
Doncaster Council

# 2022 Air Quality Annual Status Report (ASR)

## In fulfilment of Part IV of the Environment Act 1995

## Local Air Quality Management

Date: July 2022

| Information | Doncaster Council Details |
|---|---|
| **Local Authority Officer** | Chris Shields |
| **Department** | Pollution Control |
| **Address** | Civic Office, Waterdale, Doncaster, DN1 3BU. |
| **Telephone** | 01302 737573 |
| **E-mail** | Pollution.control@doncaster.gov.uk |
| **Report Reference Number** | DONC-ASR-2022 |
| **Date** | 12h July 2022 |

# Executive Summary: Air Quality in Our Area

## Air Quality in Doncaster

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

There are eight areas of poorer air quality in Doncaster, referred to as “Air Quality Management Areas” (AQMAs). These AQMAs have been declared due the breaching (or exceedance) of legal air quality standards, set by central government, for the polluting gas nitrogen dioxide ($NO_2$). Nitrogen dioxide gas is strongly associated with traffic emissions, and consequently our AQMAs are located adjacent to busy roads within the Borough. In common with other UK towns and cities, our AQMAs have been declared due to exceedance of the annual mean objective for nitrogen dioxide, whilst one of our AQMAs (AQMA 7, Hickleton) has also been declared for exceedance of the one-hour mean objective for nitrogen dioxide gas.

The AQMAs are located near busy roads in the following areas; Town Centre along A630 Church Way; Balby A630; Hyde Park along Carr House Road A18; Bawtry Road M18/A638; Conisbrough A630/Low Road; Skellow, adjacent to the along the A1, and Hickleton and Marr on the A635. An action plan is in place bringing forward measures to

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

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2021

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

work towards reducing emissions and ultimately achieving compliance with the objectives for nitrogen dioxide gas.

A general decline in nitrogen dioxide concentrations over the last decade has occurred in many locations across the Borough, particularly so for the years 2019 to 2021, however parts of the Borough continue to exceed. Lower nitrogen dioxide concentrations in 2020 and 2021 reflect the impact of reduced traffic levels in the Borough due to the various pandemic lockdowns, resulting in fewer emissions from traffic. It is currently uncertain how longer term changes (if any) in driving habits due to the pandemic (more home working for instance); will impact on further reducing traffic emissions in future years, however roadside nitrogen dioxide concentrations in Doncaster in 2020 and 2021 were similar compared to previous years.

This makes prediction of air pollution concentrations within the Borough more challenging and subsequent decisions to revoke (remove) any of our AQMAs.

No other airborne pollutants breach legal air quality standards in the Borough; however, we are aware of the health impact of airborne fine particles ($PM_{10}$ and $PM_{2.5}$ particles), which is monitored throughout the Borough and Government proposals to introduce a stricter standard for $PM_{2.5}$ particles in due course. Monitoring of $PM_{2.5}$ particles in Doncaster will highlight progress on meeting legal $PM_{2.5}$ standards in future years.

During 2021, there were no new major sources of pollution in Doncaster likely to have significant impact on meeting legal air quality standards or objectives. New development in the Borough are however expected to mitigate emissions where appropriate, in line with current best practice, to prevent any deterioration in air quality.

In 2021, the Council embarked on an upgrade programme of its continuous air quality monitoring stations, which provide near real time information on the quality of the air we breathe in Doncaster. This work will be completed in 2022 and 2023 with the data being published on the Council's website.

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Progress on implementing actions within the Councils' Air Quality Action Plan has been significantly impacted by the Covid-19 pandemic and lockdown across South Yorkshire. While many actions were delayed during 2020, several actions within the plan were revived in 2021. Furthermore, the lessons learnt from undertaking temporary emergency active travel (cycling and walking) actions during the lockdowns, such as temporary bike lanes have been used in taking forward active travel changes more permanently.

Working with our neighbouring Council, Barnsley MBC, we have completed Defra air quality grant funded projects, these being an eco-driver training scheme for local drivers who use their cars for business purposes and a School Streets project, designed to raise awareness of air pollution around schools and actions to be taken to improve air quality in these areas.

The priority for the Council is to continue to implement the measures in the air quality action plan and identify further measures that could bring forward compliance with legal standards, in particular facilitating the change to cleaner vehicles and active travel, as well as improving air quality in the Borough as a whole.

In 2021, we stated that the action plan will be renewed in 2022 and will incorporate any identified measures needed for the new AQMA at Marr. This revision has been delayed as we wait for further guidance from Central Government on how to improve local air quality, following the passing of the Environment Act 2021, which will introduce extra duties to deliver local air quality management. Furthermore, this provides opportunity to align the revised plan with other Council strategies plan; in particular, the Councils' Environment and Sustainability Strategy 2020-2030.

We are currently in the process of upgrading our continuous monitoring stations in 2022 in order to be able to monitor $PM_{2.5}$ concentrations and provide real time air pollution data to

[5] Defra. Clean Air Strategy, 2019

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

our residents via the Council website. Completion of the upgrade in 2022 and 2023 will be a priority for ourselves.

Securing continuing funding for actions within the Action Plan remains a risk to implementation of these actions. Furthermore, the potential development of Clean Air Zones (CAZs) within the wider region outside of Doncaster is ongoing. The impact of these CAZs (should these be implemented) is still unknown and one the Council is monitoring.

## Conclusions and Priorities

Following the pandemic and subsequent lockdowns in 2020, nitrogen dioxide concentrations declined significantly at roadside and exceedances of legal air quality standards occurred in only two of the Borough's AQMAs. Nitrogen dioxide data from 2021 reveals that concentrations have not returned to pre-pandemic levels. Therefore, although 2021 data are slightly raised compared to 2020, the longer-term trend continues to be downwards in the Borough.

