



Hinckley & Bosworth Borough Council

2023 Air Quality Annual Status Report (ASR)

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

Date: June 2023

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Executive Summary: Air Quality in Our Area

Air Quality in the Borough of Hinckley and Bosworth

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 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

The Annual Status Report did not identify any exceedances of the Air Quality Objectives based on the assessment criteria in Local Air Quality Management Technical Guidance LAQM (TG16). In line with national trends levels of Nitrogen Dioxide (NO₂) continue a steady decline as can be seen in table A4.

The principal pollutant of concern in the borough is NO₂ from the road network. NO₂ is released into the atmosphere when fuels are burned (for example, petrol or diesel in a car engine or natural gas in a domestic central heating boiler or power station).

HBBC has 16 diffusion tube sites around the Borough that measure levels of NO₂. These sites are located in areas more likely to be affected by poorer air quality usually due to their proximity to busy roads. The sites allow HBBC to monitor air quality in those areas and take any necessary action based upon the results. Further details of these sites and

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, January 2023

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

the results are provided in Appendix A. The location of each tube is shown in Appendix D. The QA/QC data for the sites are given in Appendix C.

Overall Air Quality in the Borough is good when compared to the air quality objective value. Measured levels of NO₂ within the borough in 2022 continue to show a decrease when compared to pre-pandemic levels although it will be some time before a firm understanding of the effects on air quality due to changing behaviours is possible.

The monitoring location on Shaw Lane in Markfield (sites 10, 12 and 14) again measured levels of NO₂ lower than in (pre-pandemic) recent years. The area will be kept under review and Environmental Health (Pollution) at HBBC have requested to be kept up to date with any developing plans for the road network. Environmental Health (Pollution) are currently liaising with Leicestershire County Council as to the reason behind the continuing post pandemic reduction in NO₂ despite little difference in traffic figures. The results of these discussions will be included in next year's report.

HBBC is the regulatory authority for Part A2 and B industrial installations under the Environmental Permitting (England and Wales) Regulations 2016. There are a number of industrial sites in the borough which require an Environmental Permit to operate. This includes brickworks, quarries, petrol stations, some incinerators, dry cleaners and paint-shops amongst other facilities. Each installation is inspected by Environmental Health (Pollution) to monitor compliance with the Environmental Permit for the site and ensure that emissions to atmosphere are adequately controlled. The frequency of inspection is determined by a risk rating system. As Best Available Techniques (BAT) improve with new technological advances improvements to air quality are gained through this regime.

The latest register of Permitted Processes in the Borough can be found at:

http://www.hinckley-bosworth.gov.uk/downloads/file/871/environmental_permitting_public_register_updated_24_february_2016

Development Control provides an opportunity for agencies, and the public, to comment upon air quality impacts of proposed developments, The Site Allocations and Development

Management Policies (SADMP) Development Plan was adopted in 2016. The plan requires that adverse impacts from air pollution will be prevented by ensuring that development proposals demonstrate that they will not contribute to poor air quality.

There are no new major sources of emissions within the borough.

Actions to Improve Air Quality

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

The Environmental Improvement Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details 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.

Environmental Health (Pollution) attends the Leicestershire Air Quality Forum - a forum comprising professionals involved in Air Quality to discuss issues and disseminate best practice. The forum is also regularly attended by colleagues from other district and the county councils and Highways.

Environmental Health (Pollution) also attend the Leicestershire Air Quality and Health Partnership. The Partnership was established after Leicestershire County Council declared a Climate Emergency in May 2019, to facilitate joint working across

⁵ Defra. Environmental Improvement Plan 2023, January 2023

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

organisational boundaries working towards an action plan based on recommendations from an Air Quality Joint Strategic Needs Assessment (2019).

The partnership consists of representatives from Leicestershire County Council- including representatives from Public Health, Research and Insight, Communications and Environment and Transport Teams, District and Borough Councils with a statutory duty to monitor air quality, NHS Leicester, Leicestershire and Rutland.

The partnership aims to contribute to the vision for Air Quality and Health across Leicestershire: “To improve air pollution in the county and reduce the impact of air pollution on the environment and human health, contributing to the reduction in health inequalities.”

Transport

Planning and Policy Context:

National Highways Transport Policy:

National Highways, the successor to Highways England, is responsible for the strategic road network in England, including the M1, M69 and A5. As such actions taken on these roads will need to be largely undertaken by them. National Highways published its Air Quality Strategy in 2017.

In July 2021 National Highways produced a progress update on the Air Quality on England’s Strategic Road Network, which highlights the need to improve local air quality, exploring behavioural change measures on or close to the SRN.

The original scheme to improve the A5 between the Dodwells and Longshoot junctions has been removed from National Highways’ programme; this was on value for money grounds. National Highways are now working with Leicestershire County Council and Warwickshire County Council to explore potential, lower cost solutions, potentially based around sustainable transport measures aimed at reducing shorter-distance car journeys using this length of the A5.

Leicestershire County Council's Strategic Plan:

Leicestershire County Council's [Strategic Plan 2022-26](#) states that reducing our carbon footprint supports both our aims to tackle climate change and to improve health outcomes.

The 'Clean and Green' strategic outcome includes:

- People act now to tackle climate change
- Nature and the local environment are valued, protected, and enhanced
- Resources are used in an environmentally sustainable way
- The economy and infrastructure are low carbon and environmentally- friendly

It notes that we are confident that through actions such as enabling sustainable transport, promoting business action on climate change, and ensuring infrastructure developments are low or zero carbon, we can strike the right balance between 'green and growth'.

The County Council has various levels of control and influence in protecting the environment and addressing climate change. It is responsible for managing the environmental impacts of its own activities (e.g., heating and powering offices, using vehicles, and generating waste) and is able to help minimise the impacts of residents and businesses (e.g., by enabling and promoting sustainable transport, managing household waste in an environmentally sustainable way, and enforcing environmental legislation on businesses). It also has capacity to influence wider action by working with partners and lobbying Government. We will help to tackle climate change by embedding environmental sustainability into everything we do. We will minimise the environmental impact of our activities and use our influence in areas such as transport, planning, economic development, and community engagement to protect the environment.

Leicestershire Local Transport Plan:

The Leicestershire [Local Transport Plan](#) 3 (Leicestershire County Council, 2011) considers air quality in its chapters on 'reducing the impact of traffic', 'encouraging active and sustainable travel' and 'managing the impact of our transport system on quality of life'. The latter chapter includes a section on air quality, where it states that:

“In terms of reducing travel demand, this will be achieved through the inclusion of requirements within the planning process to ensure that development takes due consideration of the demand for travel and the opportunity to reduce the need for travel that development will create. The planning process will also need to take account of the potential contribution the location of developments could have on known Air Quality Management Areas”.

Leicestershire County Council is currently developing the Local Transport Plan 4 (LTP4), which will need to consider air quality.

In addition to the strategic document, Leicestershire County Council (LCC) is implementing measures through its Environment and Transport Departmental Business Plan.

Air quality is recognised as a key environmental issue and there is an emphasis on using evidence – Leicestershire County Council’s suite of transport models can be used to assess air quality, taking into account factors such as growth.

As the Local Highway Authority (LHA), the County Council:

- Can help District/Borough councils identify and develop mitigation methods where pollution is attributable to the local road network
- Is responsible for the safe and efficient movement of traffic on the road network.
- Sets out, through its Network Management Plan (NMP) a number of options available to tackle air quality, including maintaining and managing the road network so that it operates as efficiently and effectively as possible, reducing the need to travel by car, encouraging the use of sustainable transport, influencing how people travel, introducing improvements to tackle congestion.
- Leicestershire County Council, working in partnership with Leicester City Council, are applying measures to promote walking, cycling and use of public transport. For example, in collaboration with Leicester City Council they have implemented the “Choose How You Move” programme to open up opportunities for travel to employment, education and training by active travel.

Sustainable Transport

Cycling and Walking Strategy:

Leicestershire County Council adopted a new Cycling and Walking Strategy (CaWS) in July 2021, setting out its approach to help deliver the Governments vision, set out in ‘Gear Change’ cycling and walking plan for England, of improving air quality, combatting climate change, improving health and wellbeing, addressing inequalities and tackling congestion on our roads.

The vision for the Leicestershire CaWS is:

“For Leicestershire to become a county where walking and cycling are safe, accessible and obvious choices for short journeys, and a natural part of longer journeys, helping to deliver healthier, greener communities”.

As part of this Strategy, 10-year Local cycling and Walking Infrastructure Plans (LCWIP’s) are being developed for towns and the urban areas surrounding Leicester City, setting out prioritised cycling and walking networks for improvement and investment to facilitate modal shift to active travel, helping deliver improved air quality in the area.

As part of LCC’s LCWIP development programme for market towns; Hinckley and the surrounding area will be included. This will build on and update the work previously completed in the Hinckley Area Project. The LCWIP will enable better connectivity to key employment sites such as MIRA technological park and other sites, such as Hinckley Railway Station, which can be access by sustainable transport modes.

Passenger Transport:

Leicestershire County Council recognises the very important role that buses and other passenger transport services have to play in keeping people and places connected, especially in a largely rural county such as Leicestershire. Use of such services rather than private car travel also helps reduce congestion, improves air quality in our towns, and limits carbon emissions.

The Leicestershire Bus Service Improvement Plan (BSIP) sets out ambitions to help deliver the Government National Bus Strategy, and its main aim to increase overall bus journeys in England. The delivery vehicle for the Leicestershire BSIP vision is an Enhanced Partnership (EP), in which the County Council work in partnership with all bus operators in the county and other interested parties, such as rail service operators, to improve bus and demand responsive transport (DRT) passenger transport services helping to increase patronage and reducing car use.

The FoxConnect DRT is a brand-new service operating in Hinckley and Bosworth district and neighbouring Blaby district. Users can choose exactly where they want to be picked up and dropped off in the DRT zones, including Hinckley rail station for onward travel, providing a convenient and flexible way to travel at a time that suits people's needs, helping to reduce single occupancy car travel in the district, improving air quality and limiting carbon emissions.

Connecting bus and DRT services to rail stations, in addition to active travel, allows for longer journeys to be made on rail services which are a sustainable travel mode that creates opportunities for people to reduce car use for those longer journeys helping further reduce impacts on air quality and carbon emissions.

Electric Vehicles:

The government is committed to the switch to Electric Vehicles (EV) and investing in EV infrastructure; it will be a major contributor to net zero goals and improve the country's air quality.

The County Council is responsible for coordinating and planning the roll out of EV infrastructure and will work closely with Hinckley and Bosworth to support chargepoint planning and delivery, sharing resources and ensuring a coordinated and coherent approach.

The roll out of EV infrastructure will encourage the uptake of EV's, therefore improving air quality and reducing pollutants being emitted across the road network.

Network Management Plan (NMP)

Leicestershire County Council published the Network Management Plan in 2020, this document describes how we meet the network management duty and manage demand, encouraging sustainable travel and managing traffic to reduce congestion and keeping traffic moving to improve air quality.

