2023 Air Quality Annual Status Report (ASR) for the year 2022

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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Report Reference Number	ASR 2023
Date	June 2023

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Executive Summary: Air Quality in Our Area

The Environment Act 1995 places a duty on Local Authorities to monitor, assess and take action to improve local air quality under the statutory process of Local Air Quality Management (LAQM). The LAQM system places greater emphasis on action planning to improve air quality, as well as requiring the completion of an air quality Annual Status Report (ASR). This report relates to data gathered between 1st January and 31st December 2022 and forms Huntingdonshire District Councils 2023 ASR, providing a review of air quality in the district during 2022.

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

Air Quality in Huntingdonshire

After the impacts of the Covid pandemic and various lock downs in 2020 and 2021, traffic levels in 2022 are likely to be more normalised. The A14 works to remove the viaduct within Huntingdon centre and fully open the A1307 were completed in May 2022 with all associated traffic restrictions lifted on the 30th of that month, marking the end of the A14 relocation project. Traffic levels may have been impacted during the first few months of 2022 as roadworks could have influenced drivers' behaviour. This, coupled with the likelihood that peoples travelling habits may have changed since the pandemic, makes it

[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

difficult to assess the impact of the relocation of the A14, however, the council still considers that the relocation has had a beneficial impact on pollution levels within Huntingdon.

The main air quality issues within Huntingdonshire continue to be NO_2 from vehicle emissions, mostly originating from the A14 and to a lesser extent the A1, both of which run through the district. However, local traffic within the market towns also contributes to some elevated levels, compared to the rest of the district.

Huntingdonshire currently has four Air Quality Management Areas (AQMA's).

1. Huntingdon,
2. St Neots,
3. Brampton, and
4. A14 Hemingford to Fenstanton.

These can be viewed on our website at: Air Quality - Huntingdonshire.gov.uk and on the Defra website at: Local Authority Details - Defra, UK.

Data collected demonstrates that there were no breaches of any of the national objectives in 2022 at any of the measurement locations within Huntingdonshire.

Diffusion Tubes (non-continuous monitors for Nitrogen Dioxide (NO_2))

Results from previous years have been in line with national trends and shown a predominantly year on year reduction in Nitrogen Dioxide (NO_2), however following the expected dip in pollution levels during 2020, due to control measures associated with Covid-19, overall results slightly increased in 2021 and this trend has continued into 2022, with another slight increase at the majority of sites. Huntingdon 3 (6 George Street) which had the biggest increase last year, is the only site to record a decrease this year and reduced from 23.9µg/m^3 to 22.6µg/m^3. The biggest increases were at Buckden 1 (Perry Road) and Buckden 3 (High Street) which increased from 14.3µg/m^3 to 18.1µg/m^3 and 17.8µg/m^3 to 20.8µg/m^3 respectively, however both remain well within the objective of 40µg/m^3, and lower than pre-Covid levels.

The highest concentrations measured by diffusion tube within the district during 2022 were at Pathfinder House (PFH) with the mean result of the triplicate tubes at 28.2µg/m^3. This compares to a figure of 27µg/m^3 in 2021 and remains well within the objective.

Whilst the overall trend this year and last year has been an increase, all of the sites remain below the levels measured in 2019, before Covid and the completion of the A14 works. The data demonstrates that in 2022 all sites met the NO_2 objective of 40µg/m^3 and the continuing low trend is likely due to the relocation of the A14 and a change in travel behaviour.

As discussed in last year's ASR the tube location details for the Wood Green Animal Shelter tube have been updated as this was moved due to building works and access issues. Another change, implemented at the beginning of 2022, was the relocation of the Warboys tube to a new location at Bluntisham. It is proposed this tube will remain in place for a minimum of 3 years and then move to another location if considered more appropriate.

Continuous monitors (Analysers for Particulate Matter (PM) and NO_2)

PM_{10}, $PM_{2.5}$ and NO_2 are continuously monitored at the Air Quality Monitoring Station (AQMS) located near Pathfinder House. Results indicate that there were no exceedances of any of the air quality objectives in 2022 at this location.

Unfortunately, there were issues with the equipment during 2022 due to repair work and a change in service contract, meaning the data capture for both the NO_2 analyser and the FIDAS (Particulate Matter (PM) analyser) was below 75% and therefore it has been necessary to annualise the data in line with the LAQM Technical Guidance 2022 (TG22). Further details regarding this can be found in Section 3.1 and Appendix C.

The annualised results show the annual mean PM_{10} figure decreased slightly from 15µg/m^3 in 2021 to 14.8µg/m^3 in 2022. This remains well within the objective level of 40µg/m^3. The results indicate there was one breach of the 24-hour objective (50µg/m^3) during 2022, however this is still well below the limit of up to 35 breaches per year.

$PM_{2.5}$ has climbed slightly from 8µg/m^3 in 2021 to 8.3µg/m^3 in 2022, however this remains below the 8.7µg/m^3 measured in 2019.

The NO_2 analyser measured an annual mean of 28.2µg/m^3, slightly higher than the 27µg/m^3 measured in 2021, but lower than the 37µg/m^3 recorded in 2019. There were no 1-hour means above 200µg/m^3.

Due to the data capture Huntingdonshire District Council have not taken part in the diffusion tube co-location study to produce a localised bias adjustment figure, however when calculated, the result is the same as the national one that has been utilised. More information regarding this can be found in Appendix C.

Residential Development:

As a growing district, Huntingdonshire has many large-scale long-term developments, both under construction, as well as proposed within the planning process. Extensive development continues to take place around St Neots and Alconbury Weald and other large sites include locations at St Ives, Godmanchester, Brampton, Buckden and around Huntingdon itself. The requirements for an air quality assessment are outlined within Policy LP 36 of the Huntingdonshire District Council Local Plan, and in line with this most larger scale, or potentially polluting proposals are accompanied by an Air Quality Impact Assessment to assess the impact of the proposed development (including during construction), as well as the impact of the local air quality on the development itself and any mitigation required.

Industrial Development:

During 2022 the application for the construction of a dry anaerobic digestion facility, pellet fertiliser facility and healthcare waste energy recovery facility at a current waste composting site continued to be considered by Cambridgeshire County Council. This was refused at planning committee early in 2023.

A further application was submitted at the end of 2022 to the County Council for the construction and operation of a Thermal Treatment Facility for the generation of electricity from non-hazardous, residual waste (post-recycling), including associated plant and infrastructure at a different site. This will be discussed further in next year's ASR.

The Small Waste Incineration Plant near Colne remains under construction and commissioning and as such is still not yet fully operational. This falls under the Industrial

Emissions Directive and has an Environmental Permit issued by Huntingdonshire District Council which includes conditions to control pollution.

During 2022 complaints were received regarding two industrial sites covered by the Permitting regime. One was concerning dust from crushing activity and another regarding smoke and dust from a timber process. These were both addressed under the Permitting regime and are currently considered resolved.

There have also been some breaches of emission limits at Permitted sites. One of these has been rectified with no further issues, the other is requiring a bespoke engineering solution and is in the process of being resolved and the council are in regular contact with the operator.

Partnership working:

Huntingdonshire District Council continue to apply for funding from the County Council's air quality monitoring budget to assist with monitoring provision around the district and are grateful to the County Council for their continued support.

Huntingdonshire District Council are a member of the countywide Cambridgeshire and Peterborough Pollution Group (CPPG) and meet regularly with other local authorities, the County Public Health team, and the Environment Agency to share information and best practise measures, as well as identify and work on specific projects. Huntingdonshire District Council are also involved in the collaboration between Cambridgeshire County Council and the Cambridgeshire and Peterborough Combined Authority for the smart place's initiative – more information on this is provided below.

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 Plan[5] sets out actions that will drive continued improvements to air quality and 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 Zero[6] 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.

Monitoring:

The monitoring of air quality within the district is considered an important aspect and Huntingdonshire District Council continues to re-evaluate the monitoring provision within the area.

The issues with the mobile air quality monitor have escalated and unfortunately the supplier has discontinued several crucial parts of the unit and are no longer supporting this equipment. This has been discussed at the CPPG meeting as some of the surrounding local authorities, who also invested in this equipment, are in the same position. Depending on available funding, an alternative option may be investigated in the future.

The ‘Smart Places Initiative’ discussed in last year’s ASR has expanded to include more market towns within the district. This project aims to use data and emerging technology to address common local challenges in areas such as transport, connectivity, and air quality. This data is then processed and analysed, providing information to help influence behaviours and improve economic strength, sustainability, and quality of life for the local residents. The Smart Places initiative is part of the Connecting Cambridgeshire

[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

programme, led by Cambridgeshire County Council, which is working in collaboration with the Cambridgeshire and Peterborough Combined Authority, Huntingdonshire District Council and local town and parish councils as well as local community groups, residents, and businesses. As part of this initiative air quality monitors have been placed at several locations around St Neots, however these have experienced power problems and are due to be replaced later this month. The Huntingdonshire District Council project team are also investigating potential low-cost air monitors for St Neots, Huntingdon, Ramsey and St Ives and the Environmental Protection Officer has been liaising with the team to provide advice. It is currently proposed to trial one of these units in the next few months. Whilst these monitors are not of the standard to report robust data for LAQM, they will assist in providing a more informative picture of the air quality around the district for the public and could identify areas where more robust monitoring would be beneficial.

Planning:

As mentioned above, Policy LP 36 of the Huntingdonshire District Council Local Plan sets out the requirements for an air quality impact assessment, and in line with this most larger scale, or potentially polluting proposals are accompanied by an air quality report. As in previous years, the Environmental Protection Team continue to provide advice to the Planning Team regarding proposed developments in order to minimise air pollution impacts, even if there is no risk that air quality objectives will be breached. This approach is supported by both national and local planning policies, promoting air quality improvements and minimisation of impacts. Therefore, even if the effect is judged to be insignificant, consideration of the application of good design and good practice measures is advised, including the following:

• promoting active travel and ensuring good cycling and walking infrastructure (preferably away from roads) to reduce reliance on vehicle use,

• the provision of electric vehicle rapid charge points/infrastructure,

• access to public transport,

• good property insulation,

• low emission design.

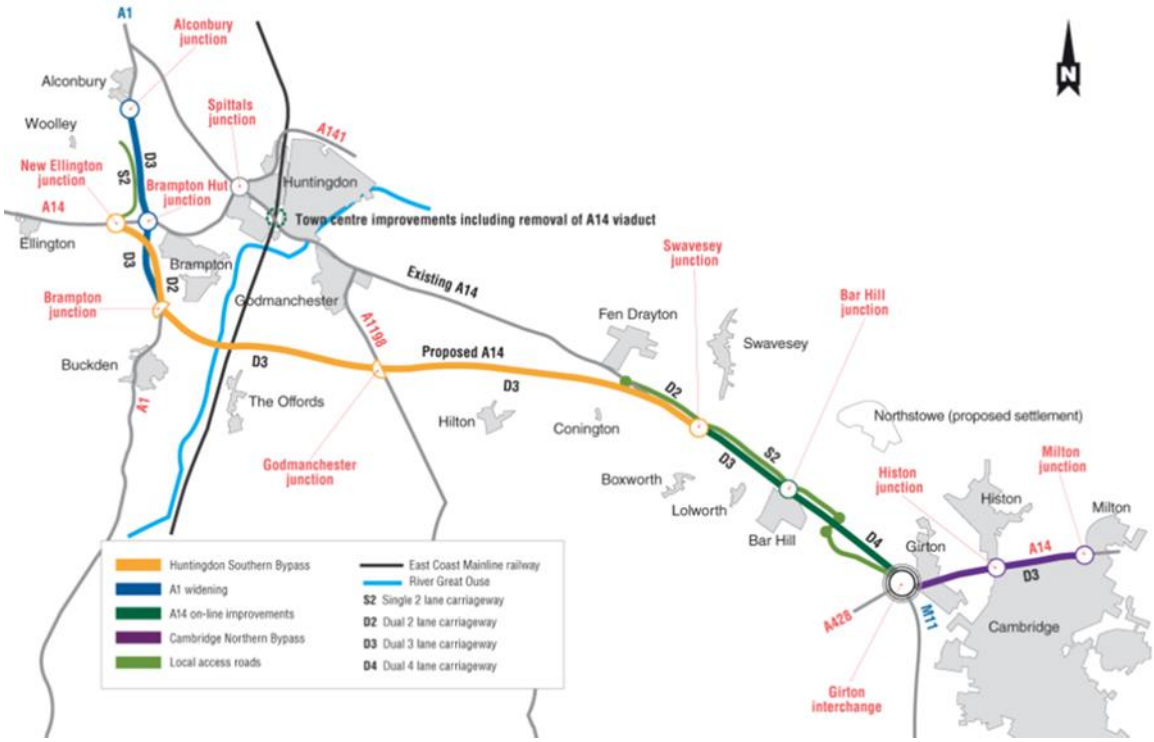
Construction Environmental Management Plans (CEMP's) continue to be a requirement for certain developments in order to control and minimise the impact of pollution, especially particulate matter, during construction activities.

Clean Air Day:

During 2022 Huntingdonshire District Council supported the National Clean Air Day public awareness campaign on 16th June 2022. Huntingdonshire District Council provided information and advice to the public on our website and via social media throughout the day, including a video by the Executive Councillor for Climate and Environment:

A14 upgrade:

The re-routing of the A14 and associated works removing the viaduct were completed in May 2023. Whilst the new section of road which takes the heavy traffic away from Huntingdon opened at the end of 2019, parts of the remaining road in close proximity to large residential areas in Huntingdon closed whilst works took place to redevelop it into the A1307, as indicated below:



The above map shows (in yellow) the relocated A14 in relation to Huntingdon. The old A14 (now A1307) is shown as the 'existing A14' and cuts straight through Huntingdon.

On 30th May 2022 all traffic restrictions were lifted and the A1307 fully opened to traffic, completing the A14 relocation project and enabling traffic to flow freely. With less travel disruption through Huntingdon, it is hoped a better understanding can be gained of the potential reduction in pollution achieved by relocating the A14, however apportionment will be difficult due to the likely impacts of the Covid pandemic on peoples travel patterns. However, as stated earlier, it is considered the relocation will have had a beneficial impact on NO_2 and PM_{10} pollution levels within the Huntingdon AQMA.

A428 upgrade:

A new 10-mile dual carriageway and various junction improvements are proposed on the A428 between the Black Cat roundabout and Caxton Gibbet roundabout. This will improve journeys between Milton Keynes and Cambridge including the section which runs south of St Neots and directly affects traffic flows within St Neots.

The Secretary of State granted the Development Consent Order (DCO) in August 2022, subject to a number of conditions, including the requirement for management plans to minimise and control dust and air pollution during construction. Commencement of construction has been delayed as Transport Action Network (TAN) submitted an application for (and subsequent appeal for) permission to have a judicial review of the Secretary of State's decision to grant the DCO. These were both refused and National Highways are planning to start construction during 2023. Regular liaison meetings will be held between the construction team and all local authorities involved, including Huntingdonshire District Council, where matters such as pollution control will be discussed to ensure adequate mitigation measures are utilised.

Further information on the project can be seen at: A428 Black Cat to Caxton Gibbet improvements - National Highways and A428 Black Cat to Caxton Gibbet Road Improvement scheme | National Infrastructure Planning (planninginspectorate.gov.uk)

General:

Huntingdonshire District Council continues to provide advice to members of the public regarding sustainability and energy saving measures, especially in the current financial climate, and is working hard to reduce its own impact by improving energy efficiency of council owned buildings, undertaking a review of inhouse fleet vehicles and low carbon alternatives, and continuing to support working from home opportunities; helping to reduce vehicle usage. EV charging points have also been installed in a number of our car parks.

Following adoption of the aspiration of a net carbon zero Huntingdonshire by 2040, as well as the cross-party developed OxCam Arc environmental principles in late 2021, Huntingdonshire District Council has been developing a new Climate Strategy which sets out our priorities and actions. These have been informed through comprehensive consultation during 2022 in Climate Conversations with local communities and businesses. In February 2023 councillors formally recognised a climate crisis and ecological emergency in Huntingdonshire and adopted the Climate Strategy setting out the priorities

to achieve the commitment of a net zero carbon council by 2040. This will be discussed further in next year's ASR, however more information can be found on our website here: Climate Strategy - Huntingdonshire.gov.uk

Conclusions and Priorities

Overall, there has been a slight decrease in PM_{10}, whilst $PM_{2.5}$ has marginally increased compared to 2021. NO_2 levels have remained broadly similar, albeit slightly higher than in 2021, with the largest increase at Buckden 3 (Perry Road) (+3.8µg/m^3 (+26.6%)). This tube is located on a residential property which changed hands during 2022. The potential change in vehicle habits of the occupiers may have contributed to this increase, as well as the general increase in vehicle movements compared to 2021.

The results indicate that within Huntingdonshire there was widespread compliance with the air quality objectives in 2022.

Due to continued compliance revocation is still proposed for the St Neots, Fenstanton and Brampton AQMA's, subject to committee approval. Due to unforeseen circumstances, there has been a delay in agreement of the draft report and seeking committee approval for revocation of 3 of the AQMA's, leaving Huntingdon the only AQMA remaining. This is discussed further in the priorities section in 2.2 below. Huntingdonshire District Council continue to be committed to ensuring the AQMA's are fully considered in line with the correct protocol, and following the formal adoption of the interim structure Environmental Health were operating under, it is proposed this matter will go to committee later in 2023.

Whilst the figures currently indicate that objectives are being met within the Huntingdon AQMA it is considered the data gathered in 2020 and 2021 is unlikely to be representative of long-term trends in pollutant concentrations due to Covid restrictions and roadworks. LAQM Technical Guidance 2022 advises the revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as well as consideration of other aspects such as national trends in emissions etc. Therefore, further information is required to assess this AQMA.

As previously highlighted, the Air Quality Action Plan (AQAP) is out of date and it is considered the most appropriate time for completing a new AQAP would be following the revocation of the 3 AQMA's (if agreed) and assessment of the remaining AQMA to ensure a more focussed and appropriate action plan is produced, if required. Alternatively, an Air

Quality Strategy (AQS) will be considered, and further information regarding this aspect will be reported in next year's ASR following the outcome of the committee decision on the proposed revocations.

The main priorities for 2023 and beyond for Huntingdonshire District Council in relation to air quality are to:

- Update the review into the status of the AQMA's that continue to show monitoring compliance, take this to committee for consideration and take appropriate action following their decision.
- Assess the impacts of the relocation of the A14 and if this will require changes to the Huntingdon AQMA – results over the next few years will demonstrate if the AQMA is still necessary.
- Once the future of 3 of the AQMA's is known, completion of a new AQAP or AQS.
- Continue to maintain partnership working with Huntingdonshire District Council planning department and improve partnership working with the County Council Highways team and other relevant stakeholders, for example with considering the provision of low-cost air quality sensors for public education and awareness
- Continue to ensure construction impacts are considered and mitigation provided for appropriate development proposals; and
- Consider what further measures the Council can take to improve its own emissions.