This annual status report has been complied using the latest data gathered throughout 2021. As with 2020 data reported in last year's annual status report, some lockdown of traffic during in 2021 makes it challenging to draw any firm conclusions on whether Doncaster's AQMAs should be revoked at this point. Further monitoring will continue in 2022, and it is hoped that additional monitoring data collected in 2022 will assist in determining the impact of longer-term traffic trends post pandemic lockdowns will have on air pollution concentrations in the Borough.

At this time, all eight AQMA designations will therefore remain in place, due to the uncertainties with future traffic flows. No developments from 2021 have been identified that will significantly affect air quality in the Borough. Doncaster Council will prioritise those measures that can be implemented and completed within 2022.

A new Plan is required for AQMA7A, Doncaster Council will use this opportunity to renew the existing plan in 2022 and 2023 and collate measures across the Borough that will work towards improving air quality.

The challenge in 2022 remains obtaining the funding and resources necessary to identify further measures so that Doncaster Council can achieve compliance with the objective in all of the Borough's AQMAs in the shortest possible time.

## Local Engagement and How to get Involved

Doncaster Council publishes the Annual Status Report and Air Quality Action Plan on its website[7]. We publish daily air quality information on our website as a way to inform residents, schools and businesses of the current levels of air quality[8]. We also engage with a small number of Parish Councils and residents on air quality matters specific to their areas.

A steering group, made up of departments from across the Council, oversees the production and implementation of the Air Quality Action Plan. This group will be widened out to involve other stakeholders as necessary. The Council currently engages with South Yorkshire Passenger Transport Executive and as such bus operators, the Sheffield City Region and individual South Yorkshire Councils and to some extent National Highways. Doncaster Council is also an active member of the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG).

Local residents, businesses and organisations are key to improving air quality. Individuals can improve air quality by considering the mode of travel they choose carefully, considering purchasing vehicles with the best environmental benefits where possible, sharing knowledge and reducing domestic emissions by considering the impact of choices of heating on the local environment.

Further information can be found online at Doncaster Council or through the contact details at the front of this report.

## Local Responsibilities and Commitment

This ASR was prepared by the Regulation and Enforcement team of Doncaster Council: with the support and agreement of the following officers and departments:

Kerry Perruzza (Transportation Unit), Richard Speight (Transport Services), Caroline Temperton (Public Health), Lisa Croft (Policy, Insight and Change), Richard Smith (Sustainability Unit).

This ASR has been approved by:

[7] https://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public

[8] https://www.doncaster.gov.uk/services/environmental/air-quality-and-pollution-control

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

If you have any comments on this ASR please send them to Chris Shields at:

Doncaster Council, Pollution Control, Civic Office, Waterdale, Doncaster, DN1 3BU.

01302 737573

pollution.control@doncaster.gov.uk

# Table of Contents

## Figures



## Tables

# 1 Local Air Quality Management

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

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

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

# 2 Actions to Improve Air Quality

## 2.1 Air Quality Management Areas

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

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

- $NO_2$ annual mean (all AQMAs);
- $NO_2$ hourly mean (AQMA 7 only).

## 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 National Highways? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | Name and Date of AQAP Publication | Web Link to AQAP |
|---|---|---|---|---|---|---|---|---|
| AQMA1 | August 1st 2001 | $NO_2$ Annual Mean | An area along A630 Church Way through the town centre of Doncaster encompassing the main shopping precinct, transport interchange, college and residential properties. | NO | 53 | 35 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA2 | August 1st 2001 | $NO_2$ Annual Mean | An area along the A630 from Balby to the A1 at Warmsworth encompassing residential properties. | YES | 53 | 40.8 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA3 | August 1st 2001 | $NO_2$ Annual Mean | An area encompassing residential properties | NO | 43 | 32.9 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | along the A18. | | | | | |
| AQMA4 | June 1st 2003 | $NO_2$ Annual Mean | An area encompassing a residential estate following the M18 where it crosses the A638. | YES | 43 | 30.6 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA5 | April 1st 2012 | $NO_2$ Annual Mean | A residential area along the A630 in Conisbrough including the junction with Low Road. | NO | 49 | 37.1 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA6 | December 1st 2013 | $NO_2$ Annual Mean | A residential area along the A1. | YES | 51 | 31.5 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA7 | February 1st 2015<br><br>February 1st 2015 | $NO_2$ Annual Mean<br><br>$NO_2$ 1-Hour Mean | A village with residential properties along the A635. | YES | 86 | 55.2 | Doncaster Air Quality Action Plan 2018 | http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public |
| AQMA7A | August 3rd 2020 | $NO_2$ Annual Mean | A village with residential properties along the A635. | YES | 38 | 30.4 | No action plan in place – to be considered in forthcoming revision of the Action Plan | - |

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

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

## 2.2 Progress and Impact of Measures to address Air Quality in Doncaster

Defra's appraisal of last year's ASR concluded (our subsequent response in **bold**):

*The following comments must be addressed before the report can be accepted:*

1. *Table A.4 would benefit from a consistent approach to missing data. Some cells are left blank, some contain a '-' and some have Ceased written in them.* **This has been rectified in this ASR with use of "-" in all cases**
2. *The Excel spreadsheet submitted does not match the ASR for tables A5, A6 and A7.* ***This is grounds for the ASR to be rejected*** *and will need be revised before this can be accepted.* **This has been rectified in this ASR – the spreadsheet tables match the ASR for tables A5, A6 and A7.**
3. *In Table A.6 the data capture for CM2 is noted as 49.8%. On page 53, data capture is listed as 46%. The details of annualisation are presented in Table C.1, rather than Table C.2 reported on p53.* **Noted**

