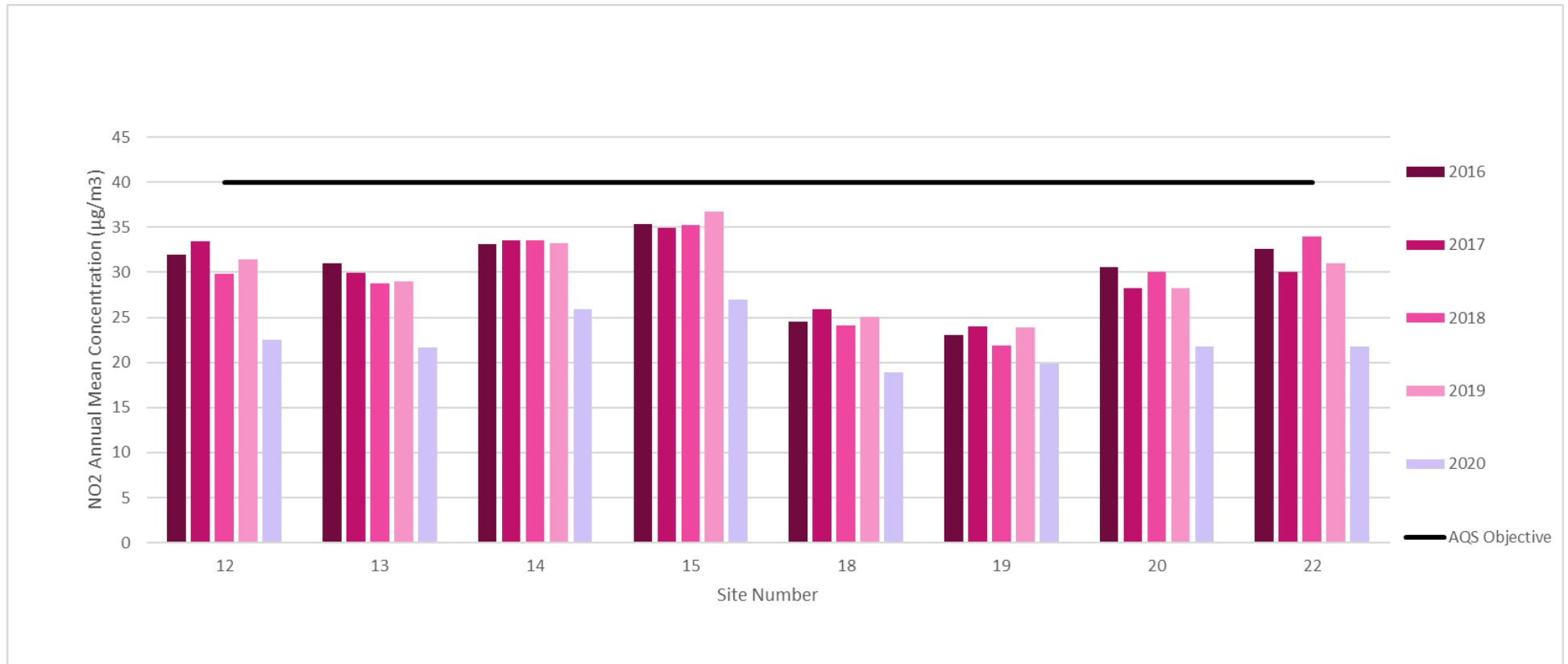


Figure A.3 – Trends in Annual Mean NO₂ Concentrations within and adjacent to the Town Centre AQMA

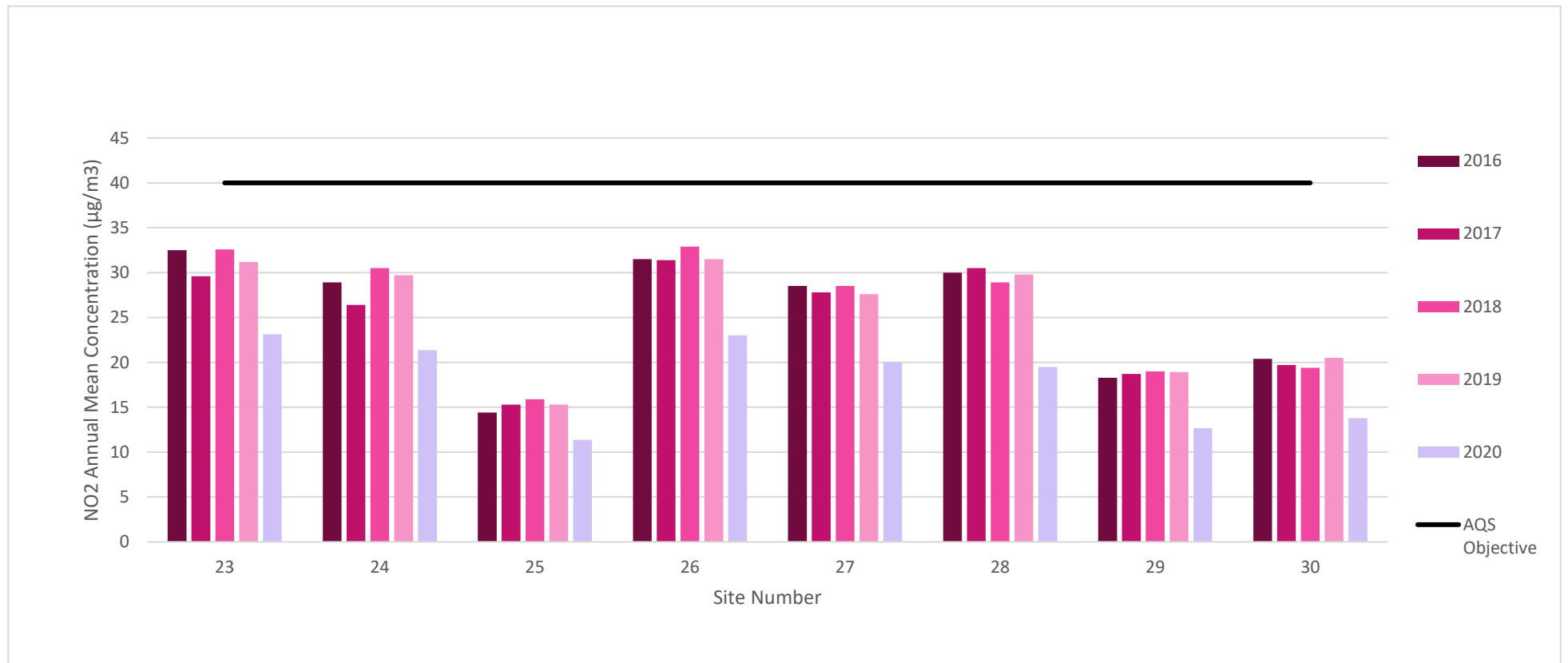


Figure A.4 – Trends in Annual Mean NO₂ Concentrations within and adjacent to the Town Centre AQMA

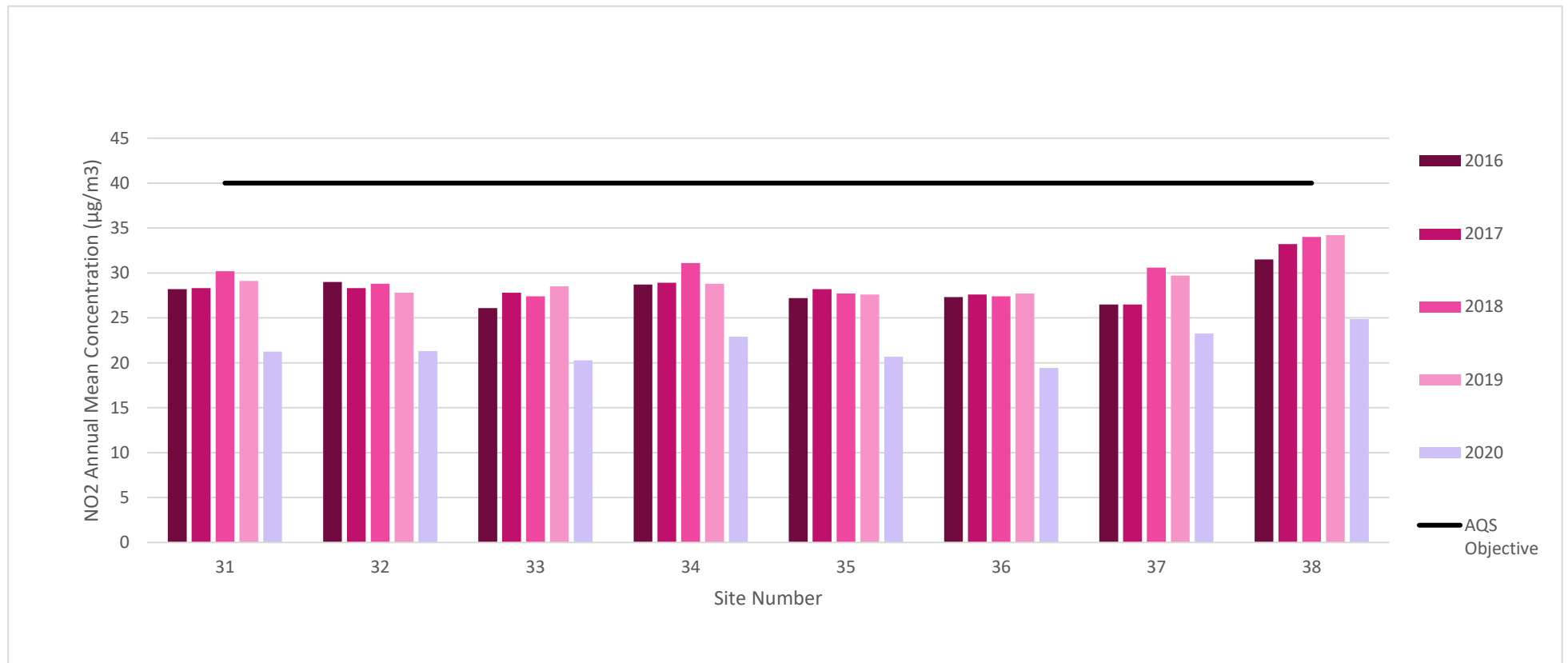


Figure A.5 – Trends in Annual Mean NO₂ Concentrations within the Gaywood Clock AQMA and adjacent to the Town Centre AQMA