The NMP highlights the actions developed in the Leicestershire Air Quality and Joint Health and Wellbeing Strategy (JWHS) Action Plan, which ensures that all parties identified work together to develop their approach to addressing air quality and all necessary measures to address air pollution in their local areas are included.

Key growth corridor schemes, such as the [A50/A511 Growth Corridor Scheme](#), will help to improve congestions and traffic flow, supporting growth in the area and therefore improve air quality for residents.

The Watling Street Bridge on the A5, is frequently hit by HGV's causing delays and congestion although not a sustained air quality issue in itself, the diversions through Hinckley impact on air quality. Current potential proposals to improve the road and bridge will help traffic flows along the A5, reduce HGV diversions and improve air quality.

Net Zero Leicestershire

In 2019, Leicestershire County Council declared a Climate Emergency, and soon followed this with a commitment to work with others across Leicestershire to achieve net zero by 2045 or before.

To facilitate this, Leicestershire County Council has recently developed a Net Zero Strategy and Action Plan, which sets out the approach to delivering the council's ambitions, including working with partners and other public bodies across the county and region to deliver ambitious goals to reduce carbon and other greenhouse gas emissions. Actions to reduce these emissions will in many or most cases also help to reduce other air pollutants.

Climate Change

Hinckley and Bosworth Borough Council Carbon Management Plan

Hinckley and Bosworth Borough Council developed a Carbon Management Plan (CMP) in 2009 as part of the Carbon Trust Local Authority Carbon Management Programme. The CMP outlined the council's approach to reducing its emissions and set an original target of reducing carbon dioxide (CO₂) emissions.

The council set a target in 2008 of reducing carbon dioxide (CO₂) emissions by 20% by 2013/14, relative to the baseline year 2008/09 with subsequent revisions setting a target of 35% reduction by 2020. This target was exceeded as the NI185 figures for 2018-19 show 36.0% gross and 38.7% weather corrected reductions from 2008-09. The gross Green House Gas emissions show a 38.2% reduction on 2009-10 base year.

On 16 July 2019 Hinckley & Bosworth Borough Council declared a 'climate emergency'. Councillors pledged to take local action to contribute to national carbon neutral targets through the development of practices and policies, with an aim to being carbon neutral in the borough of Hinckley and Bosworth by 2030. In progressing this pledge HBBC have already taken some practical steps to reduce our carbon footprint, including:

- Moving to more energy efficient public buildings, such as the leisure centre and the Hinckley Hub, as well as other council owned buildings
- Saving paper by switching officers to digital inspection forms
- Going peat free
- Reducing reliance on pesticides
- Using reusable or recyclable materials where possible
- Reducing our plastic usage
- Staff wide training and team reduction plans to encourage all staff to actively work towards carbon reduction
- Introduce HVO into our fleet

Hinckley and Bosworth Borough Council are now exploring further, wider reaching measures, designed to limit the effects of global warming both internally within the council and wider within the borough, through our community leadership role. To assist in this work a baseline emissions report for scope 1 and 2 has been completed for 2019-2020 to identify where emissions are highest. From the baseline, 74% of emissions are considered as scope 1 (fuel burnt on site) and of this, 43% is from council vehicles, including the fleet with the other 31% being the fuel used to heat buildings. The remaining 26% are scope 2 emissions which are emissions associated with purchased electricity. Work is currently being done to complete the follow up emissions report for 2020-2021 and 2021-2022. This is currently being checked but there is a reduction from the 2019 baseline. This reduction is likely to have been from the COVID-19 lockdown and the resulting hybrid operating model.

Council members and officers have drawn up a long list of potential ideas and changes which officers are considering further to determine what is feasible and to assess their likely impacts. The council is also looking at opportunities to share expertise by working with businesses and schools in the borough. The council has introduced a climate change business forum to allow local businesses to share best practice on achieving net zero. HBBC has also started offering workshops for schools to help students understand their carbon footprint. Hinckley and Bosworth Borough Council have recently installed electric vehicle charging points in two car parks and are working to relaunch our climate change champions to bring the community, schools, businesses and the council together this includes a business forum for climate change to allow businesses to share best practice.

The relationship between climate change and air quality are related in that the emissions of Carbon Dioxide and local air pollutants generally arise from the same combustion sources – power stations and industry, homes and offices, and vehicle exhausts. Although the benefits of initiatives for climate change may not be realised for many years in the future the benefits of action to reduce air pollution can be much more immediate and measurable. Where actions relating to air quality are taken this will often (but not always) have an indirect and beneficial effect on greenhouse gas emissions and vice versa.

Hinckley and Bosworth Borough Council has created a working sub-group of the Climate Change Panel, specifically looking at Travel, of which Active Travel forms a large part.

Hinckley and Bosworth Borough Council's climate change strategy 2022-2024 was approved by the Council in July 2020. It identifies the actions we will take under five delivery themes. Further information can be found at: <https://www.hinckley-bosworth.gov.uk/climatechange>

Conclusions and Priorities

The Annual Status Report did not identify any exceedances of the Air Quality Objectives. A close eye will be kept on planning applications, developments to infrastructure and other factors likely to have an impact on Air Quality in the borough.

The borough has seen several major developments completed in recent years with more to follow. The planning process provides an opportunity for the local authority to manage future air quality and to identify and assess any planning applications which may impact upon air quality both during the construction and operational phases. Environmental Health (Pollution) is consulted on planning applications and will assess the impact on air quality where necessary.

Hinckley & Bosworth Borough Council have declared a 'climate emergency'. Councillors have pledged to take local action to contribute to national carbon neutral targets through the development of practices and policies. Environmental Health (Pollution) are engaged in this process. It is hoped that adopting more environmentally friendly practices and policies will help in improving air quality.

Environmental Health (Pollution) will continue to engage with relevant partners to promote improvements in air quality.

Local Engagement and How to get Involved

The principal pollutant of concern in the Borough of Hinckley and Bosworth is NO₂ from the road network. It follows that the best way to improve the air quality is to reduce emissions from vehicles. This can be done in a number of ways such as taking emissions into account when buying a new car to reducing dependence on private vehicles either by using public transport or using a more sustainable form of transport such as walking or cycling.

Information on walking and cycling including led walks and cycle maps can be accessed through the Hinckley and Bosworth Borough Council website at www.hinckley-bosworth.gov.uk

Choose How You Move is a partnership project between Leicester City Council and Leicestershire County Council, funded by the Department for Transport. The Choose How You Move website is a one-stop shop for travel information in Leicester & Leicestershire. The website includes a journey planner to help explore different travel options that are available in Leicestershire. <https://www.choosehowyoumove.co.uk/>

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health (Pollution) Department of Hinckley and Bosworth Borough Council with the support and agreement of the following officers and departments:

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This ASR has been approved by:

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This ASR has been signed off by a Director of Public Health and the Director of Environment and Transport at Leicestershire County Council.

If you have any comments on this ASR please send them to Giles Rawdon at:

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Local Air Quality Management

This report provides an overview of air quality in the Borough of Hinckley and Bosworth during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Hinckley and Bosworth Borough 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.

1 Actions to Improve Air Quality

1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

Hinckley and Bosworth Borough Council currently does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent and reduce polluting activities.

2 Progress and Impact of Measures to address Air Quality in The Borough of Hinckley and Bosworth

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. Despite no AQMA (and therefore, not requiring an AQAP), several measures to improve air quality are presented. This highlights the Council's continued committed and pro-active approach to improving air quality across the district.
2. Although the Council applies robust QA/QC procedures to the monitoring data for 2021, there is no explicit justification for the application of the national bias adjustment factor. This is encouraged in future reports. (Completed in this ASR).
3. Comments from last year's ASR appraisal are included in the report. This is welcomed.
4. The diffusion tube mapping could be clearer. It would be useful if the Council labelled the sites using the site IDs in Table A.2, directly onto the map for clarity. The inclusion of an additional single map showing all monitoring sites within the borough would be a useful addition. This was a comment on last year's ASR appraisal, as well as this one, so the Council is actively encouraged to apply these changes in their reports going forward. (This will be completed for next year's ASR).
5. The Council outline a number of measures which they have in place to address PM_{2.5} emissions, including the use of the Public Health England "Public Health Profiles" data tool to look at the fraction of mortality attributable to particulate air pollution in the borough. Other measures also include the use of the DEFRA National Background Maps for PM_{2.5} to identify locations and sources of PM_{2.5} in hotspot areas, as well as the Council raising awareness of the impacts of solid fuel burning on human health. The Council is commended on this, as it shows their continued pro-active and committed approach to combating air pollutants, such as particulate emissions, despite there being no requirement of an AQMA in the district.
6. The Council are encouraged to present graphs to indicate the changes in annual mean NO₂ concentrations across the borough over recent years. This will provide an indication of progress, and may highlight where reductions are slower/faster, and also where there may be increases. This may then enable areas for more targeted actions to be identified. This was a comment on last year's ASR appraisal, as well as this one, so the Council is actively encouraged to apply these changes in their reports going forward. (Completed in this ASR).
7. Overall, the report is detailed, concise and satisfies the criteria of relevant standards. The Council should continue their good work.

Hinckley and Bosworth Borough Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. 24 measures are included within Table 2.1, with the type of measure and the progress Hinckley and Bosworth Borough Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

Hinckley and Bosworth Borough Council's priorities for the coming year are:

- To continue to engage with LCC regarding changes to the transport infrastructure on the A511.
- To continue engaging with Leicestershire Authorities and stakeholders at both the Leicestershire Air Quality Forum and the Leicestershire Air Quality and Health Partnership with the aim of sharing knowledge and disseminating best practice.
- To continue to roll out updated guidance for developers at the planning stage of projects.
- Review the existing diffusion tube monitoring sites and relocate resources as appropriate taking into account planned development.
- Hinckley and Bosworth Borough Council anticipates that the measures stated above and in Table 2.2 will achieve compliance with the Air Quality Objective Limits.