*The following comments are designed to help inform future reports.*

1. *$NO_2$ concentrations in AQMAs 3 and 4 have demonstrated long term compliance with the annual mean objective. For AQMA 4, additional monitoring was implemented in 2020 and will be reported on in next year's ASR. Even though AQMA 3 has shown all sites have been compliant and below the objective at receptors, this monitoring will remain in place due to the implications of the COVID-19 pandemic on the data. This conclusion is supported.* **This report will demonstrate that the 2021 data set is similar to the 2020 data set when the pandemic and subsequent lockdown impacts were at their most pronounced.**
2. *DMBC continue to compare their local bias adjustment factors to local factors from nearby Councils, demonstrating the Council are questioning if their local factor is representative. This approach is encouraged for future ASRs.* **Again, we have compared our local bias adjustment factor against those elsewhere in South Yorkshire (all South Yorkshire local authorities used the same analytical laboratory and analytical technique in 2021).**
3. *The Council have provided a good discussion of $NO_2$ trends within each AQMA and outside of the AQMAs. The Council have demonstrated an active engagement with air quality within their AQMAs and are continually reviewing the status of their AQMAs. They have also noted the impact of COVID-19 lockdowns has had upon their monitoring in detail. This is commended.*

4. *No action plan is currently in place for AQMA 7A, declared in 2020. It is understood that this is due at the end of 2021.* **There will be revision of Action Plan in 2021 following the passing of the Environment Act in 2021 and subsequent LAQM consultations within 2022.**
5. *Overall the Council have provided a good and detailed ASR. They play an active role in monitoring air quality within the borough and in the management of their AQMAs. The Council are encouraged to continue their good work.*

Doncaster Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Eleven measures are included within Table 2.2, with the type of measure and the progress Doncaster Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

We reported in our 2021 ASR that key measures were delayed due to resource issues and the need to adhere to lockdown rules during Covid-19; however, some emergency funding related to active travel had been implemented with the development of then temporary schemes.

Consequently, some of the schemes listed in our 2021 ASR have now been developed as permanent schemes, subsequently implemented in 2021. We list and discuss these below:

- North Bridge/Trafford Way walking improvements at a key pinch point. This has now been implemented permanently. This is within AQMA 1.
- The Conisbrough to Warmsworth Cycle Superhighway and the Balby Quiet Way scheme were implemented in 2021. AQMA 5 lies within the Conisbrough to Warmsworth cycle superhighway running alongside the A630 between Conisbrough and Warmsworth – this being funded using DfT active travel phase 2 funding. This will be finally completed this year and will then connect with the “Balby Quiet Way” scheme A630 within AQMA 2, which has resulted in kerb extension and signposting to facilitate more cycling and waking, creating an enhanced active travel route to the City centre. These schemes should assist with modal shift away from the car and result in some emission reduction.
- In 2021, the City centre has been enhanced by an approximately 50 additional cycle parking spaces.

Implementation of actions is still affected by the impact of the pandemic and subsequent lockdowns. For instance. The first three months of 2021 were still subject to these lockdowns. Whilst 2021 has seen a return to implementation of actions, it has been difficult to determine suitable indicators due to lack of data as a consequence of the break in collection of scheme related data during the pandemic.

This issue will however be addressed when we revise the action plan in 2021.

Furthermore, we stated in last years' ASR that we intended to revise the Council's Air Quality Action Plan (AQAP) in 2022. Following passing of the Environment Act in autumn 2021 however, and subsequent Local Air Quality Management LAQM consultations in 2022, we have therefore taken the decision to delay revision of the AQAP. Delay in revision will ensure that we can take account of any changes in the subsequent LAQM process, in particular relating to drafting of AQAPs. The revised AQAP will also include specific actions for our latest AQMA – 7A along the A635 in the village of Marr. Subject to the issuing of revised guidance following the passing of the Act and subsequent LAQM consultations, we hope to revise the plan in 2023.

As reported last year, measures six and twelve have now been removed from the plan (measure seven being removed from the plan previously).

As reported last year, the now published Doncaster Council Environment Strategy will play a key role in forming future measures in the AQAP.

Doncaster Council's priorities for the coming year are to revise the air quality action plan in light of national developments (passing of the Environment Act 2021 and subsequent LAQM consultations), along with the continuation of those measures which restarted in 2021 after the pandemic and lockdowns. In addition, the wider Environment and Sustainability Strategies will continue to play a key role in scaling up efforts to improve air quality and capitalise on co-benefits with the Climate and Biodiversity Emergency declarations.

The principal challenges and barriers to implementation that Doncaster Council anticipates facing are funding and resource issues along with the currently unknown impacts of Covid-19 and ongoing Clean Air Zone developments in the wider region, such as continuing work in Sheffield and elsewhere in Yorkshire.

Doncaster Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA3, AQMA4 and AQMA7A, subject to further evidence regarding post pandemic traffic flows in future years.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Doncaster Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMA1, AQMA2, AQMA5, AQMA6 and AQMA7, again subject to further evidence regarding post pandemic traffic flows in future years.  AQMA7 in particular continues to show significant exceedance of the annual mean objective.

