Mansfield
District Council

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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The cover photograph shows Mansfield Bus Station, which was built in 2013 and includes a pedestrian bridge link to the railway station.

Executive summary: air quality in our area

Air quality in the Mansfield district

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 ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Historically, the Mansfield area relied heavily on coal for heating and the pollutants of concern were therefore 'black smoke' and sulphur dioxide. Over a number of years, Smoke Control Orders were introduced to cover the whole district, which produced a major improvement in air quality as regards both 'black smoke' and SO_2. Following the closure of the coal mines and therefore the massive reduction in residential solid fuel use, the emphasis has shifted to vehicle exhaust emissions (NO_2), and, to a smaller degree, airborne dust (PM_{10}). Currently, the Council does not undertake PM_{10} monitoring, but it does monitor for NO_2.

The Council has no Air Quality Management Areas at present, but has been continuing to pay greater attention to the northern end of Chesterfield Road North, Pleasley, and the Debdale Lane/Chesterfield Road North junction, Mansfield, where the highest NO_2 levels in the District are experienced. We have a real-time analyser and nine diffusion tubes in place at roadside locations throughout the district. This is a significant reduction from the number of diffusion tubes in place in 2020, but many were lost due to weathering of the fixings or

[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 2021

[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

vandalism during 2021, and to date it has not been possible to replace them. A programme of tube replacement will take place in 2022. In 2021, none of our monitoring sites exceeded the national Air Quality Objective of an annual mean of 40µgm^3 when the required factors were applied. The trend for NO_2 generally in the district over the last seven years shows a decline in levels.

A detailed air quality assessment was carried out for Pleasley in 2015, using NO_2 diffusion tubes and a real-time analyser, and it was concluded that an Air Quality Management Area was not required, but monitoring would continue. Unfortunately, it was not possible to start real-time monitoring again in Pleasley until April 2019, using an NO_2 analyser at a site some 100m further south of the previous location. It was hoped that after two years' monitoring at this location, the real-time unit could be moved to another site, but this has been delayed because the results for 2020 were artificially lowered by the travel restrictions necessary during the Covid-19 outbreak; the Council felt that the unit should remain in place during 2021, when travelling was likely to be back to normal, or near-normal, levels.

It is difficult for a local Council alone to reduce NO_2 emissions in its district, as these are primarily from vehicle exhausts. Consequently, the Council is reliant on actions also being taken by the County Council, Highways England, vehicle manufacturers and other involved parties.

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 Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[6] 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.

[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

Mansfield District Council's Smoke Control Area programme has been a great success in reducing air pollution from domestic heating sources, and the Council has not needed to monitor for 'black smoke' or sulphur dioxide for over twelve years. However, it is necessary to remind residents at intervals about the requirements of the Smoke Control Orders.

Nationwide, there has been a massive increase in the use of wood-burning stoves, and whenever Mansfield's Environmental Health section becomes aware of people installing these locally, it offers them advice on the installation and use of these stoves. Fortunately, the stoves tend to be scattered about the district rather than concentrated in an area, so any effects are usually confined to their immediate surroundings.

A small number of Council properties still require converting from old solid fuel-fired district heating systems to gas or electric, but this has been delayed, as only essential works could be carried out to Council houses in 2020 due to the Covid-19 outbreak, thus causing a backlog of works needing to be done in 2021.

A new list of measures being taken by various Council departments to improve local air quality was put together in 2016, with several items on it already completed. This was updated every year until 2020, when the Covid-19 restrictions, including staff working from home and being redeployed, meant that this could not be done. The Air Quality Action Plan has now been updated with the actions taken in 2021. Since Mansfield Council currently only monitors for NO_2, and the diffusion tubes have been positioned to monitor traffic emissions, it is difficult to quantify many of the outcomes of the Action Plan.

A closer working relationship with other Councils has been achieved through various schemes, including the Local Authority Energy Partnership and the Nottingham City Procurement Unit.

Mansfield is part of the group led by Nottinghamshire County Council that has updated the Nottinghamshire Air Quality Improvement Strategy.

Conclusions and priorities

Our conclusions from monitoring in 2021 are:

1) Results recorded in 2021 by the nine NO_2 diffusion tubes and the real-time monitoring unit were all below the annual Objective of 40µg/m^3. These results were recorded in

a year when the country was recovering from the restrictions associated with the Covid-19 outbreak, and the levels were expected to have increased from the previous year. However, it is hoped that public experience of living and home-working during the Covid-19 year will lead to fewer car journeys on a permanent basis.

2) Although the Council does not monitor for $PM_{2.5}$, we assume that, comparing monitored levels recorded in the centre of Nottingham with Defra's modelled background level for Mansfield, $PM_{2.5}$ levels in the area will not be a cause for concern. No Air Quality Objective has been set to date for $PM_{2.5}$, but the World Health Organisation guideline value is 10µgm^3. Mansfield's levels are thought to be around 7.9µgm^3. The actions identified in Table 2.1 that will help to reduce PM_{10} concentrations should also reduce $PM_{2.5}$.

3) Detailed dispersion modelling was carried out in 2018 by a consultant looking at possible air quality issues from three road junctions and two residential development locations for the proposed Local Plan allocation. The report concluded that, although implementation of the Local Plan would cause an increase in traffic loading at the junctions, it would not have significant impacts on local air quality. Even if the expected improvements in vehicle emissions did not materialise, the impact would still be 'negligible' to 'slight'. Monitoring has been taking place for some years at one of the junctions in question; a diffusion tube was due to be put in place at a suitable point once the residential developments have been completed, as a receptor was identified that might experience an increase in NO_2 levels of up to 3.9µgm^3. A tube has still not been put in place at this second junction as the residential development has not yet been completed.

Our priorities for the coming year are:

1) To continue diffusion tube monitoring for NO_2 throughout the district to enable us to have an ongoing indication of levels of this pollutant;

2) To monitor throughout 2022 with the NOx real-time analyser in the new location on Chesterfield Road North in Pleasley, as the 2021 results are likely to have been artificially lowered due to the steady recovery from the restrictions associated with Covid-19;

3) To reinstate real-time PM_{10} monitoring in the district;

4) To implement and continue to develop the various measures the Council is taking to improve local air quality;

5) To promote the new Nottinghamshire Air Quality Improvement Strategy; and

6) To promote the requirements of the Air Quality Regulations 2020 (England), which came into force on 1 May 2021.

Local engagement and how to get involved

Several of the initiatives detailed in Table 2.1 have been undertaken in partnership with other bodies, usually the County Council or county-wide groups. This helps to achieve both efficiency and consistency.