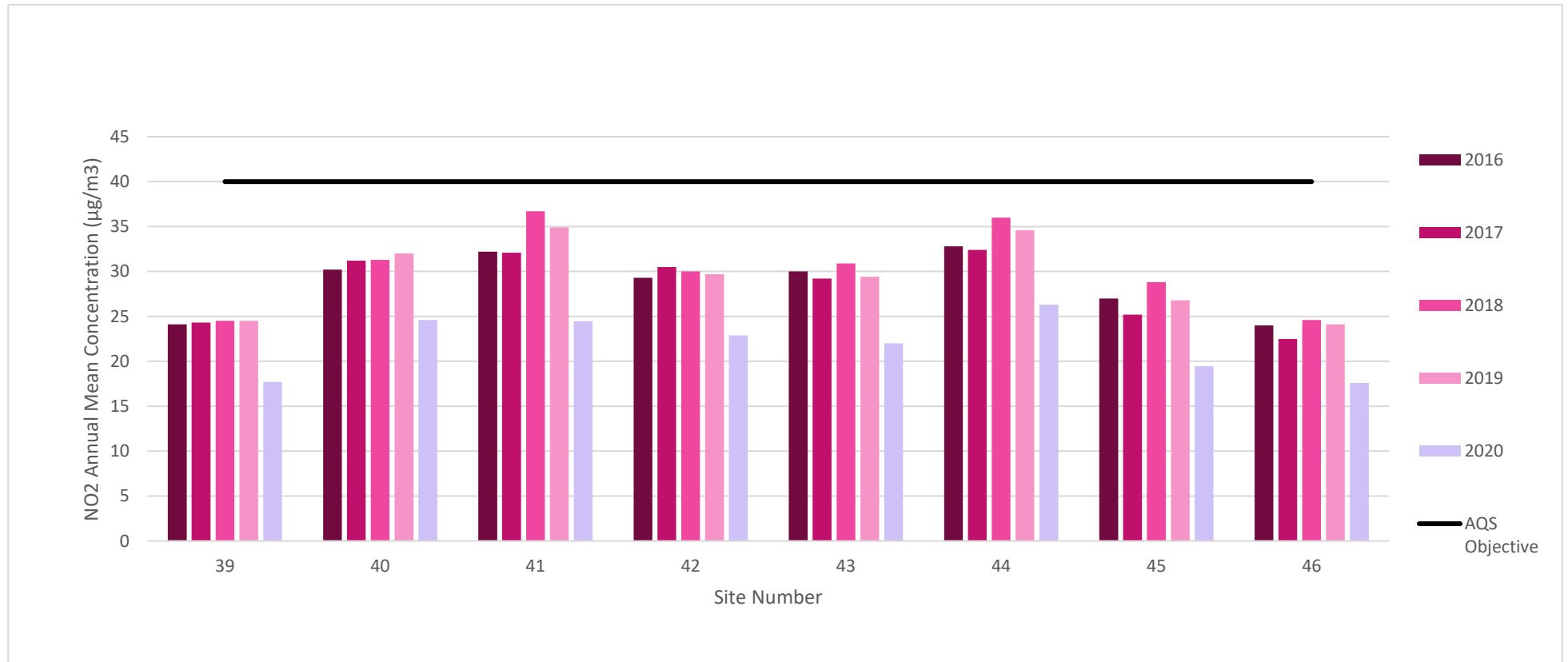


Figure A.6 – Trends in Annual Mean NO₂ Concentrations South of King's Lynn and within and adjacent to the Town Centre AQMA

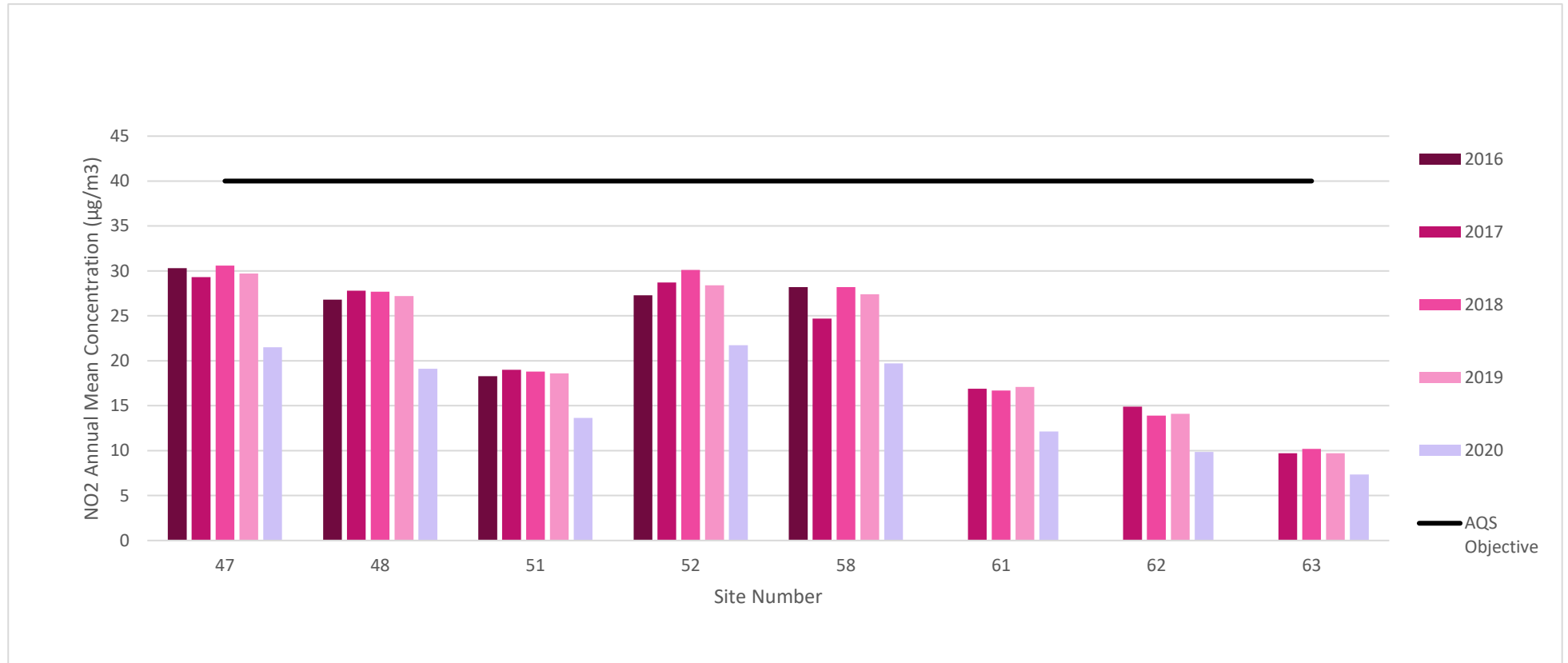


Figure A.7 – Trends in Annual Mean NO₂ Concentrations within and South of King's Lynn

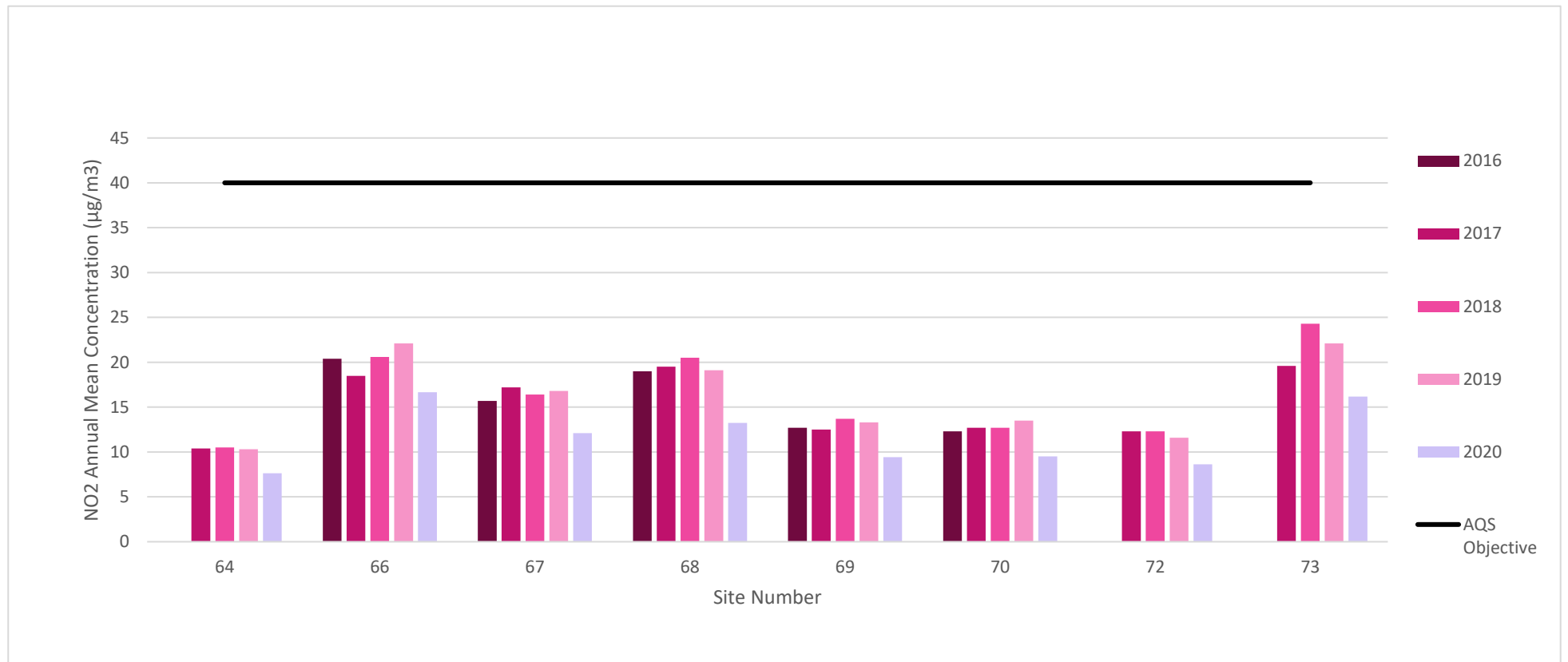


Figure A.8 – Trends in Annual Mean NO₂ Concentrations within and South of King's Lynn