## Table 2.2 – Progress on Measures to Improve Air Quality

| Measure No. | Measure | Category | Classification | Year Measure Introduced | Estimated / Actual Completion Year | Organisations Involved | **Funding Source** | **Defra AQ Grant Funding** | Funding Status | **Estimated Cost of Measure** | Measure Status | Reduction in Pollutant / Emission from Measure | Key Performance Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ECO stars Fleet Recognition Scheme | Vehicle Fleet Efficiency | Fleet efficiency and recognition schemes | 2010 | 2021 | Doncaster Council and Barnsley Council. | Air Quality Grant | Yes | Fully funded | £100k - £500k | Completed | Low | No. of scheme members. | No progress during 2021. See explanatory text earlier | Lack of continuous funding for scheme remains an issue. No current funding identified which may result in cessation of the scheme. Should this happen, this action will be removed |
| 2 | Air Quality Planning and Technical Guidance | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2017 | Ongoing | Doncaster Council | Doncaster Council | No | Not Funded | < £10k | Implementation | Low | % of applications with air quality mitigation included. | All relevant applications now screened with this guidance. | Continues to be used on 100% applications that Pollution Control are consulted on. In 2021, the Council started drafting a Supplementary Planning Document including air quality. The Councils' underpinning AQ and Planning guidance was revised in 2021 to include updated guidance on the provision of electric vehicle charge points for new development |
| 3 | Clean Air Plans | Promoting Low Emission Transport | Low Emission Zone (LEZ) | 2017 | Ongoing | Doncaster Council | None | No | Study funded | Study £10k to £50k | Planning | High | To be determined | Funding identified in 2021 for emission profile study in AQMA 7 in 2022 with the view to | To be reported in next year's ASR, emission profile study being undertaken in 2022. |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | inform future actions | |
| 4 | Sustainable Travel Access Fund Projects | Promoting Travel Alternatives | Promotion of active travel | 2017 | Ongoing | Doncaster Council and South Yorkshire Mayoral Combined Authority | DfT | No | Funded | £150k (Capability Fund, revenue) | Implementation | Low | -Dr Bike Services - Cycle Training - Cycle Package, all implemented as part of an ongoing – annual programme | Creation of Doncaster Active Travel hub in 2021 | From March 2021, these DfT funded projects came under the Capability Fund. We will review all active travel measures within the revision of the Air Quality Action Plan in 2023. |
| 5 | Future Transport (Fleet) Policy | Promoting Low Emission Transport | Public Vehicle Procurement - Prioritising uptake of low emission vehicles | 2017 | 2022 | Doncaster Council | Doncaster Council | No | Partially Funded | £100k - £500k | Implementation | Medium | % Fleet as Diesel/ Petrol/ ULEV/ Hybrid. | Fleet of electric pool vehicles now available for use across Council Departments and a successful planning approval for solar EV car park. | Funding issues going forward and current working from home policy changes may affect this measure. Embedding and uptake of the authorities Energy Savings Trust report, the report has been cascaded to the group, however global issues have impacted on its delivery and assumptions, it does however move on and initial impacts around EV`s are pleasing with project work being carried out. |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Cycling Strategy | Promoting Travel Alternatives | Promotion of cycling | 2017 | Cycling Strategy approved in 2019, ongoing actions as a consequence | Doncaster Council and South Yorkshire Mayoral Combined Authority | DfT | No | Funded | < £10k for development of the strategy. | Implementation | Low | • numbers of people cycling<br><br>Baseline data prior to schemes, indicator reported on conclusions of schemes | The Council's Active Travel Alliance oversees implementation of the Strategy. | We will address the Strategy within the revision of the Air Quality Action Plan in 2023. Current actions to run until March 2023. A total of ~ £24 million from TCF, Active Travel Funds and Emergency Fund to deliver these infrastructure |
| 9 | Quality Bus Partnership | Promoting Low Emission Transport | Other | 2017 | 2022, now completed | Doncaster Council, SYPTE and Bus Operators | Doncaster Council and Private Business | No | Funded by bus operators, for upgrade of the fleet | < £10k | Completed | Low | % of higher Euro engine specifications in the fleets | 2021 - successful DfT Zebra (Zero Emission Bus Regional Area) South Yorkshire bid including routes along A630 Balby Road - AQMA 2. Delivery and Implementation in 2022 to 2023. Also £1.9 million "Gainshare" EV bus trial successful bid in 2021. Implementation in next 2 years | Bus fleets nationally as well as locally are going through a period of transition following the pandemic. This action will be considered further in the forthcoming AQAP revision, in light of current circumstances. |
| 10 | Parking Strategy | Policy Guidance and Development Control | Other policy | 2017 | Completed, Parking Strategy originally approved in 2018 | Doncaster Council | Doncaster Council | No | Funded | < £10k for development of the strategy, further funding for any subsequent schemes | Planning | Low | Six EV chargers in Council operated car parks. | Car parking health check completed. Minor increase in EV charging units in Council Car Park and further implementation being considered. | The Council will have to review the Strategy at some point following the pandemic and its impact on ongoing patronage of car parks etc. This will be considered in the revision of the AQAP. |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Walking Strategy | Alternatives to private vehicle use | Other | 2017 | Walking Strategy approved in 2018, ongoing actions as a consequence | Doncaster Council and South Yorkshire Mayoral Combined Authority | DfT | No | Funded | < £10k for cost of development of the Strategy | Implementation | Low | TBC | The Council's Active Travel Alliance oversees implementation of the Strategy. Activity still delayed due to covid-19. 14 Community street audits completed working with community groups. These will be considered in due course. | Majority of activity has now paused due to COVID however, some elements considered in the COVID emergency fund (ATF1). This strategy and subsequent schemes will be addressed within the revision of the Air Quality Action Plan in 2023 |
| 13 | Procurement | Policy Guidance and Development Control | Sustainable Procurement Guidance | 2017 | 2022 | Doncaster Council | Doncaster Council | NO | Not Funded | < £10k | Planning | Medium | TBC | None | None . |
| 14 | ECO Driver Training | Vehicle Fleet Efficiency | Driver training and ECO driving aids | 2018 | 2022 | Doncaster and Barnsley Council | Air Quality Grant | YES | Funded | £10k - 50k | Implementation | Low | No. of companies & No. of drivers | Project delayed due to covid-19.Contract awarded and launch carried out in Doncaster. First sessions carried out prior to covid-19 halting the project. Altered project to online, and designed a module that can be accessed remotely. Currently launched but with limited uptake due to covid but evaluation completed in 2021 by partner authority, Barnsley Council | Evaluation submitted to Defra as part of Defra AQ grant requirement |

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

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

The Public Health Outcomes Framework indicator for Doncaster (2019) for deaths attributable to $PM_{2.5}$ stands at 5.0%, which is lower than the national average (5.1%) but higher than the Yorkshire and Humber average (4.8%).