Hinckley and Bosworth Borough Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Leicestershire County Council;
- Leicestershire Air Quality Forum
- Leicestershire Air Quality and Health Partnership

The principal challenges and barriers to implementation that Hinckley and Bosworth Borough Council anticipates facing are:

- The Borough of Hinckley and Bosworth is located within what is known as The Golden Triangle of Logistics which, with access to several major motorways, provides access to over 90% of the UK population within 4 hours. The Golden Triangle has close to 14 million m² of warehouse space; more than twice the combined warehousing activity of London, Scotland and Wales. This provides a strong desire for B8 (Storage or Distribution) development which, while bringing in clear economic benefits does present challenges to air quality on the local road network.
- A major challenge relates to working in a two tier authority with Environmental Health and Highways working in separate authorities. This is in part addressed through the Leicestershire Air Quality Forum where professionals from various agencies meet to discuss air quality issues in the region and best practice.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Prevent and/or reduce environmental impacts from domestic and commercial emissions. Control of dust and smoke Bonfires	Other	Other	Ongoing	2022	HBBC Environmental Health	Local Authority Funding	NO	Not Funded	£50k - £100k	Implementation	Reduced particulate matter	Low number of Commercial Smoke Complaints 2022 - 10 2021 - 25 2020- 54 2019- 29 2018- 23 Low number of Domestic smoke complaints 2022- 69 2021- 95 2020- 143 2019- 71 2018- 72	Implementation on-going	2022 Saw a reduction in complaints
2	Environmental Permits	Environmental Permits	Introduction/increase of environmental charges through permit systems and economic instruments	Ongoing	2022	HBBC Environmental Health	Local Authority Funding	NO	Not Funded	£10k - 50k	Implementation	Reduced Emissions of regulated pollutants	Permitted Processes attaining best achievable risk rating	All processes are inspected as per DEFRA guidance.	100% of planned inspections of permitted processes were completed in 2022. One permit for an A2 Process has been varied due to a rebuild of the factory. The updated facility is significantly more energy efficient than the previous.

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
3	Environmental Permits	Environmental Permits	Tradable permit system through permit systems and economic instruments	Ongoing	2022	HBBC	Local Authority Funding	NO	Not Funded	< £10k	Implementation	Reduced Co2 and related emissions	Permitted Process compliance with EU ETS	One Environmental Permit has been varied and now includes a condition requiring compliance with the EU Emissions Trading Scheme	The Environment Agency regulate the EU ETS a condition applied through the Environmental Permit provides a further incentive to comply with the scheme.
4	2022/2023 Sport & Physical activity commissioning plan	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2022	2023	HBBC	Local Authority Funding	NO	Not Funded	£10k - 50k	Completed	Reduction in vehicle emissions		The HBBC 2022/2023 Sport & Physical activity commissioning plan continues to make a commitment to delivery of an Active Travel programme for children and young people. The Hinckley and Bosworth School Sports Partnership (HBSSPAN) undertake a number of projects including working with the LCC Safe and Sustainable transport team to roll out Active Travel months in October and May, producing class wallcharts for use in every Primary classroom in HBSSPAN schools. This is supported by a countywide co-ordinated social media campaign.	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Planning Policy- Site Allocations and Development Management Policies Development Plan	Policy Guidance and Development Control	Other policy	2016	2023	HBBC	Local Authority Funding	NO	Not Funded	£100k - £500k	Implementation	Reduction in general emissions as developers need to demonstrate that applications will not contribute to poor air quality	Developers assess air quality as required.	The Site Allocations and Development Management Policies (SADMP) Development Plan was formally adopted on 12 July 2016.	The SADMP requires that adverse impacts from air pollution will be prevented by ensuring that development proposals demonstrate that they will not contribute to poor air quality.
6	Sustainable Travel Initiatives	Promoting travel alternatives	Intensive active travel campaign & infrastructure	2022	ongoing	LCC, HBBC	funding source e.g. Developers & highway infrastructure funding	No	Partially Funded	£100k - £500k	Implementation	Reduction in vehicle emissions	Increase in cycling and walking and wheeling trips.	To include: car sharing, E-Bike try outs, cycle and public transport awareness campaigns, Dr Bike, business grants, Bikeability cycle training for year 5 and 6 pupils, adult cycle courses, Junior Road Safety Officer scheme. Under the Choose How you Move brand: www.choosehowyoumove.co.uk	Actively working with businesses and schools to support them in developing travel plans and delivering safe and sustainable travel initiatives.
7	Hinckley Area Project Zone 4- Hinckley town centre and A47 corridor	Transport Planning and Infrastructure	Other	2017	2023	LCC	Local Authority Funding	NO	Partially Funded		Part 2 of works joint funded by LCC capital programme and Government NPIF funding.	Reduction in vehicle emissions	Works completed	Transport strategy for the town and A47 corridor developed.	Funding constraints have impacted works to the A47 corridor.
8	EV public charge points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2023	HBBC	25% local authority, 75% OLEV funding (DFT)	NO	Partially Funded	£50k - £100k	Completed	Reduction in vehicle emissions	Works completed	New Ev charge points (working from Feb 2023 Market Bosworth rectory lane car park – 3 twins Stanley street car park Barwell – 4 twins Hallfields car park Earl Shilton – 4 twins	2 Twin charge points have been installed at the HBBC depot in April 2023 ready for the first 5 electric fleet vehicles arriving September 2023

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
9		Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2022	2023	HBBC	Local Authority Funding	NO			Completed	Reduction in HBBC fleet emissions	Works completed	HBBC's HGV fleet is now run on HVO which has up to 90% lower emissions	Completed March 2023
10	Taxi Licensing Conditions	Promoting Low Emission Transport		2022	2022	HBBC	Local Authority Funding	NO			Completed	Reduction in emissions from licenced vehicles	Works completed	As of November 2022 any vehicle applying for the grant of a new taxi or private hire licence will need to be less than 6 years old when first licensed and comply with one of the following vehicle emission standards: Euro 6 petrol or Euro 6 diesel, Ultra-low emissions vehicle (ULEV), Zero emissions vehicle (ZEV)	All licensed vehicles must be an ultra-low emission vehicle or zero emission vehicle by December 2030. A ULEV will be defined as a vehicle emitting less than 50gCO2/km and capable of travelling at least 70 miles with zero emissions. Any replacement vehicle or transfer of a vehicle licence after December 2030 must meet the Ultra-Low Emissions standards as above.
11	Air Quality Monitoring	Other	Other	2023	ongoing	Environmental Services Team	Developer funding, Defra AQ Grant	Yes	Partially funded	£10k - £50k	Implementation	Not applicable	Not applicable	Funding in place. Monitoring ongoing with programme under review	
12	Traffic Data Collection	Traffic Management	Other	2023	Not applicable	LCC	Developers & highway infrastructure funding	NO	Fully funded	£100k - £500k	Ongoing, demand led	Not applicable	Not applicable	Funding secured	
13	Liaison with local Councils	Public Information	Other	2023	ongoing	Parish Councils, Braunstone Town Council, Parish Meetings	HBBC, Defra AQ Grant	Yes	Partially funded	<£10k	Planning	Not applicable	Not applicable		

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
14	Air Quality Information available on Borough Council's website	Public Information	Via the Internet	2023	ongoing	HBBC, LCC	HBBC, Defra AQ Grant	Yes	Partially funded	<£10k	Planning	Not possible to estimate	Information available on the district website		
15	Air Quality and Health Partnership Comms plan	Public Information	Via the Internet	2023	ongoing	HBBC, LCC	HBBC, Defra AQ Grant	Yes	Partially funded	<£10k	Planning	Not possible to estimate	Not applicable		
16	Air Quality and Health Partnership	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2022	ongoing	HBBC, LCC, Public Health, NWL, HDC, MBC, CBC, O&W, BDC.	Public Health	No	Partially funded	< £10k	Planning	Not possible to estimate	Not applicable		
17	Local Plan	Policy Guidance and Development Control	Other Policy	2022	Ongoing	HBBC, LCC	HBBC, LCC funded	No	Partially Funded	£1 million - £10 million	Planning	Reduction in vehicle emissions	Not applicable		Next Local Plan
18	Work with HBBC to secure necessary mitigation measures to support new development and ensure it is located where appropriate	Policy Guidance and Development Control	Other Policy	2022	Ongoing	HBBC, LCC	HBBC, LCC, Developer funding,	No	Partially Funded	£100k - £500k	Planning	Not possible to estimate	Not applicable		Convenient access to local amenities, public transport and walking and cycling facilities with the intention of reducing car journeys and avoiding creating future air quality problems.

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
19	Work with Leicestershire County Council to input to a strategy and implementation plan to create an integrated charging network across the district (public and private car parks, petrol stations, on street)	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	Delivery of EV Strategy and Implementation Plan is ongoing	HBBC, LCC	Private, Developer, and Central Government Funding	No	Funded	£1 million - £10 million	Planning	Reduction in vehicle emissions	Number of EV charging points per 100,000 population. District owned chargepoints to be delivered	Funding and resourcing being sought for strategy implementation	Resources
20	Work with LCC on the Pilot LEVI Fund	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	Ongoing	HBBC, LCC	Private, Developer, and Central Government Funding	No	Funded	£1 million - £10 million	Planning	Reduction in vehicle emissions	Number of EV charging points per 100,000 population. District owned charge points to be delivered	Initial pilot Funding has been secured for a limited number of charge points.	Resources
21	Development and delivery of the Local Cycling and Walking Infrastructure Strategy (LCWIP)	Transport Planning and Infrastructure	Cycle Network	2023	Ongoing	HBBC, LCC, DfT, Active Travel England (ATE)	Developer, and Central Government Funding	No		£1 million - £10 million +	Planning	Modal Shift to reduce vehicle use/ emissions	Cycling and walking stats will become available as the LCWIP progresses	1st stage engagement completed Jan 2022; concept scheme designs in progress.	Subject to Funding
22	Demand Related Transport	Alternatives to private vehicle use	Other: Public transport lift sharing scheme	2022	ongoing	Bus companies, HBBC, LCC	Central Government funding	NO	Funded	£1 million - £10 million	Implementation	Reduction in vehicle emissions	N/A	DfT pilot implemented	Fox Connect on demand – shared transport DfT Pilot scheme implemented and in use.
23	Leicestershire Enhanced Bus Partnership	Alternatives to private vehicle use	Other: Increase use on Public Transport	2022	ongoing	Bus companies, HBBC, LCC	Subject to funding	No	Partially Funded	£1 million - £10 million	Implementation	Reduction in vehicle emissions	Reduced bus emissions and increase bus use (modal shift)	Partnership between the bus operators and the County Council Introduced and currently ongoing	Fully funded subject to fare revenue and uptake

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
24	Strategic Road Network	Traffic Management	Strategic Highway Improvements	2022	<Insert year>	National Highways, LCC, HBBC	National Highways, Gov funding	No	Not Funded	> £10 million	Implementation	Not possible to estimate	N/A	Continued dialogue with National Highways	Updates via National Highways, route improvements and future strategies

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), 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.

Public Health Profiles is a data tool provided by OHID (Office of Health Improvement and Disparities)

Hinckley and Bosworth Borough Council has used the tool to generate an indication as to the fraction of mortality attributable to particulate air pollution in the borough. Table 2.3 below shows the data set against both local and national figures. Based upon the latest available figures (2021).

Area	Recent Trend	Count	Value		95% Lower CI	95% Upper CI
England	—	-	5.5		-	-
Leicestershire	—	-	5.8		-	-
Oadby and Wigston	—	-	6.2		-	-
Charnwood	—	-	6.1		-	-
Hinckley and Bosworth	—	-	5.8		-	-
Blaby	—	-	5.7		-	-
North West Leicestershire	—	-	5.7		-	-
Harborough	—	-	5.3		-	-
Melton	—	-	5.2		-	-

Source: Background annual average PM_{2.5} concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra's Automatic Urban and Rural Network (<https://uk-air.defra.gov.uk/interactive-map>). By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM_{2.5} concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of total PM_{2.5} are used for estimating the mortality burden attributable to particulate air pollution (COMEAP, 2022).