These are discussed further in Section 2.2 below.

Challenges:

Problems with the monitoring equipment at the AQMS have presented a challenge with regard to data capture. These issues should now be resolved and are discussed further in section 3.1.1 below.

The new management structure will enable a clear route for revocation if committee are in agreement, again this should be resolved this year.

A continued challenge is to ensure sufficient resources are available for the air quality function, but the main ongoing challenge remains to balance economic growth within

Huntingdonshire, whilst ensuring compliance with the air quality objectives and promoting and encouraging best practice to minimise pollution where possible.

Local Engagement and How to get Involved

Huntingdonshire District Council continue to receive requests for information regarding air quality within the district as members of the public and action groups are increasingly recognising the impacts of poor air quality and querying pollution levels within their area.

Members of the public can help to improve local air quality by reducing their emissions. Improving home insultation, reducing the number of car journeys undertaken, car sharing, using public transport, walking, or cycling wherever possible (active travel), switching off car engines when stationary, purchasing energy efficient goods, improving energy efficiency at home, and choosing to purchase a low emission car are all examples of actions that can help to reduce emissions.

Public transport information for Cambridgeshire can be viewed on the County Council website at: Public transport, Park and Ride and Guided Busway - Cambridgeshire County Council.

Huntingdonshire District Council have reviewed and updated the air quality information on our website to include information on internal air quality, as well as more details on wood burning stoves.

Whilst popular, the use of wood burning stoves and open fires contribute to air pollution and there are a number of steps members of the public who use these can take to reduce environmental and health impacts. More information can be found on our website at Wood Burning Stoves - Huntingdonshire.gov.uk, where we also signpost to Defra's advice on this aspect.

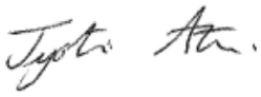
Huntingdonshire District Council provide further information on our website under 'Sustainability and greener living' Homepage of Huntingdonshire District Council - Huntingdonshire.gov.uk. The energy savings trust can also provide further advice at Energy Saving Trust. Huntingdonshire District Council support National Clean Air Day, another valuable source of information regarding air quality advice and how to minimise exposure is the Clean Air Day | Action for Clean Air website, which also provides information regarding internal air quality.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Huntingdonshire District Council with the support and agreement of the following officers and departments:

Prepared by	Position	Signature
Claire Braybrook	Environmental Protection Officer, Huntingdonshire District Council	

This ASR has been approved by:

Approved by	Position	Signature
Kate Penn	Environmental Health Service Manager, Huntingdonshire District Council	
Oliver Morley	Interim Managing Director, Huntingdonshire District Council	
Jyoti Atri	Director of Public Health, Cambridgeshire County Council	

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR, please send them to Claire Braybrook at:

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Figures

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1 Local Air Quality Management

This report provides an overview of air quality in Huntingdonshire 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 Huntingdonshire 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

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Huntingdonshire District Council can be found in Table 2.1. The table presents a description of the four AQMAs that are currently designated within Huntingdonshire. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and the air quality monitoring locations in relation to the AQMAs. The air quality objective pertinent to the current AQMA designations is as follows:

- NO_2 annual mean

Due to continued compliance, Huntingdonshire District Council propose to revoke St Neots, Brampton, and Hemingford to Fenstanton AQMA's (see monitoring section).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Huntingdonshire District Council Air Quality Management Area Order No. 1 (Huntingdon: Nitrogen Dioxide)	16th November 2005 - amended 29th October 2007	NO_2 Annual Mean	An area encompassing approximately 2831 domestic properties affected by the A14, A141, B1044, B1514 and Huntingdon Inner Ring Road.	YES	50.2ug/m^3	None (28.2ug/m^3)	3	Cambridgeshire Joint Air Quality Action Plan (2009)	www.huntingdonshire.gov.uk/media/3423/2009-joint-air-quality-action-plan.pdf
Huntingdonshire District Council Air Quality Management Area Order No. 2 (St Neots: Nitrogen Dioxide)	16th November 2005 - amended 29th October 2007	NO_2 Annual Mean	An area encompassing approximately 115 domestic properties affected by local traffic in the town centre.	NO	45.2ug/m^3	None (23.2ug/m^3)	>5	Cambridgeshire Joint Air Quality Action Plan (2009)	www.huntingdonshire.gov.uk/media/3423/2009-joint-air-quality-action-plan.pdf

Huntingdonshire District Council Air Quality Management Area Order No. 3 (Brampton)	1st September 2006 - amended 29th October 2007	NO_2 Annual Mean	An area encompassing approximately 82 domestic properties affected by the A14.	YES	37.2ug/m^3	None (14.7ug/m^3)	>5	Cambridgeshire Joint Air Quality Action Plan (2009)	www.huntingdonshire.gov.uk/media/3423/2009-joint-air-quality-action-plan.pdf
Huntingdonshire District Council Air Quality Management Area Order No. 4 (Hemingford to Fenstanton: Nitrogen Dioxide)	1st September 2006	NO_2 Annual Mean	An area encompassing approximately 62 domestic properties affected by the A14.	YES	46.2ug/m^3	None (13.0ug/m^3)	>5	Cambridgeshire Joint Air Quality Action Plan (2009)	www.huntingdonshire.gov.uk/media/3423/2009-joint-air-quality-action-plan.pdf

☒ **Huntingdonshire District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Huntingdonshire District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Huntingdonshire

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

DEFRA conclusions	Huntingdonshire District Council response
1. The Council has made it clear what measures have been completed in the last year, which is greatly appreciated.	Comment welcomed and noted.
2. Huntingdonshire District Council has provided extensive detail on what they are doing to improve $PM_{2.5}$ emissions/concentrations within their area, discussing measures that are being undertaken as well as providing the D01 indicator for their area.	Comment welcomed and noted.
3. The maps in Appendix D are not very clear, with a low resolution, so therefore it is difficult to accurately place where monitoring sites are within the area, in the future it would be appreciated if more maps were produced with a smaller scale such that key road names could be read.	Noted and completed, however it is hoped a new mapping system can be used for next year, which should be clearer.
4. The graphs of the trends of NO_2 levels are a bit difficult to read, due to the large amount of data presented within them. The colours for each year look very similar, and the graphs are overall a bit cluttered. In the future it would be more useful to only share data within the last five years e.g. 2017-2021, as it makes for easier viewing.	Noted and agreed, however as highlighted within the ASR, the colours were used in line with Defra's requirements for colourblind access. Only 5 years' worth of data is now included, please see Appendix A.
5. The Council have responded to and addressed comments made following last year's appraisal, this is	Comment welcomed, noted and completed.

appreciated and it is encouraged that the Council continue to do this in future years.	
6. It would be appreciated if the Council could provide further detail on the justification of the usage of the local bias adjustment factor, such as deriving the national bias adjustment factor and stating why it was not used in this case.	Completed.
7. Overall, the report is detailed and concise, providing a good overview of the work the Council is undertaking to improve air quality within their area, and satisfies the criteria of the relevant reporting standard. The Council should continue their good work.	Comment welcomed and noted.

In addition to the actions discussed above in the Executive Summary section, Huntingdonshire District 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 2.2.

As stated in previous ASR's, it should be noted that these measures originate from the Cambridgeshire Air Quality Action Plan (2009) and hence have remained the same for several years. Huntingdonshire District Council are in the process of revoking the St Neots, Brampton and Fenstanton AQMA's, subject to council approval, which will be considered at committee later this year (2023). Following completion of the A14 works data is being gathered during 'normal' traffic flows and the AQMA in Huntingdon will be reviewed over the next few years in line with LAQM Technical Guidance (TG22). Due to the works in Huntingdon on the viaduct removal and the A1307 impacting the earlier part of 2022 it is considered 2023 will be the earliest year to commence using data to assess this. In line with paragraph 3.57 of TG22 if compliance is achieved for three consecutive years revocation will be considered. This may result in an AQMA with more than 5 years consecutive compliance, which is against the guidance, however this would ensure a robust assessment. As this could occur as early as 2026 it is considered a new action plan is not required at this time and this will be reviewed annually taking into account the monitoring data. In the meantime, the council will also be considering the development of an Air Quality Strategy if the revocation of the three other AQMA's is approved.

Six measures are included within Table 2.2, with the type of measure and the progress Huntingdonshire District 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 2.2.

More detail on these measures can be found in the Action Plan at Joint Air Quality Action Plan 2009 (huntingdonshire.gov.uk).

Key completed measures are:

Measurement 1: The A14 upgrade and associated works were fully completed at the end of May 2022. The majority of traffic has been relocated onto the new A14 at greater distance from Huntingdon. Now the restrictions have been removed, traffic levels will stabilise, and the Huntingdon AQMA can be re-evaluated.

Measurement 2: Implementation of air quality policies in the local plan is currently on going. The Local Plan for Huntingdonshire to the year 2036 was adopted in 2019 and includes a policy on air quality with a requirement for a low emissions strategy in certain circumstances. The plan also provides advice on the provision of electric vehicles, and it is hoped this will encourage the use of electrically powered vehicles, in line with National Planning Policy.

In an attempt to ensure air quality is fully considered, officers continue to advise the Local Planning Authority, developers, and air quality consultants about current public health advice to minimise the health impacts of air quality even if there is no risk that air quality standards will be breached. Therefore, even if the effect is judged to be insignificant, consideration should be given to the application of good design and good practice measures, including aspects such as electric vehicle rapid charge points, insulation, and active travel.

Measurement 3: Development of an effective freight partnership. Now that the A14 has been moved away from the main residential areas it is not expected that freight will cause a significant issue within Huntingdonshire, therefore it is intended that no further action will be taken regarding this measure at this time. This will be reassessed in the next Air Quality Action Plan (AQAP) / Air Quality Strategy (AQS).

Measurement 4: Inclusion of Huntingdonshire in the Quality Bus Partnership (QBP). Cambridgeshire County Council has not extended the QBP to outside Cambridge City, and currently has no plan to do so, therefore no further action will be taken regarding this measure at this time. This will be reassessed in the next AQAP/AQS.

Measurement 5: The guided bus route is complete and operational.

Measurement 6: Smart traffic lights at St Neots have been installed and are operational.

With the exception of measure 2, which is ongoing, none of the other formal six measures from within the AQAP remain outstanding as currently measures 3 and 4 are not intended to be continued.

Huntingdonshire District Council worked to implement these measures in partnership with the following stakeholders during 2022:

- National Highways
- A14 Implementation Team
- Neighbouring Local Authorities
- District and County Planning and Development Teams

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

- As with last year, the main priority remains to progress the proposed revocation of the St Neots, Brampton and Fenstanton AQMAs (AQMA 2, 3 & 4). Air quality standards and objectives have been achieved for a number of years and this is likely to continue. Progress on this priority has been slower than expected due to the changes in operational commitments and priorities during 2022, as well as different ways of working, and available resources. In last year's ASR Huntingdonshire District Council predicted these issues were expected to be the main challenge, and whilst Environmental Health were operating under an interim structure, this has now been adopted and will enable matters, such as the proposed revocations, to progress. The situation has been flagged to management and an updated draft report reviewing the AQMA's will be issued shortly, which still demonstrates strong compliance with the national objectives. Following management approval, it is envisaged committee approval will be sought later this year (2023), prior to the revocation orders being made. Defra have expressed their support of this proposal in previous ASR appraisal reports.

  The revocation of AQMA 2 (St Neots) was delayed so all three could be considered together. A detailed modelling assessment of NO_2 concentrations for this AQMA can be viewed on our website at: Air Quality Modelling for St Neots - Final Report

(huntingdonshire.gov.uk). Due to the size of the report, it is not included in the Appendices.

- Work in partnership with the County Council, Combined Authority, and other relevant stakeholders to introduce air quality sensors for public education and awareness.
- Consider the development of an Air Quality Action Plan or an Air Quality Strategy
- Consider the implications on Huntingdonshire District Council of the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and the Defra Environmental Improvement Plan 2023 and how any requirements will be achieved.
- Continue to utilise funding opportunities to support the air quality monitoring service.
- Continue to maintain partnership working with Planning and encourage more involvement in the councils Climate Strategy, as well as promoting opportunities for collaboration with Highways and other interested parties.
- Continue to ensure construction impacts are considered and adequate mitigation utilised for appropriate development proposals (including vehicle idling); and
- Continue to consider what further measures the Council can take to improve its own emissions and work towards improvements in order to achieve the aspiration of a net zero Huntingdonshire by 2040.

Regionally, Cambridgeshire County Council continues to recognise the importance of air quality and it remains a key priority at regional level.

The principal challenges and barriers to implementation that Huntingdonshire District Council anticipates facing are the provision of resources to prioritise this work and difficulties in assessing the suitability and data reliability of low-cost sensors.

Huntingdonshire District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA 1 Huntingdon, and continued compliance in AQMA 2 St Neots, AQMA 3 Brampton and AQMA 4 Hemingford to Fenstanton.

Table 2.2 – 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	Re-routing of A14 away from settlements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2009	2020	Highways England	Highways England	NO	Funded		Completed	AQMA's 1, 3 & 4 should meet requirements	Monitoring should indicate a reduction when relocation of road completed	**Completed** 30th May 2022.	Lengthy Timescale but expected to improve all AQMA's (after revocation of St Neots)
2	Implementation of air quality policies in the local plan.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2009	Ongoing	Huntingdonshire District Council	Huntingdonshire District Council	NO	Funded		Implementation	All	N/A	Included within the HDC Local Plan to 2036 Implementation **On-going**	Highlighting AQ aspects and measures for reduction is ongoing
3	Development of an effective freight partnership	Freight and Delivery Management	Other	2009	Unknown	Not currently progressing	Not currently progressing	NO	Not Funded		Aborted	All	N/A	None **Suspended**	Now the A14 improvement has been completed and Highways England have applied for improvements on the A428, it is unknown if an effective freight partnership would have any significant effect. This will be re-evaluated once changes have been monitored.
4	Inclusion of Huntingdonshire in the Quality Bus Partnership	Alternatives to private vehicle use	Other	2009	None	Cambridgeshire County Council	Cambridgeshire County Council	NO	Not Funded		Aborted	All	N/A	None **Suspended**	At present CCC do not consider that it is feasible to run the QBP outside of the city of Cambridge. This is something we will continue to consider.
5	Completion and opening of Cambridgeshire Guided Busway	Transport Planning and Infrastructure	Bus route improvements	2009	Completed	Cambridgeshire County Council	Cambridgeshire County Council	NO	Funded		Completed	All	Unknown	**Completed**	The guided busway was opened in August 2011 from Cambridge Huntingdon and extended to Peterborough in July 2012.

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
6	Change to traffic-light system in St Neots High Street as specified in the St Neots Markets Town Strategy	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2009	Completed	Cambridgeshire County Council	Cambridgeshire County Council	NO	Funded		Completed	Reduction in AQMA 2 St Neots	AQ monitoring indicates a reduction	**Completed**	Works completed in 2013. Modelling undertaken in 2017 demonstrates AQ limits are being met and HDC are in the process of revoking the AQMA. See Section 2.2

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

Particulate Matter $(PM)_{2.5}$ is not a single chemical, but any substance in the air which is not a gas and is a suspension of particulate matter with an aerodynamic diameter of 2.5µm or less.

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$. There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Due to its extremely small size, $PM_{2.5}$ can travel for long distances in the air, and it is estimated that as much as up to 50% of the levels found in any given area can be from sources outside a local authority's boundary[7]. Nevertheless, this means that the contribution of local sources to total $PM_{2.5}$ levels is significant (typically 50% or more), and therefore Defra consider local actions to reduce $PM_{2.5}$ emissions will have a significant beneficial impact with regard to overall $PM_{2.5}$ concentrations.

Two new targets for $PM_{2.5}$ have been set under The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

- Annual Mean Concentration Target ('concentration target') - a maximum concentration of 10µg/m^3 to be met across England by 2040
- Population Exposure Reduction Target ('exposure target') - a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

Defra has published an Environmental Improvement Plan setting interim targets and describing how these will be met. This can be viewed here Environmental Improvement Plan 2023 - GOV.UK (www.gov.uk)

$PM_{2.5}$ has been monitored in Huntingdonshire at Pathfinder House since 2014 and results have indicated a general downward trend over the years. The monitor was replaced in 2019 to reduce uncertainty in results. The annual mean for $PM_{2.5}$ in 2022 was 8.3µg/m^3, which was slightly higher than the level of 8µg/m^3 recorded in 2021 and 2020. Table A.8

[7] Defra Local Air Quality Management Technical Guidance (TG22) 2022

and Figure A.4 in Appendix A demonstrate the measured annual mean concentration of $PM_{2.5}$ in Huntingdonshire has been steadily reducing. This reduction is not as significant as the one experienced with the NO_2 levels and would therefore indicate that the impact of the relocation of the A14 and the Covid lockdown measures did not have as much impact on $PM_{2.5}$ levels. This could be due to a number of factors such as meteorological conditions and an increase in domestic heating etc.

Huntingdonshire District Council is taking the following measures to address $PM_{2.5}$:

- The measures (1, 2, 5 & 6) discussed above in Section 2.2 and Table 2.2 will have co-benefits on multiple pollutants, including $PM_{2.5}$.
- In 2014 Huntingdonshire District Council joined with Cambridgeshire County Council Public Health and the other Cambridgeshire authorities to develop the transport and health joint strategic needs assessment which focused on $PM_{2.5}$ from transport, seeTransport-and-Health-JSNA-2015-Air-Pollution.pdf (cambridgeshireinsight.org.uk)
- Continue to regulate and enforce sites covered by the Environmental Permitting regime and provide advice to minimise emissions and ensure continued environmental improvement.
- Continue to liaise with the Local Planning Authority and developers requesting pre-app advice, to ensure air quality mitigation measures are considered for large developments to minimise any impact (Measurement 2 in Table 2.2).
- Continue to advise planning conditions to require a Construction Environmental Management Plan (CEMP) when necessary, in order to control dust from demolition and construction activities.
- Maintain the provision of advice to members of the public to minimise bonfires and inform them of key advice documents, such as those provided by Defra regarding the reduction of air pollution from the use of wood burning stoves and open fires.
- Continue supporting Clean Air Day, signposting members of the public to resources and advice regarding air quality and promotion of air quality information.
- Continue to provide information and guidance to members of the public regarding Solid Fuel Restrictions and work in partnership with the County Trading Standards Team to highlight any issues.

- Attendance at the quarterly Cambridgeshire Pollution Prevention Group meetings where issues such as air quality are discussed with representatives from other adjoining Local Authorities, The County Council, and the Environment Agency to discuss best practice and partnership working.
- Huntingdonshire District Council is intending to review and update the Council's Air Quality Action Plan (AQAP) or provide an Air Quality Strategy (AQS) once the outcome of the current AQMAs has been determined. $PM_{2.5}$ will be considered within any new AQAP/AQS, as will the requirements under Defra's Environmental Improvement Plan and the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.

Huntingdonshire does not currently have any Smoke Control Areas within the district.