The Environmental Health Department continues to give advice on air quality issues when requested by the public, particularly in respect of wood-burning stoves and garden bonfires.

The public can help to improve air quality in the district in several ways:

1) If you are using an open fire, burn only solid smokeless fuels on it, not wood or coal. This is a legal requirement under the Clean Air Act 1993 and the various Smoke Control Orders that cover all properties in the district. The text of the Clean Air Act 1993 is available at www.legislation.gov.uk/ukpga/1993/11/contents; information on the Council's Smoke Control Orders and the streets within each is available on request from the Environmental Health section.

2) If you have a closed solid-fuel fire (roomheater), burn only the type of fuel recommended by the manufacturer. Again, this is a legal requirement. Some roomheaters are advertised as 'multi-fuel', but if they are not on the Defra 'approved appliance' list, you cannot burn anything except smokeless fuel on them. Approved appliances are listed at www.smokecontrol.defra.gov.uk/appliances.php?country=england; and authorised fuels at www.smokecontrol.defra.gov.uk/fuels.php. If you use other types of fuel on a roomheater, you risk damaging its interior, which may release fumes into your house.

3) If you are using a wood-burning stove, burn only clean, dry wood. Wood must be left to dry for at least a year before you use it (unless you have bought 'kiln-dried' wood), and it must contain less than 20% moisture. Moisture meters can be bought to check

this; they are particularly useful if you buy wood from several different sources, as the moisture content may not be consistent. Store your firewood in a place where it will not get damp; if possible, bring wood indoors at least a week before using it, to help it to dry out further, and check its moisture content before using it. Never burn wood that has been painted, varnished or treated in any way (this includes pallets), as it could cause damage to the interior of your stove and release fumes inside your house. New legislation came into force in May 2021 to regulate the sale of wood as a fuel - visit www.hetas.co.uk/ready-to-burn-what-consumers-need-to-know for more information.

4) Since 2005, wood-burning stoves have been required by law to have a Certificate of Compliance from a HETAS-registered engineer, or a Building Notice from a Building Control Officer, to confirm that they have been fitted correctly. If you do not have a certificate for your stove, you should have it serviced by a HETAS-registered engineer, who will give you a certificate for twelve months.

5) Avoid garden bonfires as much as possible. Never burn household waste, furniture, carpets, anything containing plastics or foam rubber, or any other items likely to cause black smoke and smell. You can burn plant and tree cuttings from your garden, but you must allow them to dry out before burning them. You can also burn confidential papers. Any garden fire you do have should be attended at all times by someone with access to a hosepipe or a bucket of water, soil or sand, to put it out if it gets out of control or if the wind blows the smoke towards another property or a road. Fires must be put out before leaving them at night.

6) Wherever possible, use alternative forms of transport rather than your car. When changing cars, look for a ‘cleaner’ vehicle; in particular, be aware that new single-fuel cars and vans (i.e. those that only use petrol or diesel) will no longer be produced from 2030. Have your car serviced regularly, and if the exhaust starts smoking, have it checked.

Local responsibilities and commitment

This ASR was prepared by the Environmental Health Department of Mansfield District Council with the support and agreement of the following officers and departments: Planning; Planning Policy; Housing; Private Sector Housing; Taxi Licencing; Fleet Management; Facilities; and Public Relations.

This ASR has been signed off by the Head of Health and Communities.

If you have any comments on this ASR, please send them to Mrs S Dilks or Miss C Dewick on sdilks@mansfield.gov.uk or cdewick@mansfield.gov.uk.

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1 Local Air Quality Management

This report provides an overview of air quality in the Mansfield district during 2021. 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 Mansfield District 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

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.

Mansfield District Council does not have any AQMAs at present, but since 2016 has been compiling and updating a list of measures it has been taking to improve air quality. It was not possible to update the AQAP in 2020, as, due to the restrictions imposed by Covid-19, many initiatives had to be put on hold, and all staff members were working from home and did not always have access to documents required to provide an update. The AQAP has now been updated for 2021. For reference, maps of the Council's monitoring locations are available in Appendix D.

Progress and impact of measures to address air quality in the Mansfield District

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

1. *There are no Air Quality Management Areas (AQMA) and as a result the Council is not required to produce an Air Quality Action Plan (AQAP) however, the Council has developed 23 measures to improve Air Quality. This shows best practice, and is to be encouraged. However, the Council have stated that no progress has been made in 2020 due to COVID-19 restrictions. Any updates in the future should be detailed in the future ASRs.*

   The AQAP has been updated as much as possible bearing in mind the continued impact of Covid-19 in 2021, and is provided on pages 18-20 of this document.

2. *It appears that there have been changes in the diffusion tube monitoring between 2019 and 2020, although no details have been provided. It would be helpful for the Council to provide a summary of changes in any monitoring network from the previous ASR.*

There have been no intentional changes to the diffusion tube monitoring network. The restrictions following the outbreak of Covid-19 meant that the Council halted all but essential or urgent visits, which meant that tubes were not changed for some months, and replacement of damaged fixings (which caused loss of several tubes) was not carried out. The Council intends to reinstate the missing fixings during 2022.

3. *The Council notes that results from the automatic site (Chesterfield Road North, Pleasley) in 2020 are not likely to be truly representative, and that monitoring will continue, likely throughout 2021 and 2022. This is considered good practice, and should provide robust evidence of air quality at this location.*

   It is still our intention to monitor throughout 2022 at this site. Suitable sites for the automatic unit's relocation will be considered in the winter of that year.

4. *Whilst the annualisation calculations are robust it is recognised that these were most likely conducted prior to the release of the LAQM tool this year, the Council may wish to consider using this next year to expedite the calculations.*

   The Diffusion Tube Data Processing Tool version 2, released 8 March 2022, was used for processing the 2021 data.

5. *It is encouraging to see the council responding to the comments raised in the previous reporting year. This should be encouraged, and continue in future ASRs.*

   The Council intends to continue responding to the Defra comments in this bulleted style, as it provides a useful checklist for our current and future actions.

6. *The Council have reiterated their intention to reinstate PM_{10} monitoring is stated, which is encouraging.*

   The knock-on effects of Covid-19 have meant that the re-introduction of PM_{10} monitoring was not progressed in 2021.

7. *The Council has listed a number of priorities for the next year and the council should provide an update on the progress of these in the next reporting year.*

   Regrettably, it has not been possible to action several of last year's priorities, due to staffing levels and the slow recovery from Covid-19. It has been decided that the greatest

priority is to replace our missing diffusion tubes and ensure that we acquire as full a dataset as possible in 2022.