Table 2.3 Fraction of mortality attributable to particulate air pollution (new method) 2021

The Public Health Profiles data tool also provides data on the mean average levels of PM_{2.5} across the borough as shown in table 2.4 below.

Area	Recent Trend	Count	Value		95% Lower CI	95% Upper CI
England	—	-	7.4		-	-
Leicestershire	—	-	7.7		-	-
Oadby and Wigston	—	-	8.3		-	-
Charnwood	—	-	8.2		-	-
Hinckley and Bosworth	—	-	7.8		-	-
Blaby	—	-	7.7		-	-
North West Leicestershire	—	-	7.6		-	-
Harborough	—	-	7.1		-	-
Melton	—	-	6.9		-	-

Source: Background annual average PM_{2.5} concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in DEFRA's Automatic Urban and Rural Network (<https://uk-air.defra.gov.uk/interactive-map>). By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM_{2.5} concentrations for each lower tier local authority are calculated. This work is completed under contract to DEFRA, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC).

Table 2.4 Air Pollution: fine particulate matter (new method- concentrations of total PM_{2.5}) 2021 Mean µg/m³

In addition to the measures in table 2.2 the following measures are taken in the Borough to reduce PM_{2.5}:

Hinckley and Bosworth Borough Council have used the DEFRA National Background Maps for PM_{2.5} to determine the locations where higher concentrations of PM_{2.5} are likely.

The source apportionment data provided in the maps allows HBBC to identify sources of PM_{2.5} in hotspot areas. This will allow HBBC to evaluate existing control measures and amend these if necessary.

The majority of sources identified from the maps where PM_{2.5} is likely to be generated in the borough are sites controlled by the Pollution Prevention and Control regime. HBBC has several permitted processes in the borough which are regularly inspected by Environmental Health (Pollution) using a risk rating system. Emissions are monitored at

sites either continually or annually to ensure compliance with current Emission Limit Values (ELVs) where these are necessary. Permit conditions require operators to inform Environmental Health (Pollution) of any exceedances of ELVs.

Under the planning process air quality impact assessments will be required for developments likely to affect air quality. Reports will include impacts from PM_{2.5}. Environmental Health (Pollution) has recently updated the guidance given to developers regarding air quality and more emphasis is placed on PM_{2.5}.

Domestic wood and coal fires are the largest contributors to Particulate emissions - almost 38% according to DEFRA's Clean Air Strategy. This compares to emissions from industrial combustion (17%) and road transport (13%). The tiny particles in smoke can cause a range of health impacts such as breathing problems and exacerbating asthma as well as contributing to other health conditions. Hinckley and Bosworth Borough Council raises awareness of the impacts of solid fuel burning both during the investigating of complaints and by providing relevant information on the council website. Where appropriate enforcement action will be taken under clean air, nuisance or anti-social behaviour legislation.

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

This section sets out the monitoring undertaken within 2022 by Hinckley and Bosworth Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

4.1.1 Automatic Monitoring Sites

Hinckley and Bosworth Borough Council does not operate any automatic monitoring sites.

4.1.2 Non-Automatic Monitoring Sites

Hinckley and Bosworth Borough Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 16 sites during 2022. **Table A.1** 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.

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.

4.1.3 Nitrogen Dioxide (NO₂)

Error! Reference source not found. and Table A.2 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 2022 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.2 shows that no sites across the borough indicated exceedances of the Air Quality Objectives at relevant exposures in 2022. No AQMA's have been declared.

Following the 2012 Progress Report sites 10 and 14 were established to provide additional monitoring to the existing site 12 at 6 Shaw Lane, Markfield. This site had measured possible marginal exceedances of the Air Quality Objectives in that report. A Detailed Assessment was carried out of this area in 2015. The results of the detailed assessment showed that the Air Quality Objective Values were not exceeded and an Air Quality Management Area was not declared. The site will be closely monitored.

In 2020 all monitoring sites were reviewed. A diffusion tube monitoring site was established on Groby Road in Ratby in 2020 (site 13) to monitor levels of NO₂ close to the M1. The results of the monitoring indicate that the Air Quality Objectives are not being exceeded at this site.

Site 5 was established to measure levels of NO₂ along Peckleton Lane in Desford. The adjacent land has received planning permission for a storage and distribution site. The results of the monitoring indicate that the Air Quality Objectives are not being exceeded at this site at present. Monitoring will continue to assess the impact of the development once it is operational.

Analysis of measurements across the UK has shown that the 1 hour NO₂ objective is not likely to be exceeded unless the annual mean is above 60µg/m³ (Laxton & Marnier 2003). Exceedance of 60µg/m³ annual mean can be used as a surrogate index for breaches of

the hourly objective. Table A2 in appendix A shows that none of the HBBC monitoring sites had annual mean values approaching $60\mu\text{g}/\text{m}^3$ so it is unlikely that the hourly objective has been exceeded at any of them.

4.1.4 Particulate Matter (PM₁₀)

HBBC does not monitor PM₁₀

4.1.5 Particulate Matter (PM_{2.5})

HBBC does not monitor PM_{2.5}

4.1.6 Sulphur Dioxide (SO₂)

HBBC does not monitor SO₂.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
1	Trinity Lane	Urban Centre	442417	293808	NO ₂		0.0	3.0	No	2.0
2	1 Rufford Close	Suburban	442903	291349	NO ₂		0.0	7.0	No	2.0
3	562 Coventry Road	Suburban	440106	293080	NO ₂		0.0	16.0	No	2.0
4	Rivendell A5	Suburban	439736	293244	NO ₂		0.0	21.0	No	2.0
5	Peckleton Lane Desford	Suburban	448012	302544	NO ₂		14.0	1.0	No	2.0
6	207 Rugby Road, Burbage	Suburban	442592	292938	NO ₂		0.0	9.0	No	2.0
7	66 London Road	Suburban	443624	293829	NO ₂		0.0	10.0	No	2.0
8	Wood Street, Earl Shilton	Urban Centre	446320	297756	NO ₂		5.0	1.0	No	2.5
9	Shilton Bypass	Suburban	446696	296771	NO ₂		24.0	6.0	No	2.0
11	216 Markfield Road, Groby	Suburban	451376	308147	NO ₂		0.0	13.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
13	36 Groby Road, Ratby	Suburban	451560	306273	NO ₂		0.0	18.0	No	1.7
10, 12, 14	6 Shaw Lane	Rural	447113	311660	NO ₂		0.0	8.0	No	1.7
15	93 Rugby Road, Hinckley	Urban Centre	442291	293579	NO ₂		0.0	5.0	No	2.0
16	171 Rugby Road, Hinckley	Suburban	442328	293264	NO ₂		0.0	7.0	No	2.0

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 – 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 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
1	442417	293808	Urban Centre	100	100.0	20.3	19.6	15.6	17.1	16.3
2	442903	291349	Suburban	100	100.0	27.4	27.3	23.4	22.8	22.5
3	440106	293080	Suburban	100	100.0	23.8	23.1	18.7	18.9	18.2
4	439736	293244	Suburban	100	100.0	20.4	21.1	17.0	18.2	17.8
5	448012	302544	Suburban	100	100.0				10.9	12.4
6	442592	292938	Suburban	100	100.0	20.4	19.8	15.6	17.0	16.4
7	443624	293829	Suburban	100	100.0	21.3	21.1	16.9	17.6	18.1
8	446320	297756	Urban Centre	100	100.0	20.9	23.3	18.8	21.6	19.1
9	446696	296771	Suburban	82.7	82.7	16.2	19.1	15.6	17.2	17.7
11	451376	308147	Suburban	100	100.0	24.3	23.7	19.0	18.8	18.1
13	451560	306273	Suburban	100	100.0		28.6	15.3	15.9	15.3
10, 12, 14	447113	311660	Rural	100	100.0	36.7	35.1	26.8	28.8	27.1

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 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
15	442291	293579	Urban Centre	100	100.0	31.1	29.0	24.9	25.5	23.6
16	442328	293264	Suburban	92.3	92.3	25.0	24.0	18.9	18.6	18.9

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

Diffusion tube data has been bias adjusted.

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

Notes:

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

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**.