Public Health Outcomes Framework:

Some of the above ties in with the Public Health Outcomes Framework (PHOF), which includes an indicator for air pollution due to the extensive evidence of the health impacts associated with it. The PHOF aims to increase healthy life expectancy, reduce differences in life expectancy and have healthy life expectancy between communities. The indicators are designed to demonstrate how well public health is being improved and protected and encourage partnership working and involvement.

The Public Health Indicator for $PM_{2.5}$ provides a useful indication as to the burden associated with concentrations of $PM_{2.5}$ within Huntingdonshire.

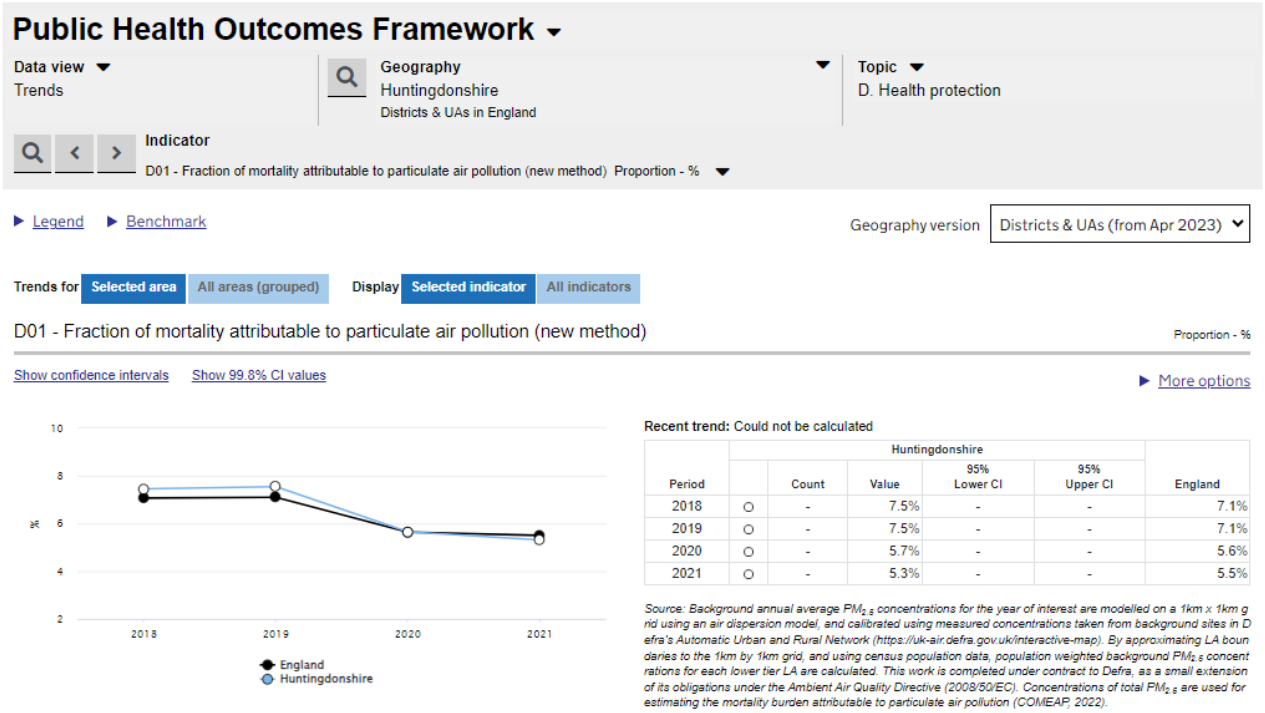
The method used to estimate the indicator values changed in early 2022 and is now based on recommendations made by the Committee on the Medical Effects of Air Pollutants. Concentrations of total $PM_{2.5}$ are therefore now used as the basis for the air pollution data for this indicator. Modelled concentrations of the anthropogenic component of $PM_{2.5}$ (human-made only) are no longer used because of the uncertainty associated with the assignment to anthropogenic and non-anthropogenic sources, and because non-anthropogenic sources make only a small contribution to total concentrations.

The new indicator is defined as the fraction of annual all-cause adult mortality attributable to particulate air pollution (concentrations of total $PM_{2.5}$). It can be viewed as the mortality burden associated with long-term exposure to particulate air pollution at current levels,

expressed as the percentage of annual deaths from all causes in those aged 30 and over. A time series with this new definition is available back to 2018, but it is advised that caution is needed when interpreting trends, and these cannot be compared to the data within ASR's dated prior to and including 2021 under this section, due to the differences in calculation methodology[8].

The Public Health England PHOF indicator D01 *'Fraction of mortality attributable to particulate air pollution'* for Huntingdonshire in 2021 (the most recent year available) was 5.3%, a decrease of 0.4% compared to 2020. The 2021 values for Huntingdonshire are 0.2% lower than both those for the East of England region, and the England values.

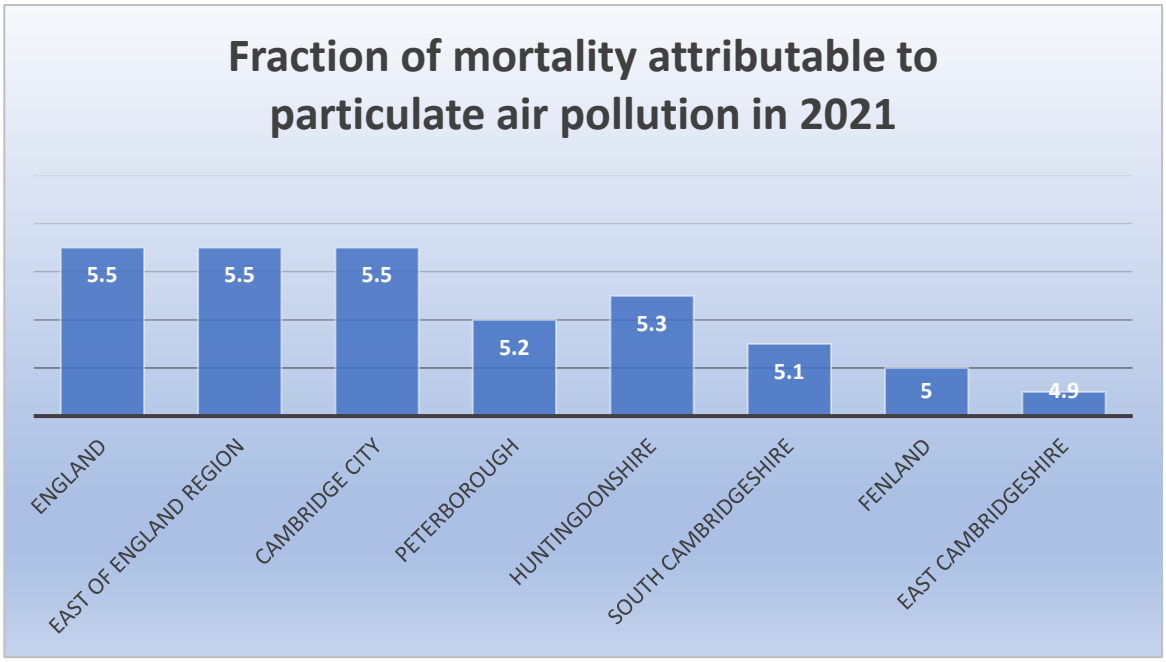
Public Health Outcomes Framework data trends for Huntingdonshire compared with England:



Source: [Public Health Outcomes Framework - Data - OHID (phe.org.uk)]

[8] [Public Health Outcomes Framework: commentary, May 2022 - GOV.UK (www.gov.uk)]

Locally Huntingdonshire's figures are similar to the surrounding local authorities:



Source: [Public Health Outcomes Framework - Data - OHID (phe.org.uk)]

The PHOF air pollution indicator links with the physical health indicators and the associated 'Everybody active, every day' framework. This supports all sectors to embed physical activity into the fabric of daily life and make it an easy, cost-effective, and 'normal' choice in every community, including the promotion of active travel, which will help reduce pollution from transport.

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

This section sets out the monitoring undertaken within 2022 by Huntingdonshire District 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.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Huntingdonshire District Council undertook automatic (continuous) monitoring at one site during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring site. The Huntingdon Pathfinder House Data Download - Air Quality monitoring service (airqualityengland.co.uk) page presents automatic monitoring results for Huntingdonshire District Council, with automatic monitoring results also available through the UK-Air website at Interactive monitoring networks map - Defra, UK.

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

The equipment consists of a Serinus S40 NOx analyser and a FIDAS 200 particulate monitor, both of which are MCERTS certified.

During 2022 there were some issues with the equipment.

The FIDAS was removed during a service by the maintenance contractor and after investigation new optics were required and the unit had to be returned to the manufacturer in Germany to be fixed. Therefore, a significant amount of data was not captured during its absence from site from 16th March 2022 to 23rd June 2022. Data is also missing from 24th June 2022 to 29th July 2022 due to a change in service and maintenance contractor. This data was downloaded from the equipment following new communications installation and has previously been requested.

The NO_x analyser had no maintenance issues during 2022, however following the delays in changeover of contractor and communications installation, data was missing from 1st May 2022 to 4th August 2022. As with the particulate monitor, the analyser stores data and this was requested at the time and is currently being investigated by our data management company. However, for the period of 6th July 2022 to 4th August 2022 the data will be rejected due to a sampler fault as the outgoing maintenance contractor failed to reconnect tubing correctly when removing the gas cylinder from site. These issues should be resolved and not impact on future data collection.

3.1.2 Non-Automatic Monitoring Sites

Huntingdonshire District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 58 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (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 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 (i.e. where results are within 10% of the objective, therefore for 2022 this was not required at any site within Huntingdonshire).

The diffusion tube data for 2022 indicated there were no breaches of the 40µg/m^3 annual mean objective. Whilst there was a general trend at most sites of an increase, one site Huntingdon 3 (6 George Street), is the only site to record a decrease this year and reduced from 23.9µg/m^3 to 22.6µg/m^3. As discussed in the Executive Summary section, the largest increases were at Buckden 1 (Perry Road) which increased by 3.8µg/m^3 from 14.3µg/m^3 to 18.1µg/m^3 and Buckden 3 (High Street) which increased by 3µg/m^3 from 17.8µg/m^3 to 20.8µg/m^3, however both remain well within the objective, and lower than pre-covid levels. The highest measured level within the district remains at Pathfinder House with the mean result of the triplicate tubes at 28.2µg/m^3. This compares to a figure of 27µg/m^3 in 2021 and again remains well within the objective of 40µg/m^3.

The tubes located at Pathfinder House, and Huntingdon 3 are located within the Huntingdon AQMA (see Appendix D for locations).

Following the fall in NO_2 in 2020 due to Covid restrictions and the relocation of the A14, the overall trend this year and last year has been a steady increase, as expected. The data demonstrates that in 2022 all sites met the NO_2 objective of 40µg/m^3 and all of the sites remain below the levels measured in 2019 and the continuing low trend is likely due to the relocation of the A14 and a change in travel behaviour.

As discussed in last year's ASR the tube location details for the Wood Green Animal Shelter tube have been updated as this was moved due to building works and access issues. Another change, implemented at the beginning of 2022, was the relocation of the Warboys tube to a new location at Bluntisham. It is proposed this tube will remain in place for a minimum of 3 years and then an assessment will be made to move it to another location if considered more appropriate.

The NO_2 analyser measured an annual mean of 28.2µg/m^3, slightly higher than the 27µg/m^3 measured in 2021. This can be seen in Table A.3, whereas 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 and demonstrates that there were no 1-hour means above

200µg/m^3. This has remained the case for a number of years. Due to the issues with the analyser's data capture annualisation was completed and, as the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets in Table A.5. This is required by TG22 because if the 99.8th percentile is greater than 200µg/m^3, then this indicates there would have been more than 18 exceedances of 200µg/m^3 during the calendar year if there had been 100% data capture. The figure is 86.4µg/m^3 and therefore we can conclude there were not more than 18 exceedances and the objective has been met.

There were also no annual means greater than 60µg/m^3 for any of the diffusion tubes around the district, which again according to TG22 indicates that an exceedance of the 1-hour mean objective was not likely to have occurred at these locations.

NO_2 results from the continuous monitor can be viewed online at the Air Quality England website at Huntingdon Pathfinder House Data Download - Air Quality monitoring service (airqualityengland.co.uk) where data can be downloaded.

The diffusion tube network achieved greater than 75% data capture and therefore annualisation was not required. All data has been properly ratified and corrected for bias where applicable. Due to the poor data capture for the continuous analyser Huntingdonshire District Council have not taken part in the diffusion tube co-location study to produce a localised bias adjustment figure and a national bias adjustment factor of 0.76 has been applied to the 2022 diffusion tube monitoring data, however when calculating a local bias figure, the result was the same. More information regarding this is in Appendix C.

A distance correction calculation is not required and has not been completed as there are not any locations with an annual mean concentration above, or within 10% of the NO_2 annual objective of 40µg/m^3.

To summarise, the data demonstrates that whilst in most cases there has been an increase in NO_2 between 2021 to 2022, the results remain lower than 2019 levels recorded before Covid and the A14 works. The data shows that all sites met the NO_2 objective level in 2022 and the continuing low trend is likely due to the relocation of the A14, traffic restrictions at the beginning of 2022 during roadworks, and changing travel patterns.

There are no proposed changes to the monitoring network or plans to declare an AQMA.

3.2.2 Particulate Matter (PM_{10})

PM_{10}, is continuously monitored at the Air Quality Monitoring Station (AQMS) located near Pathfinder House.

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

As discussed earlier, the annual mean PM_{10} figure decreased slightly from 15µg/m^3 in 2021 to 14.8µg/m^3 in 2022. This remains well within the objective level of 40µg/m^3.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year. The results indicate there was one breach of the 24-hour objective (50µg/m^3), however this is still well below the limit of up to 35 breaches per year.

As with the NO_x analyser there were issues with the particulate monitor's data capture and therefore annualisation was completed. As the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets in Table A.7. This is required by TG22 because if the 90.4th percentile is greater than 50µg/m^3, then this means there would have been more than 35 exceedances of 50µg/m^3 during the calendar year if there had been 100% data capture. The figure is 26.1µg/m^3 and therefore we can conclude there were not more than 35 exceedances, and the objective has been met.

Tables A.6 and A.7 and the accompanying charts show the general trend over the last five years and indicate that there is an overall reduction in PM_{10}. Results indicate that there were no exceedances of any of the air quality objectives in 2022 at this location.

PM_{10} results can also be viewed online at the Air Quality England website at Huntingdon Pathfinder House Data Download - Air Quality monitoring service (airqualityengland.co.uk) where data can be downloaded.

There are no proposed changes to the monitoring network or plans to declare an AQMA.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is continuously monitored at the Air Quality Monitoring Station (AQMS) located near Pathfinder House.

Table A.8 and the associated chart in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years with results indicating a downward trend with a slight increase in 2022 from 8µg/m^3 to 8.3µg/m^3.

As discussed above the monitor had less than 75% data capture and therefore the data was annualised in line with TG22. $PM_{2.5}$ results can also be viewed online at the Air Quality England website at Huntingdon Pathfinder House Data Download - Air Quality monitoring service (airqualityengland.co.uk) where data can be downloaded.

There are no proposed changes to the monitoring network or plans to declare an AQMA.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
PFH	Huntingdon	Roadside	524102	271540	NO2, PM10, PM2.5, PM1	YES No 1. Huntingdon	Chemiluminescent Light Scattering, Light Scattering, Light Scattering.	3	7	2.5

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
St Neots 1	The Paddocks	Kerbside	517869	260132	NO2	NO	22.0	22.0	NO	3.0
St Neots 2	18 Cromwell Gardens	Roadside	519541	260280	NO2	NO	8.0	4.0	NO	3.0
St Neots 3	71 Avenue Road	Urban Background	518925	260503	NO2	NO	4.0	1.0	NO	3.0
St Neots 4	20 Harland Road	Urban Background	518489	260871	NO2	NO	3.0	1.0	NO	3.0
St Neots 5	8-10 High Street (Post Office)	Kerbside	518323	260263	NO2	YES AQMA 2	0.0	1.0	NO	3.0
St Neots 6	35 High Street (Traffic lights)	Kerbside	518433	260321	NO2	YES AQMA 2	0.0	1.0	NO	3.0
St Neots 7	17 Arundel Crescent	Suburban	518424	258556	NO2	NO	0.0	17.0	NO	1.8
St Neots 8	122 Lindisfarne Close	Suburban	518707	258260	NO2	NO	4.0	31.0	NO	3.0
St Neots 9	5 Duchess Close	Suburban	516370	259514	NO2	NO	3.0	5.0	NO	3.0
Southoe 1	2 Lees Lane	Roadside	518714	264308	NO2	NO	24.0	2.0	NO	1.8
Buckden 1	6 Perry Road	Roadside	518981	267370	NO2	NO	0.0	12.0	NO	1.8

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)
Buckden 2	4 High Street (Roundabout)	Roadside	519082	267433	NO2	NO	0.0	1.0	NO	1.8
Buckden 3	34 High Street (shop)	Roadside	519161	267624	NO2	NO	0.0	1.0	NO	2.0
Buckden 4	11 Taylors Lane	Roadside	519197	267955	NO2	NO	3.0	1.0	NO	3.0
Brampton 1	RAF Brampton (Sparrow Close)	Roadside	520734	269623	NO2	NO	10.0	0.5	NO	3.0
Huntingdon 9	Ermine Street Huntingdon	Roadside	523575	272174	NO2	YES AQMA 1	0.0	3.0	NO	2.0
Brampton 3	1 Laws Crescent	Roadside	520155	271561	NO2	YES AQMA 3	32.0	2.0	No	3.0
Brampton 4	25 Dorling Way	Roadside	519956	271461	NO2	NO	6.0	1.5	No	3.0
Brampton 5	7 Hansell Road	Roadside	519839	271061	NO2	NO	18.0	0.5	No	3.0
Catworth 1	1 Thrapston Road	Rural	508409	274876	NO2	NO	42.0	42.0	NO	3.0
PFH 1, PFH 2, PFH 3	Pathfinder House	Roadside	524102	271540	NO2	YES AQMA 1	8.0	6.0	YES	2.5
Huntingdon 1	23 Lodge Close	Suburban	523177	271627	NO2	NO	3.0	2.0	NO	3.0
Huntingdon 2	19 Nursery Road	Kerbside	524198	271949	NO2	YES AQMA 1	0.0	1.0	NO	1.8
Huntingdon 3	6 George Street	Kerbside	523661	271802	NO2	YES AQMA 1	0.0	1.0	NO	3.0

