

Leicester City Council

2021 Air Quality Annual Status Report (ASR)



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

September 2021

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Executive Summary: Air Quality in Our Area

Air Quality in Leicester City Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, 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.

Brief summary of key air quality actions and issues:

- NO₂ pollution levels significantly declined within the city
- Annual average NO₂ levels did not exceed any of the air quality targets for the first time in over 20 years since air quality monitoring started in the city
- There were no hourly exceedances of NO₂ levels
- PM₁₀ levels did not exceed the annual average or 24-hour average limits
- PM_{2.5} levels for urban background continue to be well below the annual average of 25µg/m³
- Road traffic is the main source of pollution in the city, passenger diesel vehicles contributing the most
- No new sources of pollution were identified in 2020
- Leicester is developing a new (Local) Leicester Transport Plan which will be adopted in 2022
- COVID-19 national and local lockdowns contributed to the reduction of traffic on the roads
- The current AQMA was declared in year 2000, it includes city centre, inner ring road, radials and sections of outer ring road. The map of AQMA can be found at <https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-sustainability/air-quality/>

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

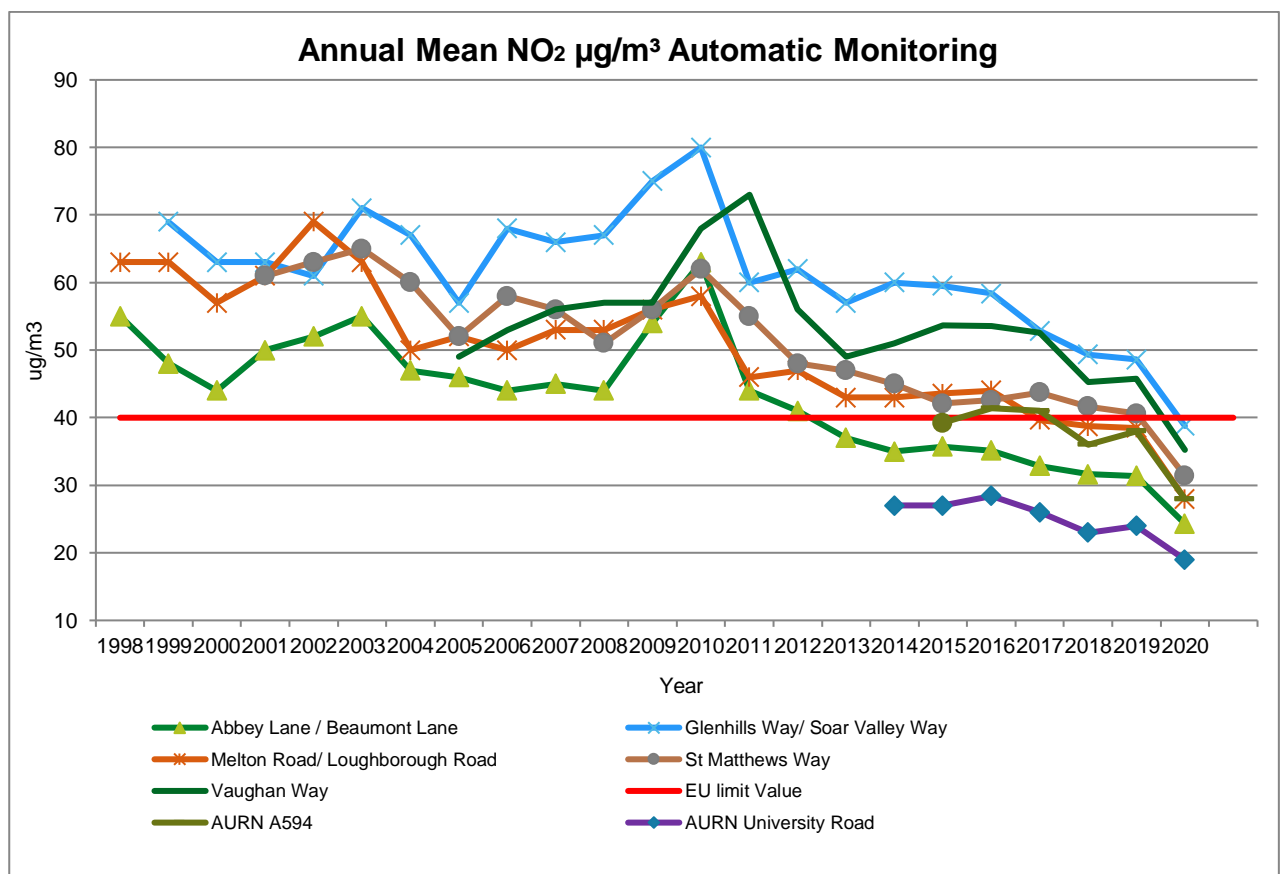
- Leicester City Council also works closely with its partners including local public health bodies, Public Health England and, through the Air Quality Forum, with Leicestershire County & District Councils to identify and deliver projects and initiatives to improve air quality.

Leicester's Air Quality Management Area

Leicester's Air Quality Management Area includes five, City Council owned automatic air quality monitoring stations located at strategic points on the main road network: Abbey Lane, Glenhills Way, Melton Road, St Matthews's Way and Vaughan Way. The NO₂ results since 1998 are shown in the graph below. NO₂ Pollution levels have fallen consistently since 2010/11.

Leicester also introduced a network of forty-nine diffusion tubes to monitor NO₂ levels around the city, predominantly within the AQMA, but also beyond it. The aim was to generate additional data needed for validation of air quality models carried out as part of preparation of Business Case and other work carried out for Joint Air Quality Unit to bring levels of NO₂ in shortest possible time. The diffusion tube network will continue into 2022 to monitor the progress pollution levels, and beyond if required.

Leicester City Council is part of an Air Quality Forum for Leicester and Leicestershire where development within the city and county are presented, discussed and knowledge exchanged. Environment Agency, Public Health England, Highways England and Freight Association representatives also attend forum meetings.



The map of the Air Quality Management Area and locations of the stations can be found at the following link: <https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-waste/air-quality>.

Secretary of State Direction on Air Quality

The Secretary of State for the Environment has “Directed” Leicester City Council to produce a Clean Air Plan bringing compliance with EU NO₂ objectives in the shortest possible time. Covering the entire administrative area, the Direction also makes clear air quality exceedances must not be transferred to areas outside the council’s administrative boundary. In 2019 the Joint Air Quality Unit were provided a draft Outline Business Case to partly fulfil this obligation. This business case illustrated, through a number of traffic and air quality models, that Leicester would be fully compliant for NO₂ in 2023 if the planned programme of interventions were followed. It has been agreed with JAQU that there are no interventions which can be made to bring the compliance earlier than 2023 and a draft plan requesting some small interventions was submitted to ministers in spring 2021.

Workplace Parking Levy

In May 2019 the City Mayor was re-elected to office on the back of a strong Manifesto which included a number of ambitious transport commitments. To help fund these is the commitment to “Consult on a fair workplace parking levy to be used exclusively to fund a dramatic improvement to the city’s transport system”. In December the City Mayor challenged the Transport Strategy Team to get one up and running by the end of 2022, to extend the transport improvement works currently being delivered by the Transforming Cities Fund.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further. 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 Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

For the Leicester City Council (LCC) improvement of air quality is at the forefront of its actions. Air Quality Action Plan was adopted by the council in November 2015 and its aim is tackling the problem of traffic emissions. (<https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-waste/air-quality>). Once the Secretary of State signs off the Plan for which Leicester is “Directed”, this will form the basis for a new AQAP in 2022.

Leicester City Council also works closely with many partners including local public health bodies, Public Health England and, through the Air Quality Forum, with Leicestershire County & District Councils to identify and deliver projects and initiatives to improve air quality.

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

Recent initiatives and actions are summarised below:

A. Reducing Transport Emissions

Clean Air Zone for Buses Agreement – the agreement which was signed in 2018 by major bus companies came into force in January 2021. It aims to upgrade the city bus fleet to Euro VI standard vehicles or above by January 2021. As part of this agreement 211 buses will be retrofitted by mid- 2021 using five separate Clean / Green Bus Technology Fund grants.

E-Bike Pool - Green Bike Pool Initiative has been very successful, providing 6 electric pool bikes to members of LCC staff. The e-bikes have been used extensively by members of Council staff. They have been based at the City Hall Bike Park managed by the LCC staff.

E-Bike Salary Sacrifice Initiative – In July 2018, the Cycling & Walking Team launched the Council’s second cycle salary sacrifice scheme, enabling a wider range of bikes, including e-bikes, to be purchased from local retailers. 41 staff have taken up this opportunity to date. As indicated by the DfT’s own “Propensity to Cycle Tool”, e-bikes have the potential to significantly reduce car-based commuting and offer additional health benefits in a compact city like Leicester.

Santander Cycles Leicester – electric bike hire scheme introduced in 2020/21 open to the citizens of Leicester will eventually see 500 electric bikes available to hire from 50 locations across Leicester city centre. This will make Santander Cycles Leicester the largest docked e-bike hire scheme in the UK.

Electric Vehicle Uptake –To encourage the uptake of vehicles the Transport Strategy Team have secured the following funding to install new electric vehicle charging points in 2021.

- £500,000 from ERDF LLCTA for publicly available fast and rapid chargers
- £620,000 from the Office for Low Emission Vehicles (OLEV) / LCC for new dedicated taxi charging infrastructure
- £123,000 from OLEV / LCC for an On-street Residential Charger trail

B. Promoting Sustainable Transport

Connecting Leicester – an ongoing programme to create and provide a connected, safe and family friendly city centre. Continuing to evolve and develop the Connecting Leicester programme is vital for ensuring that Leicester is a successful city that will experience prolonged growth. The programme will see further transformation of Leicester into a city where every citizen feels like there is a sustainable way of making a journey within the city. At the heart of this ambition is a plan to consult on a workplace parking levy, as a measure to tackle problems associated with traffic congestion and air quality.

The priorities of Connecting Leicester are:

- Removing barriers that make it difficult for people to move from one area to another
- Making the city an attractive destination for shoppers, visitors, businesses and investors as well as a great place to live

- Connecting different parts of the city centre and reducing the dominance of roads to help create an attractive and pedestrian-friendly environment
- Helping businesses to flourish and to attract new visitors to what we know is an interesting and exciting place.

As part of the wider Connecting Leicester programme, pedestrianization of the city centre to north of the Clock Tower has been taking place in 2020. The aim was to improve access for buses, taxis, cyclists and pedestrians, and support and encourage regeneration in the area.

Key features of the plan include:

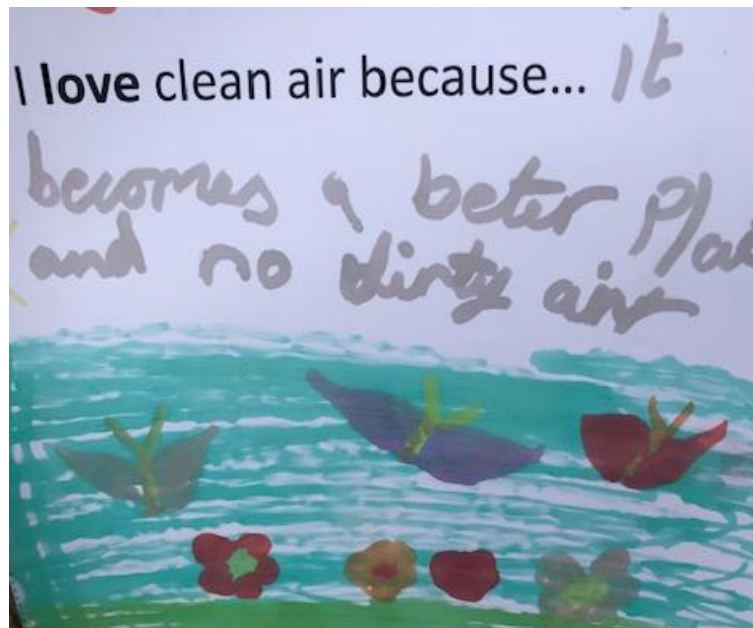
- Belgrave Gate North cycle lanes development
- Lancaster Road cycling path
- Improvements to traffic flow and pedestrian safety on Mansfield Street.
- A better pedestrian link between the Haymarket and St Margaret's bus stations.
- Pedestrianisation of part of Church Gate, Haymarket and part of Belgrave Gate.
- Grey Friars pedestrianisation
- An improved environment to create an area where people feel safe and want to visit.
- A new taxi rank on Belgrave Gate near the theatre steps.
- London Rd red route
- High quality surfacing to complement the existing city centre pedestrian zone.

Photograph 1: City Centre – Grey Friars pedestrianisation



National Clean Air Day – in 2020 the event took place online on the 8th of October, five schools across the city participated in support of National Clean Air Day with various online activities around clean air.

Photograph 2: National Clean Air Day children’s art



C. Improving Traffic Management

20 mph zones – the programme in residential areas has continued, particularly around schools. Seventy-three schemes have been completed so far.

Anti-idling campaign – “Switch your engine for cleaner air”, seven campaigns rolled out across schools in the City, potential whole city roll-out in 2021.

Photograph 3: Anti -Idling campaign



‘Sting’ – an ongoing programme of action days to tackle school-run drivers who drive or park dangerously, discard litter or leave their engines running while stationary. Leicester City Council and Leicestershire Police are carrying out the programme of visits to schools across the city, which have highlighted ongoing problems with motorists behaving inconsiderately on roads outside the school gates. So far seventy-three “Sting” action days have been organised. During action days twenty-seven Penalty Charge Notices, ten Fixed Penalty Notices and four verbal warnings by the Police were given.

D. Enhancing Planning and the Environment

“Leicester Local Plan” - a new plan is being developed for adoption. Improving air quality is a core deliverable and will be a consistent theme throughout the Plan. Consultation on the document has been taking place in Spring 2021 and will conclude in Summer 2021

“ Climate Emergency Strategy and Action Plan 2020 to 2023 ” – has been produced following extensive public consultation and engagement. The comments and ideas from the public and extensive research by us has contributed to new strategy and action plan to address climate emergency in Leicester. The strategy provides some high-level detail explaining what actions we need to take and presents a three-year strategy for addressing the emergency, along with a three-year action plan
<https://www.leicester.gov.uk/media/kuuojdxw/leicester-climate-emergency-strategy-2020-2023-final-version.pdf>

E. Secure funding from Air Quality Grant to improve air quality

Air Quality Grant 2018/19 - funding was secured to carry out a project to monitor PM_{2.5} levels with portable monitors – Zephyrs™ from EarthSense. The project involved modelling of pollution levels, preparing the source apportionment, delivering information on woodburning to public through a smart device application, campaigns and leaflets.

Air Quality Grant 2019/20 funding was awarded to identify the transboundary PM_{2.5} pollution and the sources of it i.e. regional, national and international. The project is still ongoing and will conclude mid-2021.

Air Quality Grant 2020/21 – successful bid secured funding to determine by how much a traffic intervention will reduce pollution levels both for PM_{2.5} and NO₂. It will address the issue of discrepancy between near real time modelling and in situ monitoring. It will allow to identify what works in order to create a model with the effect of reducing air pollution that can be applied elsewhere in the city

Transport Recovery Plan

In response to Covid-19, Leicester City Council introduced 11mile (17.6km) of ‘Key Worker Corridor’ pop up lanes in 2020. Target routes were identified as part of Leicester Cycling and Walking Investment Plan and priority routes identified by recipients of Leicester Bike Aid cycles – A project that distributed over 500 free bikes and fixed over 750 cycles to support essential workers delivering health, care and other frontline operational roles during the public health crisis’.

Conclusions and Priorities

Summary:

The air quality monitoring data obtained in 2020 shows a sharp decline of NO₂ levels across the whole city, it is anticipated that the national and local lockdowns first introduced in late March due to COVID-19 pandemic contributed significantly to the reduction of traffic and in turn to improvement in air quality.

For the first time since the air quality monitoring began in Leicester there were no exceedances of NO₂ levels across the city or within the Air Quality management Area. This trend was observed across the whole country.

Monitoring:

Diffusion Tubes: The air quality data obtained from a passive network of forty-nine diffusion tubes monitoring NO₂ levels only identified no annual exceedances of NO₂ levels, all of those located within the Air Quality Management Area. The network will continue to monitor NO₂ levels in 2021 and 2022 subject to revision for further years and assessment will be carried out on the trends.

Automatic Monitoring Stations: None of the automatic air quality stations within our Air Quality Management Area have recorded annual mean levels for NO₂ over the annual limit value of 40µg/m³. The downward trend observed in recent years coupled with the National Lockdown culminated in the compliance at all sites.

A review of the monitoring network initiated in 2020 will result in the relocation of the air quality station located at Glenhills Way, the move is necessary due to the being less than 25 meters from a major junction. New site is being investigated and the move will conclude towards end of 2021.