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

- Smoke Control Orders are in place across the Borough with complaint led enforcement and screening of any relevant planning applications
- Promotion of ULEV, modal shift and active travel in the AQAP

$PM_{2.5}$ monitoring has been implemented in Doncaster for 2020 and 2021 and an expansion of monitoring into a further three sites to be rolled out gradually over the next three years. Monitoring data are discussed in Section 3 of this report.

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

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

## 3.1 Summary of Monitoring Undertaken

### 3.1.1 Automatic Monitoring Sites

Doncaster Council undertook automatic (continuous) monitoring at five Council operated sites during 2021. Two sites were not operational in 2021 (CM3 and CM4), but are being refurbished in 2022 and 2023 in order for monitoring to recommence. Furthermore, due to communications and analyser issues, no data are available from our CM7 site, with data capture for the year below 25%. We expect data capture from CM7 to be much improved in 2022. In addition to the Council operated sites, there is a Government AURN (Automatic Urban and Rural Network) continuous monitoring station located in Doncaster town centre. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The https://www.wecare4air.co.uk/ page presents automatic monitoring results for Doncaster Council, with automatic monitoring results also available through the UK-Air website.

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

### 3.1.2 Non-Automatic Monitoring Sites

Doncaster Council undertook non- automatic (i.e. passive) monitoring of $NO_2$ at sixty three sites during 2021 (with an additional three tubes co-located at CM6 for creation of our local

diffusion tube bias adjustment factor – these data are reported in Appendix C). 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. Please note, monitoring has ceased at DTs 15-20 inclusive. In order to maintain consistency with previous years' ASRs, these numbers have been retained. Consideration will be given in future to re-number our diffusion tubes.

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

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

Outside of our AQMAs there are no exceedances of the objectives where relevant exposure exists in 2021.

To confirm, all of our AQMAs were previously declared due to exceedance of the annual mean objective for $NO_2$ gas, along exceedance of the 1-hour mean objective for AQMA 7.

All the AQMAs in 2021, with the exception of AQMA 7 (A635 Doncaster Road, Hickleton) and one location in AQMA 2 (A630 from Balby to the A1 junction at Warmsworth), are below the annual mean $NO_2$ objective for the second year running. In our 2021 ASR, the reductions in concentrations were attributed to the impact of the Covid 19 pandemic and subsequent lockdown. The impact of the pandemic on pollutant concentrations was discussed in detail within our 2021 ASR. Reduced $NO_2$ concentrations when compared to the last pre-pandemic year of 2019 for 2021 show that concentrations of this gas have not returned to broadly pre-pandemic levels.

As reported in our 2021 ASR, annual mean $NO_2$ concentrations within AQMAs 1, 3 and 4 have for some time been below the objective at long-term sites and therefore further monitoring studies have been carried out since 2018 for two of these areas and monitoring implemented in 2020 for the third area (AQMA 4).

The data comprises DT60-64 for AQMA 1, DT65-67 for AQMA 3 and DT68 and DT69 for AQMA 4.

In AQMA 1 (A630 Church Way in Doncaster centre), monitoring shows compliance with the objective in 2021, replicating the situation in 2020. Previous years' data (2018 and 2019) have however shown exceedance of the annual mean objective.

2021 annual mean data within AQMA 3 (A18 Carr House Road) data has continually shown that all sites are now compliant and below the objective at receptors, in most cases well below.

The monitoring will remain in place to establish whether this AQMA can be revoked in future. Typically, three years data would be sufficient to indicate that an AQMA could be revoked. Due to the impact of the pandemic in 2020 on traffic flows however, and again to some extent in 2021, we intend to continue monitoring before proceeding with a detailed assessment with the aim of eventual revocation of the AQMA.

2020 and 2021 annual mean $NO_2$ data within AQMA 4 (M18 where it crosses the A638 at Bessacarr) shows these concentrations well below the objective, confirming other longer-term data in this area. Monitoring will continue for the next two years to identify whether compliance is maintained over the period, particularly as there is significant development forecast around this location in future years.

In conclusion, the above discussed AQMAs remain valid for the current time, but will continue to be reviewed, with a view to revoking those that continue to comply with the objectives.

For the second year running, non-automatic monitoring identified no locations where annual mean concentrations were above 60 µg/m$^3$. Data from 2021 indicates therefore, that it was unlikely to have been any exceedance of the hourly objective in any of our AQMAs for this year, including AQMA 7, Hickleton.

There were no exceedances of the hourly objective recorded by the automatic monitoring stations at any point over the last six years.

Long-term trend graphs, Figure A.1. to A.8. have been included in Appendix A and continue to present an overall downward trend of annual mean nitrogen dioxide concentrations in Doncaster.

We note the impact the pandemic in 2020 on these trends (marked decrease in concentrations due to the lockdowns), but also note the similarly reduced concentrations in 2021, when compared to pre-pandemic concentrations in 2018 and 2019.

The long-term monitoring data outside of our AQMAs also continues to indicate a clear downward trend.

The most striking aspect of our 2021 continuous and diffusion monitoring data is the similarity to 2020 data, when the country was subject to a series of lockdowns, indicating that concentrations have not returned to 2018 and 2019 concentrations. This is significant, as this make prediction of future year concentrations more problematic, along with confidence with progressing with revocations in light of consistent meeting of the objectives.

At the time of writing of this report, we note that the Department of Transport road traffic statistics website has not been updated with the 2021 data set[9], so we cannot infer any relationship between 2021 traffic flows in Doncaster and 2021 annual mean $NO_2$ concentrations, or whether traffic flows remain below those prior to the pandemic. Clearly, however, the 2021 data suggests that further monitoring is required and nationally, further research may be required on post pandemic traffic patterns in order to give increased confidence to future year concentrations, even taking account the ongoing impact of replacing older, more polluting vehicles with newer, less polluting ones, with time.

[9] https://roadtraffic.dft.gov.uk/#6/55.254/-11.107/basemap-regions-countpoints

We therefore seek further guidance and advice from Defra on the above described situation, and how this will be considered within local air quality management in future years, as this has implications for future consideration of revocation of AQMAs.