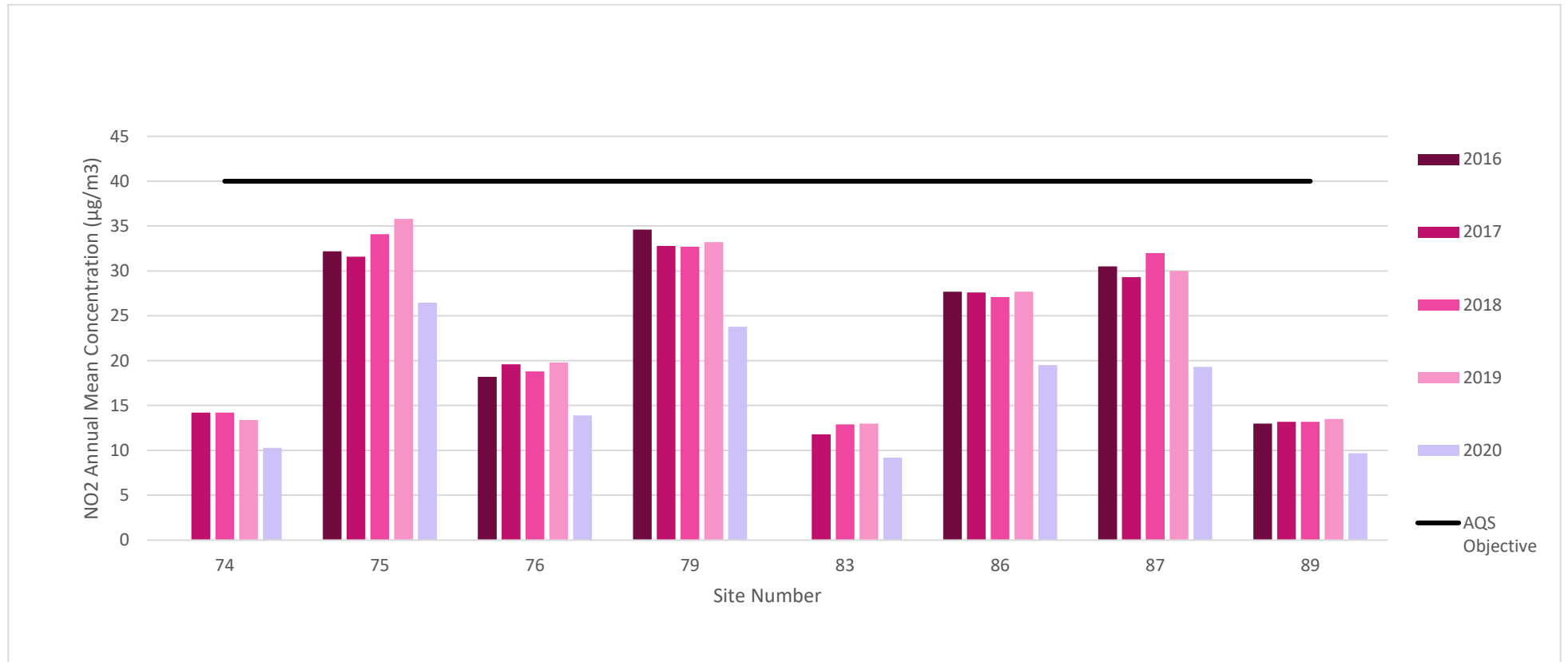


Figure A.9 – Trends in Annual Mean NO₂ Concentrations in North Lynn and South of King's Lynn

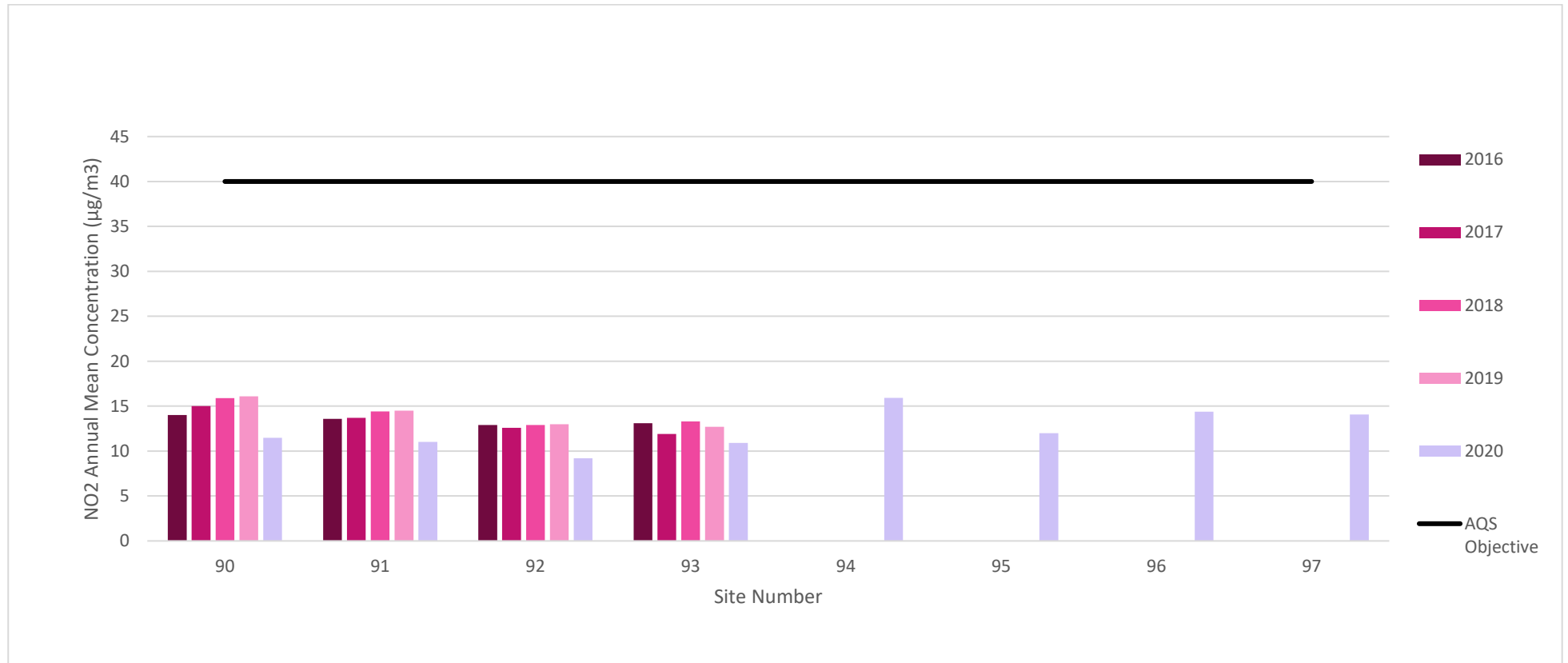


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1	562225	319191	Roadside	98.5	98.5	0	0	0	0	0
CM2	563437	320472	Roadside	91.2	91.2	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%).

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM3 (discontinued)	562086	321325	Roadside	N/A	N/A	18	19	-	-	-
CM4	570339	300083	Roadside	98.1	63.4	-	-	18.4	16	14.9
OS1	561527	320437	Roadside	99.5	68.5	21	18	16.4	11	14.7
OS2 (discontinued)	570339	300083	Roadside	N/A	N/A	21	17	10.3	-	-
OS3	561593	321466	Roadside	99.6	54.5	15	13	14.6	13	10.1
OS4	570438	299905	Roadside	99.4	87.4	16	12	13.2	11	11.0
OS5	570264	299943	Roadside	100.0	93.2	-	-	12.7	10	12.8

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Site CM4 recorded only 63.4% data capture due to the TEOM being removed in August 2020. The options for replacing this monitor are currently being looked into.