Portable Air Quality Monitors: Portable air quality monitors called Zephyrs have been deployed in March 2020 mainly to monitor PM_{2.5} levels, but also monitor NO₂, PM₁₀ and Ozone. Although these type monitors are not classified as a reference device, they will supply a very important data on the sources of PM_{2.5} within the city and the prevalence of the wood burning as well. Early results has persuaded the City Mayor to invest in further ten monitors, which were deployed in late 2020 /early 2021. Depending on DEFRA guidance on these devices, it is hoped these will replace diffusion tubes as they produce near real time information on a number of pollutants.

Air Quality Action Plan:

Several air quality related reports have been delivered or worked upon in 2020 including:

- Outline / draft Full Business Case for the Secretary of State Air Quality Direction
- Outline of a new Local Transport Plan for Leicester
- Diffusion Tube Review
- Portable Monitor Review

Results of the first three reports in particular have been used to provide information and evidence for Leicester Local NO₂ Plan which is being submitted to ministers in Spring 2021. The Leicester Local NO₂ Plan will form the basis on which Leicester will be introducing air quality benefits in the future. Although the ASR Appraisal for 2018 recommended a new Air Quality Action Plan in 2020, it has been agreed with LAQMA that the update of the AQAP will take place after the Leicester Local NO₂ Plan has been agreed by the Secretary of State, to avoid repeating any of the work. This will also incorporate all of the work already done preparing the plan.

Local Engagement and How to get Involved

Decision Makers:

Our Councillors and Officers sit on many business-related boards and forums to discuss transport matters and give latest briefings. These include:

- the Leicester Business Improvement District
- Leicester & Leicestershire Local Enterprise Partnership
- GoTravel Solutions business forum on transport
- City Centre Business Group
- Chamber of Commerce

Public:

Air quality has a high public profile in Leicester with councillor ward meetings often having a slot on the agenda.

We work with many action groups such as Friends of the Earth, UK100, Healthier Air for Leicester Campaign and Extinction Rebellion. However, throughout 2020 we have seen a shift away from discussion on air quality, due to the improvements we have made through the Air Quality Action Plan and a stronger commitment to carbon savings.

The Council hosts a number of transport citizen groups such as: Public Transport User Group and Bicycle User Group to help inform our future air quality and transport strategies.

We consult on all transport and air quality schemes giving citizens the chance to have their input.

The following websites provide information on various types of sustainable transport and also contain information about air quality:

Leicester 's Air Quality Action Plan:

<https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-waste/air-quality>

Leicester City Public Health:

<http://www.leicester.gov.uk/health-and-social-care/public-health> Leicester City Environmental Policy:
<https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-waste/environmental-policy/>

Planning sustainable travel journeys:

<http://www.choosehowyoumove.co.uk/>

Leicester Cycle City Action Plan:

<https://www.leicester.gov.uk/media/179027/leicester-cycle-city-action-plan.pdf>

Consultation Hub:

<https://consultations.leicester.gov.uk/>

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1 Local Air Quality Management

This report provides an overview of air quality in Leicester City Council 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 Leicester City Council to improve air quality and any progress that has been made. The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

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
AQMA Leicester City	Declared 2000 Amended 2007	NO ₂ , annual mean	Area encompassing large section of the City Centre and along a number of radial roads and sections of the ring road	NO	Glenhills Way 51.4 µg/m ³ , St Matthews Way 52.1 µg/m ³	No exceedance, Glenhills Way 30.9 µg/m ³ ,	“Healthier Air for Leicester” Leicester’s Air Quality Action Plan (2015-2026), 2015	http://www.leicester.gov.uk/media/180653/air-quality-action-plan.pdf

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

- Leicester City Council confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box).
- Leicester City Council confirm that all current AQAPs have been submitted to Defra (confirm by selecting in box).

2.2 Progress and Impact of Measures to address Air Quality in Leicester City Council

Defra's appraisal of last year's ASR concluded

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports.

1. The Council have provided a very detailed ASR that covers the ongoing hard work that is being completed in terms of measure implementation across the City to improve air quality conditions.
2. The standard ASR template has been used, but there are a few errors in terms of presentation that should be updated when completing the 2021 ASR.
3. In Table 2.1 the maximum recorded NO₂ annual mean within the AQMA for the assessment year should be detailed, this does not need to be the concentration at the same location for the declaration year.
 - Only the highest concentration sites included in Table 2.1
4. Within Table A.4 and A.6 the number of times a concentration exceeds the 1-hour or 24-hour mean value should be inputted rather than 0 and the total shown in brackets. Also, the value presented should only be in bold if the value is in exceedance of the objective limit, e.g. 37 for PM10 24-hour mean concentrations
 - A.4 and A.6 contain appropriate values
5. The bias adjustment factor used to adjust the diffusion tube raw annual means should be detailed within Table B.1. In addition, a footnote should be added to define "I/S" that is used within the table, it is assumed that this equates to a missing tube, but this is not clearly defined.
 - This issue has been addressed in the 2021 ASR
6. For the description of monitoring sites, the inlet heights for the AURN monitoring sites differs to the information document on UK-Air
 - Information was updated using UK-Air specification
7. In addition, all of the diffusion tube locations are classed as being at locations of relevant exposure. In terms of an annual mean objective this would equate to the monitor being placed on the façade of a residential (or equivalent) property. If there is a distance between the monitoring locations and the closest relevant exposure, these should be updated within the 2021 ASR.
 - This issue has been addressed in the 2021 ASR

8. The methodology that has been followed to derive the bias adjustment factor used should be detailed, and this should be completed in line with TG (16) guidance. A representative factor should be used to adjust the diffusion tube monitoring locations, this can be discussed with the LAQM Helpdesk when completing the 2021 ASR
 - All the required information has been included in the Table C1 and Table C.3
9. QA/QC procedures for both automatic monitoring and passive monitoring should be included within the 2021 ASR. This should include the procedures followed for both sets of monitoring, the laboratory and types of diffusion tubes used, and the results from any relevant proficiency schemes -- this error has been addressed in the 2021 ASR
10. The maps provided within the ASR are clear with all monitoring sites labelled as referenced in the results tables. Within the 2021 ASR the indicative monitoring sites established within 2020 should be documented to ascertain where PM_{2.5} measurements have been made across the City
 - PM_{2.5} monitoring maps have been included in 2021 ASR
11. Annualisation has been completed for three diffusion tube sites where the 2019 data capture was 75%. Annualisation only needs to be completed at monitoring sites that have a data capture of less than 75% for the calendar year
 - This issue has been addressed in the 2021 ASR
12. The extensive monitoring completed across the City in 2019 recorded very few exceedances of the annual mean NO objective, therefore it is recommended that a review of the current AQMA designation be completed. It is acknowledged that the Council is in the process of developing a Local NO₂ Plan following the Ministerial Direction received and therefore is extremely busy, however with the data available from this study it would be very beneficial to complete this study at the present time. Following the completion of this assessment, if a revised AQAP is required this can be completed in line with the Local NO₂ Plan to ensure that consistency of approach is established between the two initiatives
 - In depth air quality modelling has been carried out in 2019 /2020 as part of the development of NO₂ Local Plan resulting in an in-depth review of the Air Quality management Area. Several different scenarios were modelled as part of the work to determine the closest year of compliance for the NO₂. Further to the correspondence with LAQM it has been agreed that the results of the NO₂ Local Plan air quality modelling analysis can be regarded as a review of the AQMA. Results in the form of the report have been submitted as a separate document along the 2012 ASR.

Leicester City Council 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. 84 measures are included within Table 2.2, with the type of measure and the progress Leicester City Council 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 “Healthier Air for Leicester” Leicester’s Air Quality Action Plan (2015-2026).

Key completed measures are:

- “Leicester Clean Air Zone for Buses” introduced in January 2021 based on Euro VI standard for buses
- **Completed work of Connecting Leicester:**
 - Belgrave Gate North cycle lanes development
 - Lancaster Road cycling path
 - Improvements to traffic flow and pedestrian safety on Mansfield Street.
 - A better pedestrian link between the Haymarket and St Margaret’s bus stations.
 - Pedestrianisation of part of Church Gate, Haymarket and part of Belgrave Gate.
 - Grey Friars pedestrianisation An improved environment to create an area where people feel safe and want to visit.
 - A new taxi rank on Belgrave Gate near the theatre steps.
 - London Road red route
 - High quality surfacing to complement the existing city centre pedestrian zone at the Clock Tower
- 20mph zones - at the end of 2020 we had a total of seventy -three schemes
- Secretary of State Direction on Air Quality – Leicester Local NO2 Plan is being prepared
- Thirty-Three electric vehicles were bought for the council fleet in total: 33 electric cars and a moped
- Several programmes of walking and cycling initiatives have been delivered, including “Wheels to Work” and cycle training for children.
- Three new bus lane enforcement cameras were introduced
- Smart cities – platform for sharing data introduced for internal use - Air quality data has been uploaded to the smart platform for the ease of use by the public

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

- To deliver the following Transforming Cities interventions:
 - Introduce 13 electric buses to the Park & Ride and Hospital Hopper Services

- Complete the roll out of the Santander bikeshare scheme with 500 e-bike available to the public at the following locations:
 - Exploration Drive - The Dock
 - Belgrave Road Roundabout
 - Dysart Way
 - Wharf St North
 - Malabar Rd
 - Charles Street
 - Charles Street - City Hall
 - Peacock Lane
 - Gallowtree Gate
 - Rutland Street - LCB Depot
 - The Magazine
 - Sparkenhoe Street - Health Centre
 - Bonners Lane
 - Briton Street
 - Western Boulevard - Liberty Statue
 - Leicester Railway Station
 - Lancaster Rd - Fire Station
 - Upperton Road, Great Central Way
- To continue delivering the programme of Connecting Leicester
 - Clock Tower and Church Gate street improvements – project will pedestrianise an area of the city centre to north of the Clock Tower. It will improve access for buses, taxis, cyclists and pedestrians, and support and encourage regeneration in the area:
 - **Grey Friars pedestrianisation**
 - Pop up landscaping being provided
 - **London Road red route**
 - **Clock Tower**

- Pedestrian area
- **Church Gate/Haymarket Pedestrianisation**
 - Pedestrian area
- **Market Place South/Pocklington's Walk/Horsefair Street**
 - Pedestrianisation, cycle lanes work will be completed in September 2021.

Abbey Park Road

Cycle lanes

- To continue to deliver our programme of Active Travel including:
 - Ride Leicester Festival
 - 8000 participants annually on led rides
 - 19 led walks
 - 33 e-bike users in “Wheels to Work” scheme and cycle training for children and adults
- To work with the Office for Zero Emission Vehicles (OZEV) to help introduce low emission taxis to Leicester
- To continue to bring electric vehicles and bikes into the city council’s vehicle fleet to expand the fleet
- To deliver Air Quality Grant Project 2018/19 on PM_{2.5}
- To deliver Air Quality Grant Project 2019/20 on transboundary PM_{2.5} sources
- To undertake an Anti-Idling campaign concentrated around transport in school areas
- To continue to improve the city’s traffic management system and address “pinch points” on the highway network
- To deliver further 20 mph Zones in residential areas and particularly around schools
- To deliver Active Travel Fund in 2021 of 4 /5 key worker corridors and 3 Low Traffic Neighbourhoods on experimental basis
- To ensure air quality considerations are embedded in Leicester’s new Local Plan
- Smart cities – to work with partners to deliver a smart system and smart data within the planning and transport arena, delivering service improvements, efficiencies, and air quality benefits as a result
- Submit a Zero Emission Bus Regional Area (ZEBRA) fast track bid to Department for Transport

- Formal consultation of a new Leicester Transport Plan
- Formal consultation on the introduction of a Workplace Parking Levy

Leicester City Council’s priorities for the coming year are:

- To progress a new Leicester (Local) Transport Plan
- To continue deliver the transforming cities funded programme of interventions
- co-ordinated approach led by the city council but supported by many key stakeholders including academia, other authorities, government departments, private companies and the general public to improve air quality in Leicester
- To work closely with Joint Air Quality Unit to meet the Secretary of State’s Direction
- To work on delivering interventions in the Climate Emergency Action Plan
- To continue to lobby and work with Government to introduce national measures to reduce polluting emissions from diesel vehicles,
- To work with other local authorities and agencies
- To be pro-active in our response to the Government Air Quality Plan for Nitrogen Dioxide (NO₂) consultation 2018 and any subsequent guidance or mandates
- To work with the Office for Zero Emission Vehicles (OZEV) to help introduce low emission taxis to Leicester
- To continue to bring electric vehicles and bikes into the city council’s vehicle fleet
- To form an effective partnership with bus operators – exploiting the full potential of the Bus Services Act 2017 to improve the quality and accessibility of bus services, promote modal shift and reduce harmful transport emissions
- To continue the Connecting Leicester programme and make our city more accessible to sustainable modes of transport such as walking and cycling
- To continue to deliver our programme of walking and cycling initiatives including the Ride Leicester Festival, led rides, led walks, “Wheels to Work” and cycle training for children and adults
- To learn form best practice and examples of schemes introduced successfully in other cities
- To continue Anti-Idling campaigns
- To keep introducing bus priority schemes such as bus gate cameras

- To continue to improve the city's traffic management system and address "pinch points" on the highway network
- To continue to deliver our programme of introducing 20 mph Zones in residential areas and particularly around schools
- To complete retrofitting of buses, so the whole bus fleet will be EURO VI
- To introduce electric vehicles into the bus fleet in Leicester
- To deliver a Full Business Case and have it fully approved
- To continue developing monitoring network, enhancing it with additional pollution monitors such as diffusion tubes and portable air quality monitors, to expand the monitoring network with further portable air quality monitors
- To ensure air quality considerations are embedded in Leicester's new Local Plan which is to be adopted in 2021
- Smart cities - we will work with partners, universities to realise the full potential of smart systems and smart data within the planning and transport arena, delivering service improvements, efficiencies and air quality benefits as a result

The principal challenges and barriers to implementation that Leicester City Council anticipates facing are:

- Post COVID-19 financial pressures on national and local government.
- Uncertainty generated by COVID-19 pandemic in terms of transport recovery and new ways of working.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance Local City Council, anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Air Quality management Area in Leicester.

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	Meynell's Gorse Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	1995	1997	Leicester City Council and Leicestershire County Council	LCC County Council and Department for Transport	NO	Partially funded	>£1 million	Operational	<0.1%	57,804	Implemented, Electric Buses introduced	Passenger Journeys, big decrease due to lockdown
2	Enderby Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	2005	2009	Leicester City Council and Leicestershire County Council	LTP (Local Transport Plan), direct funding from LCC and County Council	No	Partially funded	> £1million	Operational	<0.1%	75,677	Implemented, Electric Buses introduced	Passenger Journeys, big decrease due to pandemic and lockdown
3	Birstall Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	2009	2011	Leicester City Council and Leicestershire County Council	LTP, direct funding from LCC and County Council	No	Partially funded	>£1million	Operational	<0.1%	43,680.4	Implemented, Electric Buses introduced	Passenger Journeys, big decrease due to lockdown
4	Choose How You Move Car Share	Alternatives to private vehicle use	Car & lift sharing schemes	2007	Ongoing	Leicester City Council and Leicestershire County Council	Access Fund	NO	Partially funded	>£1million	Operational	<0.1%	9,052 total members	9,132 registered since 2007	Website Liftshare.com Decrease in membership due to pandemic and lockdown
5	Alternatives to private vehicle use	Car Clubs	Car & lift sharing schemes	2015	Lack of access to electric charge points in some residential areas, currently being addressed by an electric vehicle charging point trial.	Leicester City Council and Leicestershire County Council	LCC funds	No	Partial Funding	< £30,000.00	Ongoing	<0.1%	Two Car Clubs	Several companies have been approached regarding establishing a city-wide car club in Leicester. Negotiations are still ongoing.	Lack of access to electric charge points in some residential areas, currently being addressed by an electric vehicle charging point trial
6	A2 installations	Environmental Permits	Introduction/increase of environment charges through permit systems and economic instruments	2019	2021	Leicester City Council and Leicestershire County Council	N/A	NO	N/A	N/A	Ongoing	<0.1%	2 permits	£3056.00 fees	2020/21
7	Options and pilot schemes to improve the efficiency in the city	Freight and Delivery Management	Delivery and Service plans	2016	2017	Leicester City Council	Joint Air Quality Unit	NO	Fully funded	£30,000.00	Terminated	<0.1%	Delivery of the successful scheme	Included in AQAP as action to be delivered by 2017	Contractual issues related to insurance risk prevented the project going ahead. JAQU funding source was briefed and funding re-allocated
8	Questionnaire	Freight and Delivery Management	Freight Consolidation Centre	2016	2017	Leicester City Council	LCC funds	NO	Fully funded	N/A	Delivered	<0.01%	High response	Preparation of questions	The Freight Study (2017) looked at the potential role of a Freight Consolidation Centre for Leicester. It was recommended that Leicester City Council do not contribute financially. The proposal would be suitable for the private sector to take forward