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)
Huntingdon 4	1 St Peters Road	Kerbside	523435	272464	NO2	YES AQMA 1	3.0	1.0	NO	3.0
Huntingdon 5	18 Blethan Drive	Roadside	522293	272909	NO2	YES AQMA 1	3.0	2.0	NO	3.0
Huntingdon 6	40 Hartford Road	Roadside	524274	271939	NO2	YES AQMA 1	4.0	2.0	NO	3.0
Godmanchester 1	25 Cambridge Villas	Roadside	525319	270571	NO2	NO	3.0	12.0	NO	3.0
Wood Green Animal Shelter	Goat enclosure	Rural	526250	268264	NO2	NO	0.0	235.0	NO	3.0
Fenstanton 1	Hilton Road	Roadside	531427	268397	NO2	YES AQMA 4	20.0	2.0	NO	3.0
Earith 1	52-54 High Street	Roadside	538460	274797	NO2	NO	0.0	1.8	NO	2.0
Fenstanton 3	1 Pear Tree Close	Rural	531063	268063	NO2	NO	6.0	1.5	NO	3.0
St Ives 1	2 The Pound	Urban Background	531206	272334	NO2	NO	5.0	1.0	NO	3.0
St Ives 2	59 Greenfields	Suburban	530850	270286	NO2	NO	6.0	1.5	NO	3.0
St Ives 3	6 Goldie Close	Roadside	529866	272285	NO2	NO	11.0	6.0	NO	3.0
Ramsey 1	5 Blenheim Road	Urban Background	528433	284936	NO2	NO	4.0	2.0	NO	3.0
Yaxley 1	2 London Road	Roadside	517480	292309	NO2	NO	13.0	2.0	NO	3.0

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)
Stibbington 1	7 Great North Road	Roadside	508326	298684	NO2	NO	22.0	2.0	NO	3.0
Alwalton 1	2 Royce Road	Roadside	513132	295723	NO2	NO	11.0	4.0	NO	3.0
Sawtry 1	81 Fen Lane	Suburban	517440	283443	NO2	NO	4.0	2.0	NO	3.0
Alconbury 1	54 Manor Lane	Roadside	518954	276010	NO2	NO	6.0	2.0	NO	3.0
Great Stukeley 1	Church of Jesus Christ - Ermine Street	Roadside	522000	274607	NO2	NO	33.0	1.0	NO	3.0
Huntingdon 7	6 Brampton Road	Roadside	523432	271760	NO2	YES AQMA 1	10.0	2.0	NO	3.0
Huntingdon 8	Main Road	Roadside	525289	272525	NO2	NO	27.0	2.0	NO	3.0
Hilton 1	1 Westbrook Close	Suburban	528836	266538	NO2	NO	10.0	1.0	NO	3.0
Fenstanton 4	25 High Street	Roadside	531729	268370	NO2	NO	1.5	1.0	NO	3.0
Alconbury 2	Lords Ways	Suburban	518955	275520	NO2	NO	10.0	1.0	NO	3.0
Brampton 6	Parish Hall Church Road	Roadside	521487	270803	NO2	NO	19.0	1.0	NO	3.0
Brampton 7	52 Elizabethan Way	Suburban	519874	270948	NO2	NO	7.0	1.5	NO	3.0
Offord D'Arcy 1	42 Gravely Road	Suburban	522127	266105	NO2	NO	11.0	3.0	NO	3.0

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)
Offord Cluny 2	168 High Street	Roadside	521947	267178	NO2	NO	11.0	3.0	NO	3.0
St Neots 10	81 Great North Road	Roadside	516921	258382	NO2	NO	15.0	1.7	NO	2.0
St Neots 11	119 Cambridge Road	Roadside	519925	260291	NO2	NO	0.0	11.0	NO	2.0
St Ives 4	1 Hill Rise	Kerbside	530529	272357	NO2	NO	6.0	1.0	NO	2.0
St Ives 5	93 Needingworth Road	Roadside	531963	272142	NO2	NO	5.0	1.5	NO	2.0
Bluntisham	B1040	Roadside	533719	275865	NO2	NO	15.0	3.0	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.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 2022 (%) (2)	2018	2019	2020	2021	2022
PFH	524102	271540	Roadside	73.7	73.7	28	37	25	27	28.2

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

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

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.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean 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 2022 (%) (2)	2018	2019	2020	2021	2022
St Neots 1	517869	260132	Kerbside	100.0	100.0	17.5	18.1	12.2	13.7	13.9
St Neots 2	519541	260280	Roadside	100.0	100.0	20.7	21.4	13.7	14.8	17.0
St Neots 3	518925	260503	Urban Background	91.7	91.7	15.0	15.8	10.9	10.8	11.5
St Neots 4	518489	260871	Urban Background	100.0	100.0	13.9	14.7	10.0	10.2	11.2
St Neots 5	518323	260263	Kerbside	91.7	91.7	28.7	28.8	18.6	21.0	23.2
St Neots 6	518433	260321	Kerbside	100.0	100.0	28.4	29.0	20.4	20.2	22.9
St Neots 7	518424	258556	Suburban	100.0	100.0	17.4	18.7	14.2	13.9	14.1
St Neots 8	518707	258260	Suburban	91.7	91.7	18.8	19.9	12.7	12.4	14.6
St Neots 9	516370	259514	Suburban	100.0	100.0	22.4	23.0	15.5	15.8	17.6
Southoe 1	518714	264308	Roadside	100.0	100.0	16.2	15.5	10.9	10.4	11.1
Buckden 1	518981	267370	Roadside	100.0	100.0	21.9	21.8	13.0	14.3	18.1
Buckden 2	519082	267433	Roadside	100.0	100.0	19.7	22.2	14.4	15.6	16.1
Buckden 3	519161	267624	Roadside	100.0	100.0	25.4	25.7	17.5	17.8	20.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
Buckden 4	519197	267955	Roadside	100.0	100.0	15.8	17.1	12.0	12.1	13.0
Brampton 1	520734	269623	Roadside	100.0	100.0	13.1	14.1	10.8	10.1	12.3
Huntingdon 9	523575	272174	Roadside	100.0	100.0	**N/A**	28.2	18.3	21.2	21.9
Brampton 3	520155	271561	Roadside	100.0	100.0	21.0	21.0	13.3	14.5	14.7
Brampton 4	519956	271461	Roadside	100.0	100.0	16.3	16.6	11.2	11.9	12.2
Brampton 5	519839	271061	Roadside	100.0	100.0	13.4	13.6	14.9	11.0	12.3
Catworth 1	508409	274876	Rural	100.0	100.0	15.8	16.4	11.7	11.7	13.2
PFH 1, PFH 2, PFH 3	524102	271540	Roadside	100.0	100.0	**43.3**	**40.1**	24.8	26.3	28.2
Huntingdon 1	523177	271627	Suburban	100.0	100.0	17.0	16.5	9.8	9.8	10.6
Huntingdon 2	524198	271949	Kerbside	100.0	100.0	23.5	23.6	14.9	17.0	17.7
Huntingdon 3	523661	271802	Kerbside	100.0	100.0	34.0	35.6	20.5	23.9	22.6
Huntingdon 4	523435	272464	Kerbside	100.0	100.0	27.4	27.2	15.4	17.0	17.9
Huntingdon 5	522293	272909	Roadside	100.0	100.0	24.6	23.0	11.0	11.7	12.9
Huntingdon 6	524274	271939	Roadside	100.0	100.0	21.6	22.4	14.8	14.9	17.6

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
Godmanchester 1	525319	270571	Roadside	100.0	100.0	22.1	19.9	9.3	10.9	11.8
Wood Green Animal Shelter	526069	268254	Rural	100.0	100.0	12.7	12.6	9.6	10.4	10.6
Fenstanton 1	531427	268397	Roadside	100.0	100.0	25.0	25.2	11.0	11.0	13.0
Earith 1	538460	274797	Roadside	100.0	100.0	**N/A**	16.6	10.6	10.3	10.7
Fenstanton 3	531063	268063	Rural	100.0	100.0	12.4	14.0	9.6	9.4	10.6
St Ives 1	531206	272334	Urban Background	100.0	100.0	16.3	16.0	11.3	11.3	12.9
St Ives 2	530850	270286	Suburban	100.0	100.0	19.3	19.3	12.0	13.0	13.4
St Ives 3	529866	272285	Roadside	100.0	100.0	15.9	15.8	10.6	10.6	11.9
Ramsey 1	528433	284936	Urban Background	100.0	100.0	17.2	17.7	11.7	12.8	13.4
Yaxley 1	517480	292309	Roadside	100.0	100.0	27.8	27.1	18.0	19.3	19.9
Stibbington 1	508326	298684	Roadside	100.0	100.0	22.8	23.6	14.7	14.0	15.9
Alwalton 1	513132	295723	Roadside	100.0	100.0	19.2	19.1	12.7	12.6	13.1
Sawtry 1	517440	283443	Suburban	91.7	91.7	20.3	18.0	11.9	13.1	14.2
Alconbury 1	518954	276010	Roadside	100.0	100.0	19.0	17.4	13.4	13.9	15.3

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 2022 (%) [2]	2018	2019	2020	2021	2022
Great Stukeley 1	522000	274607	Roadside	91.7	91.7	16.4	17.0	10.7	10.2	11.1
Huntingdon 7	523432	271760	Roadside	100.0	100.0	30.7	33.5	18.8	21.4	21.5
Huntingdon 8	525289	272525	Roadside	100.0	100.0	20.5	22.6	14.6	15.1	16.2
Hilton 1	528836	266538	Suburban	100.0	100.0	10.8	12.9	8.5	8.3	9.1
Fenstanton 4	531729	268370	Roadside	100.0	100.0	19.2	20.9	11.5	11.9	12.7
Alconbury 2	518955	275520	Suburban	100.0	100.0	11.2	13.2	9.1	8.8	9.7
Brampton 6	521487	270803	Roadside	100.0	100.0	20.7	22.5	15.1	16.8	16.8
Brampton 7	519874	270948	Suburban	100.0	100.0	11.6	14.9	11.0	11.3	12.2
Offord D'Arcy 1	522127	266105	Suburban	100.0	100.0	10.7	13.2	8.8	8.8	9.5
Offord Cluny 2	521947	267178	Roadside	100.0	100.0	16.0	19.3	10.7	12.0	13.5
St Neots 10	516921	258382	Roadside	100.0	100.0	**N/A**	24.7	16.9	17.8	20.3
St Neots 11	519925	260291	Roadside	100.0	100.0	**N/A**	18.7	11.8	12.2	13.9
St Ives 4	530529	272357	Kerbside	100.0	100.0	**N/A**	27.6	18.6	19.8	21.9
St Ives 5	531963	272142	Roadside	100.0	100.0	**N/A**	28.1	21.3	24.3	24.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
Bluntisham	533719	275865	Roadside	91.7	91.7	**N/A**	**N/A**	**N/A**	**N/A**	17.5

☒ **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 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.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

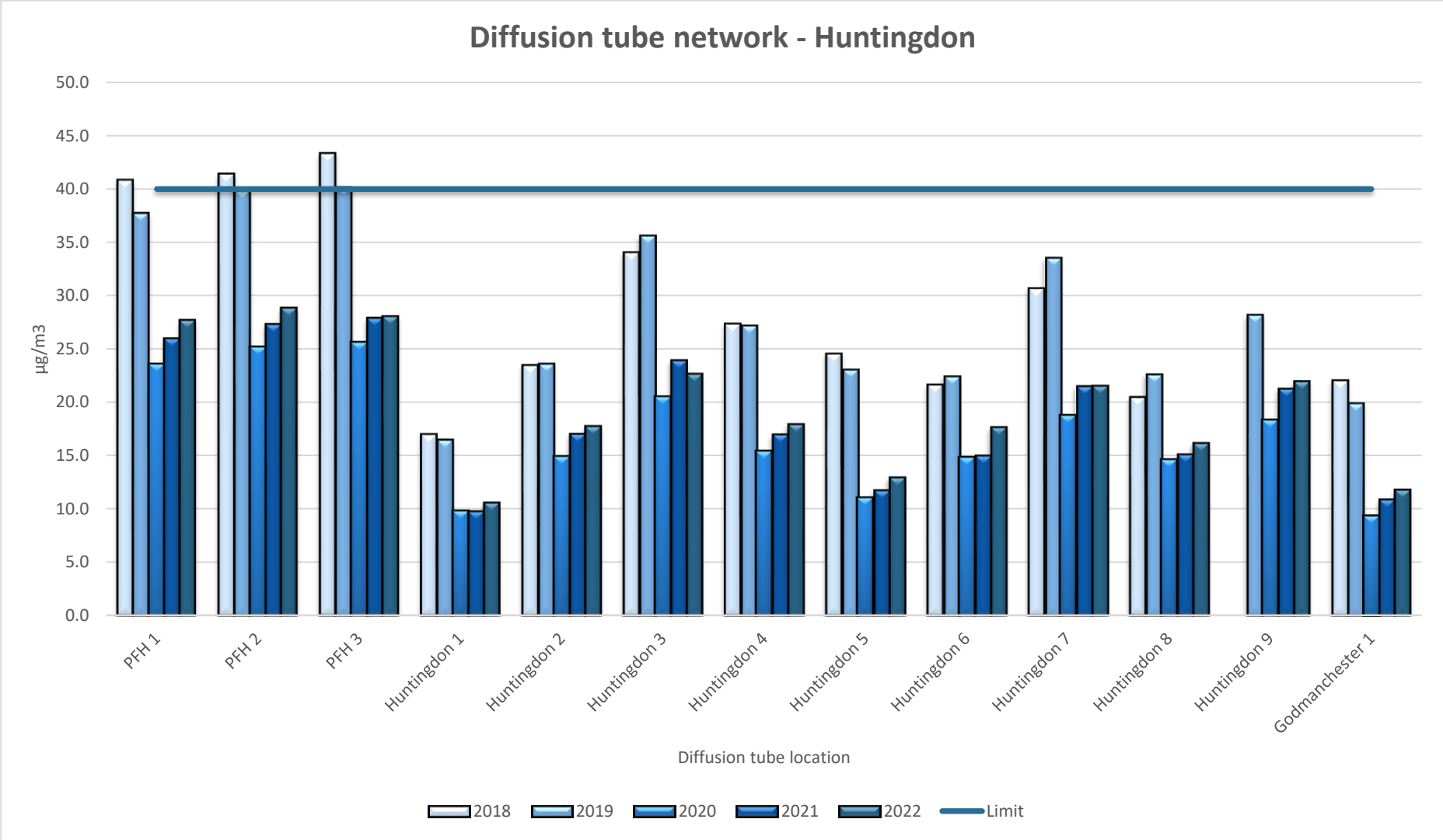
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

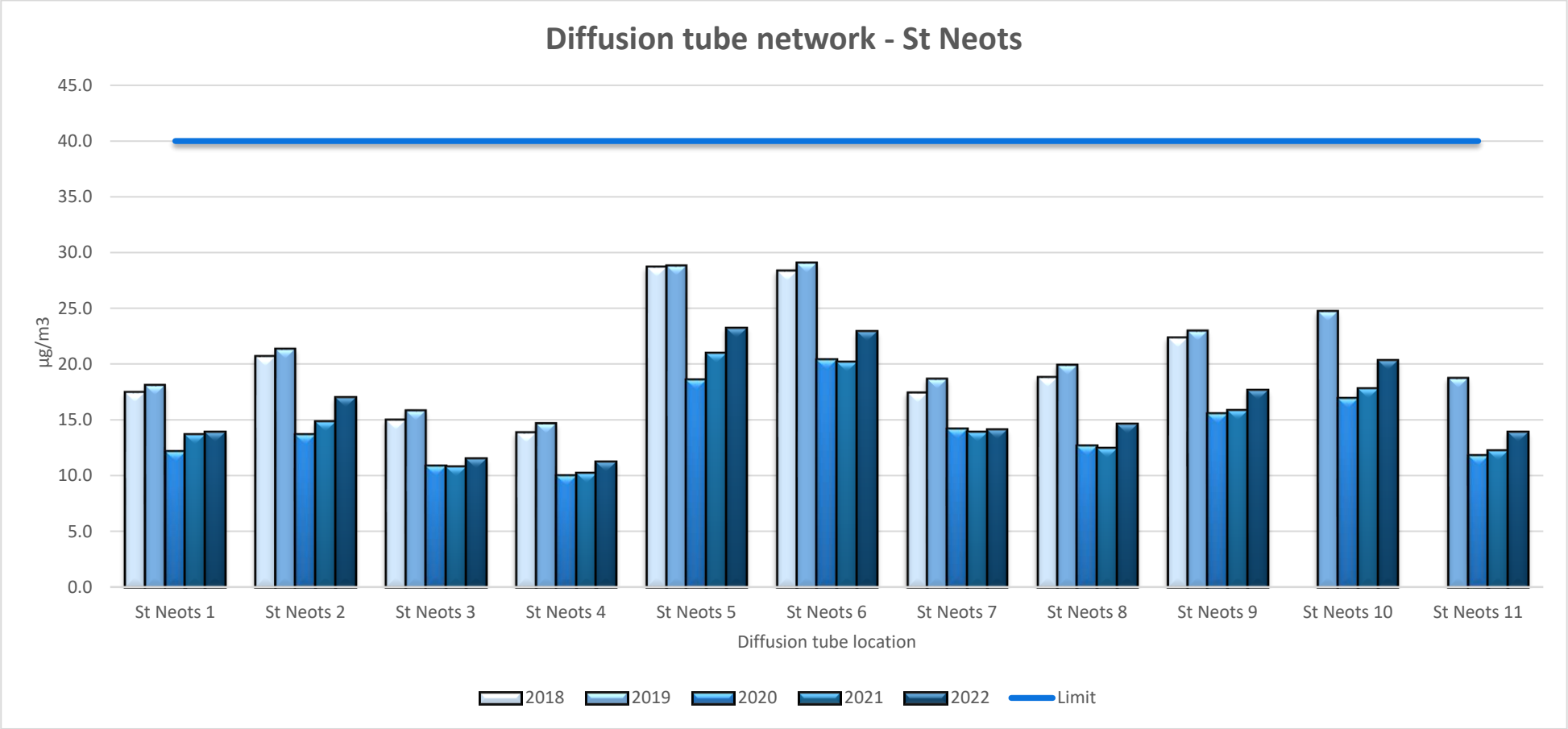
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

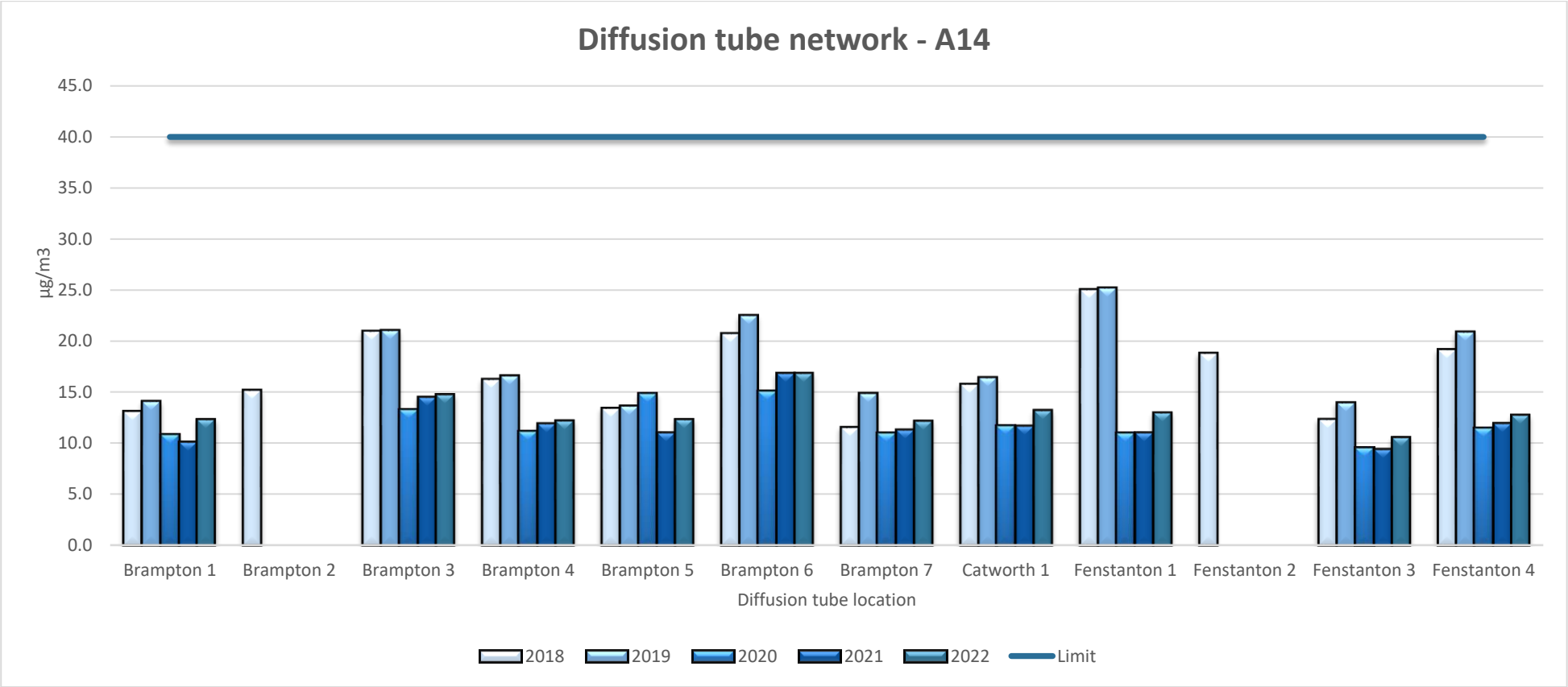
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

The presentation of the following charts has been completed in line with Defra's requirements to take account of readers who are colour blind. If you have any issues viewing the charts, please contact us on the details at the top of this report and we can provide the information in another format.