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

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

Figure A.10 – Trends in Annual Mean PM₁₀ Concentrations

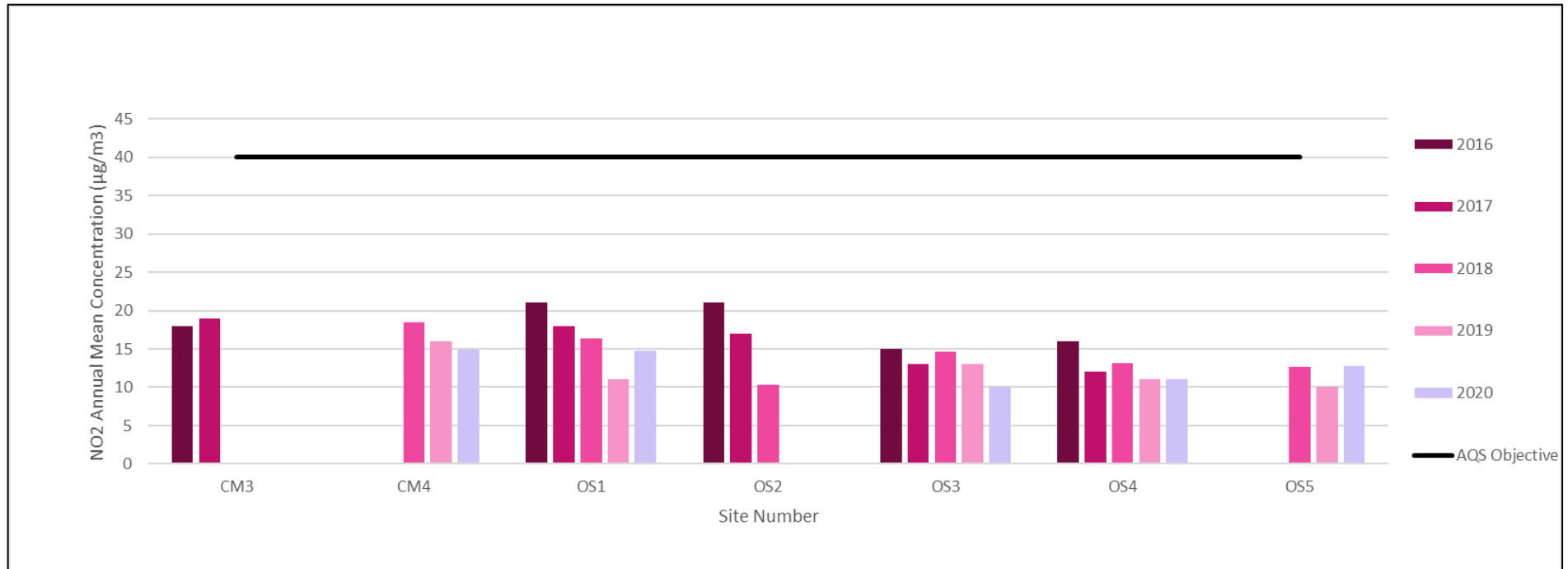


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM3	562086	321325	Roadside	N/A	N/A	5	3	0	-	-
CM4	570339	300083	Roadside	98.1	63.4	-	-	0	5	0 (20.4)
OS1	561527	320437	Roadside	99.5	68.5	9	3	4	0	4 (29.4)
OS2	570339	300083	Roadside	N/A	N/A	3	2	-	-	-
OS3	561593	321466	Roadside	99.6	54.5	2	0	0	0	0 (20.0)
OS4	570438	299905	Roadside	99.4	87.4	0	0	0	0	0
OS5	570264	299943	Roadside	100	93.2	-	-	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%).

Table A.8 – Annual Mean PM_{2.5} 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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
OS1	561527	320437	Roadside	99.5	68.5	6	6	7	5	7.9
OS2 (discontinued)	570339	300083	Roadside	N/A	N/A	6	7	4.9	-	-
OS3	561593	321466	Roadside	99.6	54.5	4	6	6.9	7	6.7
OS4	570438	299905	Roadside	99.4	87.4	10	5	6.2	7	6.4
OS5	570264	299943	Roadside	100	93.2	-	-	5.9	5	5.4

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

Notes:

The annual mean concentrations are presented as µg/m³.

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.11 – Trends in Annual Mean PM_{2.5} Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	562073	320304	42.0	37.0	28.5	20.2	21.0	27.0	28.0	29.8	35.0	31.2	43.1	40.0	31.9	25.8	-	
2	562100	320222	55.0	43.0	38.6	28.1	30.0	34.0	40.0	35.7	45.0	43.4	52.0	47.4	41.0	33.2	-	
3	562117	320095	44.0	37.0	31.7	20.6	20.0	25.0	30.0	34.3	39.0	32.5	44.0	32.5	32.6	26.4	-	
5	562003	320099		27.0	26.2	14.7	13.0	18.0	15.0	19.5	24.0	24.5	29.7	26.5	21.6	17.5	-	
6	562226	319191	30.0	24.0	22.2	13.3	14.0	17.0	18.0	19.5	21.0	23.9	28.1	25.7	21.4	17.3	-	
7	562226	319191	29.0	25.0	22.3	14.3	13.0	17.0	18.0	19.2	23.0	23.8		27.8	21.1	17.1	-	
8	562226	319191	31.0	25.0	22.8	14.1	14.0	18.0	17.0	19.9	23.0	21.7	28.8	32.4	22.3	18.1	-	
9	561912	319711	22.0	15.0	18.6	13.3	11.0	13.0	12.0	15.6	18.0	17.0	23.8	24.4	17.0	13.7	-	
10	562101	319679	45.0	41.0	30.1	22.0	22.0	27.0	28.0	32.2	36.0	34.2	37.9	38.6	32.8	26.6	-	
11	562165	319575	37.0	30.0	22.2	17.0	18.0	23.0	23.0	25.1	27.0	26.5	32.3	32.9	26.2	21.2	-	
12	562243	319452	40.0	38.0	26.5	16.7	19.0	23.0	29.0	26.0	32.0	29.6	17.7	36.0	27.8	22.5	-	
13	562264	319375	37.0	35.0	27.0	15.9	16.0	20.0	25.0	23.6	29.0	29.2	33.6	29.9	26.8	21.7	-	
14	562227	319266	48.0	40.0	29.2	18.1	21.0	26.0	30.0	29.3	34.0	20.8	46.0	41.2	32.0	25.9	-	
15	562190	319102	41.0	30.0	32.3	25.2	27.0	32.0	32.0	37.8	38.0	31.1	35.6	37.8	33.3	27.0	-	
18	562266	319043	34.0	24.0	23.2	15.5	17.0	20.0	20.0	19.9	23.0	24.5	30.9	27.9	23.3	18.9	-	
19	562277	319098	31.0	24.0	21.1	13.8	10.0	56.0	18.0	19.8	23.0	23.2	28.0	26.9	24.6	19.9	-	
20	562244	319261	34.0	24.0	28.0	22.2	20.0	25.0	19.0	26.8	29.0	28.2	33.7	32.2	26.8	21.7	-	
22	562285	319386	37.0	24.0	26.8	20.9	19.0	25.0	20.0	27.7	28.0	26.9	32.0	35.0	26.9	21.8	-	
23	562162	319614	30.0	22.0	30.8	25.0	24.0	28.0	21.0	31.3	32.0	28.0	33.5	36.9	28.5	23.1	-	
24	562136	319651	28.0	19.0	29.0	25.3	24.0	29.0	19.0	30.9	29.0	25.3	28.8	28.9	26.4	21.4	-	
25	562191	319695	24.0	16.0	12.1	8.9	9.0	10.0	11.0	10.5	13.0	14.8	18.1	21.1	14.0	11.4	-	
26	562131	319996	34.0		30.8	21.1	22.0	26.0	24.0		34.0	31.5	32.3		28.4	23.0	-	
27	562178	319999	32.0	27.0	24.5	17.3	19.0	21.0	23.0	24.9	28.0	26.4	25.9	27.6	24.7	20.0	-	
28	562253	320015	24.0	29.0	22.7	15.8	17.0	22.0	23.0	26.5	29.0	27.7	27.7		24.0	19.5	-	
29	562175	320055	23.0	18.0	14.9	9.5	10.0	11.0	11.0	12.6	16.0	17.0	25.1	19.7	15.6	12.7	-	
30	562204	320108	25.0	17.0	17.1	12.3	11.0	13.0	12.0	14.6	17.0	18.7	24.7	22.0	17.0	13.8	-	
31	562129	320132	32.0	27.0	26.4	21.4	20.0	24.0	20.0	26.8	29.0	27.2	26.9	34.1	26.2	21.2	-	
32	562119	320216	35.0	25.0	26.1	21.2	20.0	23.0	20.0	25.1		26.4	35.4	32.2	26.3	21.3	-	
33	562203	320159	36.0	30.0	24.9	18.6	17.0	21.0	20.0	22.5	24.0	25.8	31.8	28.6	25.0	20.3	-	
34	562244	320129	40.0	35.0	26.8	18.3	19.0	22.0	25.0	25.0	31.0	29.7	36.5	30.8	28.3	22.9	-	
35	562245	320238	32.0	31.0	22.6	17.6	19.0	21.0	25.0	22.5	28.0	26.2	32.0	29.1	25.5	20.7	-	
36	562219	320319	32.0	29.0	22.2	18.2	18.0	21.0	18.0	22.1	23.0	23.7	33.7	26.8	24.0	19.4	-	
37	562254	320259			29.6	27.6	25.0	27.0	22.0	28.0	30.0	27.8	37.1	33.4	28.7	23.3	-	
38	562257	320323	44.0	33.0	30.3	21.9	22.0	28.0	22.0	28.0	30.0	29.7	41.3	38.1	30.7	24.9	-	
39	562822	320427	29.0	19.0	21.0	17.1	18.0	22.0	17.0	18.7	22.0	23.3	26.7	28.3	21.8	17.7	-	
40	563490	320469	44.0	36.0	28.6	19.8	23.0	27.0	29.0	25.8	28.0	31.0	36.6	35.4	30.4	24.6	-	
41	563478	320515	37.0	31.0	29.1	22.3	24.0	29.0	25.0	29.9	33.0	28.6	35.6	38.0	30.2	24.5	-	
42	563480	320582	38.0	34.0	24.8	18.6	22.0	24.0	28.0	25.4	30.0	28.9	33.3	32.2	28.3	22.9	-	
43	563412	320477	34.0	27.0	25.7	20.4	25.0	25.0	28.0	27.5	29.0	27.6	27.8	29.2	27.2	22.0	-	
44	563377	320484	36.0	29.0	36.0	26.1	30.0	32.0	28.0	34.7	35.0	29.3	34.6	38.9	32.5	26.3	-	
45	563202	320488	27.0	22.0	26.7	21.0	22.0	22.0	19.0	24.8	27.0	22.2	27.9	27.0	24.1	19.5	-	
46	562565	320509	22.0	20.0	22.1	18.6	19.0	20.0	17.0	20.5	24.0	22.3	27.7	27.4	21.7	17.6	-	
47	562186	320376	34.0	27.0	26.2	21.2	20.0	24.0	20.0	25.2	28.0	25.6	36.2	31.4	26.6	21.5	-	
48	562180	320365	53.0		23.4	16.6	16.0	20.0	9.0	11.5	26.0	26.4	36.2	21.6	23.6	19.1	-	
51	563521	320628	23.0	19.0	17.3	11.7	12.0	14.0	14.0	14.3	17.0	18.9	18.0	22.9	16.8	13.6	-	
52	563289	320504	33.0	26.0	28.5	20.7	23.0	26.0	24.0	26.8	29.0	25.9	29.7	29.3	26.8	21.7	-	
58	562171	319019	31.0	19.0	25.4	20.0	19.0	23.0	15.0	24.3	26.0	23.6	35.5	30.2	24.3	19.7	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
61	561854	318272	23.0	18.0	13.5	9.2	11.0	12.0	10.0	12.4	14.0	16.0	22.1	18.8	15.0	12.1	-	
62	561604	318601	19.0	14.0	11.7	9.0	9.0	10.0	9.0	10.2	12.0	14.0	15.9		12.2	9.9	-	
63	560593	315712	14.0	11.0	8.4	6.5	6.0	7.0	5.0	6.4	8.0	9.2	14.3	13.0	9.1	7.3	-	
64	560917	316766	13.0	8.0	8.9	6.7	7.0	9.0	5.0	7.4	8.0	10.2	15.6	14.4	9.4	7.6	-	
66	562595	320527	28.0		18.9	14.0	15.0	16.0			20.0	21.7	25.5	26.0	20.6	16.7	-	
67	562236	319579	26.0	17.0	13.1	8.8	9.0	12.0	11.0	10.5	14.0	15.5	21.4	21.2	15.0	12.1	-	
68	562143	319838	21.0	19.0	14.9			13.0			17.0	17.8	24.9	22.5	18.8	13.2	-	
69	561994	319395	18.0	11.0	11.2	8.9	8.0	9.0	7.0	8.8	11.0	11.2	18.6	16.9	11.6	9.4	-	
70	561930	319355	18.0	12.0							10.0	10.7	18.7	18.2	14.6	9.5	-	
72	561223	320295	17.0		11.0	8.4	7.0	8.0	6.0		10.0	12.2		16.3	10.7	8.6	-	
73	563161	315848	21.0	14.0	22.3	19.1	18.0	22.0	14.0			19.9	25.4	24.0	20.0	16.2	-	
74	561754	317910	17.0	13.0	12.8	10.1	10.0	11.0	9.0	10.3	12.0	13.2	17.3	16.6	12.7	10.3	-	
75	563469	320469	40.0	35.0	33.7	25.2	27.0	31.0	27.0	31.7	31.0	34.3	38.0	37.9	32.7	26.5	-	
76	562597	318740	26.0	20.0	15.6	10.8	11.0	15.0	13.0	15.1	17.0	18.4	22.7	21.2	17.2	13.9	-	
79	562804	320423	34.0		27.9	21.8	25.0	27.0	26.0	27.5	30.0	32.8	33.9	37.2	29.4	23.8	-	
83	560779	318509	14.0	10.0	11.8	8.8	9.0	8.0	9.0	10.3	11.0	12.5	16.2	15.5	11.3	9.2	-	
86	562019	320139	34.0	31.0	24.0	16.1	16.0	20.0	21.0	23.3	25.0	28.9	25.6		24.1	19.5	-	
87	562103	320164	29.0	24.0	9.0	20.7	20.0	24.0	19.0	26.2	26.0	24.4	34.4	29.6	23.9	19.3	-	
89	561888	319467	17.0	12.0	12.2	9.1	8.0	9.0	7.0	8.6	11.0	11.8	19.6	18.3	12.0	9.7	-	
90	563366	322065	22.0	17.0	13.6	9.8	9.0	12.0	10.0	10.7	13.0	13.9	21.3	17.8	14.2	11.5	-	
91	563255	321613	22.0	15.0	12.1	8.7	8.0	10.0	9.0		13.0	13.3	19.6	19.1	13.6	11.0	-	
92	563256	321589	18.0	13.0	10.3	8.2	7.0	9.0	7.0	7.8	10.0	11.0	17.5	17.5	11.4	9.2	-	
93	563213	321283	20.0	15.0					9.0	8.1	12.0	12.1	21.3	19.5	14.6	10.9	-	
94	561957	318963	27.0	21.0	17.3	13.4	17.0	15.0	18.0	17.1	21.0	20.2	24.6	24.4	19.7	15.9	-	
95	562058	319038	21.0	15.0	13.7	11.4	10.0	12.0	9.0	12.4	14.0	14.4	23.6	21.3	14.8	12.0	-	
96	562042	319011	25.0	18.0	17.0	13.4	13.0	14.0	12.0	14.9	17.0	18.2	26.4	24.3	17.8	14.4	-	
97	564503	322411	26.0	18.0	17.2	11.7	11.0	15.0	12.0	15.3	18.0	17.1	23.8	23.4	17.4	14.1	-	