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9	Questionnaire	Freight and Delivery Management	Freight Partnerships for city centre deliveries	2016	2018	Leicester City Council	LCC funded	NO	Fully funded	N/A	Terminated	<0.01%	High response	Preparation of questions	A questionnaire has been drafted and we are currently awaiting the cost for the delivery of a questionnaire for the freight industry. Comments have been noted and used to revise the draft. This was circulated to the FQP for comment. The work was planned to be included as part of an EcoStars scheme. The EcoStars scheme will now not be progressed due to contractual issues.
10	Freight Quality Partnership	Freight and Delivery Management	Freight Partnerships for city centre deliveries	2000	Ongoing	Leicester City Council	LTP/LCC funded	NO	N/A		Ongoing	< 0.1%	Leicester freight businesses engaged	Active forum, meetings	Comments were sought from the FQP on the Freight Study and possible design of the questionnaire. Comments received were used to help shape the design of the Freight Questionnaire
11	Pedestrian Preference zone	Freight and Delivery Management	Quiet & out of hours delivery	2006	2007	Leicester City Council	LTP	NO	Partial Funding	>£1 million	Delivered	<0.1%	Scheme fully delivered	Scheme completed	All deliveries in this zone have to be done before 11, successful scheme
12	Cleige- route map for lorries	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	2012	2013	Leicester City Council	Connecting Leicester	NO	Fully Funded	<£30,000.00	Delivered	< 0.1%	Map delivered	Map used by drivers	Completed, map used by drivers
13	AQ considerations will be imbedded in the new Local Plan and Land use planning	Policy Guidance and Development	Air Quality Planning and Policy Guidance	2016	2020	Leicester City Council	Horizon 2020	NO	N/A	N/A	Delivered	<0.1 %	AQ imbedded in the documents	Preliminary work carried out	Currently ongoing
14	AQAP- plan of measures between 2015-2026	Policy Guidance and Development	Low Emissions Strategy/Clean Air Zone	2015	2026	Leicester City Council	LCC funded	NO	Partially Funded	N/A	Implemented	<0.1%	Implementation of the LES	AQAP adopted in 2015	Various schemes to be implemented to reduce pollution, the concept of Low Emission Zone in 2017 was replaced by Clean Air Zone, which was implemented for buses in January 2021
15	Leicester Direction for NO ₂ Plan	Policy Guidance and Development	Low Emissions Strategy/ Clean Air Zone Feasibility Study	May 2018	OBC delivered in October 2019, further work scheduled for 2020	Leicester City Council	Joint Air Quality Unit	NO	Fully Funded	N/A	Implemented	10%	Report delivered	OBC draft was delivered in October 2019	A set of schemes to bring the NO ₂ compliance in a shortest possible time, the impact of the schemes is assessed by using Traffic Model and Airviro Air Quality model
16	Leicester Direction for NO ₂ Plan – Clean Air Zone for freight vehicles	Policy Guidance and Development	Low Emissions Strategy/ Freight CAZ	2018	Not set yet	Leicester City Council, JAQU	Joint Air Quality Unit	NO	Not available	N/A	Not considered	10%	Implementation of CAZ for freight vehicles	Initial considerations, but not going ahead	Not going ahead

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17	Leicester Direction for NO2 Plan – Clean Air Zone for passenger vehicles	Policy Guidance and Development	Low Emissions Strategy/ Car based CAZ	2018	Not set yet	Leicester City Council	Joint Air Quality Unit	NO	N/A	N/A	No	10%	Implementation of CAZ for cars	Initial considerations	Initial considerations, but not going ahead
18	Local Plan	Policy Guidance and Development	Other policy	N/A	N/A	Leicester City Council	LCC funded	NO	Fully funded	N/A	Work in progress	< 0.1%	AQ imbedded in the plan	Draft of the plan ready	Work is being completed
19	Air Quality Forum	Policy Guidance and Development	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	N/A	Leicester City Council and Leicestershire Councils	Local Authority Funded	NO	N/A	N/A	Ongoing	< 0.1 %	Exchange of knowledge across the districts in the Leicestershire, development and adoption of best practices	Forum meetings	AQ Forum to discuss issues of pollution across Leicestershire attended by districts, county and city representatives
20	East Midlands Air Quality network	Policy Guidance and Development	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2015	Not end date	Authorities s in East Midlands, Public Health England	LTP	NO	N/A	N/A	Ongoing	< 0.1 %	Delivery of joint strategies for East Midlands	Initial drafts of guidance documents	A network of air quality specialists and public health officials
21	Procurement strategy	Policy Guidance and Development	Sustainable Procurement Guidance, Social Value Charter	2014	2018	Public Health England East Midlands	LCC funded	NO	N/A	N/A	Delivered	<0.1%	AQ included in the procurement strategy	New policy for procurement developed	Leicester City Council
22	Sustainable Procurement Guide	Promoting Low Emission Plant	Low Emission Fuels for stationary and mobile sources in Public Procurement	2016	Published 2018	Leicester City Council	LCC funded	NO	N/A	N/A	Delivered	< 0.1 %	Lowes emission plants	Implementation ongoing	Guidance prepared
23	Sustainable Procurement Guide	Promoting Low Emission Plant	Other Policy	2010	Published 2010	Leicester City Council	LCC funded	NO	N/A	N/A	Delivered	< 0.1 %	Adherence to the policy	Implementation ongoing	Ongoing
24	Procurement of 110 ULEV vehicles to replace diesel vans	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2015	2023	Leicester City Council	LCC funded	NO	Partially Funded	>£1 million	Ongoing	< 0.1 %	33 vehicles already purchased	33 EV	Ongoing
25	Clean Air Zone for Buses	Promoting Low Emission Transport	CAZ	2017	January 2021	Leicester City Council	LCC funded, Bus Companies, Clean Bus Technology Fund	NO	N/A	N/A	Implemented and ongoing	< 10 %	Agreement signed with major bus companies in Leicester	Agreement reached with bus companies	The zone includes all the buses in Leicester belonging to bus companies, which signed the agreement using St Margaret and Haymarket Bus Stations
26	Preferential location for EV at car parks	Promoting Low Emission Transport	Priority parking for LEV's	2015/2016	Ongoing	Leicester City Council	LCC funded, ERDF, Office for Zero Emission Vehicles	NO	Partially Funded	>£1 million	Ongoing	< 0.1 %	Planning stage	Planning	
27	Plugged In places - Midlands	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2012	2017	Leicester City Council	DfT	NO	Partially Funded	<£1 million	Delivered	< 0.1 %	24 plugs installed	All installed	Scheme completed
28	500 EV charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2015/2016	2020	Leicester City Council	OZEV , LCC funded	NO	Partially Funded	>£1 million	Funding not secured	< 0.1 %	KPI will be a % of the 500installed plugs	Planning stage CHRIS	28 charging points implemented. Trail for on-street charging points is anticipated in 2020. ERDF funding bid for £500 submitted in spring 2018 was successful
29	TUSKER – ULEV salary sacrifice for city council employees	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2016/2017	Ongoing	Leicester City Council	LCC	NO	Partially Funded	<£1 million	Ongoing	< 0.1 %	41 vehicles purchased up to date	41 vehicles delivered	Salary sacrifice for employees for electric cars and for the e- bikes
30	A discount on the licence fee of 40% for Euro 5 vehicles	Promoting Low Emission Transport	Taxi emission incentives	2013		Leicester City Council	LCC funded	NO	Partially Funded	< 1 million	Ongoing	< 0.1 %		Discount of 40% is discontinued as Euro 5 from 1	Discount no longer available

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														April 2017 as the Euro 5 vehicles are now standard. Standard fee applies	
31	Euro 6 vehicles the licence fee is reduced	Promoting Low Emission Transport	Taxi emission incentives	2015	Implemented	Leicester City Council	LCC	NO	N/A	N/A	Ongoing	< 0.1 %	Increased interest	Licence fee discount of 50% for Euro 6 vehicles or ULEV from 1 April 2017. Fee is £108	Fee is £108
32	Vehicle age policy for vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	2012/2013	Ongoing	Leicester City Council	LCC	NO	N/A	N/A	Ongoing	< 0.1 %	Applies to 300 hackney carriages and 1589 private hire vehicles	Policy reviewed in 2015	Vehicles over 11 years old are not licenced.
33	Spot check operations on taxis which include emission tests	Promoting Low Emission Transport	Other	2000	Ongoing	Leicester City Council	LCC	NO	N/A	N/A	Ongoing	< 0.1%	10 operations per year involving around 30 vehicles	Ongoing operations	Due to Covid Lockdown no spot checks were carried out, they will resume one government restrictions are lifted
34	Two vehicle tests per year which include an emission test	Promoting Low Emission Transport	Other	2000	Ongoing	Leicester City Council	LCC	NO	N/A	N/A	Ongoing	< 0.1 %	All taxis to have 2 tests per year	2011 vehicle testing brought in house to ensure consistent application of standards	
35	Flexible working arrangements	Promoting Travel Alternatives	Encourage / Facilitate homeworking	2014	Ongoing	Leicester City Council	N/A	NO	N/A	N/A	Ongoing	< 0.1 %	LCC gives the staff the opportunity to work from home either on a permanent basis or as and when there is a need due to domestic or health reasons.	LCC staff engaged	
36	Business Grants	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2011	Ongoing	Leicester City Council	Access fund	NO	N/A	<£1,000,000.00	Ongoing	< 0.1 %	Deliver to at least 3 businesses	48 grants issued	Monitoring has shown that in businesses engaged 25% of staff living within 5 miles of their workplace and who drove to work are now using sustainable travel
37	Business Travel Plans	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2012	Ongoing	Leicester City Council, but delivered through Go Travel Solutions (Local Social enterprise specialised in business engagement) and also grants from JAQU	Access fund, JAQU	NO	N/A	N/A	Ongoing	< 0.1 %	Engaged with 60 + businesses	Engaged 553 businesses	Single occupancy car has dropped in the last year by 3% points from 85% to 82%
38	Statutory planning related Travel Plans secured through statutory planning conditions.	Promoting Travel Alternatives as required by the NPPF.	Promoting a decrease in single occupancy vehicle usage and promoting behaviour change across organisations in the city, as per statutory planning requirements	2002	Ongoing	Leicester City Council, but delivered through Go Travel Solutions (Local Social enterprise specialised in business engagement)	LCC, local businesses	NO	N/A	N/A	Ongoing	< 0.1 %	429 businesses organisations engaged in travel plans and monitoring	More than 429 large/medium businesses actively engaged as per their planning requirements	On average, single occupancy vehicle usage has fallen by 14.6% over 5 year period under the auspices of a planning related Travel Plan. A total of 76,531 employees are covered by planning related Travel Plans in the city
39	Travel Portal- Choose How You Move	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2012	Ongoing	Leicester City Council	Access Fund, JAQU	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	302,897-page views	109,684 new users to date., 18,363 returning users to date. 239,397-page views between	Continued work to refresh and update the site is being undertaken along with continued and expanded promotion of the tool to

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														April 2020 and April 2021.	businesses and communities within the Leicester and Leicestershire area.
40	Personalised Travel Planning Access Fund Leicester + Leicestershire	Promoting Travel Alternatives	Personalised Travel Planning	2018	2022	Leicester City Council and Leicestershire County Council	ERDF	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	To engage with	2600 households participated out of 10500 involved. 23% reduction in single occupancy car journeys.	Further PTP work was planned for 2020 but this may now happen in 2021.
41	Wheels to work- fleet of pedal and electric bikes, which are available for loan by apprentices and other young people to get to work	Promoting Travel Alternatives	Personalised Travel Planning	2014	Ongoing	Leicester City Council and Leicestershire County Council	Access Fund, , East Cycle Extension Fund	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Partially Funded	9 e-bike users in Capability Fund during 2021/222 24 e-bike users in E-Cycle Extension Fund 2021/2	9 e-bike users in Capability Fund during 2021/222 24 e-bike users in E-Cycle Extension Fund 2021/2	In-house delivery since 2017. The scheme has grown to include Loan to Own and 4-week Loan To Business. E-Cycle Extension Funding has further grown the scheme with loans for schools' staff and hard to reach communities
42	Car share	Promoting Travel Alternatives	Personalised Travel Planning	2010	Ongoing	Leicester City Council, Melton Borough Council and Leicestershire County Council	Access Fund	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	1000 new members per year	658 new members in 2020/21 numbers are down due to COVID-19	29,333,357 car miles saved in the last year - this figure is an overestimate due to many staff WFH rather than their regular commute
43	Employment adviser training	Promoting Travel Alternatives	Promote use of rail and inland waterways	2012	Ongoing	Leicester City Council and Leicestershire County Council	Access Fund	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	Ensure ongoing training of 200 plus Work Coaches	Continuous training with 200 plus employment advisors, information passed on to approximately 150 people a day	The training include advice on smart ticketing and sustainable travel, so it can be passed to people who come to Job Centre Plus, Training Agencies and Employment Agencies for work advice
44	Bike It Schools Programme	Promoting Travel Alternatives	Promotion of cycling	2010	2017	Leicester City Council and Job Centre Plus and another employment agency	Access Fund	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	25,000 children engaged in 2020	Delivered in 100 schools	
45	Bike It Neighbourhood Programme	Promoting Travel Alternatives	Promotion of cycling	2014	Ongoing	Leicester City Council, delivered through Sustrans	Access Fund	NO	Partially Funded	<£100,000.00	Ongoing	< 0.1 %	No adults engaged	0 in 2020 due to pandemic	All Neighbourhood events were cancelled in 2020 Resources were channelled in to providing information, guidance and marshalling for the return to schools, with 60,000 pupils receiving advice and guidance on walking and cycling to school and advice on social distancing at the school gate. e.g. posters, pavement markings, walking maps, cycling maps, temporary cycle parking, school streets and one -ways and wider pavements for social distancing

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46	Led Rides and Festival Programme	Promoting Travel Alternatives	Promotion of cycling	2010	Ongoing	Leicester City Council, delivered through Sustrans	Access Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	15 000 attendees at Ride Leicester Festival and 8000 plus participants on led rides per annum	Ride Leicester Festival cancelled in 2020 due to Covid-19. Was replaced by Bike Aid which distributed 501 second hand and bike checked bikes to key workers. 763 applications	Will resume after Covid pandemic
47	Bike Parks	Promoting Travel Alternatives	Promotion of cycling	2010	Ongoing	Leicester City Council and British Cycling	Access Fund/ TCF	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Ongoing	In 2020/21 13945 cyclists used the Bike Park. The Bike Park was closed from 24th March to the 22nd June 2020	In March 2018, the management of the bike Park was taken in-house. Since then the numbers parking have almost doubles.
48	Bike Maintenance training	Promoting Travel Alternatives	Promotion of cycling	2011	Ongoing	Leicester City Council	Access y Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Ongoing	No bike maintenance lessons were given due to Covid restrictions. 643 bikes fixed by Dr Bike at over 50 community stations.	Future Cycles trained less than in 2016 partly due to the courses being relocated to Pilot House from LAEC. Both Sustrans and Community Cycles have been offering additional cycle maintenance training to community and staff in businesses
49	Walking programme	Promoting Travel Alternatives	Promotion of walking	2015	Ongoing	Leicester City Council	Access Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Number of new walkers this year 19 Total number of walkers who attended walks 49	Routes on the Go Jauntly app 16 Routes - downloadable route card (PDF) from website 24 Walk Videos 4 Links to Ramblers routes 11 Led Group Walks delivered (More had been planned, but were cancelled due to Lockdowns) 14 Page views on our walk inspirations page are 600. Page views on walking routes pages are 23,877 across the whole of the county	
50	Walk to school programme	Promoting Travel Alternatives	School Travel Plans	2011	Funding until March 2020	Leicester City Council	Access Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Engage with 50 plus schools in Leicester	39 primary schools engaged (Sept 2020-Dec 2020) 4 secondary schools engaged (Sept 2020 to Dec 2020)	In the primary schools engaged walking has gone up from 62% to 74%
51	Sustainable Travel Challenge	Promoting Travel Alternatives	Other	2011	Jan-16	Living Streets	Access Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Total registrants 2208	163,841 sustainable journeys were	56% of users said there sustainable journey replaced a