It should also be noted that upgrade of the Council's continuous air quality monitoring stations is currently being undertaken in 2022, including replacement of several of our aging oxides of nitrogen dioxide gas analysers.

### 3.2.2 Particulate Matter ($PM_{10}$)

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/$m^3$.

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.

There are no recorded exceedances of the $PM_{10}$ objectives across any of the monitoring sites in Doncaster in 2021 and therefore both the annual and daily mean objectives are considered to be met within the Borough.

New $PM_{10}$ analysers have been installed at CM1 and CM5 in 2022 to replace ageing non-FDMS TEOMs, however non-FDMS data have been reported for 2021 at CM1 and CM5, with a 1.3 correction factor, following discussions with the LAQM Helpdesk. This issue is discussed further in Appendix C. The new analysers will meet Defra approved standards. Monitoring will continue but the results confirm that concentrations are within the objective. Although application of 1.3 correction factor means that the resulting data have to be treated with caution, the margin of compliance with the objectives is sufficiently large to conclude that the objectives were met in 2021 at these monitoring stations. Furthermore CM2 $PM_{10}$ data (Beat Attenuation Monitor) are similar to the CM1 and CM5 data in 2021, providing further reassurance on the application of the 1.3 correction factor to the CM1 and CM5 data.

### 3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for 2021 representing the second year of monitoring conducted in Doncaster.

### 3.2.4 Sulphur Dioxide ($SO_2$)

Continuous monitoring of $SO_2$ concentrations is not undertaken in Doncaster.

# Appendix A: Monitoring Results

### Table A.1 – Details of Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Monitoring Technique | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Inlet Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| CM1 | A18 Carr House Road, Doncaster | Roadside | 458027 | 402475 | $NO_2$; $PM_{10}$ | AQMA3 | Chemiluminescent Analyser; TEOM | 4 | 1.7 | 3 |
| CM2 | Market Place, Doncaster | Urban centre | 457669 | 403611 | $NO_2$; $PM_{10}$; $PM_{2.5}$ | AQMA1 | Chemiluminescent Analyser; BAM | 30.7 | 20 | 3 |
| CM3 | A1/A630 Grosvenor Terrace, Warmsworth | Roadside | 454964 | 400745 | $NO_2$ | AQMA2 | Chemiluminescent Analyser | 15.7 | 7.3 | 3 |
| CM4 | A638 Bawtry Road, Bessacarr | Roadside | 462278 | 400111 | $NO_2$ | AQMA4 | Chemiluminescent Analyser | 20 | 2.2 | 3 |
| CM5 | A6023 Low Road, Conisbrough | Roadside | 451438 | 398528 | $NO_2$; $PM_{10}$ | AQMA5 | Chemiluminescent Analyser; TEOM | 17 | 2.95 | 2 |
| CM6 | A1, Skellow | Roadside | 452185 | 410380 | $NO_2$ | AQMA6 | Chemiluminescent | 11 | 2.5 | 2 |
| CM7 | A635 Doncaster Road, Hickleton | Roadside | 448067 | 405300 | $NO_2$; $PM_{10}$; $PM_{2.5}$ | AQMA7 | Chemiluminescent Analyser, FIDAS | 16.6 | 4.6 | 2 |
| CM8 | A630 Cleveland Street, Doncaster | Roadside | 457249 | 402747 | $NO_2$ | No | Chemiluminescent | 13 | 2 | 1.5 |