8. *The Council have produced detailed maps showing monitoring locations. However, the maps are in black and white and are not immediately clear (particularly Figure D1.a). The Council should consider the following points:*
    a. *using a large scale map of the district to show the spread of monitoring, along with smaller scale maps for each area to clearly show monitoring locations;*
    b. *contrasting colours to clear see the monitoring locations, perhaps using colours to show those locations where the AQO is exceeded;*
    c. *consistent map styles; and*
    d. *selection of an appropriately scaled base map, as too much detail on a large scale map can appear confusing.*

    Due to technical problems with the mapping system, the Council has been unable to produce new maps of the diffusion tube locations in time for the submission date of this document. The original maps have been repeated to give an indication of the locations of the tubes – the majority of the missing ones will be replaced at their original sites (or very close to them) in 2022, when new maps will be prepared.

Mansfield District Council has taken forward a number of measures during the current reporting year of 2021 to help improve local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Twenty-three measures are included within the table, with the type of measure and the progress the Council has made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within the table.

The principal challenge and barrier to implementation that Mansfield District Council anticipates facing, which will affect several measures, is the prevailing attitude to the use of cars, particularly the convenience of driving to and from work in a car, even if it is not used by its owner during the working day.

Progress on several measures has been slower than expected due to the Covid-19 outbreak, which resulted in the Council offices being closed from the end of March 2020. Staff being scattered across the area (and sometimes in neighbouring counties), plus a lack

of access to non-digitised printed documents, meant that it was difficult, if not impossible, to progress some measures, particularly those that required input from other organisations.

Mansfield District Council's priorities for the coming year are:

- To continue to monitor in the current locations, as the results recorded in 2021 are still likely to have been affected by the restrictions associated with the outbreak of Covid-19.
- To reinstate the missing diffusion tubes at their original locations, or as close to them as possible.
- To find a suitable location to move the real-time monitoring unit to, and to start monitoring PM_{10} again.
- To set up the proposed Carbon Reduction and Resilience Group, allowing coordination of the actions that different sections in the Council are carrying out.

Mansfield District Council is one of the councils who produced the Nottinghamshire Air Quality Improvement Strategy, and was involved in the updating of this document by a group led by Nottinghamshire County Council. The final version of the new strategy was brought before the various councils' committees in October 2020; it is available on the Nottingham City Council's website at

https://committee.nottinghamcity.gov.uk/documents/s107973/Notts%20AQ%20Strategy%202020%20FINALv1.0.pdf.

The District Council's updated Local Plan was adopted on 8 September 2020 and can be found at https://www.mansfield.gov.uk/downloads/file/1645/mdc-adopted-local-plan-2020. A policy for assessing air quality is included in the plan, to ensure its impact is considered during the planning stage of all new developments. Climate change has also been incorporated.

Information about Nottinghamshire County Council's Local Transport Plan 2011-2026 can be found at https://www.nottinghamshire.gov.uk/transport/public-transport/plans-strategies-policies/local-transport-plan.

Much of Mansfield's future approach to air quality issues will be influenced by the actions that are taken in and around the city of Nottingham, which was included in a World Health Organisation list released in 2016 as one of ten UK cities failing to meet WHO air pollution guidelines.

Table 2.1 – 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	Home energy conservation	Policy guidance and development control	Other policy	2011/ 2013/ 2015	When all MDC properties reach required standard	MDC Housing	Internal					Potentially locally-significant impact – may prevent residents resorting to cheaper, possibly non-authorised, fuels	Percentage reduction in heating costs	Home Energy Conservation Act Report	Very few Council properties remain to be converted from district heating systems to gas central heating, but Covid-19 restrictions have slowed completion of scheme. Over 1,800 properties converted since scheme began. 130 external wall insulations and 70 loft insulations completed since 2020
2	School travel plans	Promoting travel alternatives	School travel plans		Ongoing	Notts County Council Education Department	NCC					Potentially locally-significant impact, particularly in areas of high-density housing	Reduction in number of private vehicle school runs	Several school travel plans already implemented	Lack of cycle lanes could be a barrier to implementation
3	Cleaner taxis	Promoting low emission transport	Taxi emission incentives	2016	Ongoing	MDC Taxi Licencing	Internal						Increased number of taxi operators using cleaner vehicles	Licence fee for hybrid vehicles reduced by 10%	Monitoring projects in neighbouring districts - will consider review if necessary
4	Cleaner taxis	Promoting low emission transport	Taxi licensing conditions	2016	Depends on creation of any national standards	MDC Taxi Licencing	Internal						Fewer older vehicles operating	MDC reviewing taxi licencing policy to encourage newer, cleaner vehicles	To be completed by end of March 2023
5	MDC vehicle fleet efficiency	Vehicle fleet efficiency	Fleet efficiency and recognition schemes		When all MDC fleet vehicles are Euro 6 (or ideally electric)	MDC Fleet Management	Internal					Future replacement of diesel fleet vehicles with electric ones will contribute to local AQ improvements	Percentage reduction in emissions and fuel usage; increased number of cleaner vehicles	Halving of fleet replacement budget in 2018 has meant that replacement of vehicles has not kept up with planned timeline. New vehicle replacement scheme to be put in place by new fleet manager on their appointment in 2022	No Euro 4 vehicles in fleet; 45% of HGVs are Euro 5, all others are Euro 6. Aiming for no vehicles to be older than 10 years
6	Alternative fuels	Promoting low emission plant	Shift to installations using low-emission fuels for stationary and mobile sources	2015	When all sources meet required standard	MDC Facilities	Internal						Reduction in electricity costs	Solar panels put on Civic Centre roof in March 2016 – savings of over £30,000 to date	Solar panels being put on several new MDC commercial and residential buildings
7	Working from home	Promoting travel alternatives	Encourage/ facilitate home-working	2014	Ongoing	MDC	Internal					Impact likely to be most noticeable at peak times – people working from home likely to plan journeys to avoid those times	Number of people taking up option	Home working policy implemented 2014	12 Finance section officers work permanently from home. Many other sections now operate by agile working – staff work from home, but come into office when necessary
8	LEV parking and charging	Promoting low emission transport	Priority parking for LEVs		Ongoing	MDC Planning	Internal					Greatest impact may not be seen for some years after 2030, as existing single-fuel vehicles not to be phased out	Number of spaces provided alongside demand	Updated Local Plan (2013-33) includes policies addressing electric car charging, and mitigation and adaptation to climate change. Local Plan Annual Monitoring Report has recorded number of applications for electric car charging points and renewable energy. See https://www.mansfield.gov.uk/planning-policy/annual-monitoring-reports-1 Development Management starting to put conditions on for electric charging points and request information through planning applications	District now has least 60 public charging points for electric cars - several stores and public houses have indicated they will be applying for planning permission to provide charging points in their car parks
9	Carbon management plan	Policy guidance and development control	Low Emissions Strategy	2010	Ongoing	MDC Planning Policy	Internal						Percentage reduction in emissions. Carbon-neutral status	Full Council declared climate emergency 'in principle' on 5 March 2019. Council to go carbon-neutral by 2040. Pledge to make Mansfield carbon-neutral by 2040 and work with local businesses and industry	Further progress slowed until Climate Change Officer replaced (new starter begins in early 2022)
10	Warm Homes on Prescription	Policy guidance and development control	Other		When funding exhausted	MDC Private Sector Housing						See comments to Measure 1	Number of homes improved	114 properties improved since grant introduced in 2016/17, including 24 in 2021/22 financial year	Health professionals encouraged to refer patients if they have concerns about heating and insulation of their homes
11	Green Homes Grant LAD Scheme	Policy guidance and	Other	2020	Ongoing	MDC Private Sector Housing	BEIS						Number of homes improved	200 properties improved to date	Targeted advertisement towards eligible properties