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														recorded through the App.	car journey. More work is required to increase membership
52	Sustainable Travel Challenge	Promoting Travel Alternatives	Other	2016	2020	Leicester City Council	Access Fund	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Total users	Workplace Challenge promoted during 2017 which is managed by Leicester and Leicestershire Sports Partnership, with walking and cycling added as activities. Currently 786 registered users.	For the financial year 2017/18 we collaborated with the workplace challenge already existing in Leicester and Leicestershire, whilst working to procure a fit for purpose behaviour change app which will reward participants for travelling sustainably and will target 2000 employees within the bid area. The procurement is complete and ready to roll out in 2018/19. The new sustainable travel challenge, powered by Betterpoints, was launched in May 2018
53	Bus routes, cycle routes, bus timetables	Public Information	Via leaflets	Annual	January 2018	Leicester City Council	LCC, Bus Operators, County Council	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Annual publication		Bus Map published and available to general public
54	Leaflets promoting walking	Public Information	Via leaflets	2015	2015/2016	Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	7,500 leaflets distributed	Completed	
55	Leaflets promoting walking and cycling	Public Information	Via leaflets	2016	2019	The Ramblers Walks	ERDF	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1%	2000	?	
56	FACE– internal newsletter	Public Information	Via other mechanisms	Weekly		Leicester City Council Get moving this summer	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Delivered to all of employees	Delivered weekly	
57	Air Quality action Plan 2015-2016	Public Information	Via radio	2015-AQAP		Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Adopted	Delivered as required	
58	Twitter: Leicester City Council	Public Information	Via the Internet	2015 - AQAP	Ongoing	Leicester City Council	LTP	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Active	Messages sent as and when required	Promotion of air quality issues, events and support available from the Council.
59	Facebook: Leicester City Council	Public Information	Via the Internet	2015-AQAP		Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing		Active		
60	Leicester City website	Public Information	Via the Internet	2014	Ongoing	Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Webpage active	Webpage active	
61	Leicester	Public Information	Via the Internet	1990		Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Delivered to all of public	1,896 followers on Facebook On Twitter: 1,131 followers, 5,251 tweets to date. Between April 2020 - 2021: 14,650 profile visits and 375,100 Tweet Impressions. On Instagram: 332 followers	Both social media channels shared with Leicestershire County Council.
62	City Council AV display screen	Public Information	Other	2015-AQAP	Ongoing	Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %		Available daily, updated as and when	
63	AQAP	Traffic Management	Anti-idling campaign near schools	2015 AQAP		Leicester City Council	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %		Total number of engagements since 2018 (school staff, pupils, parents etc) 3200.	No new campaigns since March 2020

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
														Engaged 11 schools.	
64	Bus Fleet	Traffic Management	Euro VI buses with anti-idling engine switch	2015	Ongoing	Leicester City Council	Clean Bus Technology Fund	NO	Partially Funded	< 4,000,000.00	Ongoing	< 0.1 %	209 buses introduced in total	209 buses introduced	Delays to work due to Covid
65	20mph zones	Traffic Management	Reduction of speed limits, 20mph zones	1999	Ongoing	Leicester City Council	Transport Improvement Works Budget - LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Continue to implement schemes where residents request them	73 schemes	1330 streets and 283.7 km of highway
66	Bus lanes	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	First bus lane was introduced in 1973, since then many bus lanes were implemented, and the work is ongoing	Ongoing	Leicester City Council	Transport Improvement Works Programme, S106, S278, National Productivity Investment Fund, TCF	NO	Partially Funded		Ongoing	< 0.1 %	Continue to implement bus lanes where there is a need	75 bus lanes implemented	
67	SCOOT sites	Traffic Management	UTC, Congestion management, traffic reduction	1970	Ongoing	Leicester City Council	LTP, Connecting Leicester, LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	189 sites	277 sites	
68	Mova UTC System	Traffic Management	UTC, Congestion management, traffic reduction	1980	Ongoing	Leicester City Council	LTP Connecting Leicester, LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	70 sites	70 sites	24 sites are dual, both SCOOT and Mova
69	Traffic sensitive streets	Traffic Management	Other	1991	Ongoing	Leicester City Council	LTP/LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Quarterly Network Management Scorecard reports	Regulation in place	Any work carried out on the city highways has to be agreed as not to impede the traffic i.e. avoidance of rush hour. Permit scheme in place.
70	Coordination of street work	Traffic Management	Other	1991	Ongoing	Leicester City Council	LTP/LCC/Permit schemes for utility works	NO	Partially Funded	< 100,000.00	Ongoing	<0.1 %	Regulations in place	Regulation in place	Introduction of the Permit scheme allowed to reduce time of works from 3.5 days to 2.8 days on average
71	A46 better bus scheme to improve bus lane	Transport Planning and Infrastructure	Bus route improvements	2012	Completed	Leicester City Council	LCC					< 0.1 %	Scheme implemented., bus journey time significantly reduced	Scheme successful, reported 15% increase in bus patronage	
72	Cycle Lanes	Transport Planning and Infrastructure	Cycle network		Ongoing	Leicestershire County Council	TCF, Active Travel Fund	NO	Partially Funded	< 1,000,000.00	Ongoing	< 0.1 %		Off road cycle tracks 52.9 km Cycle Lane & quiet streets - 116.5k Cycle Track & traffic free streets - 65.5km	On-going implementation subject to funding
73	Bike Share Cycle hire	Transport Planning and Infrastructure	Public bike share cycle hire scheme	2016	TBC	Leicester City Council	TCF, LCC , Bike Share operator - Ride On	NO	Partially Funded	< 1,000,000.00	Ongoing	, 0.1%	Scheme delivered	Scheme delivered	Scheme delivered
74	New Haymarket Bus station	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2015	Completed	Leicester City Council	LCC, LLEP	NO	Partially Funded	< 1,000,000.00	Ongoing	< 5%	Opened	Implemented	
75	Leicester North-West major transport project	Transport Planning and Infrastructure	Other	2014	Stage 2 in designed, scheme to be completed in 2019	Leicester City Council, government grant, LEP	LCC, LLEP	NO	Partially Funded	< 10,000,000.00	Completed	< 0.1 %	Scheme being implemented in stages, stage 1 completed in June 2016	Stage 1 completed in June 2016, all completed	Scheme delivered
76	Bus pinch points project	Transport Planning and Infrastructure	Other	2015	2019	Local Growth Fund (LGF), administered by the LLEP	Local Growth Fund (LGF), administered by the LLEP, National	NO	Partially Funded	< 10,000,000.00	Completed	< 0.1 %	Reduced delays to buses at junctions and other nodes	Planning and initial design work carried out	Won National Productivity Investment Fund and LEP funding for 6

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
							Productivity Investment Fund, LTP								pinch points to be addressed to be addressed.
77	Smart ticketing	Transport Planning and Infrastructure	Other	2011	Ongoing	Leicester City Council, Smart and Integrated ticketing fund, DfT	, DfT, TCF	NO	Partially Funded	< 10,000,000.00	Completed	< 0.1 %	Onecard Scheme implemented	Onecard monthly ticket Weekly multi-operator smart ticketing	It is a part of DfT Smart Cities programme
78	Real Time Bus Passenger Information	Transport Planning and Infrastructure	Other	2012	Implemented	Leicester City Council National Productivity Investment Fund (NPIF), administered by DfT	,LTP LCC and County Council	NO	Partially Funded	< 1,000,000.00	Completed	< 0.1 %	Leicester and Leicestershire included in the scheme	Scheme implemented in 2021	It provides also details for bus operators, so they can have information about bus performance. It allows to help them plan better and for us to have more information about bus pinch points.
79	Motorcycle rider education	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2016	Ongoing	Leicester City Council	Leicester City Council and Leicestershire County Council	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	Reduction in KSI figures	Funding secured	Low capacity motorcycle accident reduction, training for Enhanced Rider Scheme and for CBT= novice riders or commuters scheme
80	PEMS test carried out for the Breathe I, bus retrofit project to determine NO2 reduction in tailpipe emissions	Vehicle Fleet Efficiency	Testing Vehicle Emissions	2015/2016/2017	2018	Leicester & Leicestershire Rutland road safety partnership	LCC	NO	Partially Funded	< 100,000.00	Ongoing	< 0.1 %	PM 10, NOx reductions and NO2 reductions	All PEMS tests completed	
81	Retrofitting of buses Breathe I	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2013	2019	Leicester City Council	Clean Bus Technology Fund	NO	Partially Funded	< 1,000,000.00	Ongoing	< 0.1 %	32 buses retrofitted	All buses retrofitted	
82	Retrofitting of buses Breathe II	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2014	2020	Leicester City Council	Clean Bus Technology Fund	NO	Partially Funded	< 1,000,000.00	Ongoing	< 0.1 %	5 buses retrofitted	All buses retrofitted	
83	Retrofitting of buses Breathe III	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2015	2021	Leicester City Council	Clean Bus Technology Fund	NO	Partially Funded	< 1,000,000.00	Ongoing	< 0.1 %	6 buses to be retrofitted	All buses retrofitted	
84	Statutory planning applications related Travel Plans secured through statutory planning conditions.	Promoting Travel Alternatives as required by the NPPF.	Promoting a decrease in single occupancy vehicle usage and promoting behaviour change to sustainable travel modes across organisations in the city, as per statutory planning requirements	2002	Ongoing	Leicester City Council	N/A	NO			Ongoing	< 0.1 %	250 businesses organisations engaged in travel plans and monitoring	A total of 427 businesses actively engaged as per their planning requirements to do so.	On average single occupancy vehicle usage has fallen by 15.4% over a 5-year period under the auspices of a planning related Travel Plan. A total of 77,612 employees are covered by planning related Travel Plans in the city.

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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.

Leicester City Council is taking the following measures to address PM_{2.5}

Leicester City Council is taking the following measures to address PM_{2.5}:

Designation of the Smoke Control Area

- Smoke Control Area was declared for the whole of Leicester City on the 1st of June 2018

Projects focusing to address PM 2.5

- Leicester City Council has secured Air Quality Grant 2018/19 to study and model locally based fine particulate pollution (PM_{2.5}). An air quality grant has been awarded to monitor small particulates using portable air quality monitors – Zephyrs, to form a network of 10 units deployed across the city, map using near real time data and make the public more aware of PM_{2.5} by using smart device applications and leaflets and how it affects our city and our health.
- Applied (and subsequently awarded) 2019/20 Air Quality Grant for identifying transboundary sources of PM_{2.5} in Leicester using state of the art modelling and satellite data.
- Applied and awarded 2020/21 Air Quality Grant to determine by how much a traffic intervention will reduce pollution levels both for PM_{2.5} and NO₂. It will address the issue of discrepancy between near real time modelling and in situ monitoring. It will allow to identify what works in order to create a model with the effect of reducing air pollution that can be applied elsewhere in the city

Actions

- Building on lessons from COVID 19 pandemic including the promotion and facilitation of homeworking, cutting out the need for transport
- To continue to bring electric vehicles and bikes into the city council's vehicle fleet
- To continue the Connecting Leicester programme and make our city more accessible to sustainable modes of transport such as walking and cycling
- To continue to deliver our programme of walking and cycling initiatives including the Ride Leicester Festival, led rides, led walks, "Wheels to Work" and cycle training for children and adults
- To learn from best practice and examples of schemes introduced successfully in other cities
- To continue running Anti-Idling campaigns
- To keep introducing bus priority schemes such as bus gate cameras
- To deliver a city-wide Clean Air Zone for buses in January 2021
- To continue to improve the city's traffic management system and address "pinch points" on the highway network

- To continue to deliver our programme of introducing 20 mph Zones in residential areas and particularly around schools

Collaborations

- Working closely with Defra as part of Local Authorities advisory group
- To continue to lobby and work with Government to introduce national measures to reduce polluting emissions from diesel vehicles, this includes work with UK100 and LGA
- To work with other local authorities and agencies , work closely with neighbouring boroughs of Blaby on transboundary sources of PM 2.5 through Defra Air Quality Grant project , Oadby& Wigston through Defra Air Quality Grant Project on monitoring of PM 2,5 with portable analysers and other Leicestershire boroughs through Leicester and Leicestershire Air Quality Forum
- To work with the Office for Zero Emission Vehicles (OZEV) to help introduce low emission taxis to Leicester
- To form an effective partnership with bus operators – exploiting the full potential of the Bus Services Act 2017 to improve the quality and accessibility of bus services, promote modal shift and reduce harmful transport emissions
- Smart cities - we will work with partners, universities to realise the full potential of smart systems and smart data within the planning and transport arena, delivering service improvements, efficiencies and air quality benefits as a result

Monitoring

- To continue developing monitoring network, enhancing it with additional pollution monitors such as diffusion tubes and portable air quality monitors
- To ensure air quality considerations are embedded in Leicester's new Local Plan which is to be adopted in 2021

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

This section sets out the monitoring undertaken within 2020 by Leicester City Council 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

Leicester City Council undertook automatic (continuous) monitoring at 5 sites during 2020. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The [Air quality \(leicester.gov.uk\)](https://leicester.gov.uk/air-quality/) page presents automatic monitoring results for Leicester City Council, national sites can be found <https://uk-air.defra.gov.uk/data/>.

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

Leicester City Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 49 sites during 2020. 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).

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.

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.

None of the stations recorded annual mean for NO₂ over the 40µg/m³, there were no hourly exceedences of 200 µg/m³.

Annual mean values for NO₂ for 2020 at Leicester air quality automatic monitoring stations when compared with 2019 data reported in 2019 ASR show an overall decline in NO₂ concentrations at all of the automatic stations and also Diffusion Tube sites. All sites where monitoring was carried out showed compliance both for annual and hourly objectives.

An air quality monitoring station (Glenhills Way) is going to be relocated to a more suitable area. Currently it is located next to a busy junction, which is not in line with a present Air Quality Standards legislation. The station was introduced over 20 years ago where legislation was slightly different regarding the location requirements.

The National Lockdown due to the Covid19 pandemic was the main contributor to the dramatic decline in NO₂ levels. The lockdown measures reduced dramatically the number of vehicles on roads thus reducing the vehicle emissions.

Unusually mild winters of late have been in terms of pollution a driving factor in improving the air quality.

Initially during the first months of 2020 the NO₂ levels were close in comparison to 2019 levels with sharp drop in overall concentrations recorded following the lockdown.

Fleet renewal with higher class of Euro engines and therefore less polluting, introduction of Ultra Low Emission vehicles into the fleet also play a role in reducing emissions and improving air quality. Overall, the 2020 data shows compliance for all objectives across the whole of the city, not only at AQM.

It is very important to treat the 2020 data as valid, but with caution. At this stage it would be prudent to gather more monitoring data before undeclaring the AQMA as the lockdown imposed in 2020 appears to have played a big role in reducing NO₂ levels. Also, it is very important to determine what is the new normal in terms of traffic volumes, human behaviour as working from home might change the peaks of vehicle emissions or change route patterns making a relatively traffic free area of the city into a busy area.

At this stage we plan to gather more evidence before making any decisions regarding revoking any parts of the AQMA in Leicester.

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.

PM₁₀ is monitored within Leicester but is not currently subject to an AQMA. PM₁₀ annual mean data for all sites has consistently been within objective limits for air quality. All stations are also within objectives set for the 24-hour mean.

3.2.2 Particulate Matter (PM_{2.5})

Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

PM_{2.5} is monitored within Leicester but is not currently subject to an AQMA.

Leicester City Council has carried out monitoring for the PM_{2.5} in 2020 using eleven portable air quality monitors called Zephyrs. The PM_{2.5} data collected by the monitors have not breach the annual mean concentrations of 25µg/m³.

The PM_{2.5} data has been also collected by the urban background AURN located at University of Leicester on University Road since 2013. The annual mean concentrations for PM_{2.5} have not breached the EU limit values of 25µg/m³ in the past five years.

The sources of pollution within the city appear to be predominantly transboundary sources background sources with small contributions from domestic burning and transport. There are no large factories or power plants within the city or in close proximity.

3.2.3 Sulphur Dioxide (SO₂)

Table A.9 in Appendix A compares the ratified continuous monitored SO₂ concentrations for N/A with the air quality objectives for SO₂.