Diffusion tube network - St Neots
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
µg/m3
St Neots 1
St Neots 2
St Neots 3
St Neots 4
St Neots 5
St Neots 6
St Neots 7
St Neots 8
St Neots 9
St Neots 10
St Neots 11
Diffusion tube location
2018
2019
2020
2021
2022
Limit


Diffusion tube network - A14
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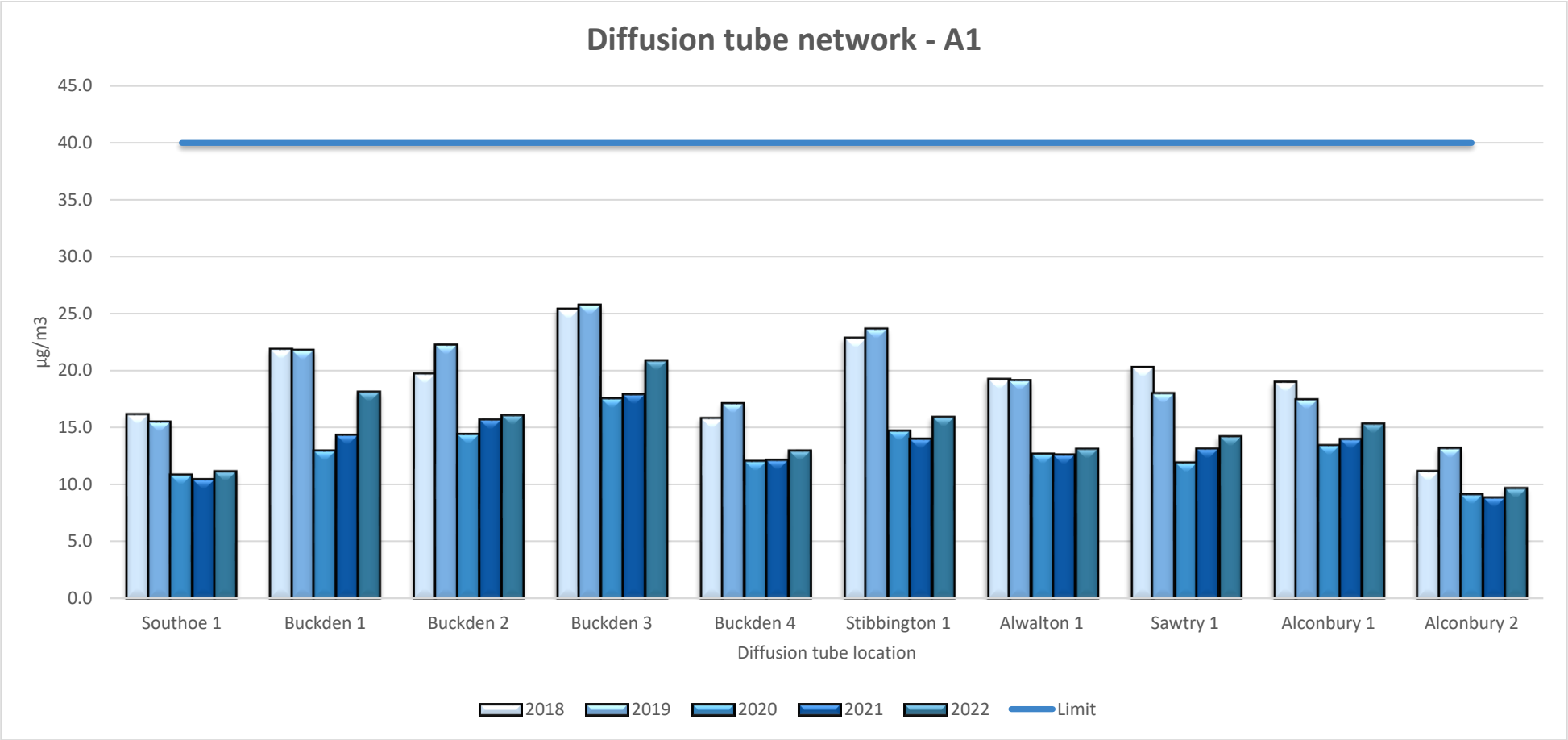
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
µg/m3
Brampton 1
Brampton 2
Brampton 3
Brampton 4
Brampton 5
Brampton 6
Brampton 7
Catworth 1
Fenstanton 1
Fenstanton 2
Fenstanton 3
Fenstanton 4
Diffusion tube location
2018
2019
2020
2021
2022
Limit


Diffusion tube network - A1
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
µg/m3
Southoe 1
Buckden 1
Buckden 2
Buckden 3
Buckden 4
Stibbington 1
Alwalton 1
Sawtry 1
Alconbury 1
Alconbury 2
Diffusion tube location
2018
2019
2020
2021
2022
Limit

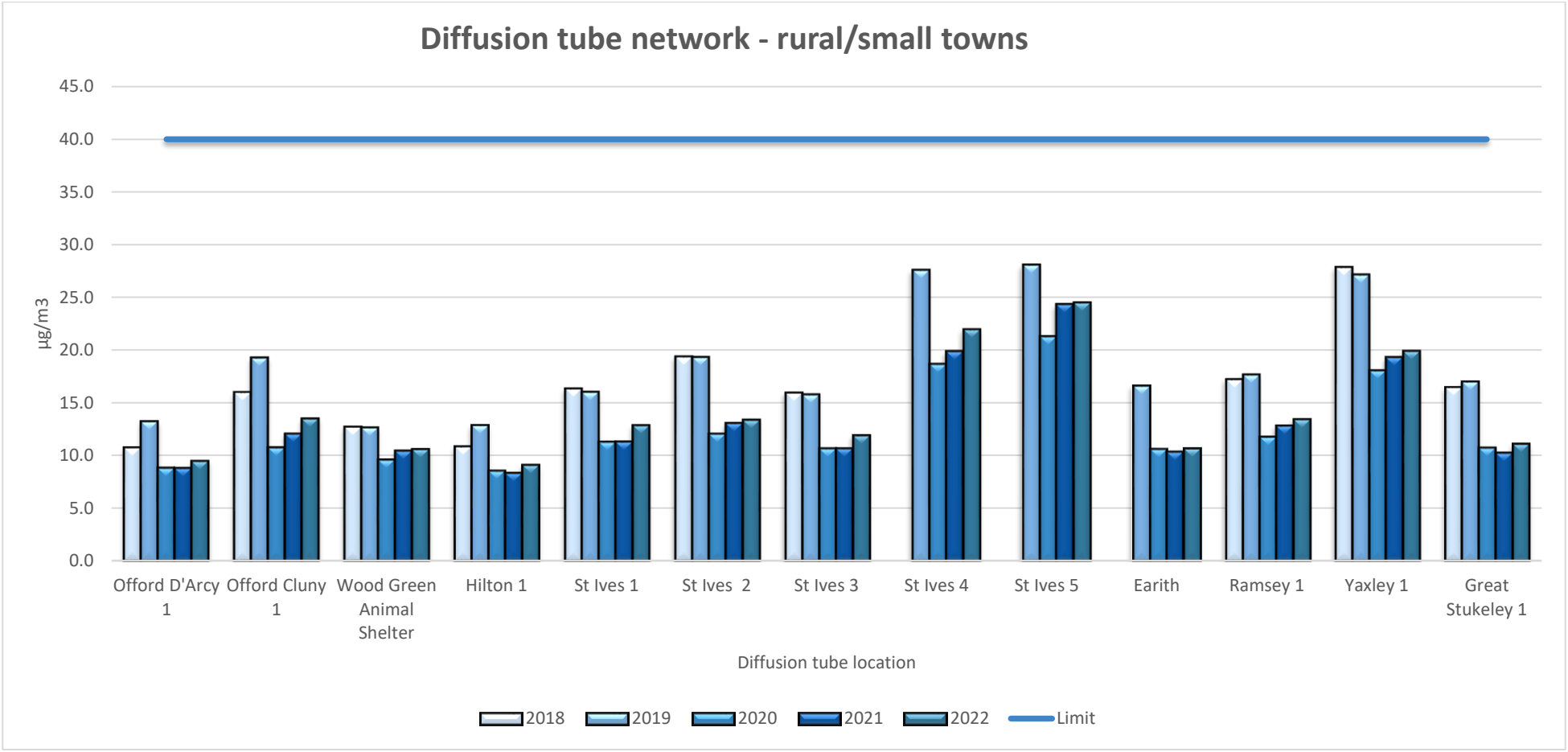

Diffusion tube network - rural/small towns
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
µg/m3
Offord D'Arcy 1
Offord Cluny 1
Wood Green Animal Shelter
Hilton 1
St Ives 1
St Ives 2
St Ives 3
St Ives 4
St Ives 5
Earith
Ramsey 1
Yaxley 1
Great Stukeley 1
Diffusion tube location
2018
2019
2020
2021
2022
Limit

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 2022 (%) (2)	2018	2019	2020	2021	2022
PFH	524102	271540	Roadside	73.7	73.7	0	0	0	0	0 (86.4µg/m^3)

Notes:

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

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

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets. If the 99.8th percentile is greater than 200µg/m^3, then this means that if there had been 100% data capture, then there have been greater than 18 exceedances of 200µg/m^3 per calendar year

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
PFH	524102	271540	Roadside	62.88	62.88	No Data	15.7	14	15	14.8

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

Notes:

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

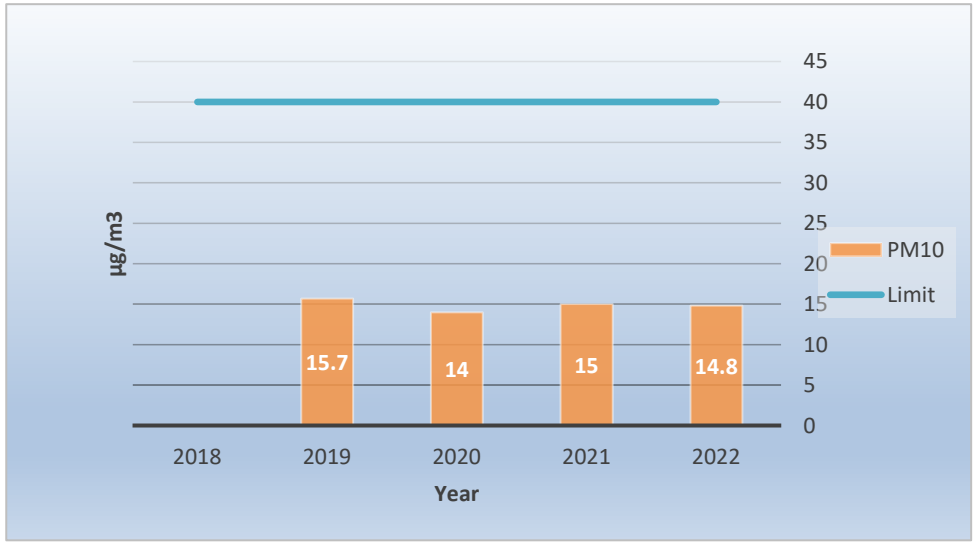
Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations



The presentation of this chart has been completed to take account of readers who are colour blind, if you have any issues viewing the chart please contact us on the details at the top of this report and we can provide the information in another format.

Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/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 2022 (%) (2)	2018	2019	2020	2021	2022
PFH	524102	271540	Roadside	62.88	62.88	No Data	0	0	1	1 (26.1µg/m^3)

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

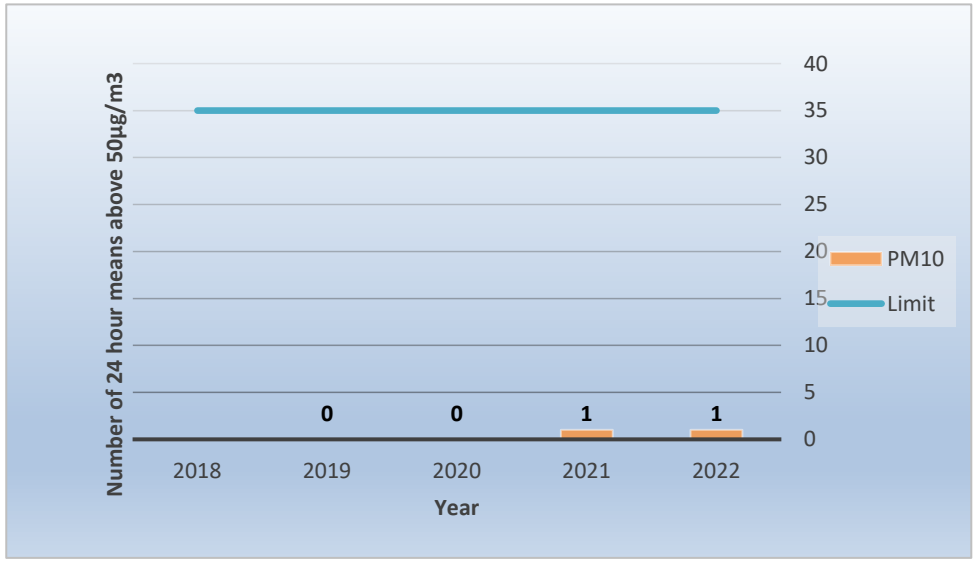
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets. If the 90.4th percentile is greater than 50µg/m^3, then this means if there had been 100% data capture, then there have been greater than 35 exceedances of 50µg/m^3 per calendar year.

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

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

Figure A.3 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3



The presentation of this chart has been completed to take account of readers who are colour blind, if you have any issues viewing the chart please contact us on the details at the top of this report and we can provide the information in another format.

Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
PFH	524102	271540	Roadside	62.88	62.88	11.7	8.67	8	8	8.3

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

Notes:

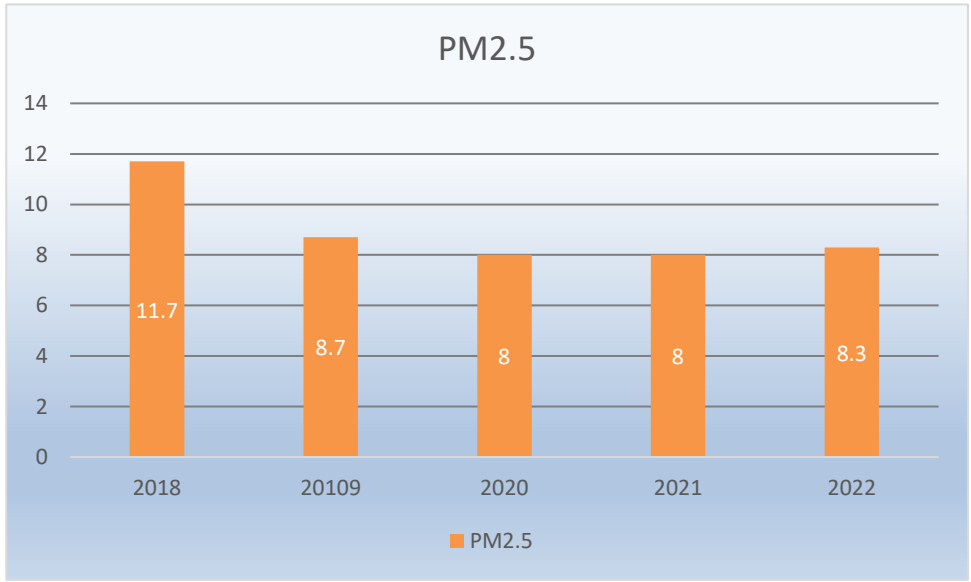
The annual mean concentrations are presented as $\mu g/m^3$.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.4 – Trends in Annual Mean $PM_{2.5}$ Concentrations



The presentation of this chart has been completed to take account of readers who are colour blind, if you have any issues viewing the chart please contact us on the details at the top of this report and we can provide the information in another format.