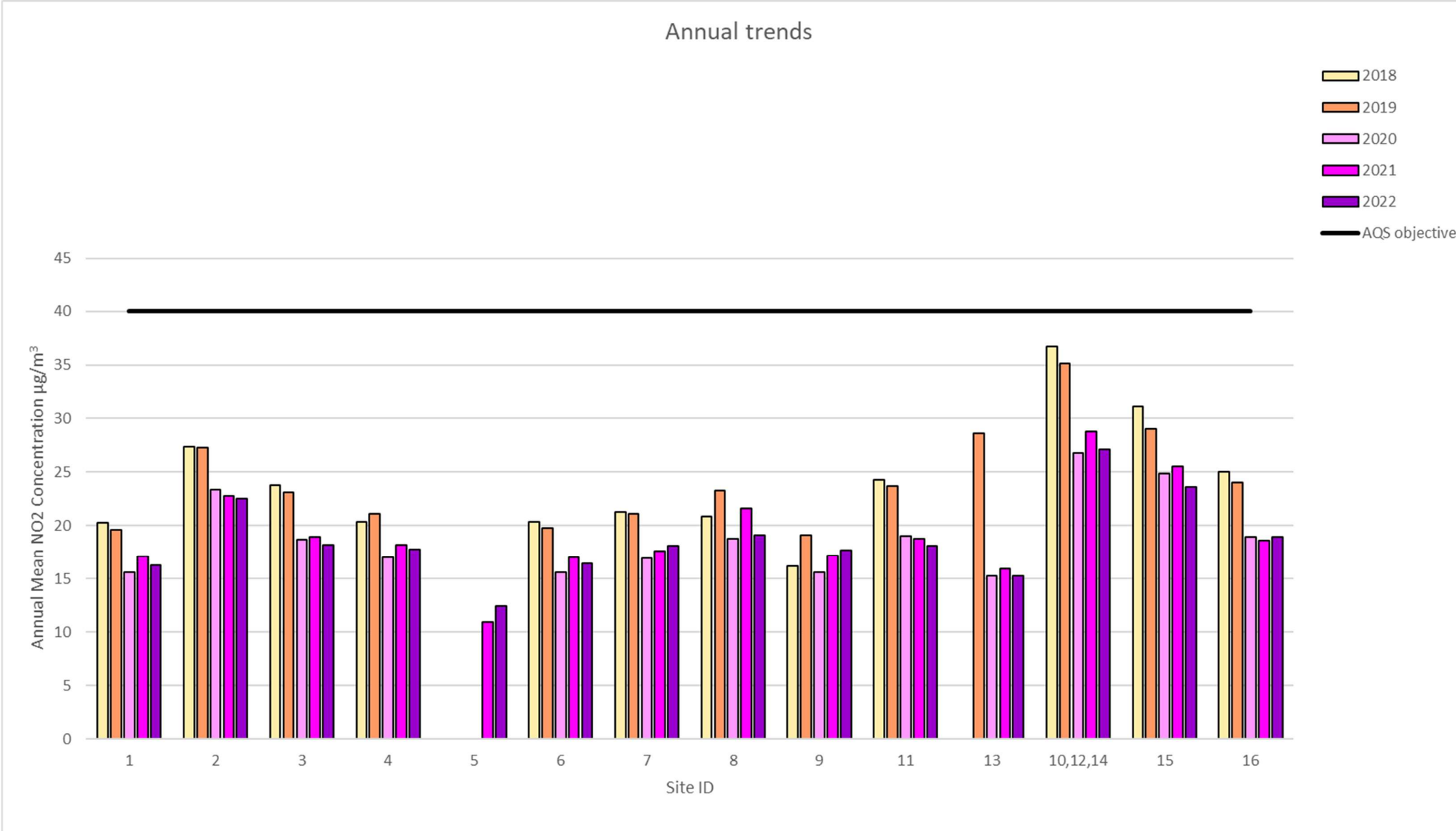
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO2 Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO₂ 2022 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	442417	293808	32.4	21.9	26.4	21.9	15.7	15.6	16.4	19.3	20.8	21.4	7.9	30.4	21.5	16.3		
2	442903	291349	39.1	32.9	29.3	23.1	29.2	30.7	26.9	20.9	27.4	34.3	36.4	25.1	29.6	22.5		
3	440106	293080	32.5	21.5	20.2	23.5	19.8	21.4	20.5	22.8	23.5	22.5	25.2	28.9	23.9	18.2		
4	439736	293244	32.3	20.8	25.2	20.7	20.3	19.8	19.3	18.6	19.5	23.6	30.4	25.7	23.4	17.8		
5	448012	302544	22.5	14.6	21.1	11.1	11.9	12.7	12.6	12.3	15.4	18.0	20.5	20.7	16.4	12.4		
6	442592	292938	26.6	19.0	32.5	21.9	15.4	16.3	17.1	18.4	22.7	21.3	20.7	23.5	21.5	16.4		
7	443624	293829	34.6	19.5	28.2	23.3	18.5	17.8	16.4	21.1	21.8	23.2	26.8	28.4	23.9	18.1		
8	446320	297756	28.1	21.8	33.8	25.8	18.9	19.1	19.2	25.6	24.5	23.7	26.5	31.6	25.2	19.1		
9	446696	296771	30.2	12.7	26.7	21.2			16.5	21.1	18.9	22.6	25.0	28.9	23.3	17.7		
10	447113	311660	45.0	30.3	41.7	36.7	35.7	35.0	33.7	31.1	36.1	36.2	38.6	34.5	-	-		
11	451376	308147	34.4	26.7	26.3	21.0	19.7	21.8	20.8	17.3	21.2	26.4	23.0	24.7	23.9	18.1		
12	447113	311660	46.6	33.3	41.1	36.4	34.2	32.3	33.2	34.5	35.9	34.5	37.9	33.9	-	-		
13	451560	306273	22.8	12.8	32.1	23.6	14.6	15.3	17.2	24.9	22.9	16.3	17.7	18.1	20.1	15.3		
14	447113	311660	41.9	31.6	43.6	36.3	35.0	33.4	33.5	32.0	35.0	33.9	19.0	26.9	35.7	27.1		
15	442291	293579	43.1	30.9	33.2	32.4	26.3	25.7	25.5	31.6	29.5	25.5	26.1	37.6	31.1	23.6		
16	442328	293264	31.7	28.6	29.0	20.2	17.1	17.3	16.9	39.4		21.9	26.5	27.5	24.8	18.9		

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

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

Local bias adjustment factor used.

National bias adjustment factor used.

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

Hinckley and Bosworth Borough Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within the Borough of Hinckley and Bosworth During 2022

Hinckley and Bosworth Borough Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Hinckley and Bosworth Borough Council During 2022

Hinckley and Bosworth Borough Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Monitoring throughout 2022 was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar

Diffusion Tube Bias Adjustment Factors

HBBC diffusion tubes are supplied and analysed by SOCOTEC Didcot. They prepare the tubes using 50% Triethanolamine (TEA) in acetone. SOCOTEC have confirmed that they meet the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance.'

In the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, SOCOTEC currently holds the highest rank of a "Satisfactory" laboratory

Bias adjustment factors used are from the Review and Assessment website (Spreadsheet Version Number: 03/23). The factor used was 0.76.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within the Borough of Hinckley and Bosworth recorded data capture of 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.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Hinckley and Bosworth Borough Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data. There are no local co-location studies with which to determine a local bias factor. A summary of bias adjustment factors used by Hinckley and Bosworth Borough Council over the past five years is presented in Table C..

The factor from the Review and Assessment website (Spreadsheet Version Number: 03/23) is the only one available for use.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	06/20	0.75
2018	National	03/19	0.76

NO₂ Fall-off with Distance from the Road

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

automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

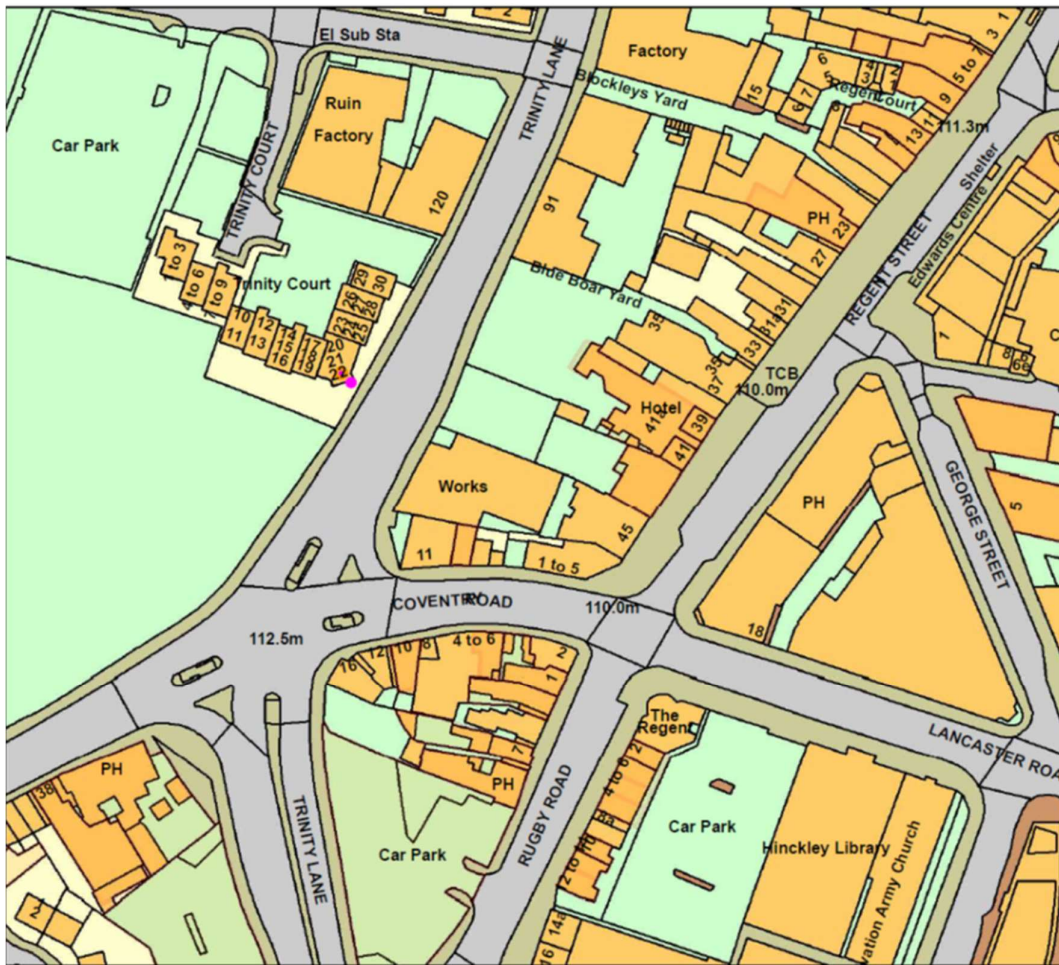
No diffusion tube NO₂ monitoring locations within the Borough of Hinckley and Bosworth required distance correction during 2022

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

Figure D.1 – Map of Non-Automatic Monitoring Site Note- All diffusion tube locations indicated by a pink dot.

Monitoring site 1

Trinity Court, Hinckley



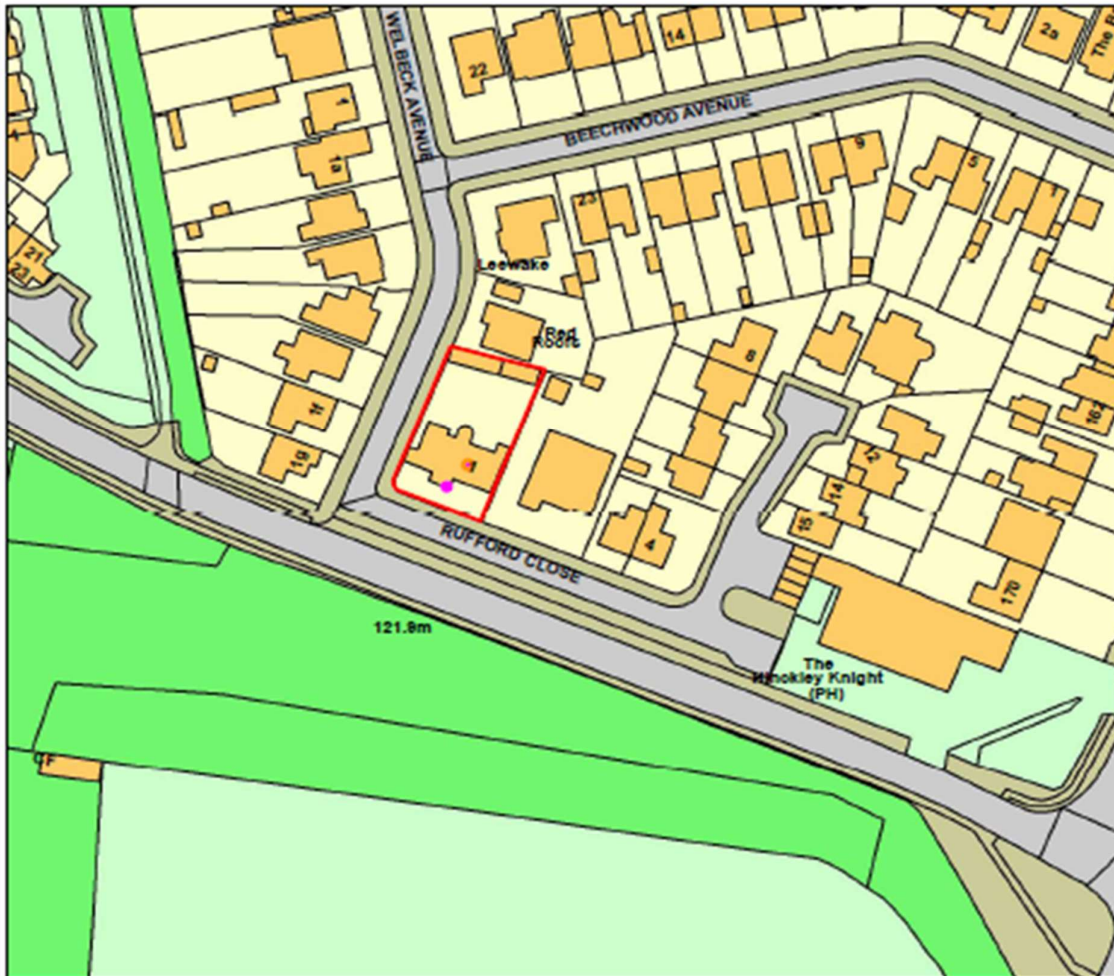
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Organisation	Hinckley and Bosworth BC
Department	
Comments	
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Monitoring Site 2