No monitoring of SO₂ has been carried out in Leiceste

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)
AURN University Road	University Road	Urban background	459178	302808	NO ₂ ; PM _{2.5}	N	Chemiluminescent; FDMS	N/A	30	4
AURN A594	AURN A 594 St Matthews way	Roadside	459361	304908	NO ₂ , PM ₁₀	Y	Chemiluminescent, FDMS	0	3	2.25
AL	Abbey Lane	Roadside	458574	306885	NO ₂ , PM ₁₀	Y	Chemiluminescent, BAM	0	7	2
GW	Glenhills Way	Roadside	457083	300156	NO ₂ , PM ₁₀	Y	Chemiluminescent, BAM	14	3	2
MR	Melton Road	Roadside	459528	306316	NO ₂ , PM ₁₀	Y	Chemiluminescent, BAM	0	3	2
SM	St Matthews Way	Roadside	459221	305036	NO ₂	Y	Chemiluminescent,	10	2	2
VW	Vaughan Way	Roadside	458507	304904	NO ₂ , PM ₁₀	Y	Chemiluminescent, BAM	0	3	2
95_UR	University Road	Urban Background	459186	302811	NO ₂ , PM ₁₀ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	N/A	20	2.5
459_VW1	Vaughan Way	Roadside	458507	304904	NO ₂ , PM ₁₀ , PM _{2.5} , O ₃	Y	Portable air quality monitor: electrochemical sensor, optical particulate counter	0	3	2.5
352_BR	Buckminster Road	Roadside	457515	305770	NO ₂ , PM ₁₀ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	15	1	2.5
361_CS	Charles Street	Roadside	458922	304785	NO ₂ , PM ₁₀ , PM _{2.5} , O ₃	Y	Portable air quality monitor: electrochemical sensor, optical particulate counter	7	1	2.5

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)
450_EV1	EV 1	Roaming sensor mounted on a vehicle	N/A	N/A	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	Y	Portable air quality monitor: electrochemical sensor, optical particulate counter	Roaming	On the road	0.7
514_EV2	EV2	Roaming sensor mounted on a vehicle	N/A	N/A	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	Y	Portable air quality monitor: electrochemical sensor, optical particulate counter	Roaming	On the road	0.7
368_GAR	Great Arler Road	Roadside	459276	301547	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	8	1	2.5
393_KCR	Knighton Church Road	Roadside	460732	301328	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	7	1	2.5
437_A6	A6	Roadside	461498	301355	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	50	1	2.5
183_MS	Middleton Street	Roadside	457135	301018	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	14	1	2.5
370_WR	Westfield Road	Roadside	456380	304621	NO ₂ , PM ₁₀₋₁ , PM _{2.5} , O ₃	N	Portable air quality monitor: electrochemical sensor, optical particulate counter	8	1	2.5

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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)
LCC1	Lamppost on A563 Krefeld Way	Roadside	456672	307669	NO ₂	NO	2	3	NO	2
LCC2	Lamppost on A563 Asquith Way	Roadside	459165	300271	NO ₂	YES, AQMA Leicester City		3	NO	2
LCC3	Lamppost on A563 Red Hill Way	Roadside	458260	307900	NO ₂	NO	0	3	NO	2
LCC4	Lamppost on A50 Groby Road	Roadside	457244	305572	NO ₂	NO	0	3	NO	2
LCC5	Lamppost on A50 Groby Road	Roadside	455578	306395	NO ₂	NO	0	3	NO	2
LCC6	Lamppost on A5630 Anstey Lane	Roadside	455825	307676	NO ₂	NO	0	3	NO	2
LCC7	Lamppost on A563 New Parks Way	Roadside	455647	305825	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC8	Lamppost on Glenfield Road	Roadside	455917	304892	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC9	Lamppost on A563 New Parks Way	Roadside	455082	304761	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC11	Lamppost on A47 Hinckley Road	Roadside	456230	304273	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC12	Lamppost on A426 Aylestone Road	Roadside	457474	301061	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC14	Lamppost on Stretton Road	Roadside	457210	304276	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC15	Lamppost on A5460 Narborough Rd	Roadside	457690	303783	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC16	Lamppost on A563 Palmerston Way	Roadside	461014	301043	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC17	Lamppost on Braunstone Lane	Roadside	456380	302193	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC18	Lamppost on A5460 Narborough Road	Roadside	456754	302259	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC19	Lamppost on Upperton Road.	Roadside	457667	303460	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC20	Lamppost on A594 Waterloo Way	Roadside	459196	303882	NO ₂	YES, AQMA Leicester City	0	3	NO	2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LCC21	Lamppost on A594 St Georges Way	Roadside	459431	304564	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC22	Lamppost on A563 Glenhills Way	Roadside	457869	300085	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC23	Lamppost on A5199 Welford Road	Roadside	459367	302117	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC24	Lamppost on B5366 Saffron Lane	Roadside	458542	302023	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC25	Lamppost on A5199 Welford Road	Roadside	459703	301072	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC26	Lamppost on A6 London Road	Roadside	461307	301478	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC27	Lamppost on A6 London Road	Roadside	460134	303093	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC28	Lamppost on A47 Uppingham Road	Roadside	463282	304552	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC29	Lamppost on A563 Colchester Road	Roadside	462891	305329	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC30	Lamppost on A47 Uppingham Road	Roadside	461806	305323	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC31	Lamppost on A6030 Coleman Road	Roadside	461596	304989	NO ₂	NO	0	3	NO	2
LCC32	Lamppost on Forest Road	Roadside	460441	305322	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC33	Telegraph pole on A6 Abbey Lane	Roadside	458749	307184	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC34	Lamppost on A607 Melton Road	Roadside	460010	307324	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC35	Lamppost on A50 Frog Island	Roadside	458099	305184	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC36	Lamppost on A594 Vaughan Way	Roadside	458267	304623	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC37	Lamppost on St Nicholas Circle	Roadside	458182	304400	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC38	Lamppost on A6030 Victoria Road East	Roadside	461558	306508	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC40	Lamppost on A607 Melton Road	Roadside	460460	308234	NO ₂	NO	0	3	NO	2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LCC41	Lamppost on A563 Troon Way	Roadside	460865	307949	NO ₂	NO	0	3	NO	2
LCC42	Lamppost on Catherine Street	Roadside	460678	306582	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC43	Lamppost on Loughborough Road	Roadside	459304	307385	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC44abc	Co-location triplicate at Leicester University AURN, University Road	Urban Background	459185	302812	NO ₂	NO	0	100	YES	2
LCC45	Lamppost on Leicester Road	Roadside	457596	310078	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC46	Lamppost on Scraftoft Lane	Roadside	464058	305532	NO ₂	NO	0	3	NO	2
LCC47abc	Co-location triplicate Vaughan Way Automatic Monitoring Station	Roadside	458507	304904	NO ₂	YES, AQMA Leicester City	0	3	YES	2
LCC48	Lamppost on A6030 Staughton Drive	Roadside	461577	302746	NO ₂	NO	0	3	NO	2
LCC49	Lamppost on Hogarth Road	Roadside	457472	310229	NO ₂	YES, AQMA Leicester City	0	3	NO	2
LCC50	Lamppost on B5327 Anstey Lane	Roadside	456269	307062	NO ₂	NO	0	3	NO	2

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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
AURN University of Leicester	459178	302808	Urban Background	N/A	98	28	26	23.2	24	19
AURN A594	459361	304908	Roadside	N/A	99	41	41	36	38	28
AL	458574	306885	Roadside	N/A	98	35	33	31	31	24
GW	457083	300156	Roadside	N/A	92	58	53	49	48.6	38.8
MR	459528	306316	Roadside	N/A	99	44	39.7	38.7	38.5	28
SM	459221	305036	Roadside	N/A	94	43	43	41	40.6	31
VW	458507	304904	Roadside	N/A	99	54	53	45	45.7	35
Zephyr 95_UR	459186	302811	Urban Background	100	N/A	-	-	-	-	19.2
Zephyr 459_VW1	458507	304904	Roadside	98	N/A	-	-	-	-	38.9
Zephyr 352_BR	457515	305770	Roadside	98	N/A	-	-	-	-	17.2
Zephyr 361_CS	458922	304785	Roadside	100	N/A	-	-	-	-	43.6
Zephyr 450_EV1	N/A	N/A	Roaming sensor mounted on a vehicle	52	N/A	-	-	-	-	29.4
Zephyr 514_EV2	N/A	N/A	Roaming sensor mounted on a vehicle	46	N/A	-	-	-	-	34.4
Zephyr 368_GAR	459276	301547	Roadside	63	N/A	-	-	-	-	16.5
Zephyr 393_KCR	460732	301328	Roadside	98	N/A	-	-	-	-	18
Zephyr 437_A6	461498	301355	Roadside	78	N/A	-	-	-	-	19.4
Zephyr 183_MS	457135	301018	Roadside	90	N/A	-	-	-	-	21.5
Zephyr 370_WR	456380	304621	Roadside	100	N/A	-	-	-	-	6.2

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).
- Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction (confirm by selecting in box).

Notes:

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

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

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
LCC1	456672	307669	Roadside	N/A	50	-	-	-	32.6	23.3
LCC2	459165	300271	Roadside	N/A	50	-	-	-	24.9	20.3
LCC3	458260	307900	Roadside	N/A	50	-	-	-	34.1	25.0
LCC4	457244	305572	Roadside	N/A	17	-	-	-	32.2	N/A
LCC5	455578	306395	Roadside	N/A	50	-	-	-	36.0	25.4
LCC6	455825	307676	Roadside	N/A	50	-	-	-	35.3	24.6
LCC7	455647	305825	Roadside	N/A	50	-	-	-	31.5	24.7
LCC8	455917	304892	Roadside	N/A	42	-	-	-	21.6	17.7
LCC9	455082	304761	Roadside	N/A	50	-	-	-	30.1	21.4
LCC11	456230	304273	Roadside	N/A	50	-	-	-	28.2	21.0
LCC12	457474	301061	Roadside	N/A	25	-	-	-	28.9	19.8
LCC14	457210	304276	Roadside	N/A	50	-	-	-	23.6	17.3
LCC15	457690	303783	Roadside	N/A	33	-	-	-	38.3	26.9
LCC16	461014	301043	Roadside	N/A	42	-	-	-	32.0	22.3
LCC17	456380	302193	Roadside	N/A	50	-	-	-	25.6	20.1
LCC18	456754	302259	Roadside	N/A	50	-	-	-	31.4	22.1
LCC19	457667	303460	Roadside	N/A	50	-	-	-	39.6	30.8
LCC20	459196	303882	Roadside	N/A	33	-	-	-	27.1	21.8
LCC21	459431	304564	Roadside	N/A	42	-	-	-	30.3	24.7
LCC22	457869	300085	Roadside	N/A	50	-	-	-	27.8	21.8
LCC23	459367	302117	Roadside	N/A	50	-	-	-	35.6	28.5
LCC24	458542	302023	Roadside	N/A	50	-	-	-	25.3	21.5
LCC25	459703	301072	Roadside	N/A	50	-	-	-	21.9	16.9
LCC26	461307	301478	Roadside	N/A	50	-	-	-	27.5	20.5
LCC27	460134	303093	Roadside	N/A	33	-	-	-	34.1	25.6
LCC28	463282	304552	Roadside	N/A	50	-	-	-	19.6	15.8
LCC29	462891	305329	Roadside	N/A	42	-	-	-	24.7	21.1
LCC30	461806	305323	Roadside	N/A	33	-	-	-	35.2	27.1
LCC31	461596	304989	Roadside	N/A	33	-	-	-	27.6	21.3
LCC32	460441	305322	Roadside	N/A	33	-	-	-	35.0	28.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
LCC33	458749	307184	Roadside	N/A	50	-	-	-	32.5	25.5
LCC34	460010	307324	Roadside	N/A	50	-	-	-	25.6	18.5
LCC35	458099	305184	Roadside	N/A	50	-	-	-	33.7	25.1
LCC36	458267	304623	Roadside	N/A	25	-	-	-	49.7	37.5
LCC37	458182	304400	Roadside	N/A	50	-	-	-	38.0	25.0
LCC38	461558	306508	Roadside	N/A	42	-	-	-	24.6	15.0
LCC40	460460	308234	Roadside	N/A	50	-	-	-	30.8	23.5
LCC41	460865	307949	Roadside	N/A	50	-	-	-	31.2	24.4
LCC42	460678	306582	Roadside	N/A	50	-	-	-	29.5	21.2
LCC43	459304	307385	Roadside	N/A	50	-	-	-	30.5	18.6
LCC44abc	459185	302812	Urban Background	N/A	42	-	-	-	22.7	15.4
LCC45	457596	310078	Roadside	N/A	50	-	-	-	17.7	15.8
LCC46	464058	305532	Roadside	N/A	50	-	-	-	19.0	15.4
LCC47abc	458507	304904	Roadside	N/A	50	-	-	-	42.8	33.1
LCC48	461577	310229	Roadside	N/A	-	-	-	-	22.8	-
LCC49	457472	310229	Roadside	N/A	50	-	-	-	18.0	13.6
LCC50	456269	307062	Roadside	N/A	50	-	-	-	22.4	17.4

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- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**
- Diffusion tube data has been bias adjusted (confirm by selecting in box).**
- 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 (confirm by selecting in box).**

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**.

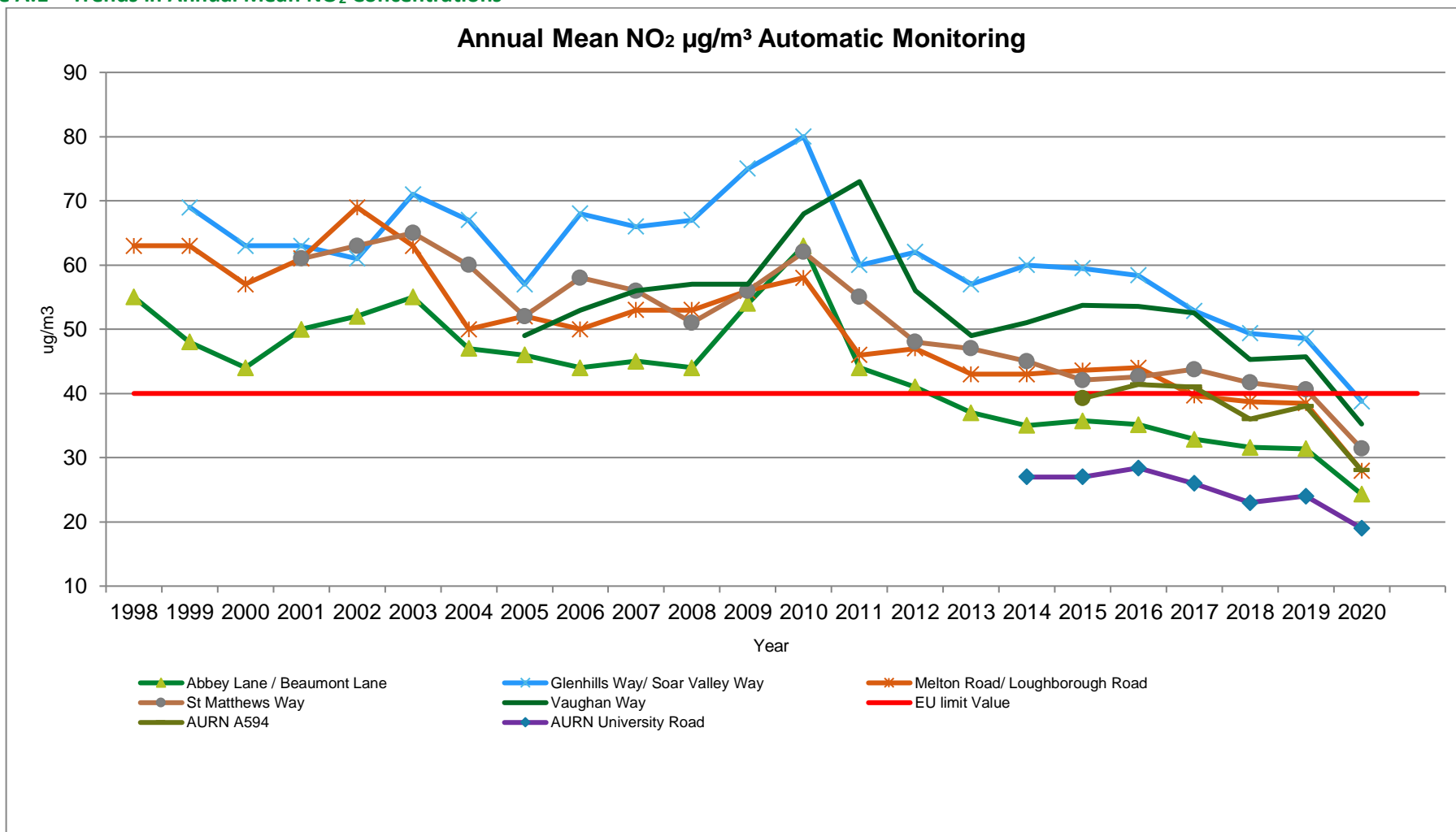
Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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