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
St Neots 1	517869	260132	28.2	21.0	23.0	16.3	14.3	12.4	12.9	17.4	15.1	18.8	13.6	25.8	18.2	13.9	-	
St Neots 2	519541	260280	30.8	23.8	26.7	18.0	16.7	16.7	16.1	17.5	21.8	22.6	25.3	31.8	22.3	17.0		
St Neots 3	518925	260503	26.1	18.5	20.4	11.6	10.7	8.0	9.4	11.6	12.6		20.5	17.3	15.2	11.5		
St Neots 4	518489	260871	25.3	18.6	18.4	10.7	10.7	9.6	9.6	10.3	11.5	19.1	10.0	23.6	14.8	11.2		
St Neots 5	518323	260263	41.5	36.4	33.4	28.9	27.3	23.9	21.4		29.0	28.8	31.8	34.0	30.6	23.2		
St Neots 6	518433	260321	42.2	31.4	37.7	24.5	26.7	26.9	23.4	26.0	27.7	29.4	34.1	31.2	30.1	22.9		
St Neots 7	518424	258556	19.8	23.4	22.0	15.0	14.2	14.0	11.9	11.6	17.0	24.5	22.3	27.2	18.6	14.1		
St Neots 8	518707	258260	31.1	24.5		14.7	13.8	15.2	12.5	13.4	17.2	23.9	20.3	24.6	19.2	14.6		
St Neots 9	516370	259514	34.8	29.7	26.3	19.8	18.2	16.9	15.8	16.7	19.3	24.3	25.1	31.5	23.2	17.6		
Southoe 1	518714	264308	18.5	14.1	24.8	14.5	11.1	9.1	9.4	14.1	13.2	14.4	11.9	20.9	14.7	11.1		
Buckden 1	518981	267370	22.5	18.9	38.3	25.0	17.2	16.3	17.7	32.6	25.0	26.7	18.0	27.8	23.8	18.1		
Buckden 2	519082	267433	34.0	21.7	23.0	17.7	21.6	20.7	18.6	20.0	19.7	22.4	10.2	24.1	21.1	16.1		
Buckden 3	519161	267624	33.3	27.3	34.2	22.2	23.5	23.2	21.3	24.7	24.0	30.2	30.1	35.2	27.4	20.8		
Buckden 4	519197	267955	18.4	19.8	21.9	14.7	23.4	12.5	9.6	14.9	12.7	16.3	15.7	24.9	17.1	13.0		
Brampton 1	520734	269623	23.4	20.9	21.5	10.6	10.8	12.2	8.1	10.9	12.7	20.4	18.9	24.0	16.2	12.3		
Huntingdon 9	523575	272174	42.7	29.4	38.5	28.0	26.4	20.8	21.0	24.6	25.9	24.3	29.7	35.0	28.9	21.9		
Brampton 3	520155	271561	28.3	20.0	26.8	11.3	13.2	13.9	13.7	17.3	16.9	20.8	22.2	28.2	19.4	14.7		

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
Brampton 4	519956	271461	27.8	19.1	22.5	11.7	9.4	11.0	10.4	13.5	15.6	18.1	7.5	25.7	16.0	12.2		
Brampton 5	519839	271061	25.4	19.4	21.2	12.4	11.7	11.1	10.3	11.1	13.5	17.3	17.8	23.3	16.2	12.3		
Catworth 1	508409	274876	27.1	23.7	18.2	10.1	16.9	15.7	13.1	12.4	15.4	19.2	21.0	15.7	17.4	13.2		
PFH 1, PFH 2, PFH 3	524102	271540	40.8	34.7	48.3	37.0	37.4	36.8	33.7	36.6	35.3	35.8	32.3	36.1	37.1	28.2		Triplicate Site with PFH 1, PFH 2 and PFH 3
Huntingdon 1	523177	271627	23.5	15.4	19.8	11.4	10.5	9.5	8.8	10.7	13.6	14.1	7.9	21.5	13.9	10.6		
Huntingdon 2	524198	271949	36.3	21.2	35.9	22.1	19.1	16.8	16.4	20.5	20.2	21.2	21.6	28.7	23.3	17.7		
Huntingdon 3	523661	271802	38.0	35.8	40.4	24.8	32.0	28.3	22.2	23.0	25.0	31.8	26.6	29.4	29.8	22.6		
Huntingdon 4	523435	272464	23.4	28.3	31.4	22.1	22.4	23.2	21.2	21.4	22.6	25.4	12.2	29.3	23.6	17.9		
Huntingdon 5	522293	272909	26.9	17.4	23.2	14.8	13.1	11.8	11.6	13.7	14.8	19.2	15.1	22.6	17.0	12.9		
Huntingdon 6	524274	271939	39.3	27.2	28.5	17.4	17.9	18.6	15.7	15.6	18.9	25.8	26.3	27.4	23.2	17.6		
Godmanchester 1	525319	270571	26.3	15.6	24.4	14.3	10.1	9.0	9.3	11.5	14.2	16.0	13.0	22.5	15.5	11.8		
Wood Green Animal Shelter	526069	268254	28.7	18.0	18.0	9.0	11.2	8.3	8.4	9.2	11.4	16.9	9.8	18.3	13.9	10.6		
Fenstanton 1	531427	268397	28.5	18.5	22.3	12.4	13.2	11.5	10.2	11.3	14.6	20.0	20.3	21.8	17.1	13.0		
Earith 1	538460	274797	19.1	17.2	20.8	14.6	11.8	9.6	9.8	10.2	10.9	13.1	11.5	19.8	14.0	10.7		
Fenstanton 3	531063	268063	25.6	16.1	21.0	10.5	9.8	8.3	7.8	10.4	10.8	15.8	12.2	18.7	13.9	10.6		
St Ives 1	531206	272334	30.0	20.1	24.8	12.1	11.0	11.0	10.3	10.9	11.9	19.2	17.8	24.1	16.9	12.9		
St Ives 2	530850	270286	31.5	19.2	21.7	10.8	14.5	12.9	11.1	12.4	16.6	19.7	16.1	24.7	17.6	13.4		
St Ives 3	529866	272285	26.1	17.6	23.8	11.5	11.9	11.4	13.0	11.7	11.4	18.6	13.1	18.0	15.7	11.9		
Ramsey 1	528433	284936	26.6	20.1	25.6	14.8	16.0	14.8	12.4	16.0	18.2	1.3	20.6	25.8	17.7	13.4		
Yaxley 1	517480	292309	38.5	25.3	30.0	22.2	23.2	23.8	23.6	22.9	27.4	24.7	29.1	23.5	26.2	19.9		
Stibbington 1	508326	298684	32.1	25.9	26.1	16.8	18.7	21.1	16.0	13.1	19.4	23.5	15.4	23.2	20.9	15.9		

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
Alwalton 1	513132	295723	23.2	18.4	21.1	15.6	16.9	16.1	15.1	16.1	18.6	20.4	4.9	20.9	17.3	13.1		
Sawtry 1	517440	283443	29.7	17.9	28.5	17.0	11.9		11.7	15.8	14.6	19.3	14.5	24.7	18.7	14.2		
Alconbury 1	518954	276010	27.2	16.4	29.7	17.7	14.1	13.4	13.1	18.0	18.9	22.7	21.9	28.6	20.1	15.3		
Great Stukeley 1	522000	274607	27.5	17.5	16.6	9.5	11.0		8.0	9.4	10.6	16.4	14.0	20.4	14.6	11.1		
Huntingdon 7	523432	271760	40.0	29.6	34.9	22.6	27.0	25.8	20.9	25.7	27.0	31.4	20.8	34.1	28.3	21.5		
Huntingdon 8	525289	272525	30.7	24.2	26.8	17.8	17.4	17.3	15.6	17.3	16.2	21.3	22.3	28.1	21.3	16.2		
Hilton 1	528836	266538	22.2	13.8	18.0	9.3	8.0	6.6	7.3	9.7	10.4	13.3	12.0	13.2	12.0	9.1		
Fenstanton 4	531729	268370	22.3	19.1	25.5	12.7	12.0	10.0	10.8	13.2	15.5	20.6	14.4	25.1	16.8	12.7		
Alconbury 2	518955	275520	20.0	14.2	14.7	10.1	8.7	7.5	7.9	10.0	10.3	15.8	14.2	19.4	12.7	9.7		
Brampton 6	521487	270803	29.2	26.4	25.9	17.6	20.3	18.7	16.1	19.0	20.3	24.4	16.8	30.8	22.1	16.8		
Brampton 7	519874	270948	26.1	20.4	20.5	10.9	10.0	11.3	9.5	11.5	14.2	19.2	13.4	25.0	16.0	12.2		
Offord D'Arcy 1	522127	266105	23.9	14.4	14.7	9.2	8.6	6.9	7.3	8.9	9.7	14.0	13.0	19.1	12.5	9.5		
Offord Cluny 2	521947	267178	26.8	19.5	20.0	14.7	13.9	14.4	13.5	13.4	16.9	19.9	14.9	25.4	17.8	13.5		
St Neots 10	516921	258382	38.1	26.2	34.2	23.9	21.0	21.5	22.9	25.2	28.4	26.9	18.1	34.3	26.7	20.3		
St Neots 11	519925	260291	27.7	19.4	21.8	15.7	13.1	13.4	11.3	16.6	17.0	19.1	18.4	25.3	18.2	13.9		
St Ives 4	530529	272357	44.4	33.5	33.9	26.4	24.6	25.3	23.0	21.7	26.2	30.3	29.9	27.3	28.9	21.9		
St Ives 5	531963	272142	28.2	32.7	38.3	33.3	27.3	28.5	26.8	35.0	32.0	34.5	31.2	38.9	32.2	24.5		
Bluntisham	533719	275865	29.7	21.8	26.0	15.4	21.3	21.2		19.4	19.2	29.3	21.0	28.7	23.0	17.5		

☒ **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.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.**

☒ **Huntingdonshire District Council confirm that all 2022 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 Huntingdonshire During 2022

Continued residential and industrial development is taking place, but Huntingdonshire District Council has not identified any significant new sources relating to air quality within the reporting year of 2022. See page iv above for more detail.

Additional Air Quality Works Undertaken by Huntingdonshire District Council During 2022

Huntingdonshire District Council has not completed any additional studies relating to the development of action plan measures or the declaration, amendment, or revocation of an AQMA within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Huntingdonshire District Council currently have a contract with SOCOTEC to provide and analyse diffusion tubes. The method of preparation is by spiking acetone: triethanolamine (50:50) onto the grids prior to the tubes being assembled. Samples are analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's *'Diffusion Tubes For Ambient NO2 Monitoring: Practical Guidance.'* The analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is also within the scope of SOCOTEC's UKAS schedule. In the AIR PT inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, SOCOTEC currently holds the highest rank of a Satisfactory laboratory.

Diffusion tube monitoring has been completed in adherence with the Defra 2022 Diffusion Tube Monitoring Calendar, with the exception of August 2022. Due to unforeseen and

unavoidable circumstances with annual leave and staff sickness the tubes were changed on the 8th and 9th of August instead of the 3rd +/- 2 days.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within the district of Huntingdonshire 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, which is again not applicable for HDC.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Leicester university	Annualisation Factor Leamington Spa	Annualisation Factor Northampton Spring Park	Annualisation Factor Wicken Fen	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
PFH NO_2	0.92	0.88	0.89	0.87	0.89	28.205	25.080
PFH PM_{10}	1.03	1.05	-	-	1.04	11.746	12.265
PFH $PM_{2.5}$	1.00	1.02	0.98	-	1.00	8.332	8.345

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

Huntingdonshire District Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data using version 03/23 of the national spreadsheet which had 26 applicable studies. A national figure was utilised due to the level of data capture at the AQMS; however, it should be noted that on completing the local bias calculation spreadsheet the result was the same at 0.76.

The National Diffusion Tube Bias Adjustment Factor Spreadsheet:

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2023

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:								
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.								
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953								
Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year[2] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)	
Socotec Didcot	50% TEA in acetone	2022	UB	Torfaen County Borough Council	13	13	10	33.4%	G	**0.75**	
Socotec Didcot	50% TEA in acetone	2022	R	Bridgend Council	12	37	27	40.6%	G	**0.71**	
Socotec Didcot	50% TEA in Acetone	2022	R	Cardiff Council / Shared Regulatory Services	11	42	33	27.3%	G	**0.79**	
Socotec Didcot	50% TEA in Acetone	2022	R	Dacorum Borough Council	12	24	18	30.8%	G	**0.76**	
Socotec Didcot	50% TEA in Acetone	2022	UB	Gravesham Borough Council	11	22	18	19.6%	G	**0.84**	
Socotec Didcot	50% TEA in Acetone	2022	UB	Gravesham Borough Council	11	26	22	17.0%	G	**0.85**	
Socotec Didcot	50% TEA in acetone	2022	R	Kingston Upon Hull City Council	12	30	23	27.9%	G	**0.78**	
Socotec Didcot	50% TEA in acetone	2022	UB	Kingston Upon Hull City Council	12	24	18	35.0%	G	**0.74**	
SOCOTEC Didcot	50% TEA in acetone	2022	UB	City Of York Council	12	16	13	31.6%	G	**0.76**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	City Of York Council	12	25	19	28.7%	G	**0.78**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	City Of York Council	11	23	17	37.2%	G	**0.73**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	City Of York Council	11	37	27	37.6%	G	**0.73**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	East Suffolk Council	11	32	23	38.6%	G	**0.72**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Ipswich Borough Council	11	42	28	50.4%	G	**0.66**	
SOCOTEC Didcot	50% TEA in acetone	2022	KS	Marylebone Road Intercomparison	12	60	42	40.7%	G	**0.71**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	North East Lincolnshire Council	10	46	31	49.4%	G	**0.67**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	North East Lincolnshire Council	10	28	27	3.7%	G	**0.96**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Wrexham County Borough Council	12	16	14	15.5%	G	**0.87**	
SOCOTEC Didcot	50% TEA in Acetone	2022	R	Horsham District Council	11	25	22	14.4%	G	**0.87**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	12	40	29	37.8%	G	**0.73**	
SOCOTEC Didcot	50% TEA in acetone	2022	KS	Leeds City Council	11	33	23	44.6%	G	**0.69**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	12	43	34	26.0%	G	**0.79**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	11	41	30	34.2%	G	**0.75**	
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	12	30	22	36.9%	G	**0.73**	
SOCOTEC Didcot	50% TEA in acetone	2022	UC	Leeds City Council	12	30	22	34.1%	G	**0.75**	
SOCOTEC Didcot	50% TEA in Acetone	2022	R	Thanet District Council	12	23	17	29.1%	G	**0.77**	
SOCOTEC Didcot	50% TEA in acetone	2022		**Overall Factor[3] (26 studies)**				**Use**		**0.76**	

A summary of bias adjustment factors used by Huntingdonshire District Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	Local	-	0.72
2020	Local	-	0.68
2019	National	03/20	0.75
2018	National	03/19	0.76

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	8				
Bias Factor A	0.76 (0.7 – 0.84)				
Bias Factor B	31% (20% - 43%)				
Diffusion Tube Mean (µg/m^3)	37				
Mean CV (Precision)	6				
Automatic Mean (µg/m^3)	29				
Data Capture	100%				
Adjusted Tube Mean (µg/m^3)	28 (26 – 31)				

Notes:

A single local bias adjustment factor has been used to bias adjust the 2022 diffusion tube results.

The Precision and Accuracy Spreadsheet for the local bias calculation:

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	06/01/2022	03/02/2022	38.7	46.8	36.8	41	5.3	13	13.2
2	03/02/2022	03/03/2022	34.2	35.8	34.1	35	1.0	3	2.4
3	03/03/2022	31/03/2022	47.7	48.2	49.1	48	0.7	1	1.8
4	31/03/2022	03/05/2022	35.5	38.4	37.1	37	1.5	4	3.6
5	03/05/2022	08/06/2022	38.2	37.6	36.3	37	1.0	3	2.4
6	08/06/2022	06/07/2022	35.7	37.5	37.3	37	1.0	3	2.5
7	06/07/2022	09/08/2022	33.7	33.7	33.8	34	0.1	0	0.1
8	09/08/2022	02/09/2022	37.3	38.4	34.1	37	2.2	6	5.5
9	02/09/2022	28/09/2022	34.5	35.2	36.1	35	0.8	2	2.0
10	28/09/2022	03/11/2022	35.8	36.8	34.9	36	1.0	3	2.4
11	03/11/2022	30/11/2022	30.2	28.9	37.9	32	4.9	15	12.1
12	30/11/2022	05/01/2023	35.6	37.6	35.2	36	1.3	4	3.2
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
35.4	100	Good	Good
22	100	Good	Good
34.8	99.6	Good	Good
	0	Good	or Data Capture
	0	Good	or Data Capture
	0	Good	or Data Capture
	0	Good	or Data Capture
27	99.7	Good	Good
26	100	Good	Good
26	100	Good	Good
26.7	99.9	Good	Good
30.9	99.4	Good	Good
Overall survey -->		Good precision	Good Overall DC

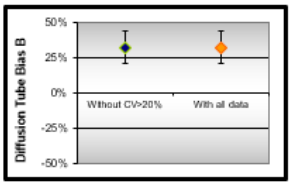
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Pathfinder House

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 8 periods of data
Bias factor A: 0.76 (0.7 - 0.84)
Bias B: 31% (20% - 43%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 29 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (26 - 31) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 8 periods of data
Bias factor A: 0.76 (0.7 - 0.84)
Bias B: 31% (20% - 43%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 29 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (26 - 31) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

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 can be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website.

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure. Due to the results gained no diffusion tube NO_2 monitoring locations within Huntingdonshire required distance correction during 2022.

QA/QC of Automatic Monitoring

During 2022 Huntingdonshire District Council held a Service Contract with Acoem, changing to Matts Monitors part way through the year, and a contract with Ricardo to provide independent Quality Assurance/Quality Control audits and data management, including ratification. QA/QC and servicing reports are available on request. Fully ratified results are available online at the Air Quality England website at Huntingdon Pathfinder House Data Download - Air Quality monitoring service (airqualityengland.co.uk) where data can be downloaded. All automatic monitoring data within the ASR is fully ratified.

An officer visits the site and completes a calibration every 2 weeks as part of the Local Site Operator (LSO) duties.

Servicing and QA/QC are completed on a six-monthly basis.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The FIDAS 200 particulate monitor utilised within Huntingdonshire does not require the application of a correction factor for PM_{10}. However, for $PM_{2.5}$ a factor of 0.9434 is applied. This follows section 7.174 in TG (22). The data downloaded from the AQE website already has this correction factor applied.

Automatic Monitoring Annualisation

Annualisation is required for any site where the data capture is less than 75% but greater than 25%. Due to the removal of the Fidas for repair and the change in service contract the NO_2, PM_{10} and $PM_{2.5}$ data require annualisation. This aspect was predominantly completed by our Data Management company Ricardo, with Huntingdonshire District Council completing the percentile information, both following Chapter 7 of TG22. The annualisation data can be seen in Table C.1 above, and in the following excerpts from the annualisation spreadsheet, which is available on request.