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.TG16.

Local bias adjustment factor used.

National bias adjustment factor used.

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

Borough Council of King's Lynn and West Norfolk confirm that all 2020 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 the Borough Council of King's Lynn and West Norfolk During 2020

The Council have received a number of planning applications for an array of developments including developments on farms, residential developments, waste recycling facilities and many others. The Environmental Quality team have been consulted upon in regard to a number of planning applications received. For those reviewed by the Environmental Quality team, effects of all developments which have been granted planning permission and are undergoing the planning permission process have been deemed insignificant.

Additional Air Quality Works Undertaken by the Borough Council of King's Lynn and West Norfolk During 2020

The Borough Council of King's Lynn and West Norfolk has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

Gradko International Ltd supply and analyse King's Lynn Council's diffusion tubes. The tubes were prepared using the 20% TEA in acetone preparation method.

Diffusion Tube Annualisation

Three non-automatic monitoring (diffusion tube) sites recorded data capture of <75% therefore requiring annualisation. Annualisation was conducted using an average annualisation factor, calculated using background concentrations from the four closest AURN sites to the Borough Council of King's Lynn and West Norfolk. Raw diffusion tube data was the annualised using the average annualisation factor to provide annual annualised mean concentrations. The Defra Diffusion Tube Data Processing Tool was

used to process all diffusion tube results in 2020, therefore the annualisation has been completed in line with LAQM.TG16. An annualisation summary is provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 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.TG16 provides guidance with regards 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.

King's Lynn Council operate one continuous NO₂ analyser at their Southgates-CM1 site. This monitoring site has a triplicate site of co-located diffusion tubes; 6, 7 and 8. A local bias adjustment factor of 0.65 has been calculated using the Diffusion Tube Data Processing Tool. The data capture for automatic and diffusion tube monitoring was good for all months of 2020, however, when compared to previous years, the local bias adjustment factor is particularly low. For this reason, the Borough Council of King's Lynn and West Norfolk have applied a national bias adjustment factor of 0.81 (from version 06/21, based on 18 studies) to the 2020 monitoring data. A summary of bias adjustment factors used by the Borough Council of King's Lynn and West Norfolk over the past five years is presented in Table C.1.

Figure C.1 – National Diffusion Tube Bias Adjustment Factor Spreadsheet

National Diffusion Tube Bias Adjustment Factor Spreadsheet				Spreadsheet Version Number: 06/21						
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 Sept 2021			
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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Step 2: Select a Preparation Method from the Drop-Down List		Step 3: Select a Year from the Drop-Down List		Step 4: 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 ³ 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 ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953				
Analysed By¹	Method To do your selection, choose All from the pop-up list	Year² To do your selection, choose All	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 Precision⁵	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2020						Use	0.81	

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	06/21	0.81
2019	National	03/20	0.93
2018	Local	-	0.93
2017	Local	-	0.85
2016	Local	-	0.85

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be 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.

No diffusion tube NO₂ monitoring locations within the Borough Council of King's Lynn and West Norfolk required distance correction during 2020.

QA/QC of Automatic Monitoring

King's Lynn and West Norfolk's automatic monitoring data is collected by Air Quality Data Management (AQDM). The TEOM data has the Volatile Correction Model (VCM) for Indicative Gravimetric Equivalence applied, and the Osiris data has a gravimetric factor of 1.3 for Indicative Gravimetric Equivalence applied. Both the TEOM and NO_x analysers are serviced biannually by Air Monitors and calibration data is collected fortnightly from the NO_x analysers by council officers and passed to AQDM, who carry out any adjustment of the data. The Osiris instruments are serviced and calibrated annually by Turnkey Instruments.

Automatic Monitoring Annualisation

Annualisation was required for three automatic monitoring sites which recorded data capture less than 75% but greater than 25%. A summary of annualisation is presented Table C.2.

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated using the 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.