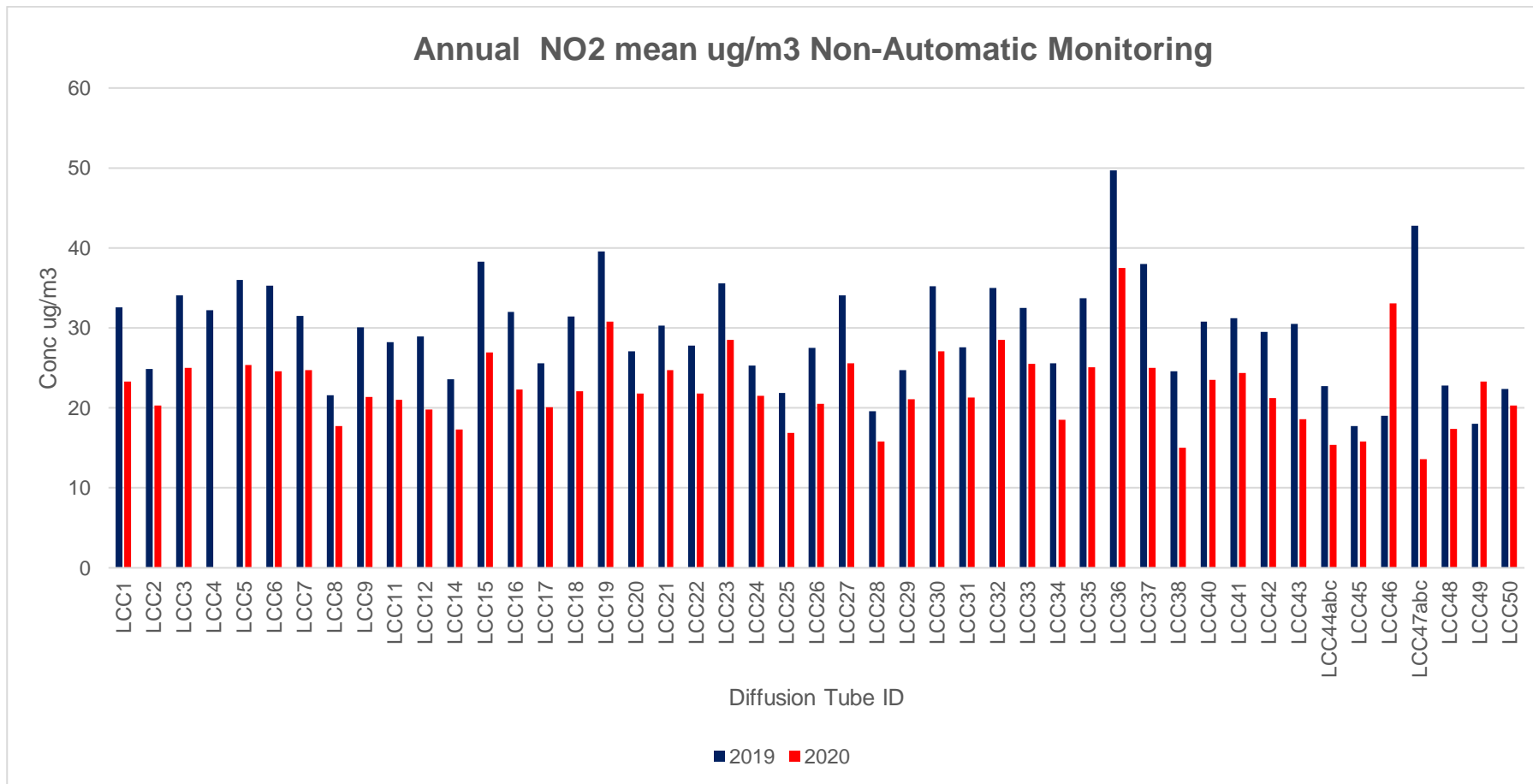


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

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
AURN University of Leicester	459178	302808	Urban Background	N/A	98	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
AURN A594	459361	304908	Roadside	N/A	99	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
AL	458574	306885	Roadside	N/A	98	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
GW	457083	300156	Roadside	N/A	92	0 (0 in total)	0 (1 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
MR	459528	306316	Roadside	N/A	99	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
SM	459221	305036	Roadside	N/A	94	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
VW	458507	304904	Roadside	N/A	99	0 (1 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)	0 (0 in total)
Zephyr 95_UR	459186	302811	Urban Background	99	N/A	-	-	-	-	0 (0 in total)
Zephyr 459_VW1	458507	304904	Roadside	98	N/A	-	-	-	-	0 (0 in total)
Zephyr 352_BR	457515	305770	Roadside	98	N/A	-	-	-	-	0 (0 in total)
Zephyr 361_CS	458922	304785	Roadside	100	N/A	-	-	-	-	0 (1 in total)
Zephyr 450_EV1	N/A	N/A	Roaming sensor mounted on a vehicle	52	N/A	-	-	-	-	0 (0 in total, 99.8 th percentile 114.54)
Zephyr 514_EV2	N/A	N/A	Roaming sensor mounted on a vehicle	46	N/A	-	-	-	-	0 (0 in total, 99.8 th percentile 119.32)
Zephyr 368_GAR	459276	301547	Roadside	63	N/A	-	-	-	-	0 (0 in total, 99.8 th percentile 74.22)
Zephyr 393_KCR	460732	301328	Roadside	98	N/A	-	-	-	-	0 (1 in total)
Zephyr 437_A6	461498	301355	Roadside	78	N/A	-	-	-	-	0 (0 in total, 99.8 th percentile 69.70)
Zephyr 183_MS	457135	301018	Roadside	90	N/A	-	-	-	-	0 (1 in total)
Zephyr 370_WR	456380	304621	Roadside	100	N/A	-	-	-	-	0 (0 in total)

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Notes:

Results are presented as the number of 1-hour periods where concentrations greater than $200\mu\text{g}/\text{m}^3$ have been recorded.

Exceedances of the NO_2 1-hour mean objective ($200\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Figure A.2 – Trends in Number of NO₂ 1-Hour Means > 200µg/m³

No exceedences of NO₂ 1 -Hour means were observed.

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
AL	458574	306885	Roadside	N/A	99	17	20	19	17.5	19
GW	457083	300156	Roadside	N/A	96	20	20	22	22	18
MR	459528	306316	Roadside	N/A	99	13	19	21	21	16
VW	458507	304904	Roadside	N/A	99	20	20	20	19.5	20
Zephyr 95_UR	459186	302811	Urban Background	100	N/A	-	-	-	-	15.6
Zephyr 459_VW1	458507	304904	Roadside	99	N/A	-	-	-	-	13.2
Zephyr 352_BR	457515	305770	Roadside	98	N/A	-	-	-	-	13.1
Zephyr 361_CS	458922	304785	Roadside	100	N/A	-	-	-	-	11.2
Zephyr 450_EV1	N/A	N/A	Roaming sensor mounted on a vehicle	52	N/A	-	-	-	-	15.91
Zephyr 514_EV2	N/A	N/A	Roaming sensor mounted on a vehicle	46	N/A	-	-	-	-	16.34
Zephyr 368_GAR	459276	301547	Roadside	63	N/A	-	-	-	-	15.96
Zephyr 393_KCR	460732	301328	Roadside	96	N/A	-	-	-	-	13.75
Zephyr 437_A6	461498	301355	Roadside	82	N/A	-	-	-	-	11.41
Zephyr 183_MS	457135	301018	Roadside	90	N/A	-	-	-	-	12.2
Zephyr 370_WR	456380	304621	Roadside	100	N/A	-	-	-	-	13.19

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Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

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.

(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.3 – Trends in Annual Mean PM₁₀ Concentrations

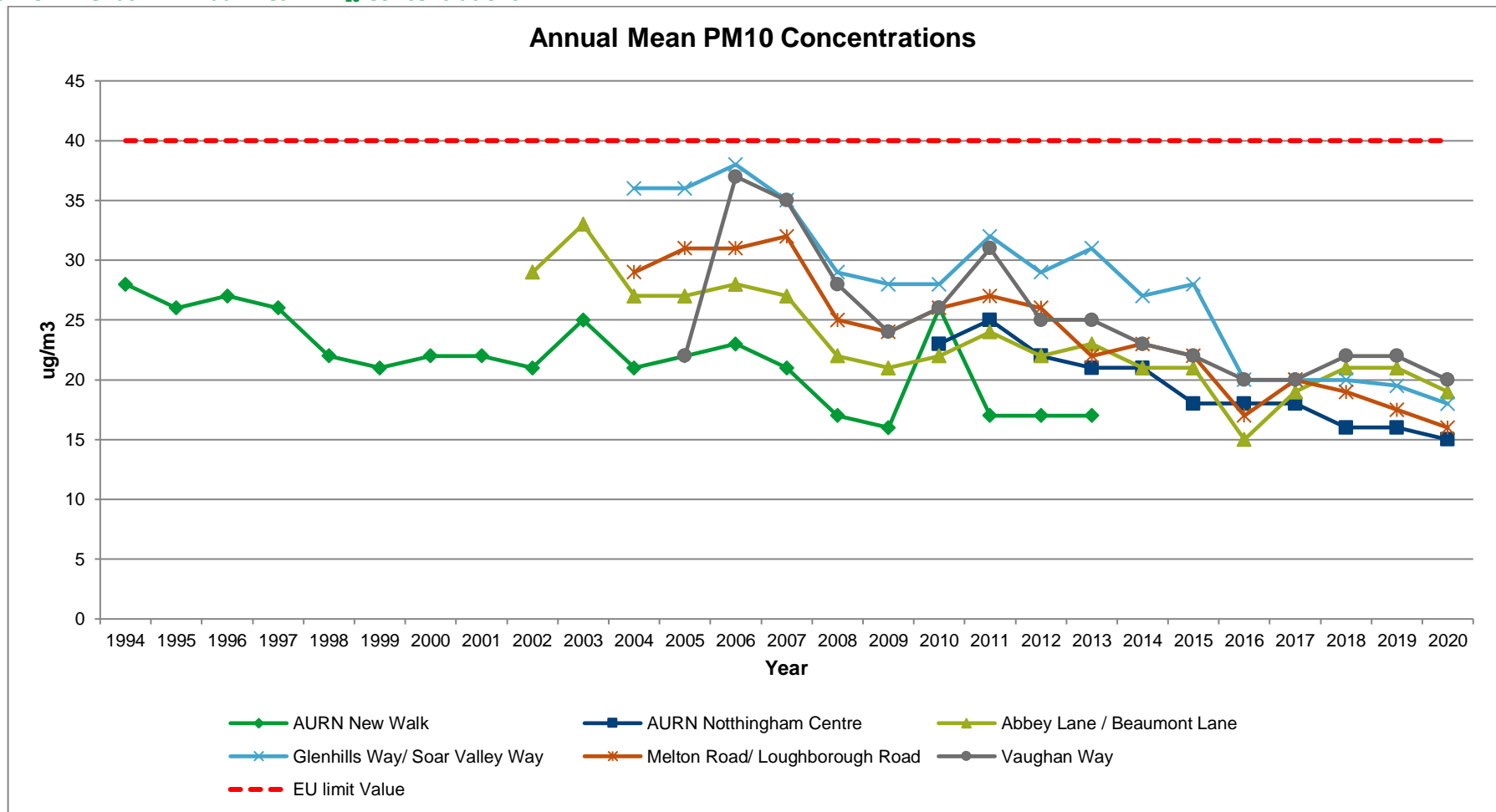


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

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
AL	458574	306885	Roadside	N/A	99	0 (0 in total)	0 (2 in total)	0 (10 in total)	0 (5 in total)	0 (0 in total)
GW	457083	300156	Roadside	N/A	96	0 (1 in total)	0 (1 in total)	0 (8 in total)	0 (11 in total)	0(2in total)
MR	459528	306316	Roadside	N/A	99	0 (0 in total)	0 (5 in total)	0 (8 in total)	0 (10 in total)	0 (0 in total)
VW	458507	304904	Roadside	N/A	99	0 (4 in total)	0 (2 in total)	0 (9 in total)	0 (8 in total)	0(2 in total)
Zephyr 95_UR	459186	302811	Urban Background	100	N/A	-	-	-	-	0(3 in total)
Zephyr 459_VW1	458507	304904	Roadside	99	N/A	-	-	-	-	0(1 in total)
Zephyr 352_BR	457515	305770	Roadside	98	N/A	-	-	-	-	0(2 in total)
Zephyr 361_CS	458922	304785	Roadside	100	N/A	-	-	-	-	0(1 in total)
Zephyr 450_EV1	N/A	N/A	Roaming sensor mounted on a vehicle	52	N/A	-	-	-	-	0(0 in total, 90.4 th percentile 29.74)
Zephyr 514_EV2	N/A	N/A	Roaming sensor mounted on a vehicle	46	N/A	-	-	-	-	0(0 in total, 90.4 th percentile 31)
Zephyr 368_GAR	459276	301547	Roadside	63	N/A	-	-	-	-	0(0 in total, 90.4 th percentile 33.4))
Zephyr 393_KCR	460732	301328	Roadside	96	N/A	-	-	-	-	0(0 in total)
Zephyr 437_A6	461498	301355	Roadside	82	N/A	-	-	-	-	0(0 in total, 90.4 th percentile 24.59))
Zephyr 183_MS	457135	301018	Roadside	90	N/A	-	-	-	-	0 (1 in total)
Zephyr 370_WR	456380	304621	Roadside	100	N/A	-	-	-	-	0(0 in total)

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Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded. Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Figure A.4 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

No exceedances of 24-Hour Mean PM₁₀ were observed

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
AURN University of Leicester	459178	302808	Urban Background	N/A	99	12	11.5	10.4	11	7
Zephyr 95_UR	459186	302811	Urban Background	100	N/A	-	-	-	-	8.9
Zephyr 459_VW1	458507	304904	Roadside	99	N/A	-	-	-	-	9.27
Zephyr 352_BR	457515	305770	Roadside	98	N/A	-	-	-	-	9.19
Zephyr 361_CS	458922	304785	Roadside	100	N/A	-	-	-	-	8.5
Zephyr 450_EV1	N/A	N/A	Roaming sensor mounted on a vehicle	52	N/A	-	-	-	-	9.35
Zephyr 514_EV2	N/A	N/A	Roaming sensor mounted on a vehicle	46	N/A	-	-	-	-	9.87
Zephyr 368_GAR	459276	301547	Roadside	63	N/A	-	-	-	-	11.14
Zephyr 393_KCR	460732	301328	Roadside	96	N/A	-	-	-	-	11.54
Zephyr 437_A6	461498	301355	Roadside	82	N/A	-	-	-	-	7.51
Zephyr 183_MS	457135	301018	Roadside	90	N/A	-	-	-	-	10.87
Zephyr 370_WR	456380	304621	Roadside	100	N/A	-	-	-	-	9.38

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Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

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.5 – Trends in Annual Mean PM_{2.5} Concentrations

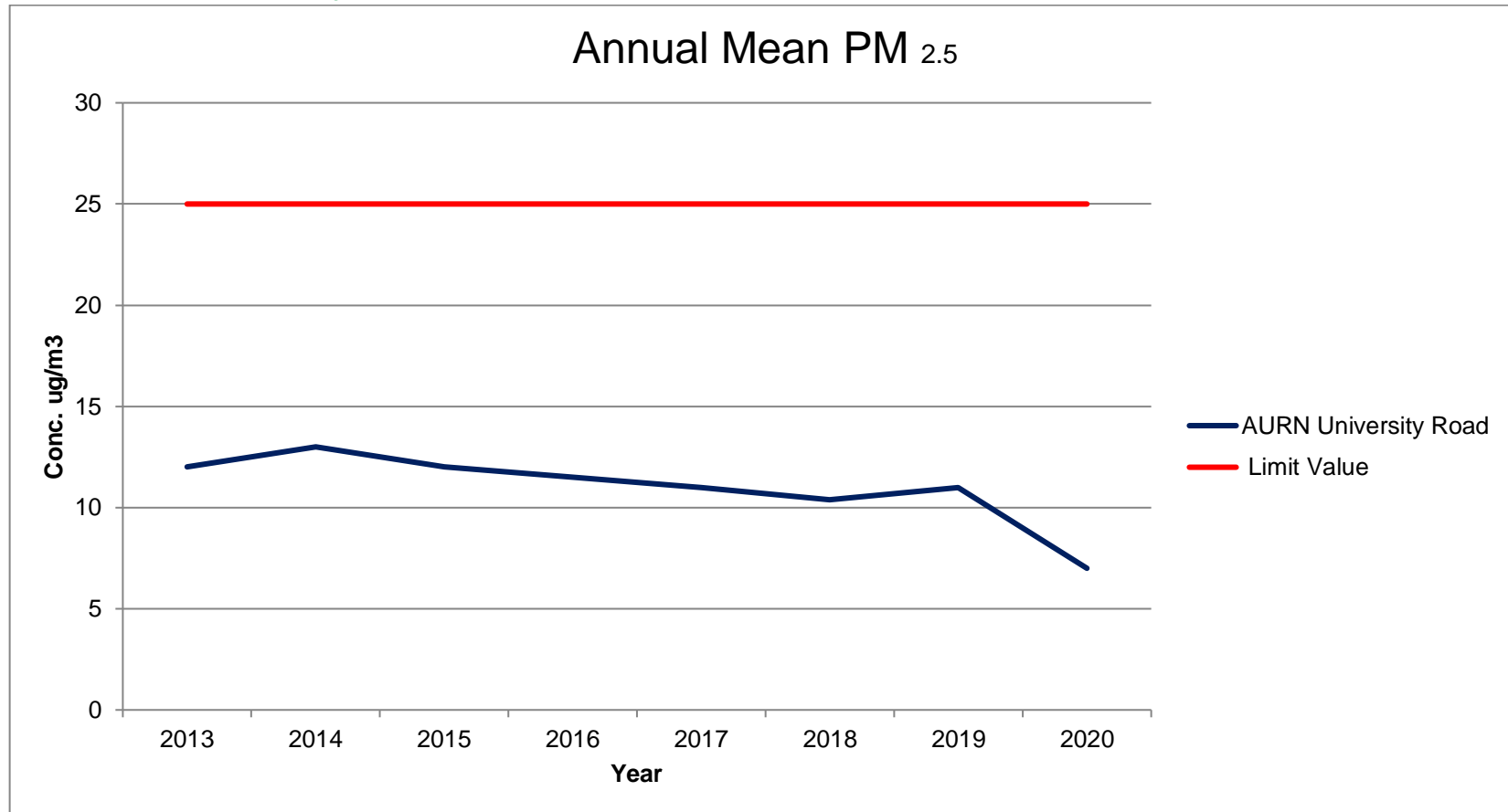


Table A.9 – SO₂ 2020 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	Number of 15-minute Means > 266µg/m ³	Number of 1-hour Means > 350µg/m ³	Number of 24-hour Means > 125µg/m ³
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