Rufford Close



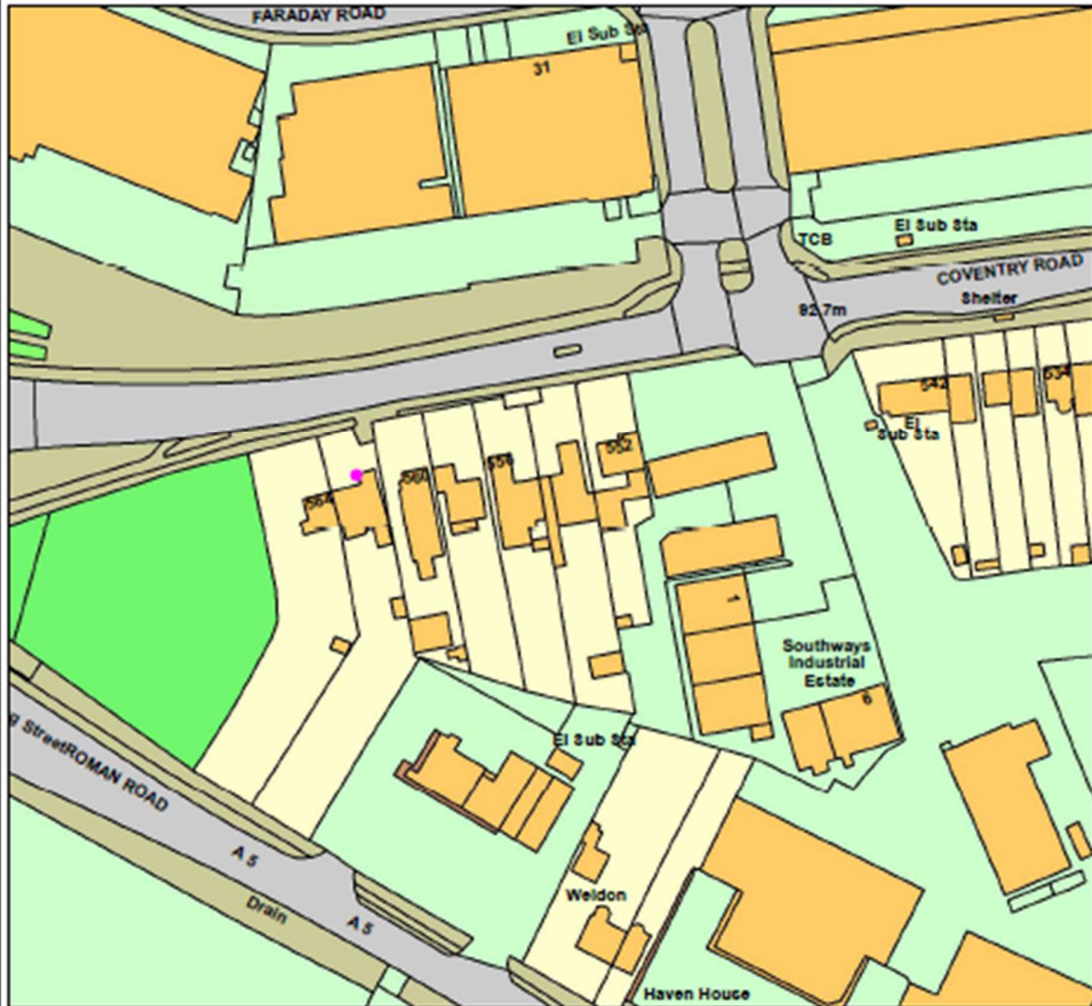
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Monitoring Site 3

562 Rugby Road Hinckley



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Monitoring Site 4

A5 Rivendell



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Monitoring Site 5

Peckleton Lane Desford



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PSMA Number	100018489

Monitoring Site 6

207 Rugby Road, Burbage



Scale: 1:1,250

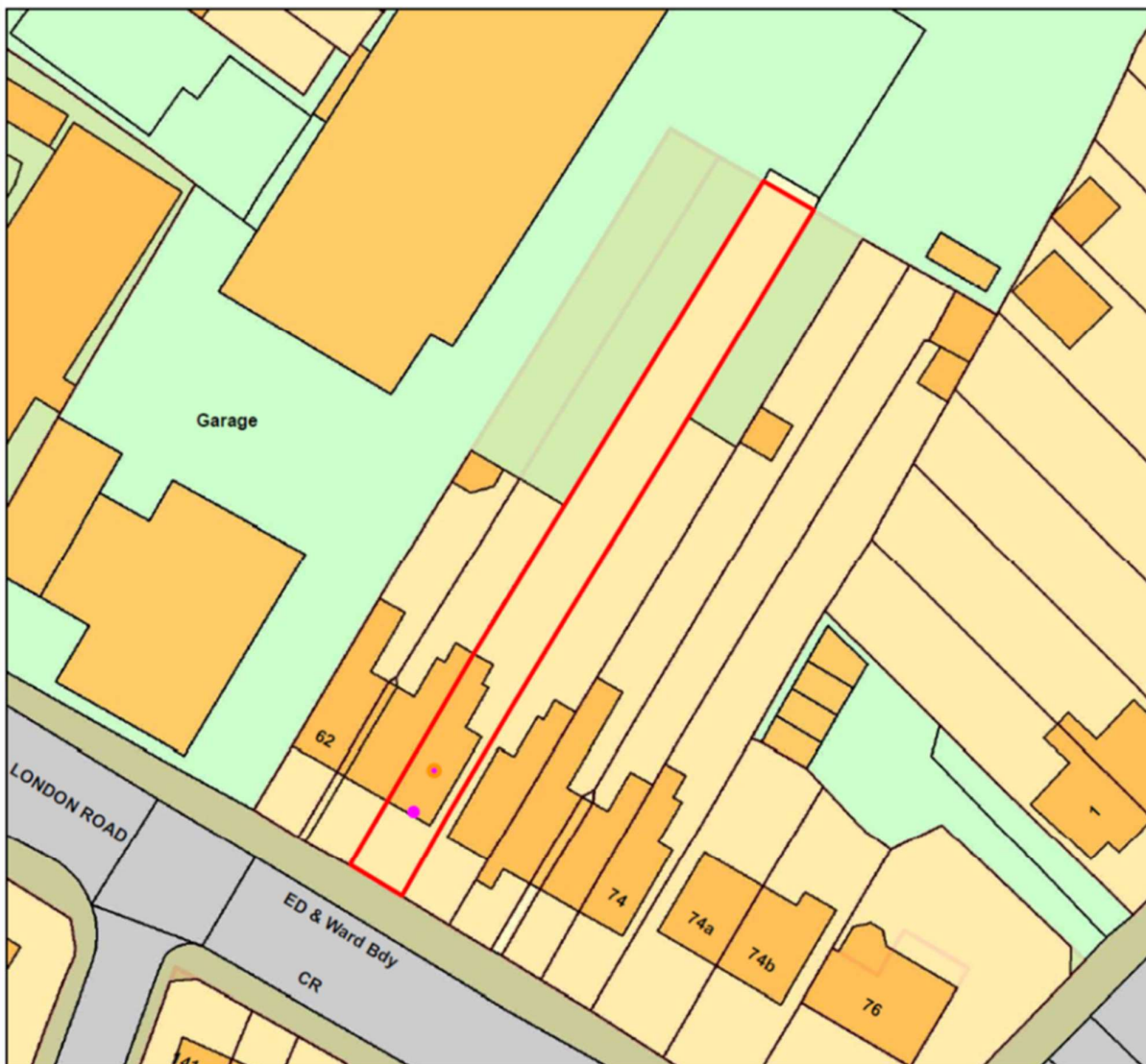
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Monitoring site 7