No automatic NO₂ monitoring locations within the Borough Council of King's Lynn and West Norfolk required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Wicken Fen	Annualisation Factor Norwich Lakenfields	Annualisation Factor Leicester University	Annualisation Factor Northampton Spring Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
68	0.8854	0.8859	0.8674	0.8443	0.8707	18.8	16.3	
70	0.8135	0.8271	0.8116	0.7652	0.8043	14.6	11.7	
93	0.9489	0.9400	0.9113	0.8845	0.9212	14.6	13.5	
CM4 PM ₁₀	1.096	1.081	1.102	1.169	1.112	13.38	14.9	
OS1 PM ₁₀	1.008	1.043	1.091	1.060	1.050	13.97	14.7	
OS3 PM ₁₀	0.789	0.828	0.872	0.814	0.826	12.22	10.1	
OS1 PM _{2.5}	1.008	1.043	1.091	1.060	1.050	7.53	7.9	
OS3 PM _{2.5}	0.789	0.828	0.872	0.814	0.826	8.09	6.7	

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12				
Bias Factor A	0.65 (0.59 - 0.73)				
Bias Factor B	53% (37% - 69%)				
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	21.8				
Mean CV (Precision)	3.9%				
Automatic Mean ($\mu\text{g}/\text{m}^3$)	14.2				
Data Capture	97%				
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	14 (13 - 16)				

Notes:

A single local bias adjustment factor has been calculated but a national factor has been used bias adjust the 2020 diffusion tube results.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Monitoring Sites Within and Adjacent to the Gaywood Clock AQMA