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

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

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 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 (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LCC1	456672	307669	34.6	33.3	-	-	-	-	-	-	37.6	37.9	42.8	28.2	35.7	23.3	**	
LCC2	459165	300271	32.1	29.7	-	-	-	-	-	-	27.4	29.9	38.4	29.9	31.2	20.3	**	
LCC3	458260	307900	38.8	38.2	-	-	-	-	-	-	33.2	39.2	47.4	33.2	38.3	25.0	**	
LCC4	457244	305572	-	33.1	-	-	-	-	-	-	32.6	-	-	-	32.9	N/A	**	
LCC5	455578	306395	42.5	40.1	-	-	-	-	-	-	36.8	37.1	46.8	30.3	38.9	25.4	**	
LCC6	455825	307676	41.4	32.1	-	-	-	-	-	-	37.6	37.4	44.6	32.6	37.6	24.6	**	
LCC7	455647	305825	40.6	40.6	-	-	-	-	-	-	34	37.9	39.2	35.3	37.9	24.7	**	
LCC8	455917	304892	32.7	23.4	-	-	-	-	-	-	22	22.6	32.2	I/S	26.6	17.7	**	Data capture less than 25 %
LCC9	455082	304761	39.6	30	-	-	-	-	-	-	30.8	31.7	39	26	32.9	21.4	**	
LCC11	456230	304273	38.3	30.5	-	-	-	-	-	-	26.4	32.8	37	27.7	32.1	21.0	**	
LCC12	457474	301061	42.8	-	-	-	-	-	-	-	26.5	-	-	23.6	31.0	19.8	**	
LCC14	457210	304276	30.8	26.5	-	-	-	-	-	-	25.2	26.7	32.2	17.9	26.6	17.3	**	
LCC15	457690	303783	40.9	36.5	-	-	-	-	-	-	35.1	40	-	-	38.1	26.9	**	
LCC16	461014	301043	36.6	31.4	-	-	-	-	-	-	29.6	31.7	-	41.8	34.2	22.3	**	
LCC17	456380	302193	34.6	26.3	-	-	-	-	-	-	26.4	28.4	35.3	33.8	30.8	20.1	**	
LCC18	456754	302259	42.5	32.7	-	-	-	-	-	-	29.7	32.3	35.1	31.2	33.9	22.1	**	
LCC19	457667	303460	56.7	51.2	-	-	-	-	-	-	38.2	44.1	56.7	36.5	47.2	30.8	**	
LCC20	459196	303882	36.9	29.1	-	-	-	-	-	-	28.8	28.9	-	-	30.9	21.8	**	
LCC21	459431	304564	46.3	38.5	-	-	-	-	-	-	28.3	31.9	40.0	-	37.0	24.7	**	
LCC22	457869	300085	35.0	30.8	-	-	-	-	-	-	34.4	31.7	38.6	30.1	33.4	21.8	**	
LCC23	459367	302117	50.8	40.4	-	-	-	-	-	-	33.3	42.4	51.6	43.5	43.7	28.5	**	
LCC24	458542	302023	29.4	31.2	-	-	-	-	-	-	30.1	34.5	39.0	33.1	32.9	21.5	**	
LCC25	459703	301072	31.3	26.9	-	-	-	-	-	-	21.7	23.0	33.8	19.1	26.0	16.9	**	
LCC26	461307	301478	36.7	29.5	-	-	-	-	-	-	28.2	29.9	33.2	31.2	31.5	20.5	**	
LCC27	460134	303093	40.0	-	-	-	-	-	-	-	37.2	37.1	42.5	-	39.2	25.6	**	
LCC28	463282	304552	27.8	21.6	-	-	-	-	-	-	21.0	20.0	28.9	26.4	24.3	15.8	**	
LCC29	462891	305329	-	29.5	-	-	-	-	-	-	23.8	30.0	38.2	34.4	31.2	21.1	**	
LCC30	461806	305323	47.4	40.1	-	-	-	-	-	-	30.4	36.4	-	-	38.6	27.1	**	
LCC31	461596	304989	39.7	-	-	-	-	-	-	-	27.8	27.4	36.0	-	32.7	21.3	**	
LCC32	460441	305322	-	-	-	-	-	-	-	-	40.0	42.9	45.0	43.4	42.8	28.5	**	
LCC33	458749	307184	47.7	44.6	-	-	-	-	-	-	30.4	37.4	43.4	31.9	39.2	25.5	**	
LCC34	460010	307324	31.7	26.2	-	-	-	-	-	-	25.8	26.8	34.7	25.6	28.5	18.5	**	
LCC35	458099	305184	46.7	35.2	-	-	-	-	-	-	28.6	33.4	46.5	40.7	38.5	25.1	**	
LCC36	458267	304623	54.4	56.3	-	-	-	-	-	-	-	57.8	-	-	56.2	37.5	**	The sensitive receptor is located over 85 meters from the DF therefore no distance correction was calculated
LCC37	458182	304400	45.6	44.3	-	-	-	-	-	-	35.7	38.0	37.4	29.0	38.3	25.0	**	
LCC38	461558	306508	33.5	14.7	-	-	-	-	-	-	23.1	-	26.7	20.2	23.6	15.0	**	
LCC40	460460	308234	43.0	34.7	-	-	-	-	-	-	30.1	34.0	41.7	32.9	36.1	23.5	**	
LCC41	460865	307949	46.5	39.4	-	-	-	-	-	-	24.9	35.3	45.6	33.3	37.5	24.4	**	
LCC43	460678	306582	40.5	29.8	-	-	-	-	-	-	31.0	30.9	40.2	22.9	32.6	21.2	**	
LCC44 a	459304	307385	34.1	28.5	-	-	-	-	-	-	20.8	26.7	33.1	32.9	N/A*		**	*Triplicate tube that require monthly averaging

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 (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LCC44 b	459304	307385	30.1	27.6	-	-	-	-	-	-	21.9	25.9	31.7	30.7	N/A*	18.6	**	*Triplicate tube that require monthly averaging
LCC44 c	459304	307385	29.7	27.5	-	-	-	-	-	-	20.2	25.3	34.2	-	N/A*		**	*Triplicate tube that require monthly averaging
LCC45	459185	302812	29.0	20.5	-	-	-	-	-	-	-	20.6	29.7	23.7	24.7	15.4	**	
LCC46	457596	310078	29.0	21.6	-	-	-	-	-	-	22.0	23.7	31.3	17.9	24.3	15.8	**	
LCC47 a	464058	305532	61.0	57.3	-	-	-	-	-	-	37.7	48.2	53.5	50.0	N/A*	33.1	**	*Triplicate tube that require monthly averaging
LCC47 b	464058	305532	65.6	54.4	-	-	-	-	-	-	38.6	44.5	46.7	38.9	N/A*		**	*Triplicate tube that require monthly averaging
LCC47 c	464058	305532	67.5	58.6	-	-	-	-	-	-	34.7	52.7	55.3	47.3	N/A*		**	*Triplicate tube that require monthly averaging
LCC49	458507	304904	25.8	18.6	-	-	-	-	-	-	17.0	20.0	29.0	14.6	20.8	13.6	**	
LCC50	461577	302746	-	21.4	-	-	-	-	-	-	24.4	24.8	33.7	23.9	25.6	17.4	**	

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQM DATA PROCESSING TOOL (IF UTILISED)

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1 (confirm by selecting in box).
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).
- Local bias adjustment factor used (confirm by selecting in box).
- National bias adjustment factor used (confirm by selecting in box).
- Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box).
- Leicester City Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System (confirm by selecting in box).

**The DT were deployed as part of Leicester NO₂ Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure

Notes:

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

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

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 Leicester City Council During 2020.

Leicester City Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Leicester City Council During 2020.

The Secretary of State for the Environment has “Directed” Leicester City Council to produce a Clean Air Plan bringing compliance with EU NO₂ objectives in the shortest possible time. Covering the entire administrative area, the Direction also makes clear air quality exceedances must not be transferred to areas outside the council’s administrative boundary. In 2019 the Joint Air Quality Unit were provided a draft Outline Business Case to partly fulfil this obligation. This business case illustrated, through a number of traffic and air quality models, that Leicester would be fully compliant for NO₂ in 2023 if the planned programme of interventions were followed. It has been agreed with JAQU that there are no interventions which can be made to bring the compliance earlier than 2023 and a draft plan requesting some small interventions was submitted to ministers in spring 2021.

QA/QC of Diffusion Tube Monitoring

An NO₂ diffusion tube survey has been undertaken over the course of 2020 as a continuation of the 2019 diffusion tube survey, where monitoring locations were selected in accordance with the methodology provided in ‘Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance’ and approved by Department for Environment, Food & Rural Affairs (Defra) and Department for Transport (DfT) Joint Air Quality Unit (JAQU). It should be noted that diffusion tube locations for this study were selected in order to determine NO₂ concentrations across the city with the focus on covering major roads. Not all sites are representative of sensitive receptor locations and hence the AQS objectives are not applicable at all locations.

Monitoring has been undertaken at 49 locations across the city during 2020. At two of these locations triplicate tubes have been co-located with continuous NO₂ analysers (located on Vaughan Way and the Automatic Urban and Rural Network (AURN) site on University Road) to allow a bias adjustment factor to be calculated in accordance with the LAQM.TG(16).

All diffusion tubes used in the monitoring followed the preparation method of 20% TEA in water and were provided and analysed by Staffordshire Highways Laboratory. The laboratory is accredited by the [United Kingdom Accreditation Service](#) (UKAS). The supplier has not been changed during the year). Due to COVID-19 lockdown in Leicester it was not possible to fully follow Diffusion Tube 2020 Monitoring Calendar and only 50 % data capture was achieved. At the beginning of the year January 2020 to beginning of March 2020 Diffusion Tube Monitoring Calendar was followed, then the lockdown was introduced, and the Calendar was followed again from the end of August 2020 onwards.

Raw NO₂ results have been annualised and bias adjusted in accordance with LAQM.TG (16).

Diffusion Tube Annualisation

Due to the national lockdowns associated with the COVID-19 pandemic, the diffusion tube monitoring was interrupted from March 2020 until the end of August 2020. Therefore, there was no diffusion tube data recorded for this period resulting in all average diffusion tube results requiring annualisation.

The results from these sites have been annualised to represent a full annual data capture based upon the methodology contained within LAQM.TG (16). The approach is based on the principle that patterns in pollutant concentrations are usually consistent across broad regions and therefore considers the relationship between period means and annual means at monitoring stations in the same region as the site of interest. The period mean is the period that the diffusion tube data is available for. The average of the ratios of the continuous monitor data annual mean to the period mean (A_m/P_m) provides the annualisation factor. This annualisation factor is then applied to the diffusion tube period mean to provide an estimated annual average representative of a full calendar year.

LAQM.TG (16) stipulates that background sites should be used to avoid any local effects that may occur at roadside sites, and should, wherever possible lie within a radius of about 50 miles. Table C 2. presents three Defra AURN background monitoring locations, which are within 50 miles of the site, and the 2020 annual mean NO₂ concentrations and data captures. Urban background monitoring sites are characterised as urban locations distanced from sources and broadly representative of city-wide background concentrations. Data from these sites is considered by LAQM.TG (16) to be suitable for the adjustment of short-term diffusion tube monitoring survey results to annual mean concentrations.

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 regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Leicester City Council have applied a local bias adjustment factor of 0.845 to the 2020 monitoring data. A summary of bias adjustment factors used by Leicester City Council over the past five years is presented in

Table C.1.

Due to the inherent bias associated with passive NO₂ diffusion tubes, it is necessary to utilise an adjustment factor which can be applied to the monitoring dataset in order to calculate the concentration from the tube. Bias adjustment is the process of accounting for the variable accuracy of annual mean NO₂ concentrations as measured by diffusion tubes relative to the chemiluminescent reference method from continuous automatic analysers. The Local Bias Adjustment Factor Tool, designed by AEA Technology on behalf of DEFRA, was used with monitoring data from the co-location sites (Vaughan Way and Leicester University AURN), as displayed in Table C 2, to generate a combined local bias adjustment factor of 0.845 which was then utilised for bias correction, in accordance with LAQM.TG(16).

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.845
2019	Local	-	0.82
2018	-	-	-

2017	-	-	-
2016	-	-	-

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 Leicester City Council required distance correction during 2020. None of the annual averages recorded were in the region of 36 ug/m² or above, therefore no distance corrections were carried out.

QA/QC of Automatic Monitoring

The data management for automatic air quality stations presented in this report has been carried out by the Environmental Research Group at the Imperial College London. Data presented in the ASR 2020 has been ratified in accordance with LAQM.TG (16):

- erroneous data has been identified and deleted
- data was analysed for drifts
- scaling has been applied where required
- negative or out of range data have been identified
- results from other monitoring stations have been considered
- unusual weather patterns, unusual incidents such as lane closure have been considered
- all LSO visits and services noted in the reports for each station
- loss of data due to equipment malfunction recorded
- LSO visits and services recorded

The ratified historical air quality data is available at the following website:

<https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-sustainability/air-quality/>

The Local Site Operators (LSO) duties have been carried out by the Enviro Technologies Ltd on monthly basis, they included calibrating the NO_x analysers and changing the tape in BAMs when required to ensure continuous monitoring. After each LSO visit a written report is produced for the records, so all information is available for viewing if required.

Automatic air quality stations are serviced twice a year by the Enviro Technologies Ltd and full reports are written after each service for record keeping.

Here are the calibration procedures followed:

Teledyne API NO_x Analyser Calibration Procedure

Zero Calibration

- Press the CALZ button to start the Zero calibration.
- Using the <TST TST> buttons, scroll to the NO_x STB parameter and wait until the NO_x STB value drops below 1.0 PPB.
- Once stabilised, press ZERO followed by ENTER to confirm the new Zero offsets.
- Press EXIT to exit the Zero calibration mode.

Span Calibration

- For a span cylinder connected to the pressurised span port, press CALS, or for a cylinder connected to the sample inlet press CAL or CALM and open the valve to output 2 Bar on the regulator.

- Using the <TST TST> buttons, scroll to the NOX STB parameter and wait until the NOX STB value drops below 1.0 PPB.
- Once stabilised, press SPAN followed by ENTER to confirm the new Span slopes.
- Press EXIT to exit the Span calibration mode (and if using a cylinder on sample inlet, close the regulator).

PM₁₀ and PM_{2.5} Monitoring Adjustment

Leicester City Council is using Smart Heated 1020 Beta Attenuation Monitors (BAMs) to monitor PM₁₀ levels and a correction factor of 0.96618357487922712 is used for the data. This corrects the measurements outputted from the instrument to reportable PM10 concentrations is applied to the data before it is published.

Automatic Monitoring Annualisation

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

An annualisation was carried out for a portable air quality sensor called Zephyr deployed as a part of PM 2.5 air quality network funded by the Air Quality grant from Defra, the calculations are included in 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.

One fall-off-with-distance calculations were required for automatic monitoring sites: Glenhills Way and St Matthews Way, Table C.4 contains the calculations. None of the limit values for NO₂, PM₁₀ or PM_{2.5} were exceeded at this location.