66 London Road, Hinckley



Scale: 1:510

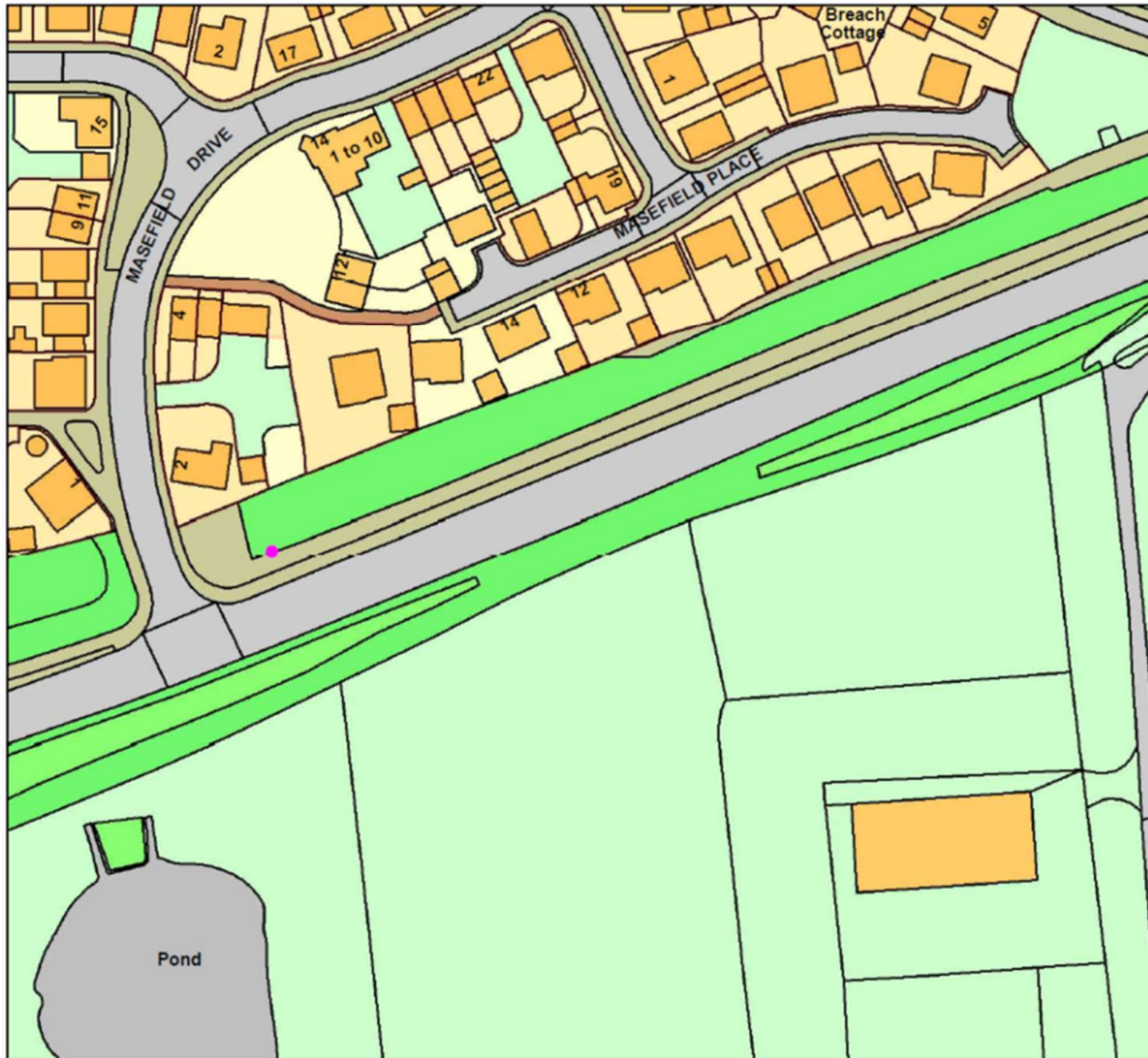
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Monitoring site 8

Earl Shilton Bypass



Scale: 1:1,250

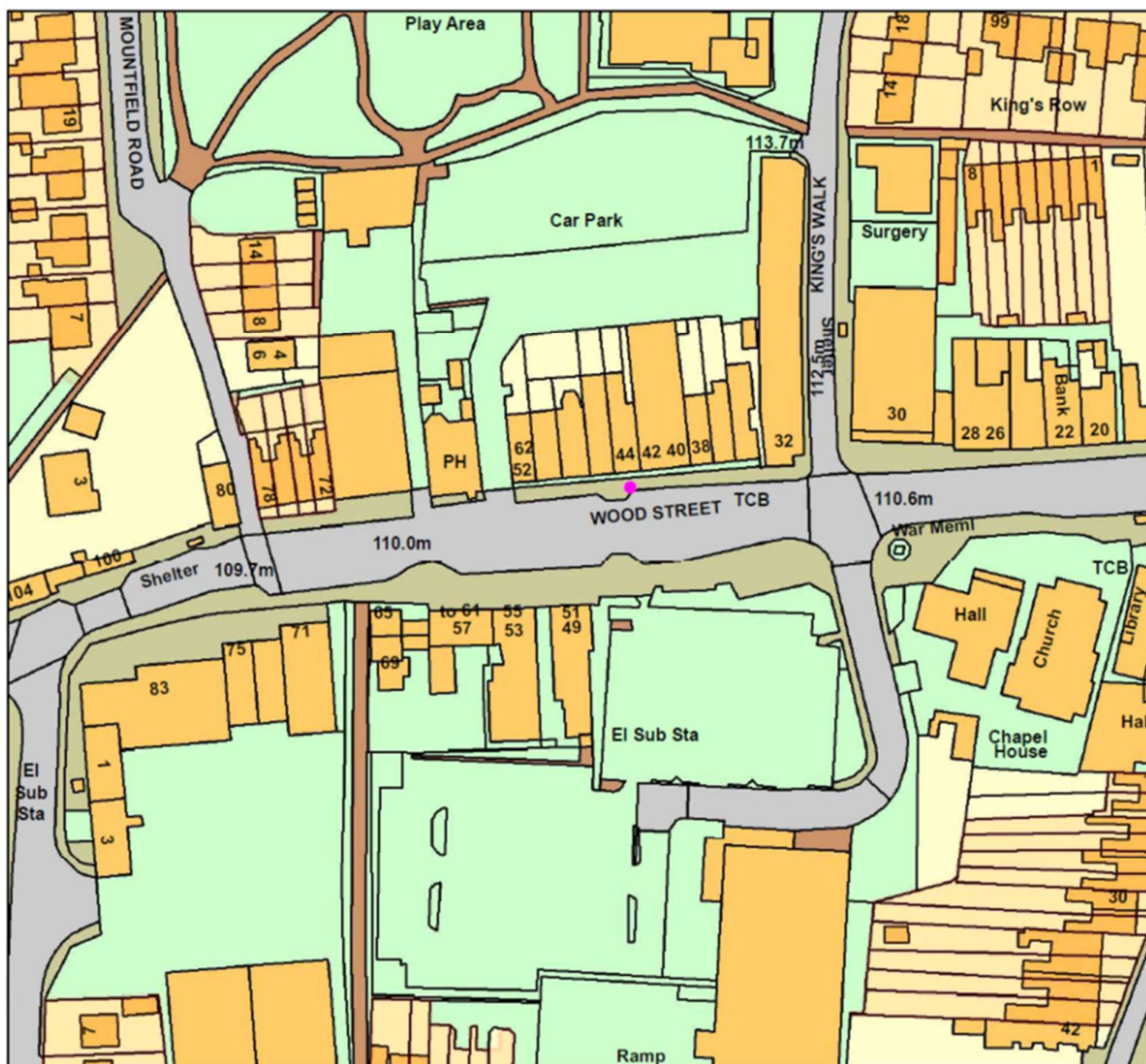
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Monitoring site 9

Wood Street, Earl Shilton



Scale: 1:1,250

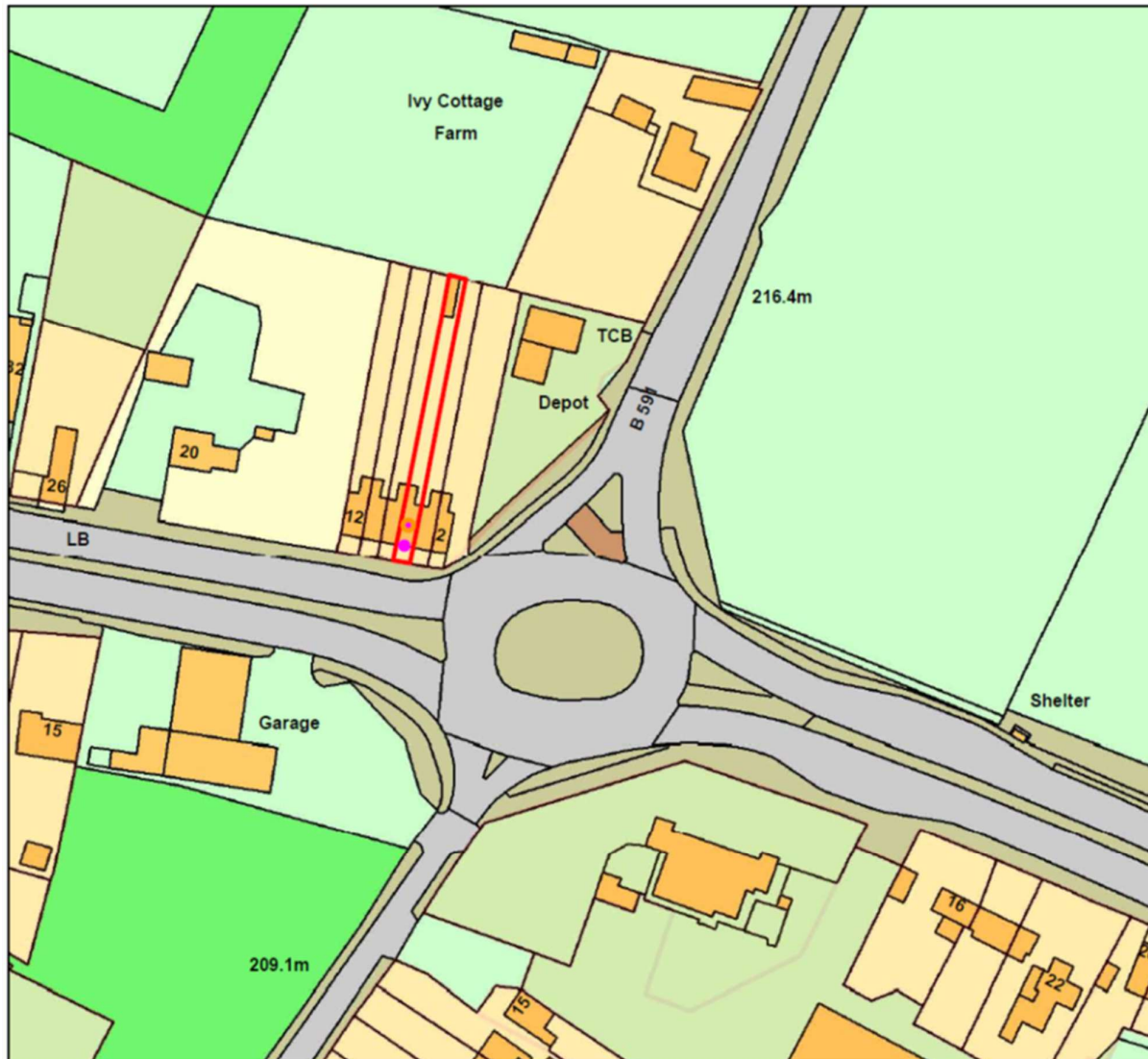
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Monitoring site 10,12,14