Figure D.2 – Map of Monitoring Sites Within and Adjacent to the Town Centre AQMA

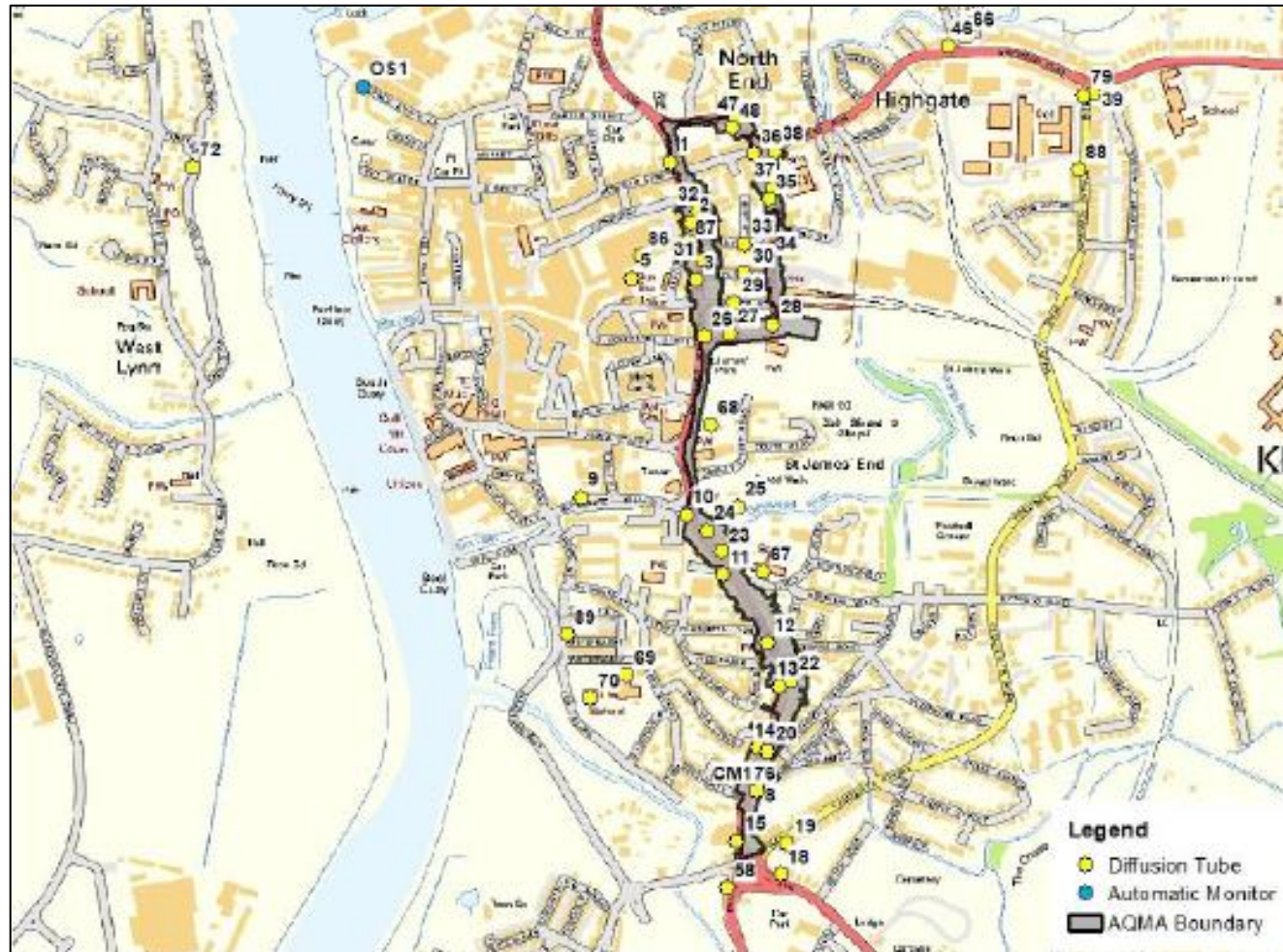


Figure D.3 – Map of Non-Automatic Monitoring Sites South of King's Lynn

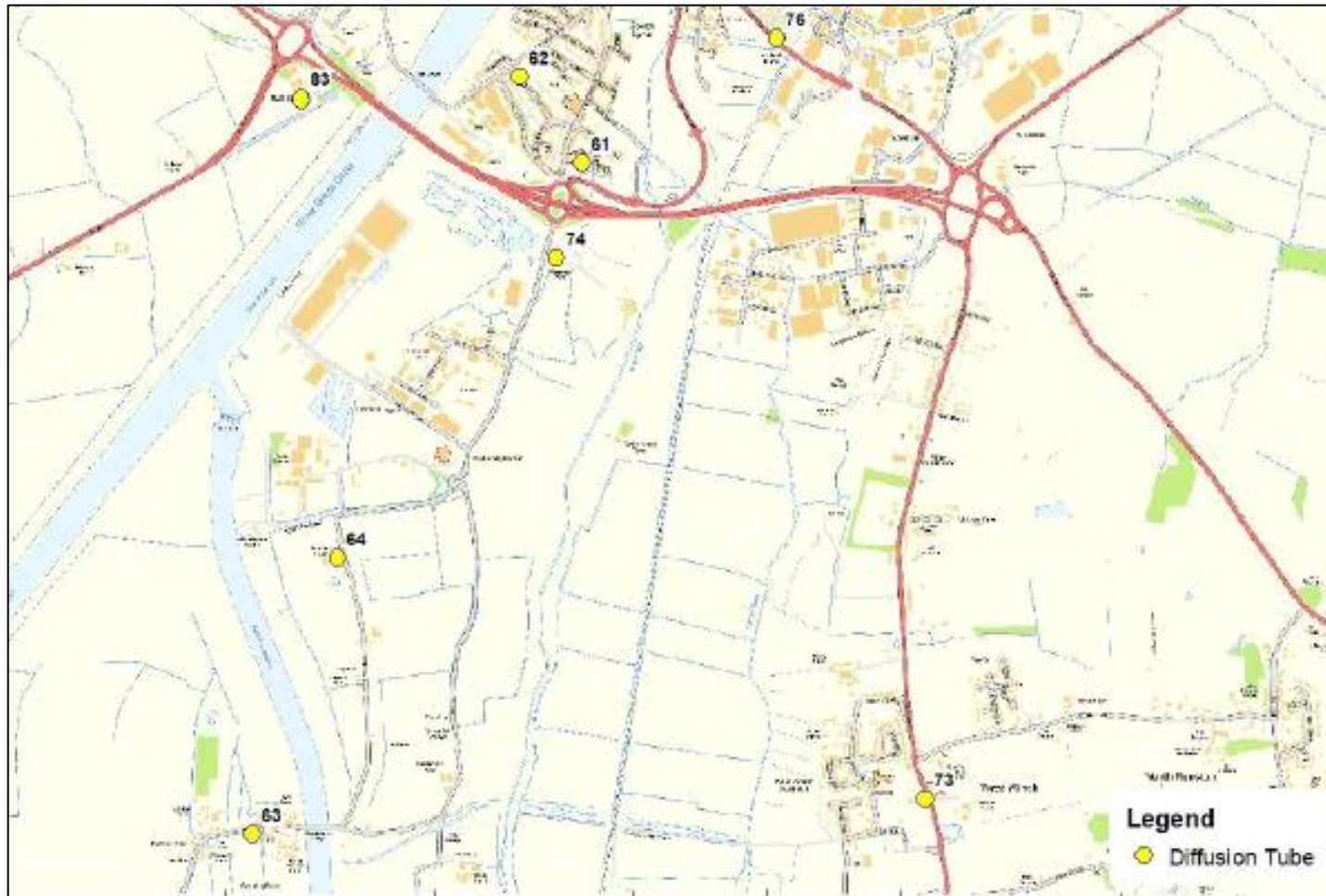


Figure D.4 – Map of Monitoring Sites in North Lynn

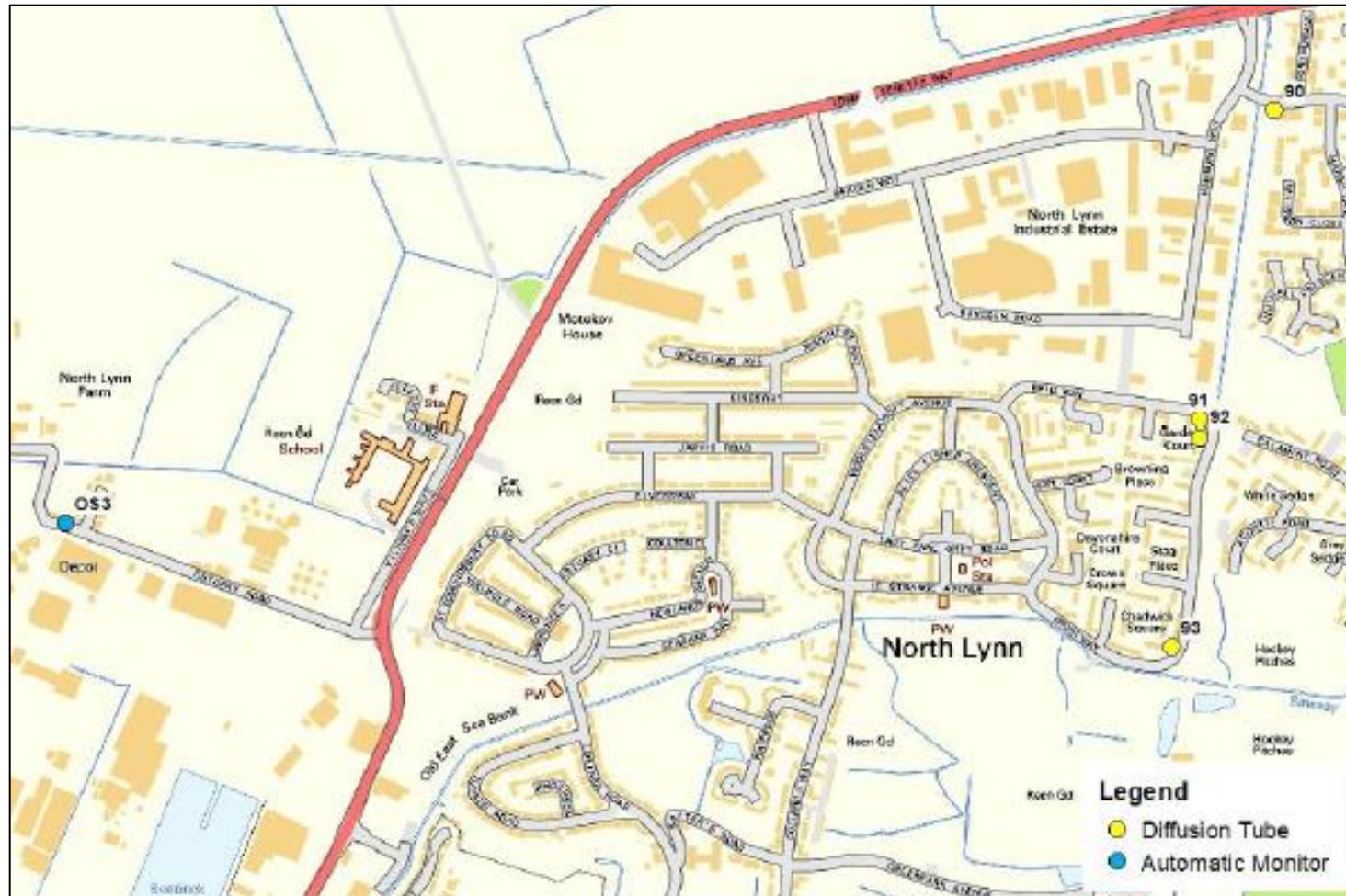
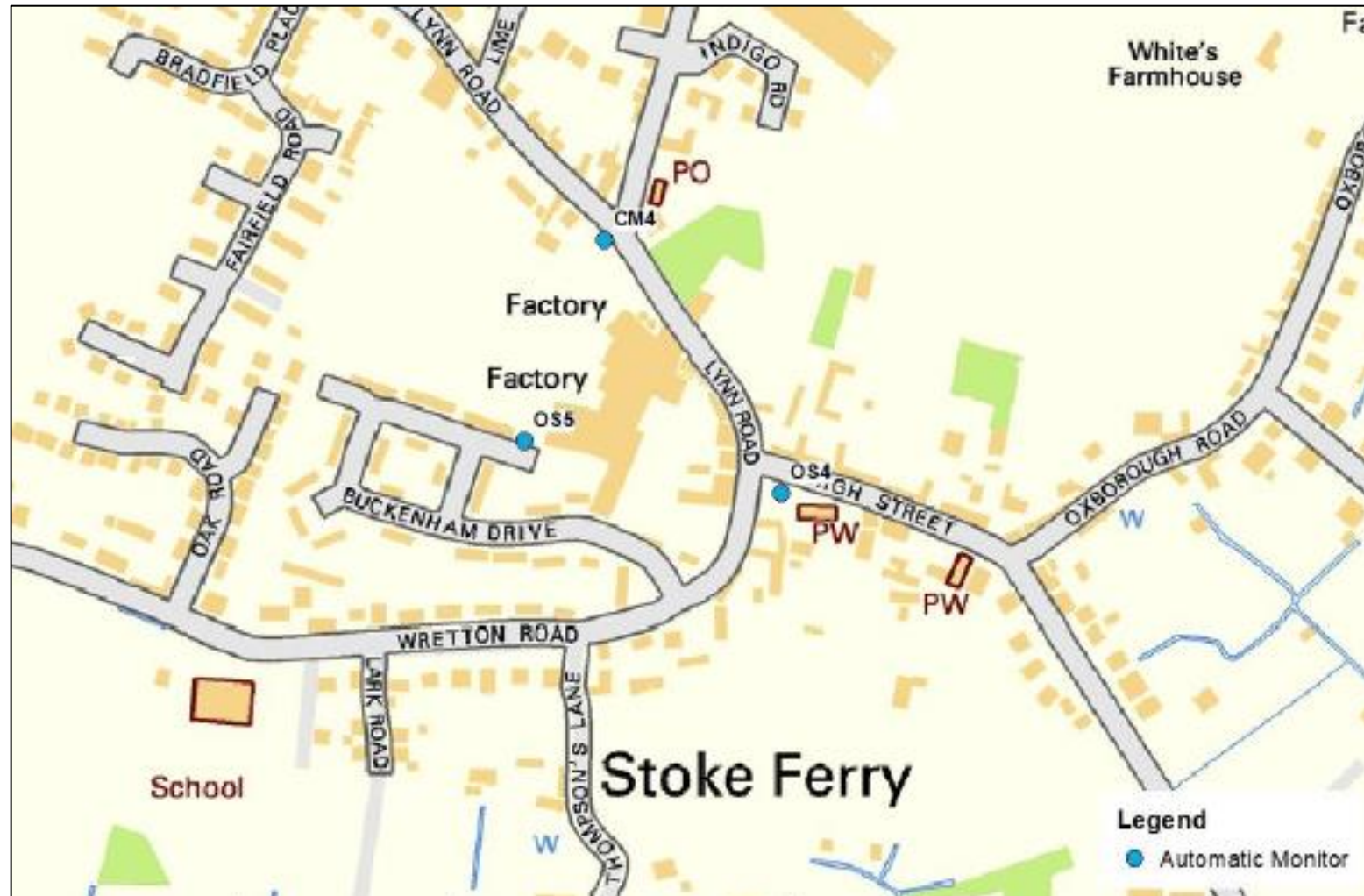


Figure D.5 – Map of Automatic Monitoring Sites in Stoke Ferry



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data⁸ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)⁹ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

⁸ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20 $\mu\text{g}/\text{m}^3$ if expressed relative to annual mean averages. During this period, changes in $\text{PM}_{2.5}$ concentrations were less marked than those of NO_2 . $\text{PM}_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $\text{PM}_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5 $\mu\text{g}/\text{m}^3$ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within the Borough Council of King's Lynn and West Norfolk

The average NO_2 concentrations experienced at roadside diffusion tube monitoring sites within the Town Centre AQMA reduced by 27% in 2020 when compared to 2019 concentrations. This is likely attributed to the reductions in annual mean concentration during the first lockdown, which took place between March and June 2020. 2020 is the first year that all NO_2 monitoring sites within the Town Centre AQMA have complied with the NO_2 annual mean objective since declaration.

Opportunities Presented by COVID-19 upon LAQM within the Borough Council of King's Lynn and West Norfolk

The Council's communications team shared numerous social media posts throughout lockdown, encouraging members of the public to use public transport or active transport where possible.

Challenges and Constraints Imposed by COVID-19 upon LAQM within the Borough Council of King's Lynn and West Norfolk

The Borough Council of King's Lynn and West Norfolk have experienced some challenges relating to accessing diffusion tube locations. Some of the sites are located on premises which were inaccessible during the first lockdown period, such as school grounds.

Consequently, the Council have experienced a reduction in data capture at several sites across the King's Lynn and West Norfolk diffusion tube network in comparison to previous years. Regardless of these impacts data capture remained above 75% at all but three diffusion tube monitoring sites.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Appendix G: Planning Applications

Table G.2 – Most significant planning applications

26 Most significant planning applications			
Planning Reference	Address	Proposal	Response
Various	Various x 7	Dwellings	Proposed developments include a wood burner. Applicants made aware of our advice on burning wood and coal at www.west-norfolk.gov.uk/solid-fuel to minimise potential pollution or nuisance from the solid fuel appliances.
19/02206/F	Commercial Storage And Outbuildings Sedgeford Road Docking Norfolk	Change of use from commercial storage and outbuildings to 6 holiday lodges and studio	Proposed development includes a wood burner. Applicant made aware of our advice on burning wood and coal at www.west-norfolk.gov.uk/solid-fuel to minimise potential pollution or nuisance from the solid fuel appliances.
20/00001/F	Palm Paper Poplar Avenue King's Lynn Norfolk PE34 3AL	Construction and operation of a calander heating facility	AQA submitted. Concluded that emissions from the operation of the facility would not result in a breach of any air quality assessment levels with the additional contribution from the proposed boiler. Process contributions of nitrogen dioxide on human health from the boiler screened out as 'insignificant' at all areas of relevant exposure; with the total impact of nitrogen dioxide emissions from the facility described as 'not significant'.
20/00090/FM	Wretton Farm Farhill Drove Wretton King's Lynn Norfolk PE33 9QF	Demolition of dwelling and development of 4No broiler poultry breeding units (26,400 birds) with ancillary structures including farm office/staff amenity/egg storage building and dwelling	AQA submitted. Development will result in the poultry farm expanding to accommodate more than 40,000 birds so required to operate in accordance with an Environment Agency Permit. As the development is phased, until fully completed, control of emissions will come under the Borough Council of King's Lynn and West Norfolk. Mitigation measures recommended.