	2022 Data Capture - UK-Air				
Background Sites Considered	PM10	PM2.5	NO2	Distance from Huntingdon Pathfinder House	Used to annualise 2022 data?
Leicester University	99.6689	99.6689	99.1324	44 miles	Y
Northampton Spring Park	N/A	97.1461	96.6438	31 miles	Y
Wicken Fen	56.4726	56.4726	97.032	20 miles	Y
Leamington Spa [1]	99.9315	89.532	99.9315	56 miles	Y
Borehamwood Meadow Park [2]	77.6142	77.6142	97.1233	45 miles	N

Comments
-
-
-

1 *Would consider it best practice to use national network site, only >6miles from approximate radius that is stipulated in technical guidance*

2 *Not required for NOx, data capture too low for PM*

NO_2 annualisation:

Huntingdon Pathfinder House NO2			
Data 01/01/22 01:00 - 30/04/22 00:00 & 04/08/22 12:00 - 31/12/22 00:00			
Background Site	**Annual Mean**	**Period Mean**	**Ratio**
Leicester University	18.858	20.59	0.92
Northampton Spring Park	10.407	11.68	0.89
Wicken Fen	6.507	7.45	0.87
Leamington Spa	15.761	17.98	0.88
		Average ratio	**0.89**
	Raw data	**Annualised**	
Annualised annual mean	**28.205**	**25.080**	

PM_{10} annualisation:

Huntingdon Pathfinder House PM10			
Data 01/01/22 01:00 - 16/03/22 10:00 & 29/07/22 16:00 - 31/12/22 00:00			
Background Site	**Annual Mean**	**Period Mean**	**Ratio**
Leicester University	12.929	12.50	1.03
Leamington Spa	12.85	12.19	1.05
		Average ratio	**1.04**
	Raw data	**Annualised**	
Annualised annual mean	**11.746**	**12.265**	

$PM_{2.5}$ annualisation:

Background Site	**Annual Mean**	**Period Mean**	**Ratio**
Leicester University	7.931	7.897	1.00
Northampton Spring Park	8.168	8.309	0.98
Leamington Spa	7.616	7.488	1.02
		Average ratio	**1.00**
	Raw data	**Annualised**	
Annualised annual mean	**8.332**	**8.345**	

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 can be estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website.

As mentioned above under the diffusion tube section, distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure. Due to the results obtained at the automatic NO_2 monitoring location within Huntingdonshire, no distance correction was required during 2022.

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

Figure D.1 – Map of Non-Automatic Monitoring Sites around the district - overview

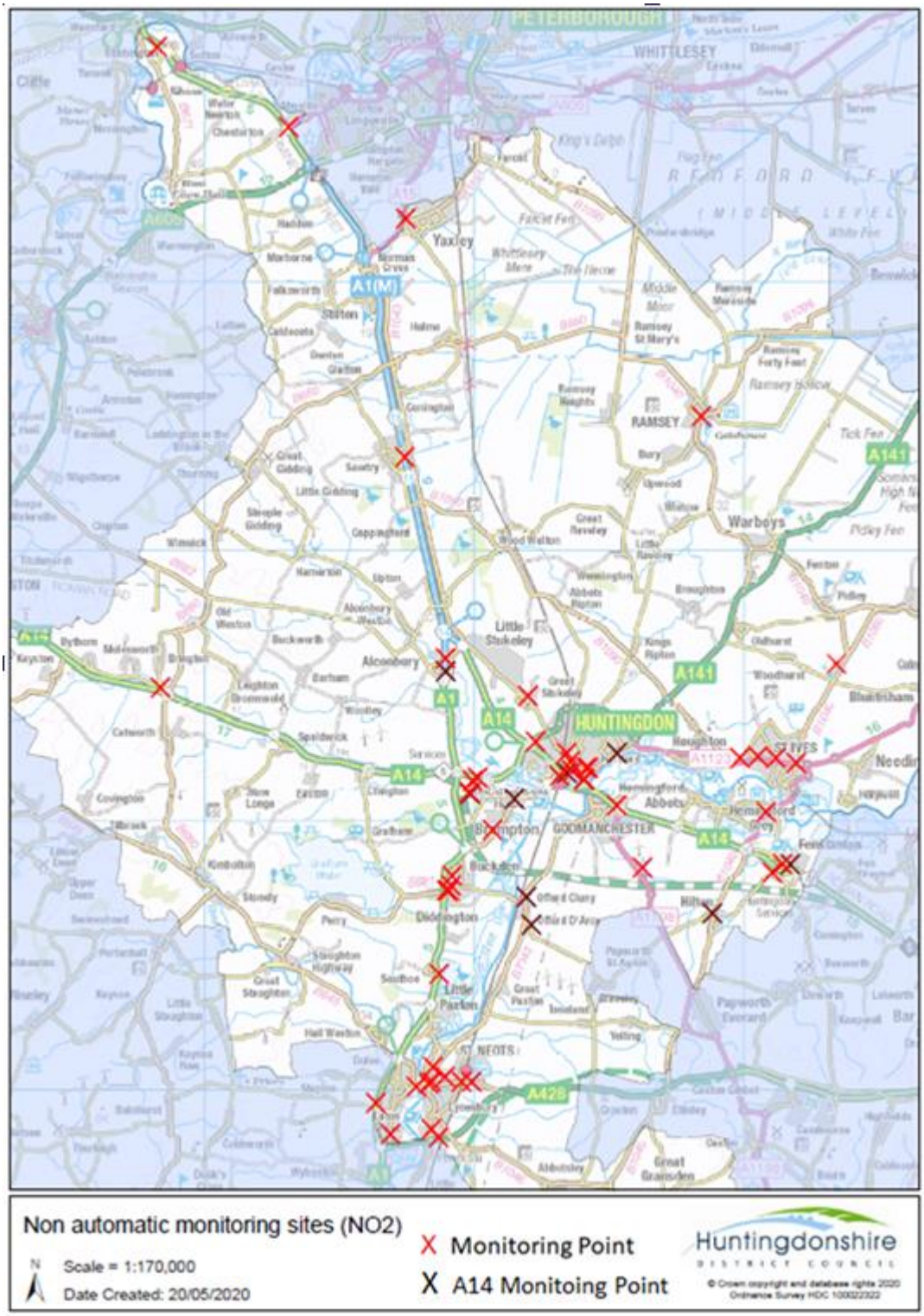


Figure D.2 – Map of Huntingdon AQMA Diffusion Tube NO_2 monitoring locations - overview

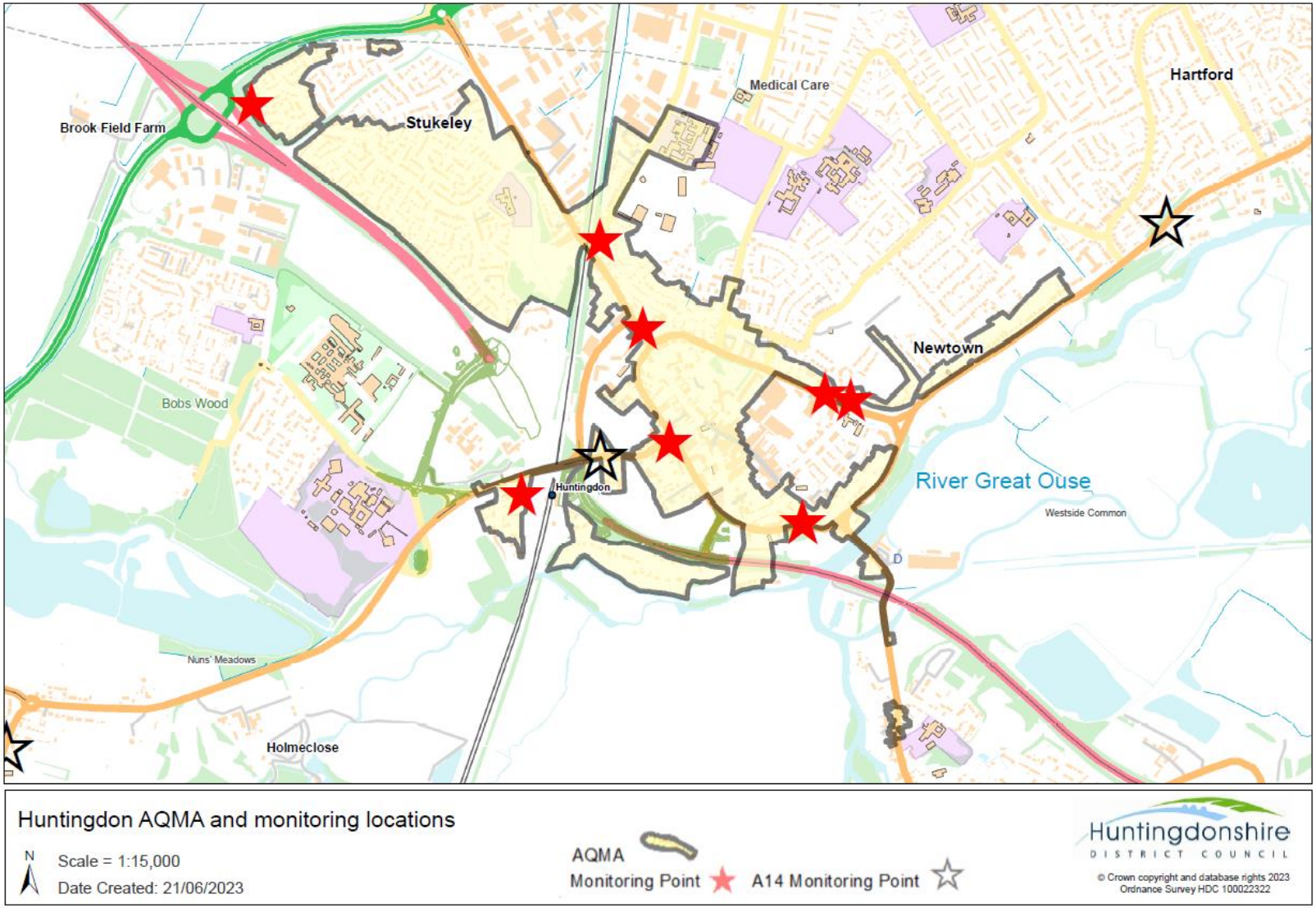


Figure D.3 – Map of Huntingdon AQMA Diffusion Tube NO_2 monitoring locations

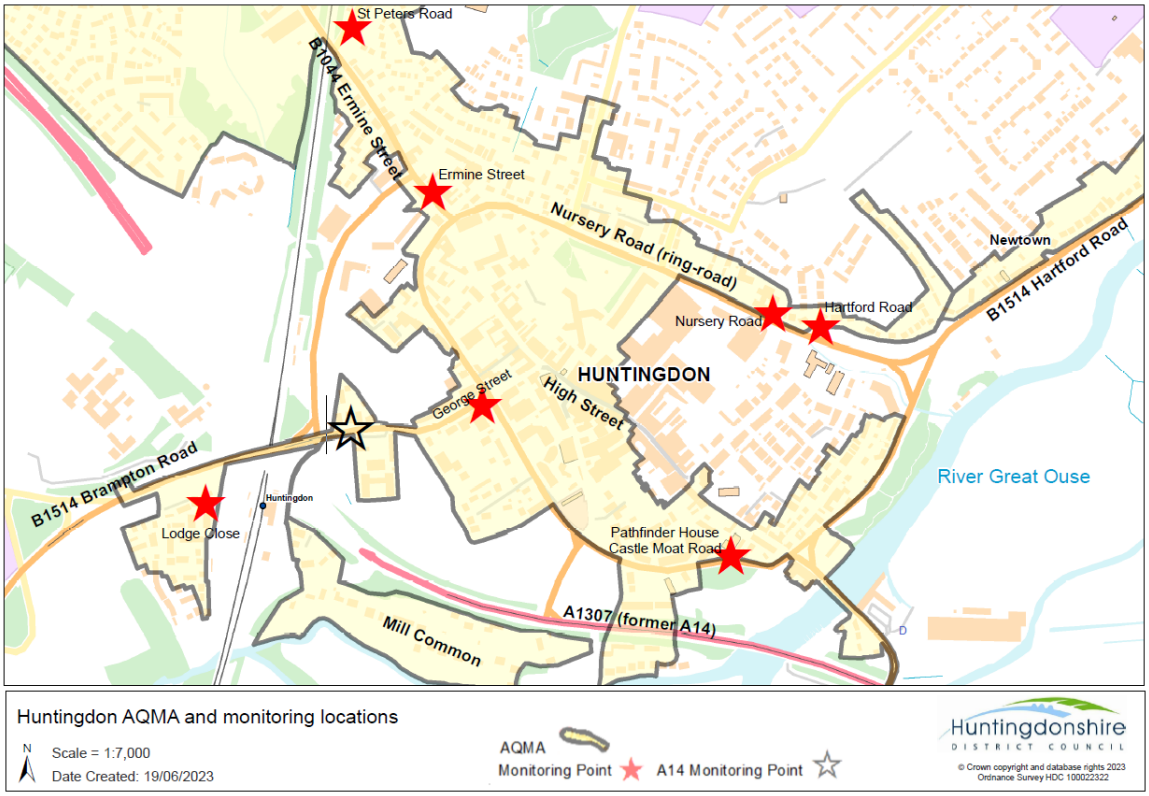


Figure D.4 – Map of Huntingdon AQMA Diffusion Tube NO_2 monitoring locations

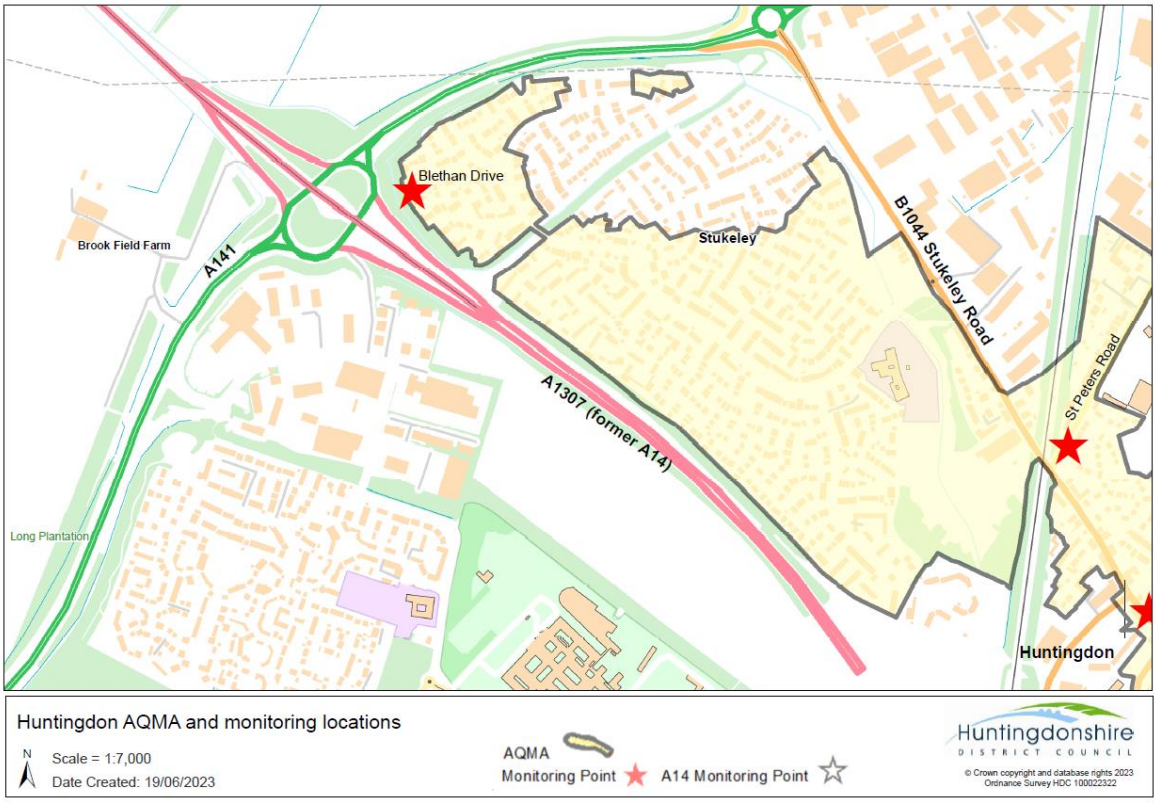


Figure D.5 – Map of Huntingdon AQMA Diffusion Tube NO_2 monitoring locations

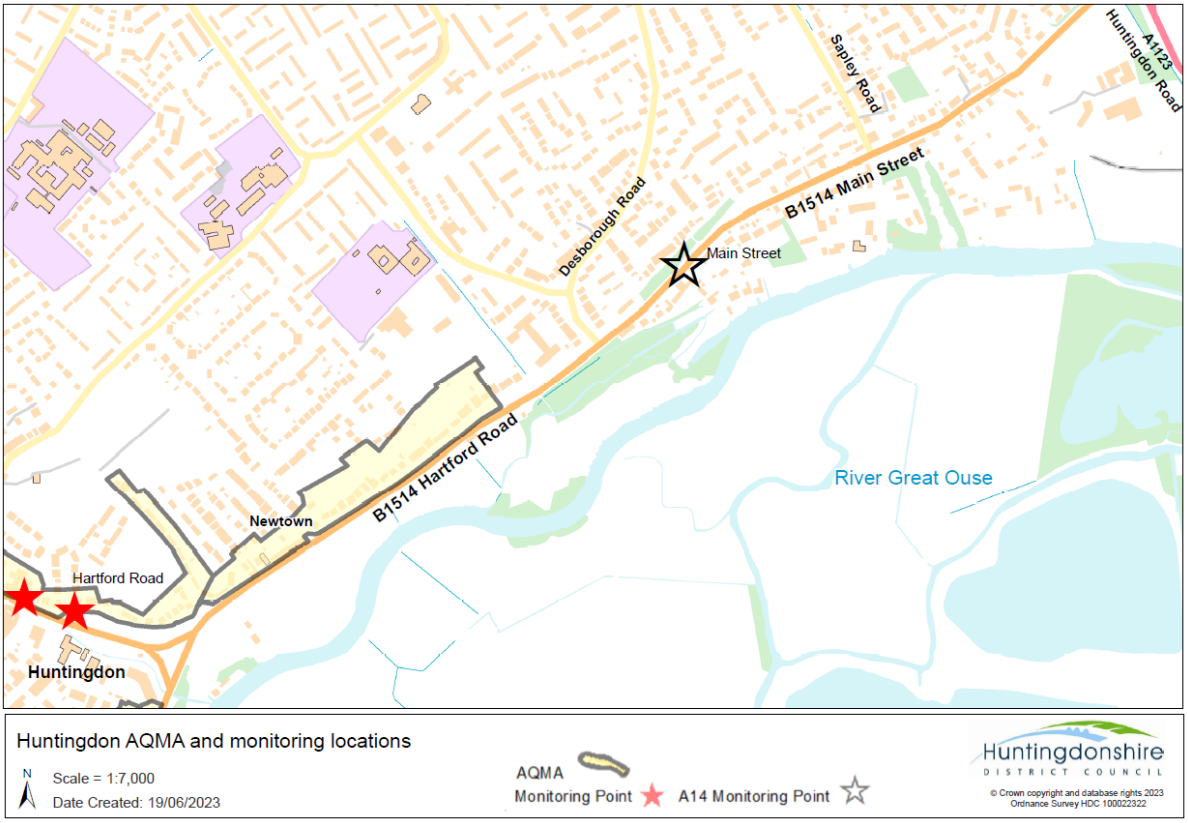


Figure D.6 – Map of St Neots AQMA Diffusion Tube NO_2 monitoring locations - overview