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		development control													
12	Speed limit reductions	Traffic management	Reduction of speed limits, 20mph zones	Included in Transport Plan 2011-2026	Ongoing	Notts County Council Highways	NCC					Potentially significant impact during peak times	Reduction in traffic emissions; accident reduction	Some 40mph roads reduced to 30; 20mph zones around most schools in district, although some operate only when road crossing attendant on duty	Primarily for road safety, but should also improve air quality
13	Delivery management	Freight and delivery management	Quiet & out-of-hours delivery		Ongoing	MDC Planning							Reduction in complaints from nearby residents	Discussions with businesses to reduce frequency of deliveries	Considered during planning process; conditions attached where appropriate
14	"Part B" process controls	Environmental permits	Measures to reduce pollution through IPPC permits going beyond BAT		Ongoing	MDC Environmental Health							Reduction in solvent use	Permitted processes reporting on progress every two years	Discussed with businesses during inspection process; also considered in each business's Five Year Review
15	Energy partnership	Policy guidance and development control	Regional groups co-ordinating programmes to develop area-wide strategies to reduce emissions and improve air quality		Ongoing funding available	Local Authority Energy Partnership made up of 20 authorities from Nottinghamshire and Derbyshire							Co-ordination of strategies likely to have positive effect on air pollution throughout county	MDC's strategy to be written and programmes developed by new Climate Change Officer (due to start at MDC in 2022)	Local Energy Partnership has not met for some time (approx. 2012/13). Climate Change and Resilience Group to be set up in MDC to drive policies forward locally
16	Local Plan	Policy guidance and development control	Air quality planning and policy guidance	2013	Ongoing development and refinement of AQ policies	MDC Planning Policy	Internal					Impact in immediate area of development potentially significant – all properties need to be constructed so as to reduce possibility of residents making changes which may be advantageous to them but not to air quality in area	Increased awareness of air quality issues, and action to improve air quality, among developers in District	Updated Local Plan adopted September 2020. See https://www.mansfield.gov.uk/local-plan/adopted-local-plan-2013-2033	Updated Local Plan addresses air quality in policies P7 (Amenity) and NE3 (Pollution and land stability). Evidence on air quality will be gathered and used to inform AQ policies within local plan. Updated Local Plan Objectives 9 and 12, and monitoring indicator for NE3, address air quality
17	Sustainable procurement	Policy guidance and development control	Sustainable procurement guidance		Ongoing compliance with strategy	Nottingham City Council Procurement Unit						Potentially significant impact of less-frequent deliveries in town centre, as most delivery vehicles are diesel	Impact on air quality	Minimise environmental impact of goods, services and works procured	
18	Cycle-to-work scheme	Promoting travel alternatives	Promotion of cycling	2016	Ongoing	MDC	Internal						Number of people cycling to work	Cycle-to-work scheme already implemented at MDC. Wider scheme proposed in 2019, but no further progress due to Covid-19	To be included in new Health and Wellbeing Agenda, scheduled for completion by September 2022.
19	Cycle network	Promoting travel alternatives	Promotion of cycling	2017/18	Ongoing	MDC, Notts County Council	D2N2 LEP LGF					Considered likely to have only small impact on AQ – will mostly affect health	Increased use of cycle network	Potential cycle routes identified in 2017; no further progress due to Covid-19	
20	Promotion of walking	Promoting travel alternatives	Promotion of walking	2016	Ongoing	MDC	Internal					See comment above	Increased number of people walking; improvements in health	New corporate priorities launched in 2016, including actions to help people live healthier lives, and for climate change issues, district heating improvements, energy efficiency, carbon footprint reductions	To be included in new Health and Wellbeing Agenda, scheduled for completion by September 2022
21	Bus lane	Traffic management	Strategic highway improvements, re-prioritising road space away from cars, including access management, selective vehicle priority, bus priority, high-occupancy lane	Included in Transport Plan 2011-2026	Ongoing – new bus lanes under consideration	Notts County Council Highways	NCC					Local impact potentially quite significant – existing bus lane is on street with terraced houses next to traffic lights	Reduction of bus waiting time at one busy traffic-lighted junction	Bus lane on Leeming Lane South has been in place for several years. Possibility of two further bus lanes, plus extension of existing one, being investigated by NCC in 2019/20, but progress delayed by impact of Covid-19	Reduced bus waiting time at traffic lights by two minutes on average
22	Public information	Public information	Via radio, press, and internet		Ongoing	MDC Public Relations and Communications Team	Internal						Increased number of hits, comments and likes recorded from website, Facebook pages, etc.	Positive publicity via social media, MDC website, press releases, etc., and by taking part in national awareness campaigns	

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23	Public information	Public information	Via leaflets, radio, and internet		Ongoing	MDC Environmental Health	Internal					Local impact potentially quite significant – necessary to remind residents at intervals of requirements of Smoke Control Orders	Increased number of requests per annum for leaflets and interviews; increased number of hits on EH section of website	Various leaflets always available on request; interviews as requested by local radio station; information on MDC website	

$PM_{2.5}$ – Local Authority approach to reducing emissions and/or concentrations

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

The Public Health Outcomes Framework Indicator[5] D01, 'Fraction of mortality attributable to particulate air pollution' for Mansfield is 5.1% (measured as $PM_{2.5}$ and taken from 2020 data). This is just under the East Midlands figure of 5.2%, and under the figure for the whole of England, which is 5.6%.