20/00068/FM	Walnut Road Walpole St Peter Norfolk	Dwelling	Screened, no objections to the proposed development on air quality grounds. Recommended addition of EV changing points/infrastructure within the development in line with NPPF para. 110 (e).
20/00163/PACU1	King Street King's Lynn Norfolk PE30 1ES	Prior Approval for change of use of offices to 48 residential units	Screened, no additional parking planned. Estimated AADT of 38, not significant in line with EPUK and IAQM Planning for Air Quality Guidance. 48 cycle spaces, close proximity to the town centre, placing it within walking distance, thus encouraging active transport.
FUL/2020/0004	Middleton Aggregates Limited Blackborough End PE32 1SW	Vary the date of extraction and restoration until 2022.	Recommend existing planning conditions re-attached to mitigate potential negative air quality impacts.
20/00181/F	Collins Lane Marham King's Lynn Norfolk PE33 9JR	Retrospective change of use of existing general farm storage barn to use for a biomass boiler	LAQM Biomass Emissions Screening Tool utilised. Stack emission rates calculated from the installation emissions certificate are less than the target values, it is not likely that the national air quality objectives for PM ₁₀ or NO ₂ will be exceeded as a result of use of the biomass boiler.
SCR/2019/0009	Middleton Aggregates Limited Blackborough End King's Lynn Norfolk PE32 1SW	Former Quarry, proposed Inert Waste Recycling Facility with associated access and ancillary infrastructure	AQA submitted. Construction: negligible to low risk of dust soiling impacts and increases in particulate matter concentrations, with mitigation not significant. Operational phase: negligible, both from traffic and dust. Proposed mitigation will reduce potential impacts to an acceptable level.
20/00226/OM	Land N of 26 To 30 Poppyfields Drive Snettisham Norfolk	Outline Application up to 69 homes, creation of a new priority junction, provision of public open space and associated infrastructure	Screened. 144 parking spaces are proposed, with an estimated AADT of 288. This is not deemed a significant change in line with EPUK and IAQM Planning for Air Quality Guidance. Recommended addition of EV changing points/infrastructure within the development in line with NPPF para. 110 (e).
20/00368/F	Windsor Road King's Lynn Norfolk PE30 5PL	Change of use from offices and store to 6 dwellings	No allocated parking, short walk to town. Recommended secure cycle storage. Background concs low

20/00433/OM	Land Between Vong Lane And Church Close Pott Row Norfolk	Outline application for up to 26 dwellings	Screened. AADT for the development is estimated to be 98. This is not deemed a significant change in line with EPUK & IAQM Planning for Air Quality Guidance. Recommended EV changing points/infrastructure within the development in line with NPPF para. 110 (e) and the Borough Council of King's Lynn and West-Norfolk Air Quality Action Plan measure 19.
20/00489/F	Land W of Travel Lodge And SW of The Gatehouse PH Kellard Place King's Lynn Norfolk	Drive-thru cafe/restaurant	AADT calculated to be 852-1042. AQA requested. PM10: assessment showed that the development resulted in negligible impacts on the receptors included, below the annual mean AQS objective. NO2: emissions, 2023 with and the without the proposed development, impact is described as negligible at all modelled relevant receptors. Future implementation of road layout improvements around the Southgates roundabout and London Road, as detailed within the King's Lynn Transport Study, has the potential to reduce congestion and thus improve air quality at this location.
20/00666/RMM	Grimston Road South Wootton Norfolk	Increase from 52 dwellings to 55	Update of earlier AQA due to increase in numbers. No objections on air quality grounds. Recommended EV changing points/infrastructure in line with NPPF para. 110 (e) and measure 19 of the Borough Council's Air Quality Action Plan.
20/00724/FM	Land SE of 60 Queen Mary Road N of Railway Line And S of Parkway Gaywood King's Lynn Norfolk	380 new homes and associated green space, landscaping and infrastructure, together with a new vehicular bridge over railway, including new roads, and infrastructure	AQA submitted. Moderate adverse impact on NO2 concentrations predicted at one receptor, and slight adverse impacts predicted at seven receptors. No exceedances of the respective air quality objectives predicted. Overall effect of the development on NO2 concentrations at receptors within and adjacent to the Gaywood Clock AQMA is considered to be 'not significant'. EV charging points incorporated into the proposed development at 179 plots.
20/00757/FM	Lovell Homes NORA 4 Site Offices And Compound Morston Drift King's Lynn Norfolk PE30 5GA	Construction of 105 dwellings and associated infrastructure and landscaping	Screened. AADT of 456; this is not deemed a significant change in line with EPUK and IAQM Planning for Air Quality guidance. Active transport: cycleways and footpaths will be provided, with improved access to existing footpaths. All dwellings will have gardens to accommodate garden storage units/ sheds to provide secure cycle storage options. Recommended EV changing points/infrastructure within the development in line with NPPF para. 110 (e) and measure 19 of the Borough Councils Air Quality Action Plan.

FUL/2020/0021	Sibelco Minerals & Chemicals Leziate King's Lynn Norfolk PE32 1EH	Extraction of industrial sand and associated works with progressive restoration to wildlife	Environmental Statement. Mitigation through the shielding of the conveyor near to receptors is proposed. This mitigation reduces dust effects at receptors to slightly adverse. Unlikely to result in exceedances of the PM10 air quality objectives.
20/00811/FM	BCKLWN Southend Car Park Seagate Hunstanton Norfolk	32 apartments with 33 parking spaces	Screened. Includes secure cycle storage. Recommended EV changing points/infrastructure within the development in line with NPPF para. 110 (e) and Measure 19 of the Borough Council's Air Quality Action Plan.
20/00706/OM	Land at Lynn Road Hillington Norfolk	Outline Major Application: Proposed residential development	Screened. 36 dwellings and 100 associated parking spaces. This could result in an estimated AADT rate of 200, which is not a significant change in line with EPUK and IAQM Planning for Air Quality Guidance. Recommended EV charging points/infrastructure within the development in line with NPPF para. 110 (e) and Measure 19 of the Borough Council's Air Quality Action Plan.
20/00817/FM	Hunstanton Bus Station St Edmunds Terrace Hunstanton Norfolk	Library, retail unit, public conveniences and 49 apartments, with associated infrastructure	Screened. 52 new parking spaces. Transport Assessment indicates 104 AADT. Recommended EV changing points/infrastructure within the development in line with NPPF para. 110 (e) and Measure 19 of the Borough Council's Air Quality Action Plan.
14/01714/DISC_A	Land East of 11 To 37 Elm High Road Emneth Norfolk	Outline Application for up to 117 dwellings	Construction management and Travel plans submitted to mitigate construction dust and support sustainable transport
20/01166/FM	Hillington Square King's Lynn Norfolk	Demolition of existing residential blocks to provide mixture of new flats with communal space and townhouses, including parking	Proximity to the London Road Air Quality Management Area, an Air Quality Assessment was undertaken. Annual mean NO ₂ concentrations were not predicted to exceed the air quality objective of 40µg/m ³ at any receptor location during the 'With Development' scenario. Recommended EV changing points/infrastructure within the development in line with NPPF para. 110 (e) and Measure 19 of the Borough Council's AQAP.

20/01186/F	26 Railway Road King's Lynn Norfolk	Conversion of existing ground floor shop unit to dwelling	Within AQMA. Recommended that development should be 'designed to minimise public exposure to pollution sources' e.g. by locating habitable rooms away from busy roads. Design should include an alternative means of ventilation in rooms facing Railway Road, to reduce adverse effects on occupiers on days when air quality may be poor.
20/01893/FM	160 Bexwell Road Downham Market Norfolk PE38 9LJ	rection of a new Lidl food store with associated car parking and landscaping	135 car parking spaces, including 2 electric vehicle charging spaces. Transport Assessment, AQA and Travel Plan submitted. Highly unlikely, based on the information submitted, that the proposed development will result in an exceedance of the AQS at nearby receptors.
20/01957/FM	Salters Road King's Lynn Norfolk	Construction of 78 affordable dwellings and associated access, infrastructure	150 new parking spaces are proposed. It is estimated that the development could result in an AADT of 300, which is not deemed a significant increase in line with EPUK and IAQM Planning for Air Quality Guidance. Additionally, 29 EV charging points will be provided on site.
20/01954/RMM	Land NW of South Wootton School Off Edward Benefer Way King's Lynn Norfolk	Reserved Matters Application following outline planning permission 17/01151/OM for the construction of 450 dwellings with associated infrastructure	Screening Level Air Quality Assessment, and a Framework Travel Plan were all submitted within the outline application. Recommended inclusion of EV changing points/infrastructure within the development in line with Measure 19 of the Borough Council's Air Quality Action Plan and NPPF para. 110 (e).

Notes:

During 2020 the Env Quality Team commented on 80 planning applications regarding air quality. The most significant are detailed in the table above.

Appendix H: Electric Vehicle Charging Device Statistics

Table H.3 – Publicly available electric vehicle charging devices in Kings Lynn and West Norfolk by all speeds

	Oct-19	Jan-20	Apr-20	Jul-20	Oct-20
Total devices	28	30	30	30	34

Notes:

'Total devices' represent publicly available charging devices at all speeds. A device can have a number of connectors of varying speeds.

Table H.2 – Publicly available electric vehicle charging rapid devices in Kings Lynn and West Norfolk

	Oct-19	Jan-20	Apr-20	Jul-20	Oct-20
Total devices	4	5	5	5	5

Notes:

'Rapid devices' are those whose fastest connector is rated at 43kW or above. A device can have a number of connectors of varying speeds.

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 Highways England
EU	European Union
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
TEOM	Tapered Element Oscillating Microbalance

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Defra Annual Status Report Appraisal Report. September 2020.
- Borough Council of King's Lynn and West Norfolk Progress Report. August 2014.
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