**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) |
|---|---|---|---|---|---|---|---|---|---|---|
| DT1 | A638 North Bridge | Kerbside | 456992 | 403757 | NO2 | N | 20+ | 0.8 | No | 2.0 |
| DT2 | A638 North Bridge adj. Trafford Way | Roadside | 457308 | 403458 | NO2 | AQMA1 | 20+ | 9.2 | No | 2.0 |
| DT3 | Regent Sq. adj. South Parade | Kerbside | 457957 | 403152 | NO2 | N | 1.0 | 0.5 | No | 2.0 |
| DT4 | South Parade opp. Regent Sq. | Roadside | 457952 | 403123 | NO2 | N | 20+ | 2.0 | No | 2.0 |
| DT5 | Bennethorpe Rd | Kerbside | 459113 | 402842 | NO2 | AQMA3 | 20+ | 0.5 | No | 2.0 |
| DT6 | A638 Bawtry Rd, adj. Racecourse | Roadside | 459533 | 402768 | NO2 | N | 20+ | 6.8 | No | 2.0 |
| DT7 | A638 Bawtry Rd, | Roadside | 462933 | 399568 | NO2 | N | 20+ | 1.0 | No | 2.0 |
| DT8 | Sheep Bridge Lane, adj. A6182 | Kerbside | 462865 | 399334 | NO2 | N | 20+ | 2.3 | No | 2.0 |
| DT9 | Hurst Lane nr junc. A638 Bawtry Rd | Roadside | 463901 | 398398 | NO2 | N | 20+ | 0.8 | No | 2.0 |
| DT10 | Hayfield Lane, Auckley, nr Hurst Lane | Kerbside | 464879 | 399699 | NO2 | N | 20+ | 0.7 | No | 2.0 |
| DT11 | Queen Marys' Road, Rossington | Roadside | 461334 | 397977 | NO2 | N | 13.3 | 2.3 | No | 2.0 |
| DT12 | West End Lane, Rossington | Roadside | 461164 | 398459 | NO2 | N | 23.8 | 2.0 | No | 2.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT13 | A638 Bawtry Road, Bessacarr | Roadside | 462242 | 400134 | NO2 | AQMA 4 | 20+ | 3.5 | No | 2.0 |
| DT14 | A638 Bawtry Road, Bessacarr | Roadside | 461362 | 400777 | NO2 | N | 14.0 | 3.2 | No | 2.0 |
| DT15 | - | - | - | - | - | - | - | - | - | - |
| DT16 | - | - | - | - | - | - | - | - | - | - |
| DT17 | - | - | - | - | - | - | - | - | - | - |
| DT18 | - | - | - | - | - | - | - | - | - | - |
| DT19 | - | - | - | - | - | - | - | - | - | - |
| DT20 | - | - | - | - | - | - | - | - | - | - |
| DT21 | A630, Balby, Hall Flat Junction | Roadside | 456182 | 401254 | NO2 | AQMA2 | 6.0 | 1.5 | No | 2.0 |
| DT22 | A630, Warmsworth, nr Warde Ave. | Roadside | 455679 | 401000 | NO2 | AQMA2 | 10.7 | 2.5 | No | 2.0 |
| DT23 | A6023, Low Road, Conisbrough | Kerbside | 451457 | 398659 | NO2 | AQMA5 | 1.2 | 1.0 | No | 2.0 |
| DT24 | A6023, junction A630, Conisbrough | Roadside | 451419 | 398540 | NO2 | AQMA5 | 2.7 | 2.2 | No | 2.0 |
| DT25 | A630, Warmsworth / Waverley Ave. | Roadside | 455635 | 401002 | NO2 | AQMA2 | 20+ | 1.5 | No | 2.0 |
| DT26 | A630 High Road, Balby / Oswin Ave. | Roadside | 456130 | 401258 | NO2 | AQMA2 | 20+ | 2.5 | No | 2.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT27 | A630 Balby Rd, Hexthorpe, Belmont Av | Roadside | 457010 | 402060 | NO2 | AQMA2 | 1.0 | 1.5 | No | 2.0 |
| DT28 | A630 Balby Rd, Hex'pe, Mansfield Rd | Roadside | 457022 | 402136 | NO2 | AQMA2 | 0.3 | 3.7 | No | 2.0 |
| DT29 | Hayfield Lane, Auckley | Roadside | 464986 | 399697 | NO2 | N | 0.0 | 8.7 | No | 2.0 |
| DT30 | Gate House Lane, Auckley | Roadside | 465719 | 400140 | NO2 | N | 9.3 | 6.0 | No | 2.0 |
| DT31 | B1396 Mosham Road, Blaxton | Roadside | 466895 | 400405 | NO2 | N | 0.0 | 11.3 | No | 2.0 |
| DT32 | A614 Station Road, Blaxton | Roadside | 467174 | 400372 | NO2 | N | 0.0 | 5.5 | No | 2.0 |
| DT33 | Hatfield Moors, off A614 Thorne Road | Rural | 468620 | 404175 | NO2 | N | 20+ | N/A | No | 2.0 |
| DT34 | A614 Bawtry Rd, Hatfield Woodhouse | Roadside | 467755 | 408643 | NO2 | N | 20+ | 2.3 | No | 2.0 |
| DT35 | Hatfield Moors, Hollinbridge Lane | Rural | 469056 | 407623 | NO2 | N | 20+ | N/A | No | 2.0 |
| DT36 | Market Place Car Park, A630 | Roadside | 457615 | 403630 | NO2 | AQMA1 | 20+ | 6.3 | No | 2.0 |
| DT37 | A630 Trafford Way nr Frenchgate | Roadside | 457379 | 403460 | NO2 | AQMA1 | 4.0 | 4.0 | No | 2.0 |
| DT38 | Church Road, Stainforth | Urban Background | 464046 | 411818 | NO2 | N | 20+ | 9.3 | No | 2.0 |
| DT39 | Howden Avenue, Skellow, nr Hill Crest | Roadside | 452219 | 410224 | NO2 | AQMA6 | 0.0 | 7.0 | No | 2.0 |
| DT40 | Hill Crest, Skellow | Roadside | 452195 | 410302 | NO2 | AQMA6 | 0.3 | 7.6 | No | 2.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT41 | Hill Crest, Skellow, nr B1220 | Roadside | 452180 | 410377 | NO2 | AQMA6 | 6.7 | 9.4 | No | 2.0 |
| DT42 | Crabgate Lane, Skellow, nr B1220 | Suburban | 452180 | 410404 | NO2 | AQMA6 | 15.0 | 1.0 | No | 2.0 |
| DT43 | B1220 Hampole Balk Lane, Skellow | Roadside | 452195 | 410389 | NO2 | AQMA6 | 12.0 | 1.8 | No | 2.0 |
| DT44 | A635 Doncaster Road, Hickleton | Kerbside | 448230 | 405305 | NO2 | AQMA7 | 3.0 | 1.0 | No | 2.0 |
| DT45 | A635 Doncaster Road, Hickleton | Roadside | 447966 | 405303 | NO2 | AQMA7 | 0.0 | 14.4 | No | 2.0 |
| DT46 | A635 Doncaster Road, Hickleton | Suburban | 448148 | 405297 | NO2 | AQMA7 | 0.0 | 3.6 | No | 2.0 |
| DT47 | A635 Doncaster Road, Hickleton | Kerbside | 448058 | 405319 | NO2 | AQMA7 | 0.3 | 0.8 | No | 2.0 |
| DT48 | A635 Doncaster Road, Hickleton | Kerbside | 448235 | 405321 | NO2 | AQMA7 | 0.3 | 0.8 | No | 2.0 |
| DT49 | A635 Barnsley Road, Marr | Kerbside | 451331 | 405223 | NO2 | AQMA7A | 0.0 | 3.1 | No | 2.0 |
| DT50 | A614 King Street, Thorne | Roadside | 468749 | 413300 | NO2 | N | 0.5 | 2.0 | No | 2.0 |
| DT51 | A6023, Low Road, Conisbrough | Roadside | 451445 | 398574 | NO2 | AQMA5 | 20+ | 2.1 | No | 2.0 |
| DT52 | A630 Doncaster Road, Conisbrough | Roadside | 451485 | 398511 | NO2 | AQMA5 | 2.0 | 2.0 | No | 2.0 |
| DT53 | A6023, Low Road, Conisbrough | Kerbside | 451452 | 398645 | NO2 | AQMA5 | 0.0 | 1.9 | No | 2.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT54 | A6023, Low Road, Conisbrough | Roadside | 451442 | 398647 | NO2 | AQMA5 | 0.3 | 1.8 | No | 2.0 |
| DT55 | A630 Doncaster Road, Conisbrough | Roadside | 451626 | 398691 | NO2 | AQMA5 | 0.0 | 6.0 | No | 2.0 |
| DT56 | A6023 Doncaster Road, Mexborough | Roadside | 448042 | 399884 | NO2 | N | 3.0 | 4.0 | No | 2.0 |
| DT57 | A6023 Doncaster Road, Mexborough | Roadside | 448005 | 399860 | NO2 | N | 13.0 | 2.0 | No | 2.0 |
| DT58 | A635 Barnsley Road, Marr | Kerbside | 451683 | 405225 | NO2 | AQMA7A | 0.3 | 1.0 | No | 2.0 |
| DT59 | A635 Barnsley Road, Marr | Roadside | 451514 | 405246 | NO2 | AQMA7A | 0.0 | 18.0 | No | 2.0 |
| DT60 | St Leger Place, adj. A630 Church Way | Roadside | 457870 | 403839 | NO2 | AQMA1 | 0.5 | 7.0 | No | 2.0 |
| DT61 | Dockin Hill Road, adj. Church Way | Roadside | 457791 | 403767 | NO2 | AQMA1 | 0.5 | 15.5 | No | 2.0 |
| DT62 | A630 Church Way | Roadside | 457733 | 403740 | NO2 | AQMA1 | 0.5 | 7.0 | No | 2.0 |
| DT63 | Market Road, adj. Market Place | Roadside | 457701 | 403579 | NO2 | AQMA1 | 0.0 | 1.7 | No | 2.0 |
| DT64 | A630 Trafford Way nr Frenchgate | Roadside | 457345 | 403433 | NO2 | AQMA1 | 0.0 | 13.4 | No | 2.0 |
| DT65 | Somerset Road, adj A18 Carr House Rd | Roadside | 457995 | 402506 | NO2 | AQMA3 | 3.7 | 8.0 | No | 2.0 |
| DT66 | A18 Carr House Road | Roadside | 458142 | 402563 | NO2 | AQMA3 | 0.0 | 5.8 | No | 2.0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT67 | A18 Carr House Road | Roadside | 458259 | 402582 | NO2 | AQMA3 | 0.0 | 6.3 | No | 2.0 |
| DT68 | High Grove Court, nr M18, Bessacarr | Roadside | 462520 | 400757 | NO2 | AQMA4 | 0.0 | 4.7 | No | 2.0 |
| DT69 | Footbridge, adj M18, Bessacarr | Roadside | 462500 | 400708 | NO2 | AQMA4 | 0.0 | 12.9 | 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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| CM1 | 458027 | 402475 | Roadside | 76.3 | 76.3 | 28.6 | - | 20.1 | 30.3 | 20.1 |
| CM2 | 457669 | 403611 | Urban centre | - | - | 26.1 | 25.6 | - | - | - |
| CM3 | 454964 | 400745 | Roadside | - | - | 23.9 | - | 23 | - | - |
| CM4 | 462278 | 400111 | Roadside | - | - | 37.2 | 28.1 | - | - | - |
| CM5 | 451438 | 398528 | Roadside | 75.3 | 75.3 | 37 | 30.5 | 25.4 | 22.8 | 24.8 |
| CM6 | 452185 | 410380 | Roadside | 76.5 | 76.5 | **45.8** | 37.3 | 27.9 | 27.2 | 25.8 |
| CM7 | 448067 | 405300 | Roadside | - | - | - | - | - | - | - |
| CM8 | 457249 | 402747 | Roadside | 99 | 99 | 26 | 29 | 30 | 24 | 26 |