Mansfield District Council does not monitor for $PM_{2.5}$ at present, therefore the local levels have been predicted from the nearest AURN site that measures $PM_{2.5}$, and the modelled background concentrations from the Defra website. On this website, the modelled background level for 2021 for the Mansfield area is 7.9µgm^3, which is unchanged from the 2020 figure. In 2021, the annual mean concentration at the AURN site in Nottingham Centre was 8.3µgm^3, a considerable reduction from the 2020 figure of 10.83µgm^3. (Please note that the Mansfield figure is modelled, whereas the Nottingham one is monitored).

The World Health Organisation guideline value[6] for $PM_{2.5}$ is 10µgm^3; no air quality objective has been set to date. The European Union legal annual mean is 25µg/m^3, which has been transposed into UK law, although the Mayor of London said in the Greater London Authority's 2019 report, "$PM_{2.5}$ in London: roadmap to meeting World Health Organisation guidelines by 2030" that he did not think this limit "goes far enough for the protection of human health". Several countries with cities of a size comparable to London have set out to meet the WHO guideline rather than the EU legal annual mean.

It seems very unlikely that the levels in Mansfield town centre would be as high as those in Nottingham city centre, so the assumption has been made that Mansfield's levels are closer to the modelled 7.9µgm^3 than to Nottingham's monitored 8.3µgm^3, and therefore there is unlikely to be a major problem with $PM_{2.5}$ in the district. Both Mansfield's modelled and Nottingham's monitored levels are below the European Union legal annual mean and the WHO guideline value.

Mansfield District Council does not currently have any measures in place to deal specifically with $PM_{2.5}$. However, the levels of PM_{10} that we were finding in the district up to August 2016 (when real-time PM_{10} monitoring stopped) suggested that we would not have high levels of $PM_{2.5}$, since studies indicate that $PM_{2.5}$ levels tend to be approximately 0.6% of PM_{10} levels. In addition, we believe that the measures we are taking to reduce PM_{10} will have a knock-on effect on $PM_{2.5}$. These measures are detailed in Table 2.1 above.

3 Air quality monitoring data and comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2021 by Mansfield District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

Summary of monitoring undertaken

3.1.1 Automatic monitoring sites

Mansfield District Council undertook automatic (continuous) monitoring at one site during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. A map showing the location of the monitoring site is 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

The Council undertook non-automatic (i.e. passive) monitoring of NO_2 at nine sites during 2021. 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 as Figures D.1a to D.1g. 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.

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.

3.1.3 Nitrogen dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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

No exceedances of the annual mean or hourly mean Air Quality Objectives were recorded in 2021. However, due to the number of people that are still working from home, the 2021 monitoring results are still the product of exceptional circumstances. It will be interesting to see whether Covid-19 has a lasting effect on air pollution levels, and to what extent.

3.1.4 Particulate matter (PM_{10})

Mansfield District Council does not currently monitor for PM_{10}.

3.1.5 Particulate matter ($PM_{2.5}$)

Mansfield District Council does not currently monitor for $PM_{2.5}$.

3.1.6 Sulphur dioxide (SO_2)

Mansfield District Council does not currently monitor for SO_2.

Appendix A: Monitoring results

Table A.1 – Details of automatic monitoring sites

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)
Chesterfield Road North	Roadside	450974	363730	NO_2	N	Real-time chemiluminescence	1	5	2

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of non-automatic monitoring sites

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with continuous analyser?	Tube height (m)
DL	Debdale Lane	Roadside	452515	362508	NO_2	N	4	3	N	2
FT1	Forest Town 1	Roadside	457199	362697	NO_2	N	9	5	N	2
FT2	Forest Town 2	Roadside	457407	362701	NO_2	N	11	2	N	2
LLS	Leeming Lane South	Roadside	454421	362860	NO_2	N	11	3	N	2.5
NR	Nottingham Road	Roadside	453842	360174	NO_2	N	5	2	N	2.5
OML	Old Mill Lane	Roadside	455834	362101	NO_2	N	11	3	N	2
SS	Sherwood Street	Roadside	456928	367423	NO_2	N	8	4	N	2.5
SRE	Southwell Road East	Roadside	458513	358623	NO_2	N	8	3	N	2
WT	Warsop Town Hall	Roadside	456663	368019	NO_2	N	7	4	N	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual mean NO_2 monitoring results: automatic monitoring (µg/m^3)

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2021 (%) (2)	2017	2018	2019	2020	2021
Chesterfield Road North	450974	363730	Roadside	-	100	-	-	14.2	6.5	5.6

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

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

Notes:

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

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

All means have been "annualised" as per LAQM.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 NO_2 monitoring results: non-automatic monitoring (µg/m^3)

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 2021 (%) (2)	2017	2018	2019	2020	2021
DL	452515	362508	Roadside	100	50	37.1	37.6	33.2	21.5	28.7
FT 1	457199	362697	Roadside	100	50	23.3	25.6	23.9	15.3	20.1
FT 2	457407	362701	Roadside	83	41	21.0	19.3	18.4	20.4	15.1
LLS	454421	362860	Roadside	100	50	28.0	29.7	27.3	15.4	20.8
NR	453842	360174	Roadside	100	50	37.9	35.5	31.2	18.2	23.5
OML	455834	362101	Roadside	83	41	28.5	30.6	27.9	15.7	23.0
SS	456928	367423	Roadside	83	41	21.1	21.6	19.4	11.7	16.0
SRE	458513	358623	Roadside	83	41	20.1	20.9	18.3	10.6	14.0
WT	456663	368019	Roadside	83	41	24.7	26.5	23.0	13.5	20.4

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

☒ Diffusion tube data has been bias adjusted.