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

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
LCC1	15.3	14.0	18.7	-	0.77	35.7	27.6	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC2	15.3	14.0	18.7	-	0.77	31.2	24.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC3	15.3	14.0	18.7	-	0.77	38.3	29.5	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC4	15.3	14.0	18.7	-	N/A	32.9	N/A	Data capture less than 25%
LCC5	15.3	14.0	18.7	-	0.77	38.9	30.0	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC6	15.3	14.0	18.7	-	0.77	37.6	29.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC7	15.3	14.0	18.7	-	0.77	37.9	29.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC8	15.3	14.0	18.7	-	0.79	26.6	21.0	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC9	15.3	14.0	18.7	-	0.77	32.9	25.3	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
								for air quality model and not as an AQMA relevant exposure
LCC11	15.3	14.0	18.7	-	0.77	32.1	24.8	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC12	15.3	14.0	18.7	-	0.76	31.0	23.4	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC14	15.3	14.0	18.7	-	0.77	26.6	20.5	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC15	15.3	14.0	18.7	-	0.84	38.1	31.9	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC16	15.3	14.0	18.7	-	0.77	34.2	26.4	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC17	15.3	14.0	18.7	-	0.77	30.8	23.8	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC18	15.3	14.0	18.7	-	0.77	33.9	26.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC19	15.3	14.0	18.7	-	0.77	47.2	36.5	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
LCC20	15.3	14.0	18.7	-	0.84	30.9	25.8	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC21	15.3	14.0	18.7	-	0.79	37.0	29.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC22	15.3	14.0	18.7	-	0.77	33.4	25.8	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC23	15.3	14.0	18.7	-	0.77	43.7	33.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC24	15.3	14.0	18.7	-	0.77	32.9	25.4	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC25	15.3	14.0	18.7	-	0.77	26.0	20.0	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC26	15.3	14.0	18.7	-	0.77	31.5	24.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC27	15.3	14.0	18.7	-	0.77	39.2	30.3	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC28	15.3	14.0	18.7	-	0.77	24.3	18.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
LCC29	15.3	14.0	18.7	-	0.80	31.2	25.0	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC30	15.3	14.0	18.7	-	0.83	38.6	32.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC31	15.3	14.0	18.7	-	0.77	32.7	25.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC32	15.3	14.0	18.7	-	0.79	42.8	33.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC33	15.3	14.0	18.7	-	0.77	39.2	30.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC34	15.3	14.0	18.7	-	0.77	28.5	21.9	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC35	15.3	14.0	18.7	-	0.77	38.5	29.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC36	15.3	14.0	18.7	-	0.79	56.2	44.3	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC37	15.3	14.0	18.7	-	0.77	38.3	29.6	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
LCC38	15.3	14.0	18.7	-	0.75	23.6	17.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC40	15.3	14.0	18.7	-	0.77	36.1	27.8	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC41	15.3	14.0	18.7	-	0.77	37.5	28.9	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC43	15.3	14.0	18.7	-	0.77	32.6	25.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC44abc	15.3	14.0	18.7	-	0.77	28.5	22.0	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC45	15.3	14.0	18.7	-	0.74	24.7	18.2	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC46	15.3	14.0	18.7	-	0.77	24.3	18.7	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC47abc	15.3	14.0	18.7	-	0.77	50.7	39.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
LCC49	15.3	14.0	18.7	-	0.77	20.8	16.1	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
LCC50	15.3	14.0	18.7	-	0.80	25.6	20.6	The DT were deployed as part of Leicester NO2 Plan to monitor compliance and be used for air quality model and not as an AQMA relevant exposure
Zephyr 368 GAR	-	-	17.14	16.18	1.14	14.5	16.5	Period mean was calculated

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	6	6	-	-	-
Bias Factor A	0.87 (0.84-0.9)	0.82 (0.77 – 0.88)	-	-	-
Bias Factor B	15% (11% - 19%)	22% (14% -30%)	-	-	-
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	51	28	-	-	-
Mean CV (Precision)	7	4	-	-	-
Automatic Mean ($\mu\text{g}/\text{m}^3$)	44	23	-	-	-
Data Capture	99 %	98%	-	-	-
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	44 (43- 46)	23 (22-25)	-	-	-

Notes:

A combined local bias adjustment factor of 0.845 has been used to bias adjust the 2020 diffusion tube results.

Table C.4 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
GW	3	14		19	30.9	For the third year this site is compliant at sensitive receptor

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

Figure D.1 – Map of Non-Automatic Monitoring Site, Air Quality Management Area and Automatic Air Quality satins

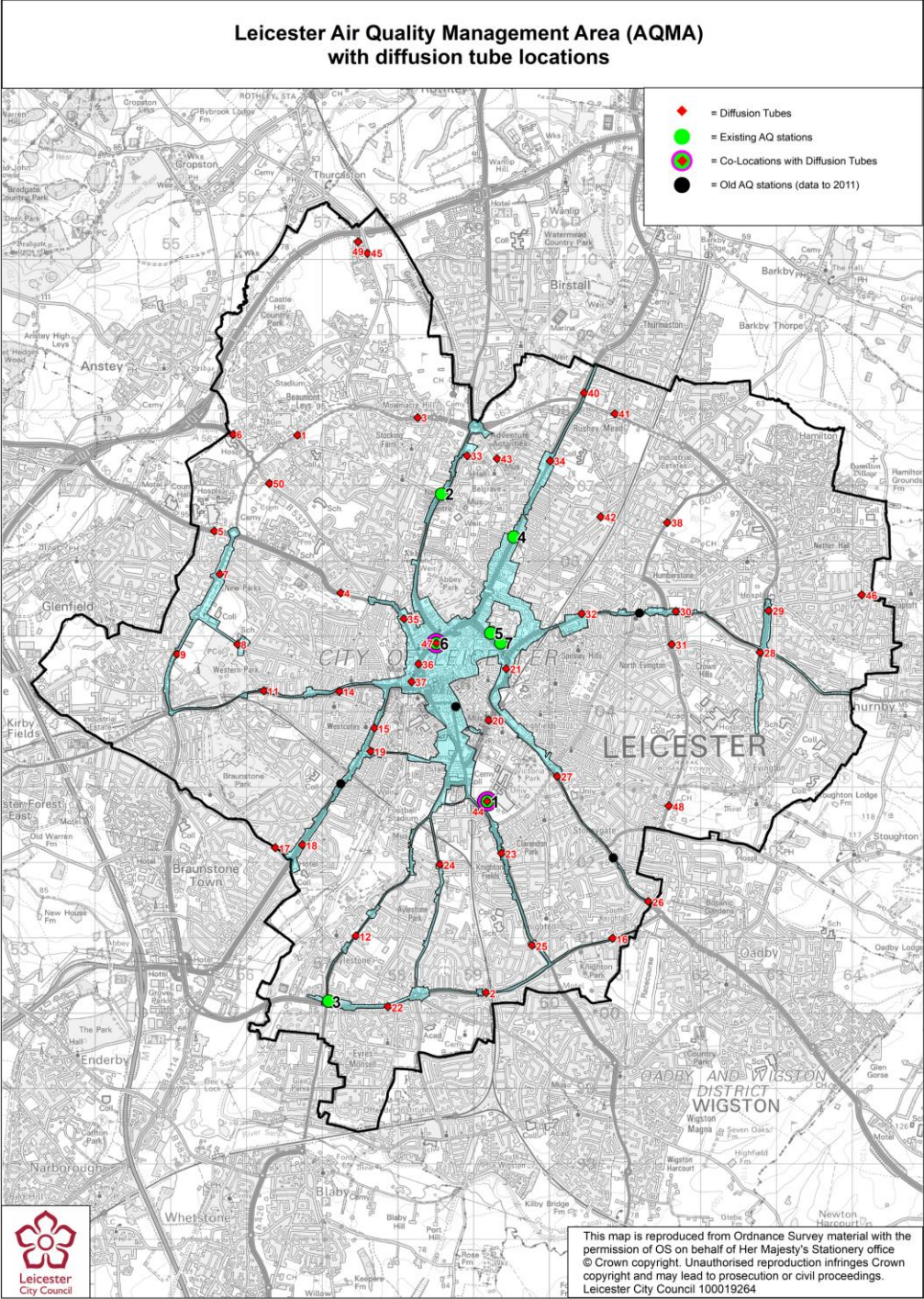
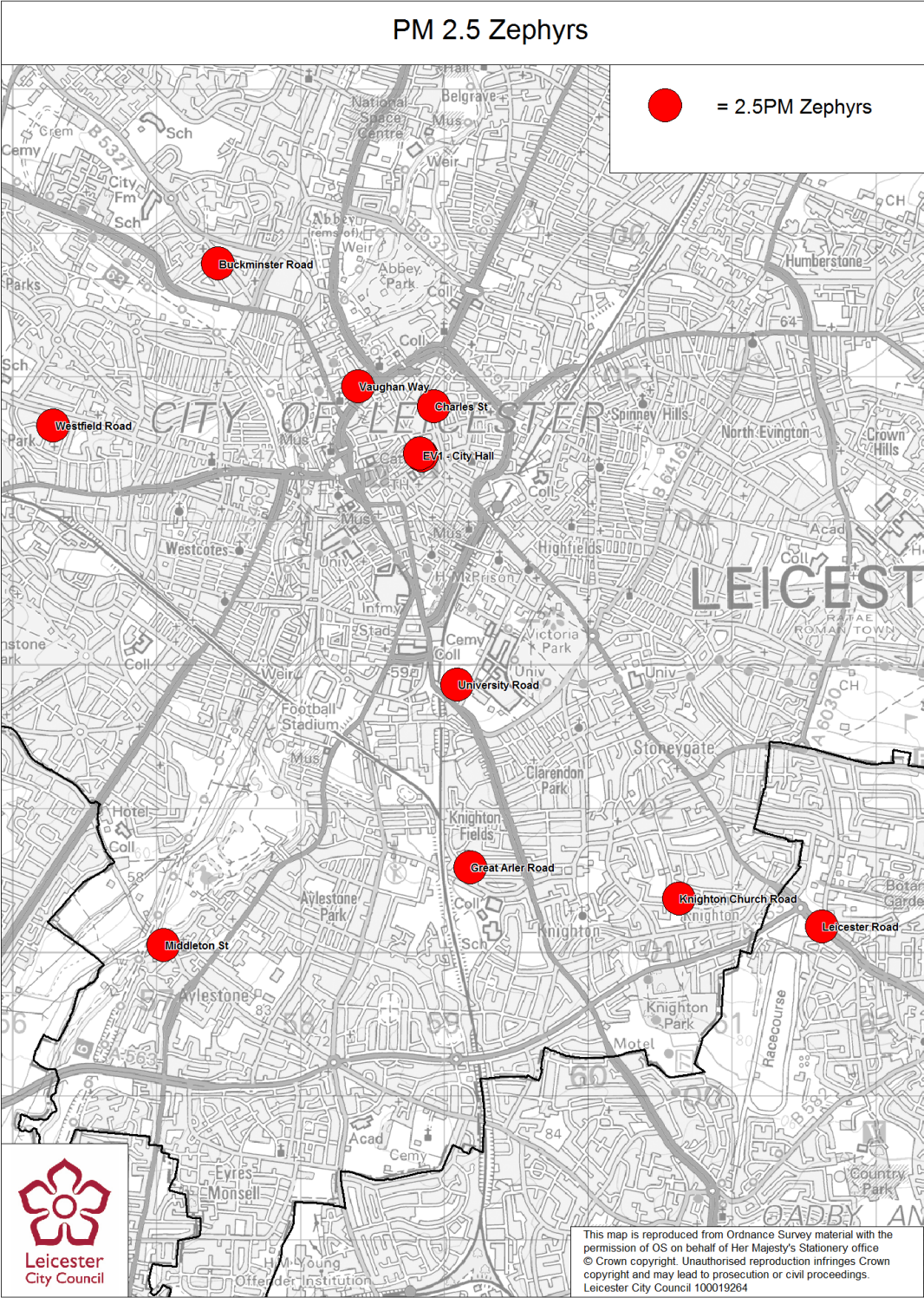


Figure D.2 – Location of portable air quality PM 2.5 monitors - Zephyrs



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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 represents an absolute reduction of between 10 to 20µg/m³ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. 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 PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5µg/m³ 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.

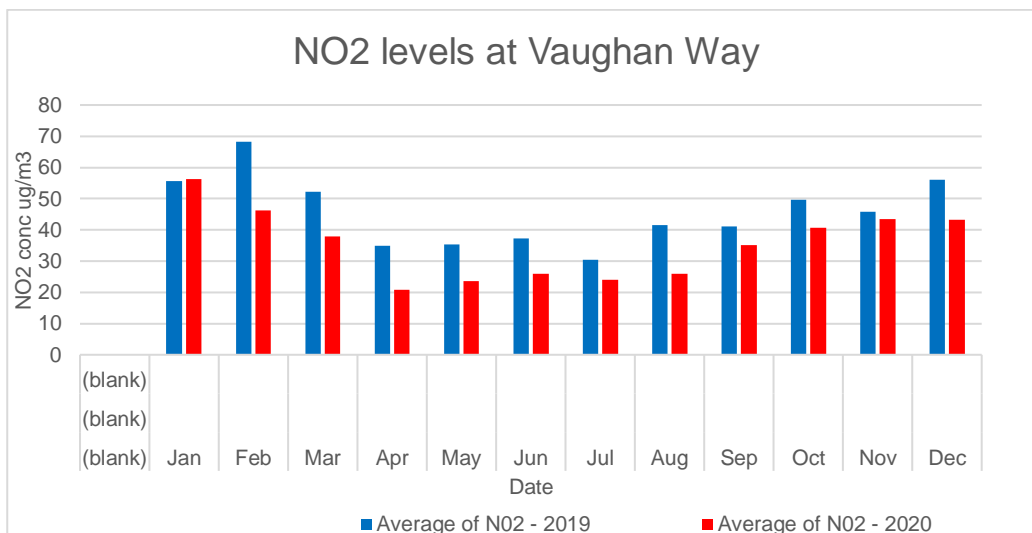
Impacts of COVID-19 on Air Quality within Leicester City Council

- Reductions of NO₂ concentrations at all of the monitoring sites were experienced between April to September 2020, the levels were over 40% down compared to previous years for continuous automatic monitoring stations and up to 25% at roadside diffusion tube locations. Due to the reductions all sites where the monitoring was carried out were compliant for the NO₂ objectives across the whole of the city, not only at AQMA. Figure F.1 demonstrates the impact of the lockdown on NO₂ monthly levels in comparison to previous year of monitoring. Leicester has experienced additional lockdowns compared to other areas of the country resulting in further reductions in NO₂ levels.

Figure F.1 NO₂ monthly averages for Vaughan Way air quality station

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

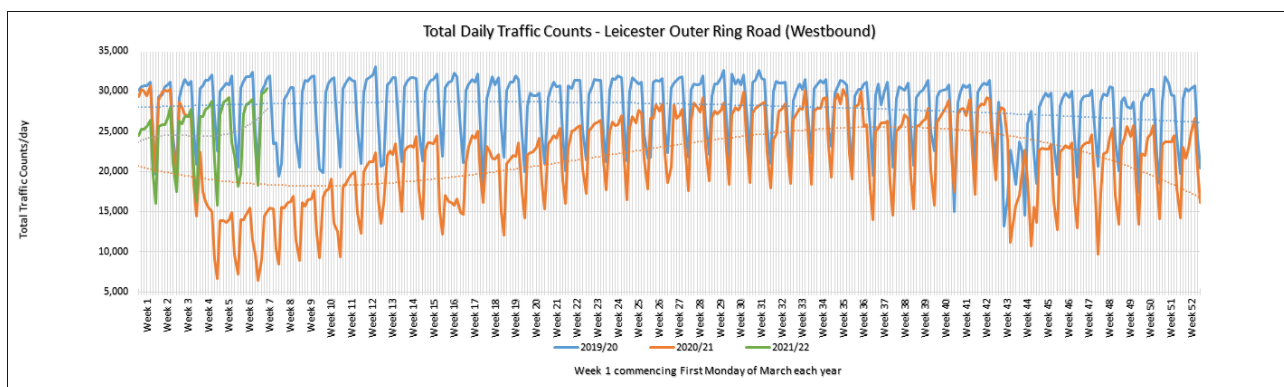
⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020



- Traffic levels fell to 35-45% of normal at the start of the first lockdown, but then slowly crept back up (despite Leicester always remaining in some form of lockdown) until they were back around 90-95% in November 2020, just before the 2nd National lockdown. Flows did not fall so far under the second lockdown, the lowest being 70% at the weekends. The 3rd National Lockdown on 5th Jan 2021 saw traffic levels fall back to 75-80% of 2019 levels. By mid-April as lockdown restrictions eased and Retail re-opened traffic levels were back at 95% of pre-Covid levels. Traffic has not quite returned in the same way however, the morning and evening peaks, while still present, are not as pronounced as they once were, with traffic levels spread more evenly throughout the day.

Figure F.2 illustrates observed changes in daily traffic counts on the Westbound Outer Ring Road section of Leicester’s road network

Figure F.2 Total Daily Traffic Counts – Leicester Outer Ring Road (Westbound)



Opportunities Presented by COVID-19 upon LAQM within Leicester City Council

- In response to Covid-19, Leicester City Council introduced 11mile (17.6km) of 'Key Worker Corridor' pop up lanes in 2020. Target routes were identified as part of Leicester Cycling and Walking Investment Plan and priority routes identified by recipients of Leicester Bike Aid cycles – A project that distributed over 500 free bikes and fixed over 750 cycles to support essential workers delivering health, care and other frontline operational roles during the public health crisis'.

Photograph 4: Key worker corridor



Challenges and Constraints Imposed by COVID-19 upon LAQM within Leicester City Council

- The implementation of action plan measure 2.1: retrofitting of 20 Euro III buses has been delayed due to parts being manufactured in Germany and factories only working at 50% capacity , also the staff at bus depots had to be protected ,so no outside contractors were allowed to do any work during the lockdowns. **Small Impact**
- During 2020 due to additional lockdowns in Leicester contractors managing the diffusion tube network were not able to come and collect the tubes. Therefore, it was not possible to maintain diffusion tube exposure periods for April to end of August in line with the national monitoring calendar for a number of sites. This has affected data capture within 2020, resulting in monitoring sites having to be annualised. **Medium Impact**

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
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

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
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.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.
- <http://www.leicester.gov.uk/health-and-social-care/public-health>
- <https://www.leicester.gov.uk/your-council/policies-plans-and-strategies/environment-and-waste/environmental-policy/>
- <https://www.leicester.gov.uk/media/180653/air-quality-action-plan.pdf>
- <https://www.leicester.gov.uk/media/kuuojdxw/leicester-climate-emergency-strategy-2020-2023-final-version.pdf>
- <https://www.leicester.gov.uk/media/tvnhl2pe/leicester-climate-emergency-action-plan-2020-2023-final-version.pdf>