6 Shaw Lane, Markfield



Scale: 1:1,250

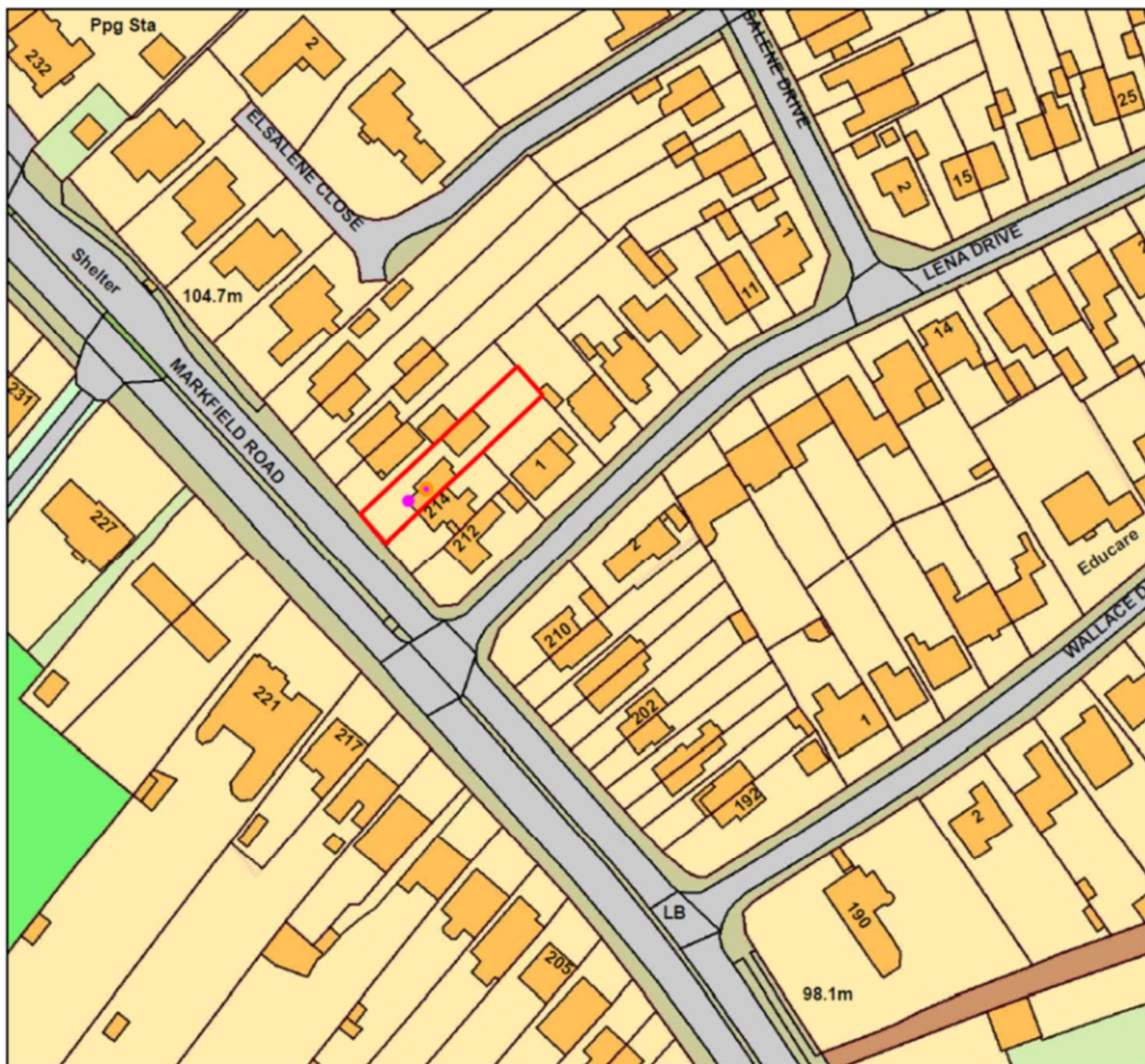
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Monitoring site 11

216 Markfield Road, Groby



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Monitoring Site 13

36 Groby Road, Ratby



Scale: 1:1,250

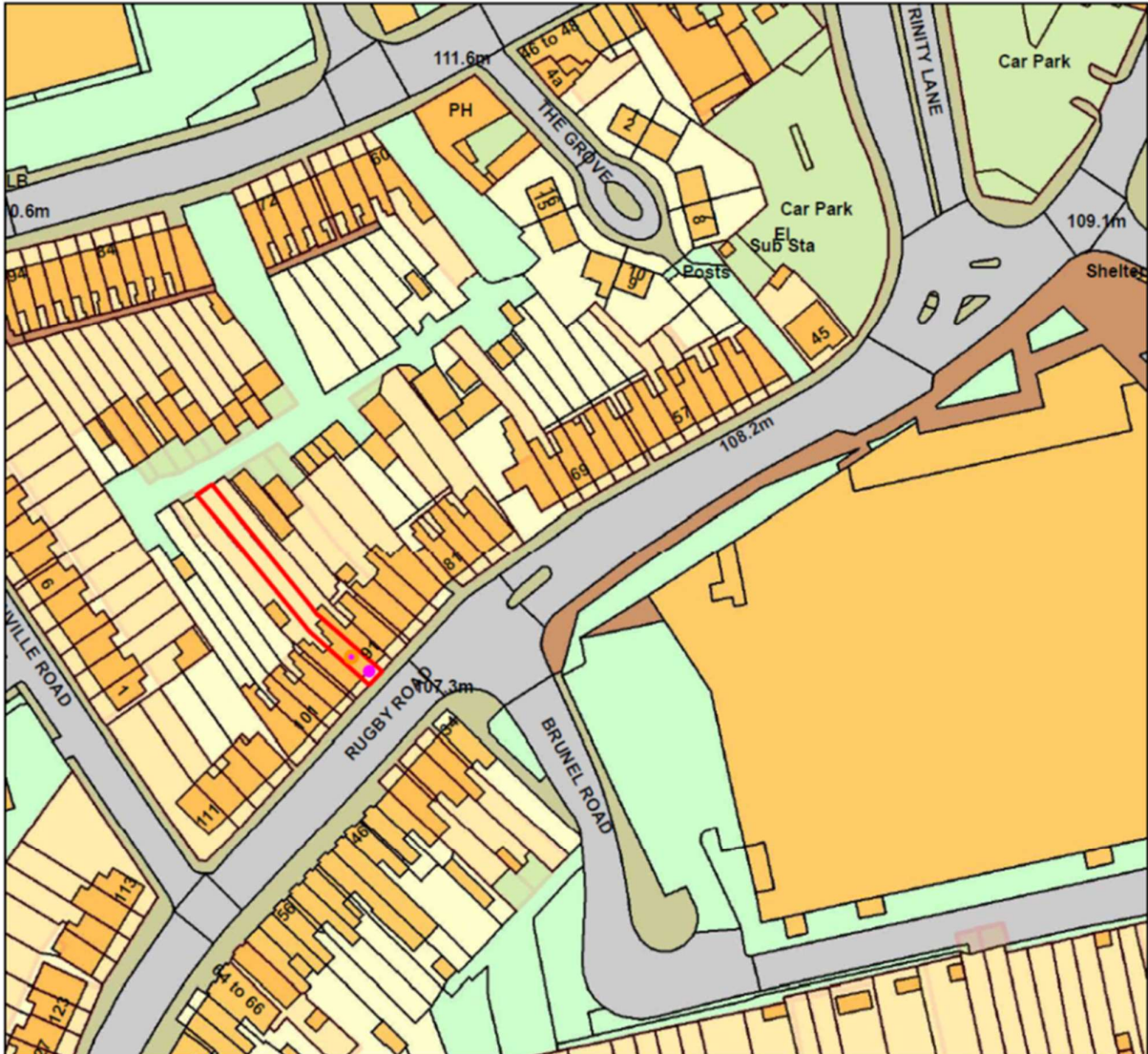
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Monitoring site 15

93 Rugby Road, Hickley



Scale: 1:1,250

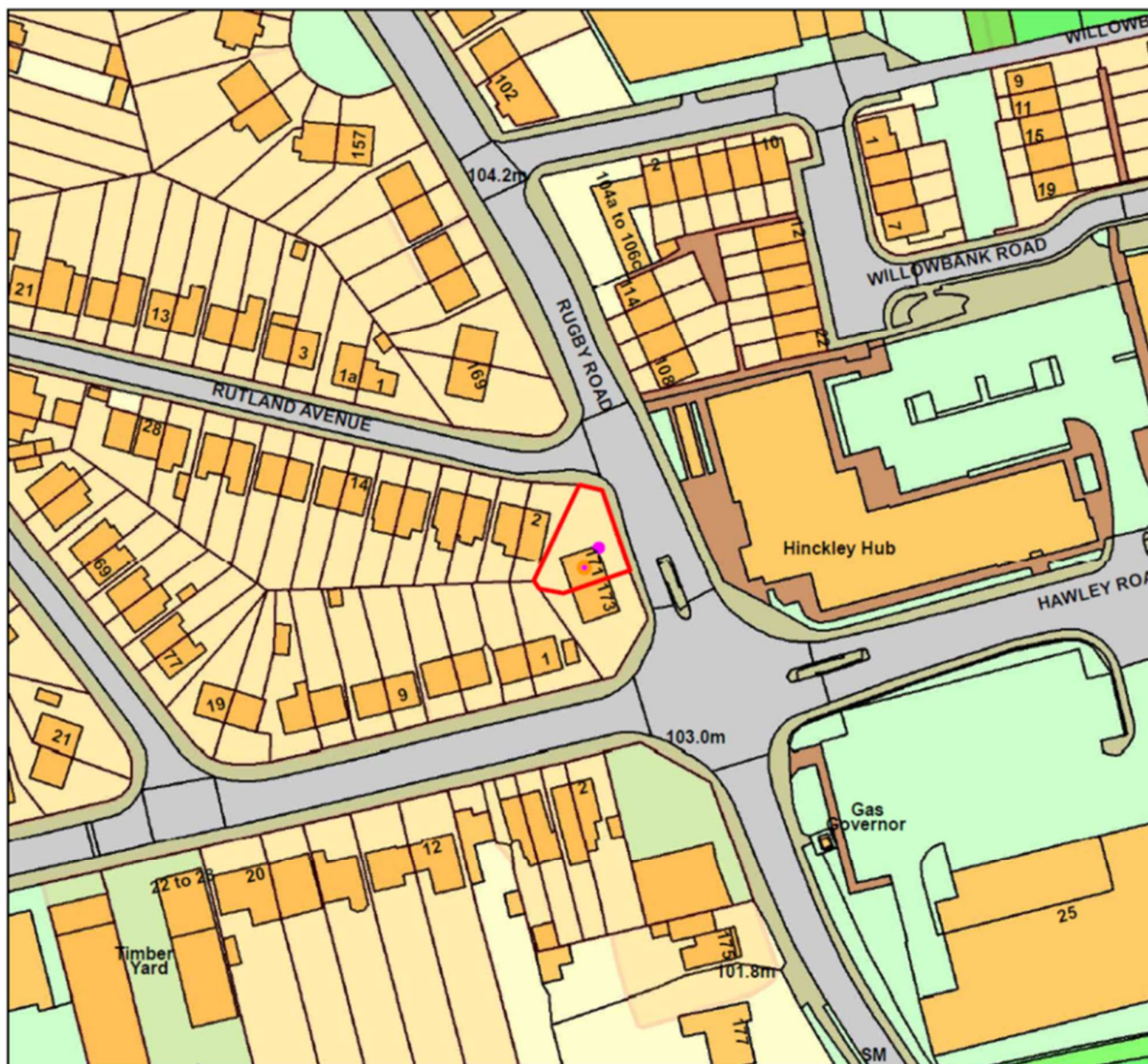
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Monitoring site 16

171 Rugby Road, Hinckley



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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

Glossary of Terms

AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
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

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