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

Notes:

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

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.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 NO_2 concentrations

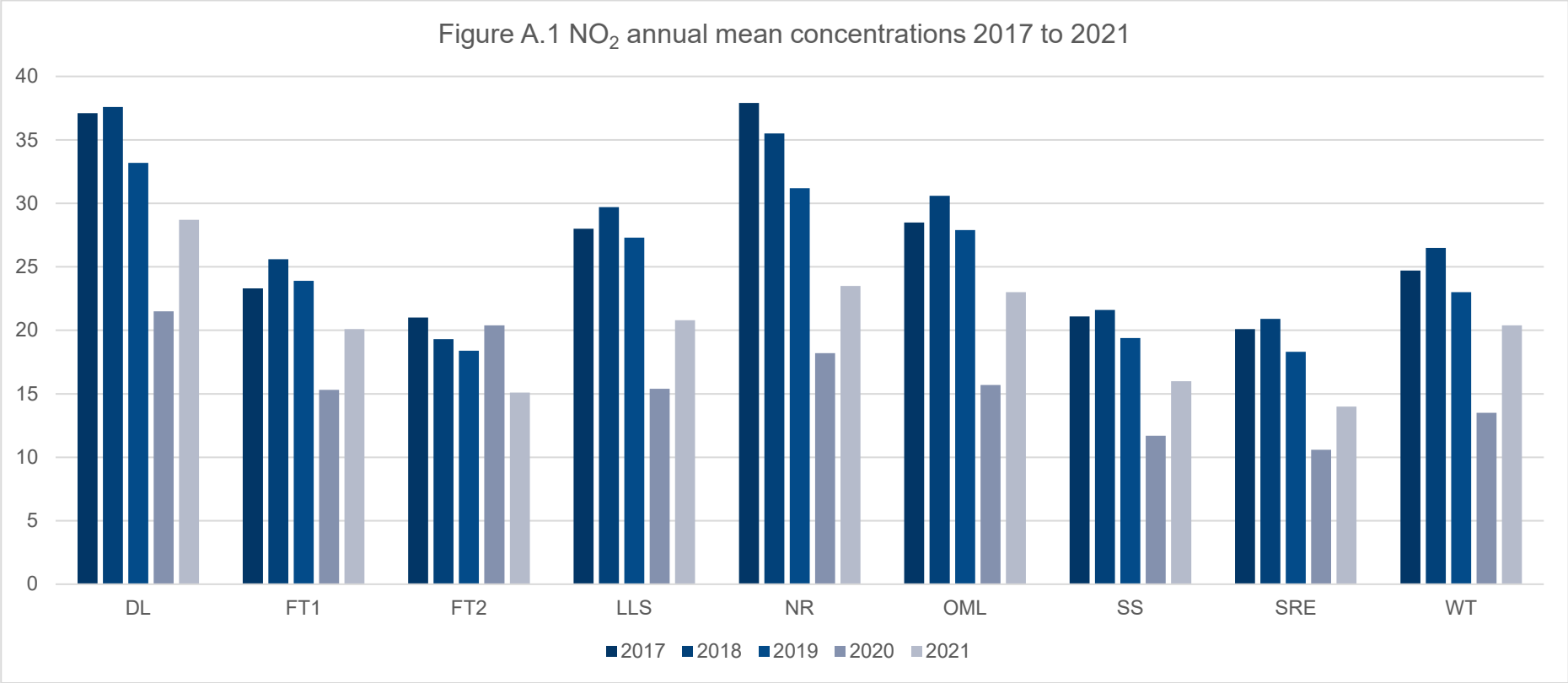


Figure A.1 presents NO_2 annual mean concentrations for the nine diffusion tube monitoring sites between years 2017 to 2021. There were no exceedances of the annual mean objective in 2021, and there is a general trend of reduction experienced across the sites.

Table A.5 – 1-hour mean NO_2 monitoring results, number of 1-hour means >200µg/m^3

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2021 (%) (2)	2017	2018	2019	2020	2021
Chesterfield Road North	450974	363730	Automatic	-	100	-	-	**47** (99.8th percentile 351.6)	None	None

Notes:

Results are presented as the number of 1hr periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1hr mean objective (200µg/m^3 not to be exceeded more than 18 times/yr) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1hr 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%).

Appendix B: Full monthly diffusion tube results for 2021

Table B.1 – NO_2 2021 diffusion tube results (µg/m^3)

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias-adjusted (0.84)	Annual mean: distance corrected to nearest exposure	Comment
DL	452515	362508							29.3	22.9	36.0	36.3	41.8	38.1	28.8	28.7	-	
FT 1	457199	362697							19.5	11.9	25.1	28.7	26.8	31.0	23.8	20.1	-	
FT 2	457407	362701							13.5	7.8	18.3	21.6			15.3	15.1	-	
LLS	454421	362860							22.7	12.4	28.2	26.6	29.0	29.1	24.7	20.8	-	
NR	453842	360174							28.0	13.5	33.8	30.2	40.0	21.8	27.8	23.5	-	
OML	455834	362101							25.3	11.7	29.8	26.5	35.5		25.8	23.0	-	
SS	456928	367423							13.4	10.0	19.7	21.8	24.9		18.0	16.0	-	
SRE	458513	358623								7.3	18.1	18.8	23.0	21.8	18.0	14.0	-	
WT	456663	368019							21.8	16.3	25.9	24.4		25.7	22.8	20.4	-	

☒ All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.

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

☐ Local bias adjustment factor used.

☒ National bias adjustment factor used.

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

☐ Mansfield District Council confirms that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting technical information/air quality monitoring data QA/QC

New or changed sources identified within the Mansfield district during 2021

Planning permission was granted at the end of October 2021 for a replacement roadstone coating plant just inside the entrance to a former sand quarry off Southwell Road East, on the border between Mansfield and Rainworth. It is considered that, due to up-to-date technology and the location in the quarry below general ground-level in the area, that the plant will have no greater effect than the existing one (which has been generally emissions-free except in the case of a breakdown).

Additional air quality works undertaken by Mansfield District Council during 2021

Mansfield District Council has not completed any additional works within the reporting year of 2021.

QA/QC of diffusion tube monitoring

All the Local Authorities in Nottinghamshire have a contract with Gradko International for the supply and analysis of NO_2 diffusion tubes, so that there is consistency throughout the county. Gradko has a very strict QA procedure which involves analysing, once a month, a certified solution supplied by AEA Technology. Gradko also takes part in the NO_2 Network Field Intercomparison Exercises carried out by AEA Technology, in which it is rated as ‘good’.

The diffusion tubes used in Nottinghamshire are prepared using 20% TEA in water. Mansfield’s tubes are stored under refrigeration prior to use, and are used within the specified expiry dates. Upon changing the tubes, the date, site and exposure times are recorded, and the tubes are put into a sealed bag. They are forwarded to Gradko for analysis along with an unexposed tube from the same batch.

Although diffusion tube monitoring had re-started in November 2020, the Environmental Health section was told in December to discontinue it again, due to staffing levels and continuing concerns associated with Covid-19. Monitoring did not begin again until July 2021. The tube exposure periods conformed to the Diffusion Tube Exposure Calendar.