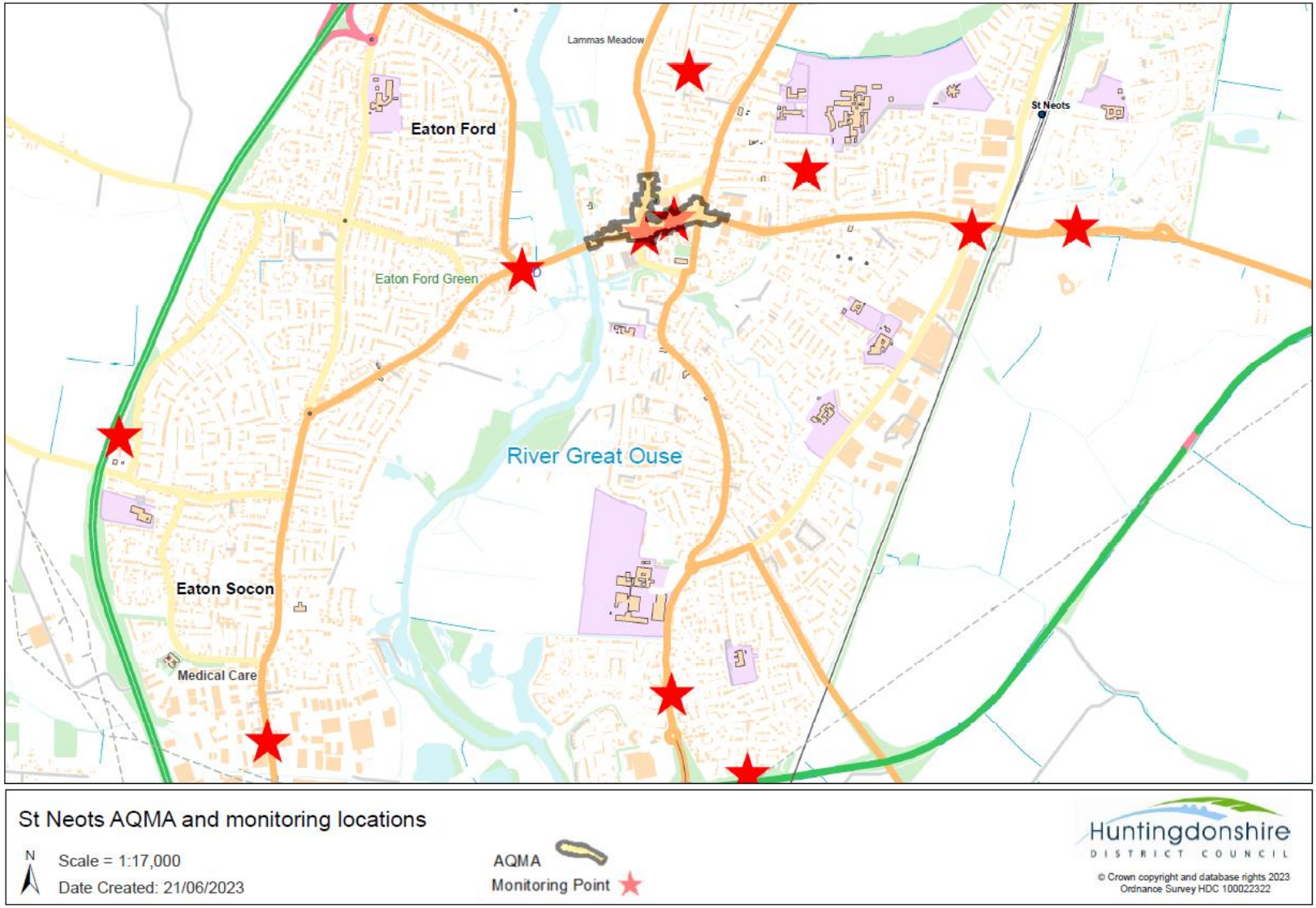


Figure D.7 – Map of St Neots AQMA Diffusion Tube NO_2 monitoring locations

Figure D.8 – Map of St Neots AQMA Diffusion Tube NO_2 monitoring locations

Figure D.9 – Map of St Neots AQMA Diffusion Tube NO_2 monitoring locations

Figure D.10 – Map of Fenstanton AQMA Diffusion Tube NO_2 monitoring locations - overview

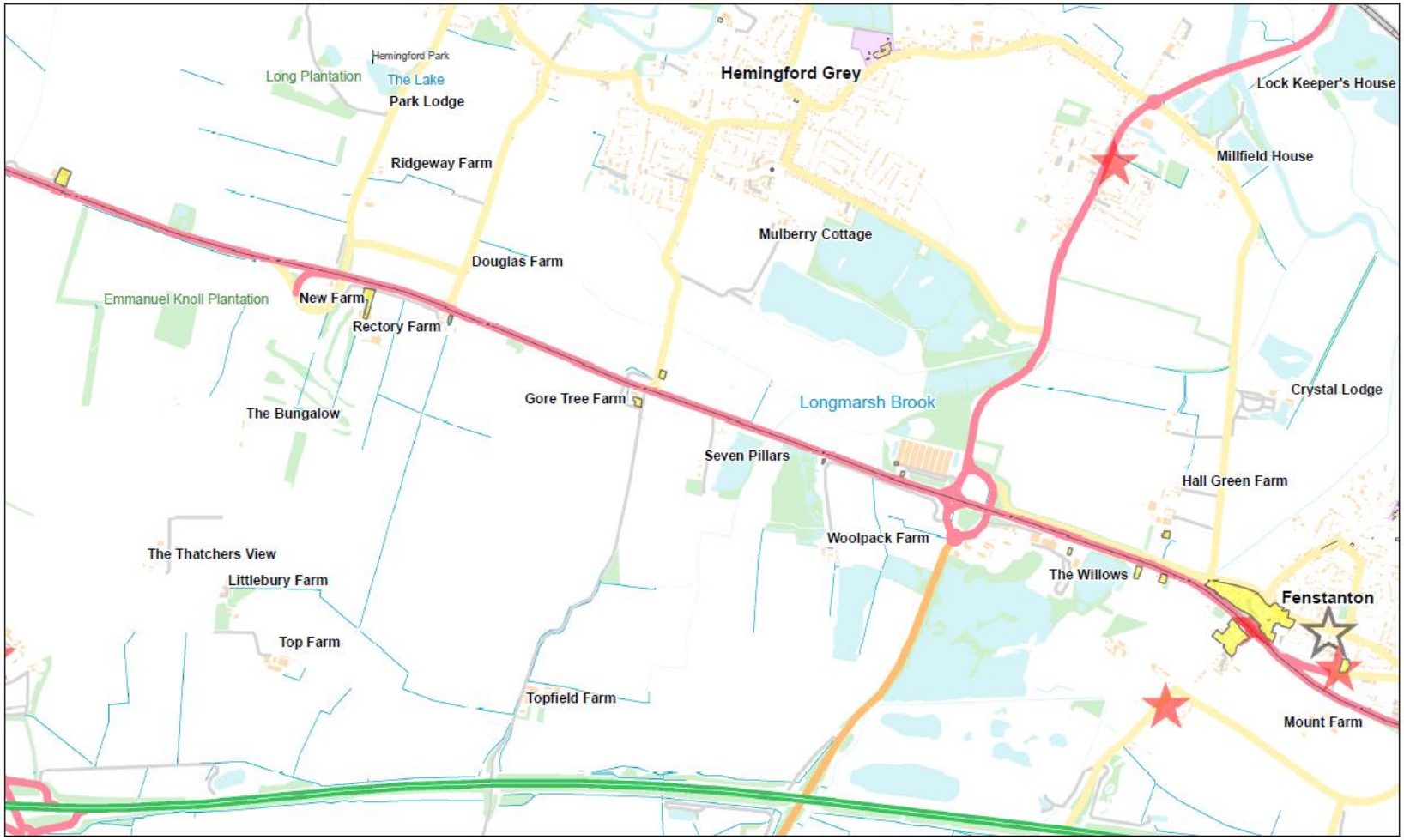


Figure D.11 – Map of Fenstanton AQMA Diffusion Tube NO_2 monitoring locations

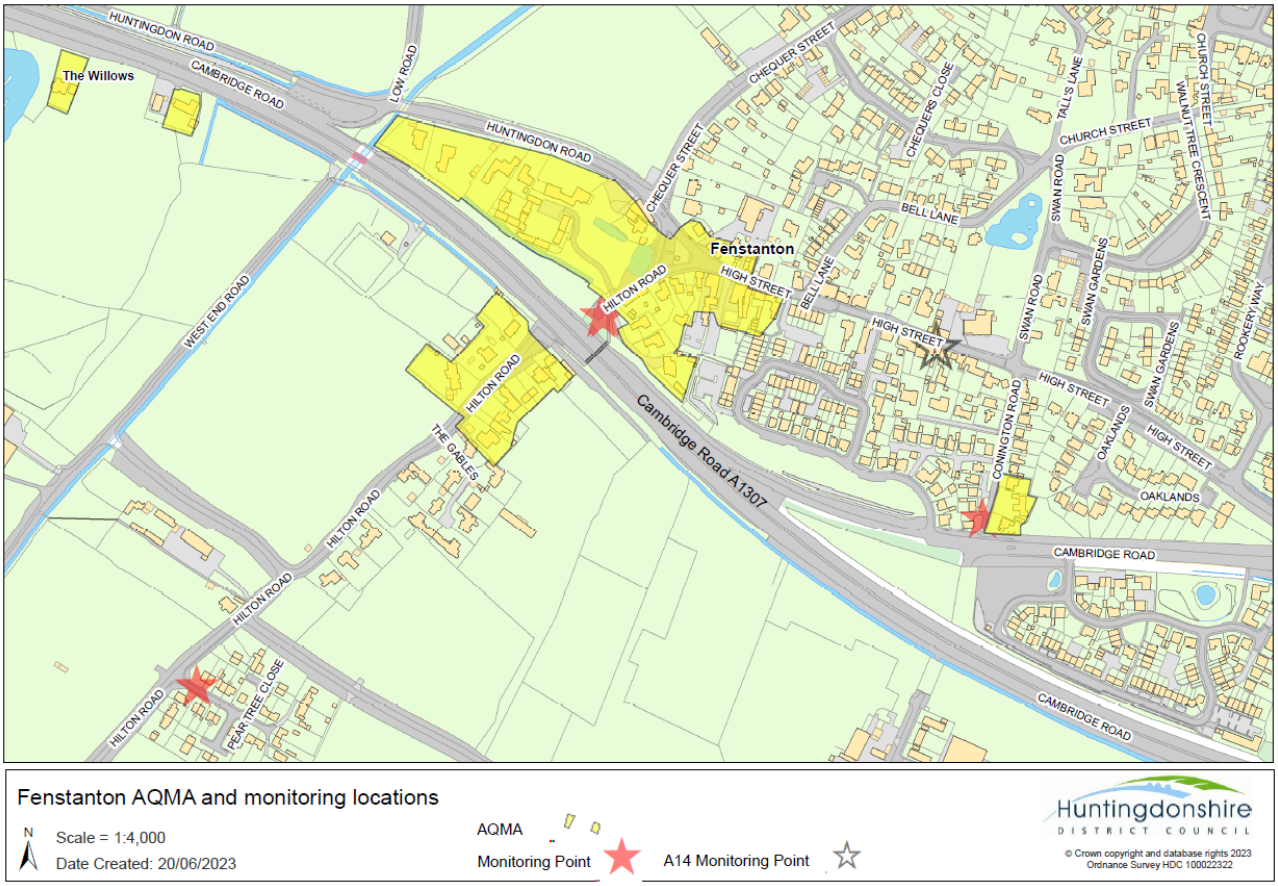


Figure D.12 – Map of Brampton AQMA Diffusion Tube NO_2 monitoring locations - overview

Figure D.13 – Map of Brampton AQMA Diffusion Tube NO_2 monitoring locations

Figure D.14 – Map of Brampton AQMA Diffusion Tube NO_2 monitoring locations

Figure D.15 – Map of Brampton AQMA Diffusion Tube NO_2 monitoring locations

Figure D.16 – Map of the Automatic NO_2, PM_{10} and $PM_{2.5}$ monitoring location

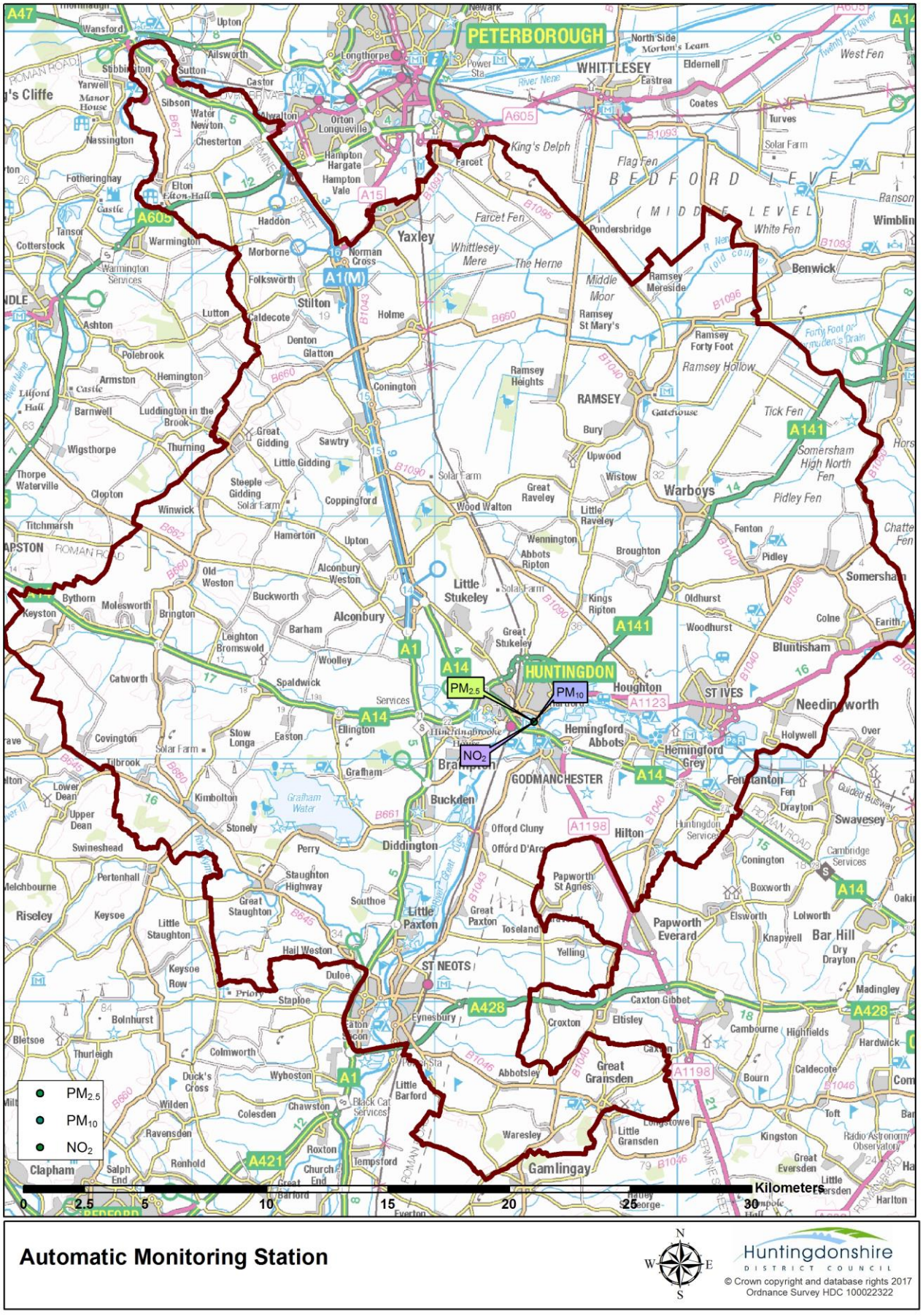
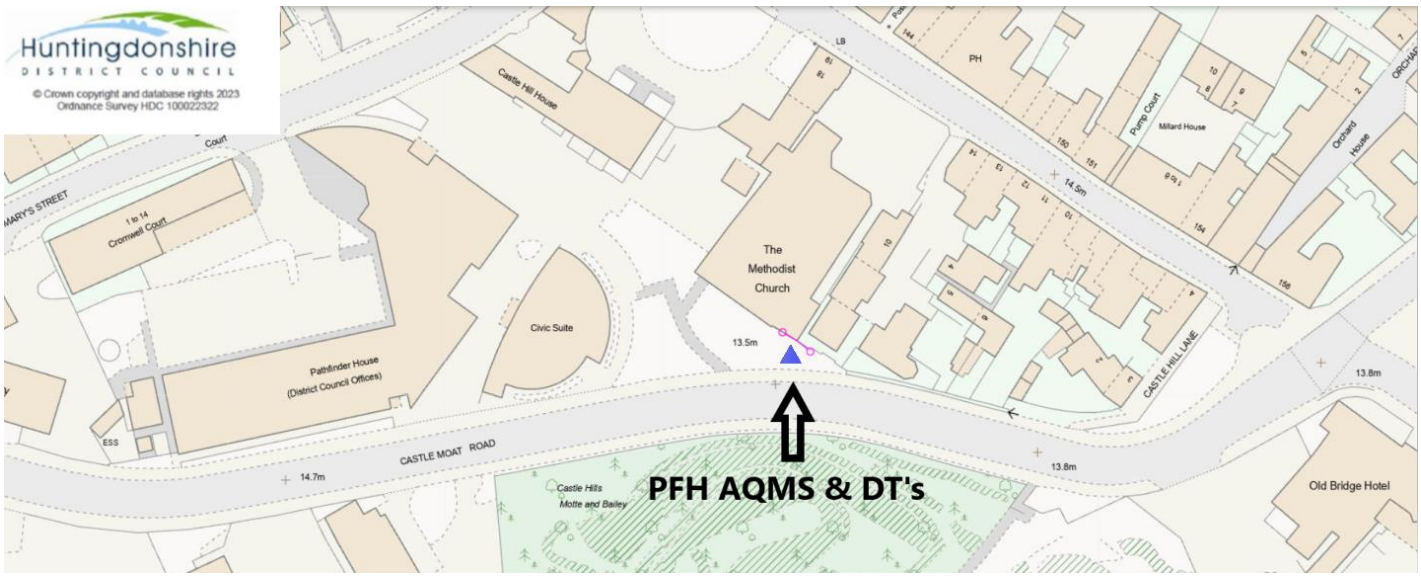


Figure D.17 – Map of the Automatic NO_2, PM_{10} and $PM_{2.5}$ monitoring location

Figure D.18 – Map of the Automatic NO_2, PM_{10} and $PM_{2.5}$ and PFH diffusion tubes monitoring location



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[9]

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

[9] 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.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.