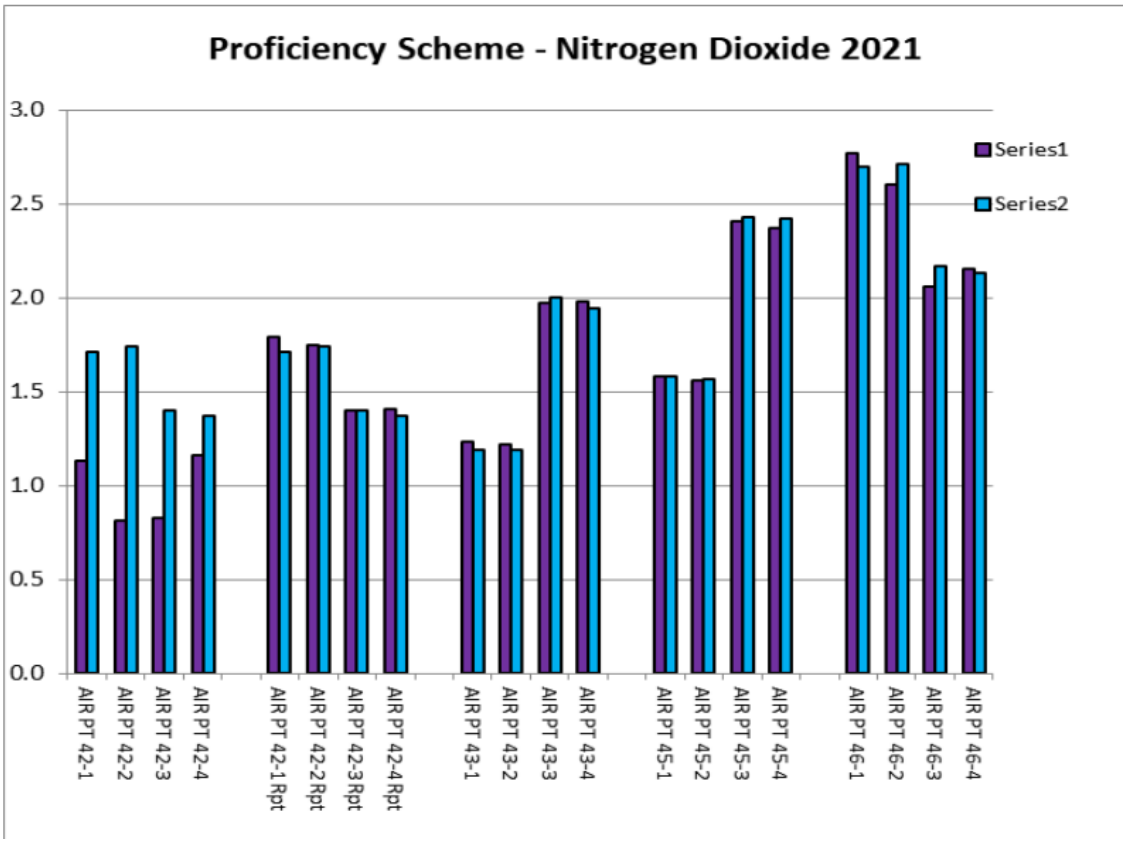
Gradko has confirmed that the laboratory complies with the procedures detailed in the Defra Harmonisation Practical Guidance. To explain the March results, they state that "*Results from AIR-PT 42 showed a significant negative bias. An investigation was carried out and a repeat set of samples ordered (Mar-21) to confirm results. Results from the investigation showed for AIR-PT samples, extraction of nitrite was not complete and required further time on the shaker to extract all nitrite from the tubes. Successful extraction was demonstrated on the repeat AIR-PT samples in March 2021. The investigation also showed that for laboratory standards and customer samples, extraction of nitrite from tubes was complete without further shaking, and there was no risk associated with results reported to customers. For any queries please contact the Laboratory Manager, Linda Gates, at linda@gradkolab.com*."

Their proficiency scheme results for 2021 are as follows:

Method – GLM7-CARY 60 spectrophotometer

AIR PT Proficiency Scheme - Nitrogen Dioxide 2021					
Date			Procedure GLM 7		
	Round	Assigned value	Measured concentration	z-Score	% Bias
Feb-21	AIR PT 42-1	1.71	1.13	-4.17	-33.9%
Feb-21	AIR PT 42-2	1.74	0.81	-6.29	-53.4%
Feb-21	AIR PT 42-3	1.40	0.83	-5.43	-40.7%
Feb-21	AIR PT 42-4	1.37	1.16	-1.91	-15.3%
Mar-21	AIR PT 42-1 Rpt	1.71	1.79	0.62	4.7%
Mar-21	AIR PT 42-2 Rpt	1.74	1.75	0.08	0.6%
Mar-21	AIR PT 42-3 Rpt	1.40	1.40	0	0.0%
Mar-21	AIR PT 42-4 Rpt	1.37	1.41	0.39	2.9%
May-21	AIR PT 43-1	1.19	1.23	0.35	3.4%
May-21	AIR PT 43-2	1.19	1.22	0.26	2.5%
May-21	AIR PT 43-3	2.00	1.97	-0.2	-1.5%
May-21	AIR PT 43-4	1.94	1.98	0.26	2.1%

Aug-21	AIR PT 45-1	1.58	1.58	0	0.0%
Aug-21	AIR PT 45-2	1.57	1.56	-0.08	-0.6%
Aug-21	AIR PT 45-3	2.43	2.41	-0.08	-0.8%
Aug-21	AIR PT 45-4	2.42	2.37	-0.28	-2.1%
Oct-21	AIR PT 46-1	2.7	2.77	0.33	2.6%
Oct-21	AIR PT 46-2	2.71	2.6	-0.49	-4.1%
Oct-21	AIR PT 46-3	2.17	2.06	-0.65	-5.1%
Oct-21	AIR PT 46-4	2.13	2.15	0.13	0.9%



Diffusion tube annualisation

The results from all Mansfield's non-automatic monitoring sites were annualised, as tubes were only put out from July 2021 onwards.

Of the nine diffusion tubes on site in 2021, four had a data capture of 25% and five had a data capture of 17%. The results from those with the lowest data capture did not require annualisation; the results from the others have been annualised.

The AURN sites used to annualise Mansfield's data were Nottingham Centre (23km away), Burton-on-Trent Horningslow (56km), and Leicester University (77km), which all had a good rate of data capture.

The Diffusion Tube Data Processing Tool was used to derive the data presented in the tables above.

Diffusion tube bias adjustment factors

The diffusion tube data presented within this 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/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Mansfield District Council has applied a national bias adjustment factor of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by Mansfield District Council over the past five years is presented in Table C.1.

The Council has used the national bias adjustment factor for several years, as it has no co-located diffusion tubes. Three co-located diffusion tubes were sited at the former monitoring unit location at the Landmark Centre, Chesterfield Road North, Pleasley, but the factor derived from them was seldom used as it was usually considered too low to be acceptable; in 2014, it was as low as 0.53, which, if used, would have reduced the results by nearly half.

Table C.1 – Bias adjustment factor

Monitoring year	Local or national	If national, version of national spreadsheet	Adjustment factor
2021	National	03/22	0.84
2020	National	03/21	0.81
2019	National	03/20	0.84
2018	National	03/19	0.93
2017	National	03/18	0.89

NO_2 fall-off with distance from the road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has

been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring results within the Mansfield District required distance correction during 2021, as no annual mean concentrations were greater than 36µg/m^3.

QA/QC of automatic monitoring

Two officers normally share the task of servicing the real-time monitoring unit and uploading the data, and visit the site once a month. However, due to the various lockdowns and restrictions associated with Covid-19, and because the current data logger has a large capacity, visits to the site were kept to an absolute minimum in 2021.

The data has been collated and ratified in-house by the officer who has been compiling the Air Quality Review since its inception in 2003.

Only summary data is available on the Council's website, by downloading copies of the Air Quality Reviews (to be found at www.mansfield.gov.uk/pollution/air-quality-1). Reviews from 2014 onwards are on the website; earlier copies are available on request.

Automatic monitoring annualisation

The automatic monitoring unit within the Mansfield District recorded a data capture of greater than 75%, therefore no annualisation of monitoring data was required. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 fall-off with distance from the road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

The 2021 results from the automatic NO_2 monitoring unit within the Mansfield District do not required distance correction, as the levels were below 36µg/m^3.

Table C.2 – Annualisation summary (concentrations presented in µg/m^3)

Site ID	Annualisation factor Burton on Trent Horningslow	Annualisation factor Leicester University	Annualisation factor Nottingham Centre	Average annualisation factor	Raw data annual mean	Annualised annual mean	Comments
DL	1.0323	1.0098	0.9647	1.0023	34.1	34.1	
FT 1	1.0323	1.0098	0.9647	1.0023	23.8	23.9	
HL	1.2403	1.1534	1.1288	1.1742	15.3	18.0	
LLS	1.0323	1.0098	0.9647	1.0023	24.7	24.7	
NR	1.0323	1.0098	0.9647	1.0023	27.9	27.9	
OML	1.1191	1.0408	1.0314	1.0638	25.8	27.4	
SS	1.1191	1.0408	1.0314	1.0638	18.0	19.1	
SRE	0.9416	0.9489	0.9209	0.9371	17.8	16.7	
WT	1.0960	1.0868	1.0158	1.0662	22.8	24.3	

Appendix D: Map(s) of monitoring locations

Figure D.1 – Map of non-automatic monitoring sites in central Mansfield

Figure D.1b Location map of non-automatic monitoring sites in northern Mansfield

Figure D.1c Location map of non-automatic monitoring site in Pleasley

Please note that the distance to the M1 junction should read 4 miles

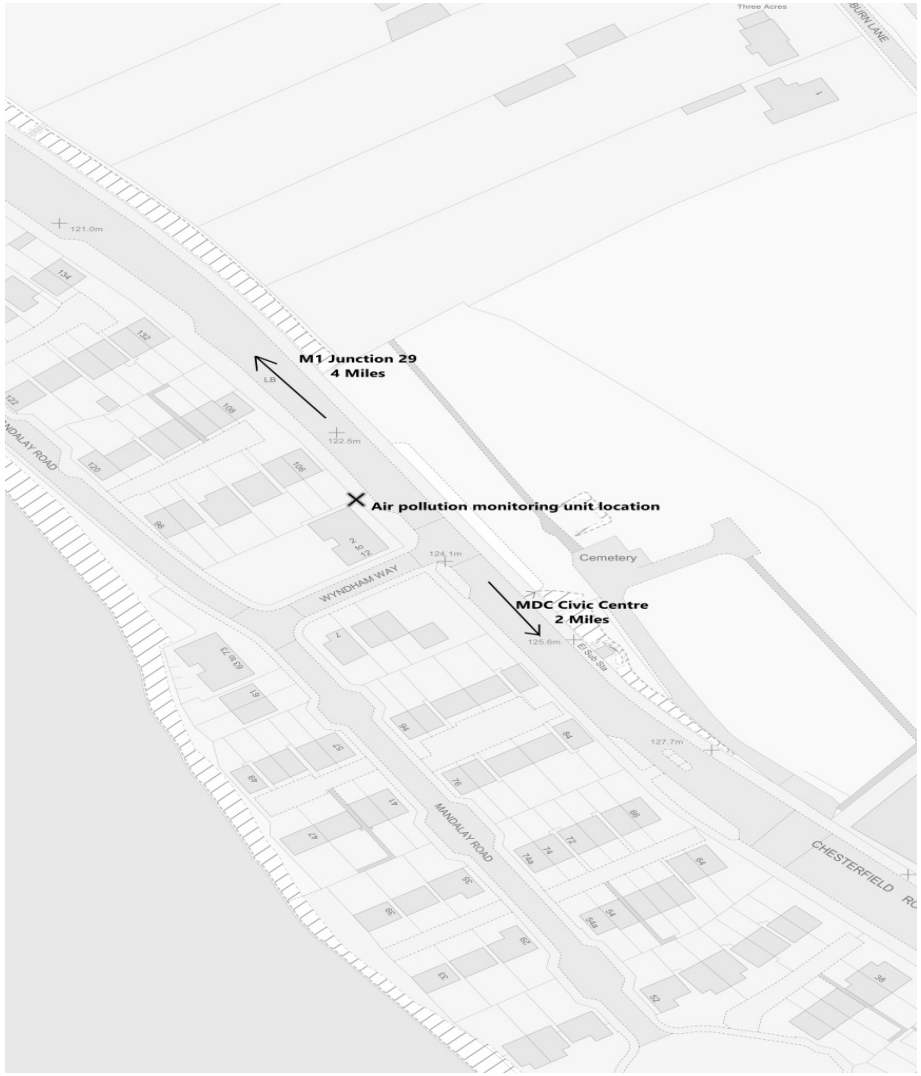
Figure D.1d Location map of non-automatic monitoring site in Mansfield Woodhouse

Figure D.1e Location map of non-automatic monitoring sites in Forest Town

Figure D.1f Location map of non-automatic monitoring sites in Warsop

Figure D.1g Location map of non-automatic monitoring site in Rainworth

Figure D.1h Map of real-time monitoring location



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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/m^3).

Glossary of terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed/are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
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.