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

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

**Notes:**

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

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

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

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

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

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

## Table A.4 – Annual Mean $NO_2$ Monitoring Results: Non-Automatic Monitoring (µg/m$^3$)

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| DT1 | 456992 | 403757 | Kerbside | 92.3 | 92.3 | 33.0 | 32.0 | 28.4 | 22.5 | 23.4 |
| DT2 | 457308 | 403458 | Roadside | 100.0 | 100.0 | **41.0** | **41.0** | 36.8 | 31.9 | 30.0 |
| DT3 | 457957 | 403152 | Kerbside | 100.0 | 100.0 | 33.0 | 31.0 | 27.2 | 22.9 | 21.3 |
| DT4 | 457952 | 403123 | Roadside | 100.0 | 100.0 | **45.0** | 39.0 | 35.2 | 29.7 | 30.9 |
| DT5 | 459113 | 402842 | Kerbside | 100.0 | 100.0 | **43.0** | 37.0 | 34.7 | 27.8 | 30.7 |
| DT6 | 459533 | 402768 | Roadside | 84.6 | 84.6 | 35.0 | 30.0 | 28.9 | 21.4 | 23.8 |
| DT7 | 462933 | 399568 | Roadside | 90.4 | 90.4 | **43.0** | - | 30.1 | 24.6 | 24.4 |
| DT8 | 462865 | 399334 | Kerbside | 100.0 | 100.0 | 26.0 | 26.0 | 23.1 | 17.5 | 17.7 |
| DT9 | 463901 | 398398 | Roadside | 100.0 | 100.0 | 37.0 | 27.0 | 20.0 | 15.3 | 15.2 |
| DT10 | 464879 | 399699 | Kerbside | 100.0 | 100.0 | 25.0 | 22.0 | 22.0 | - | 17.5 |
| DT11 | 461334 | 397977 | Roadside | 75.0 | 75.0 | 24.0 | 24.0 | 27.2 | 21.6 | 24.1 |
| DT12 | 461164 | 398459 | Roadside | 92.3 | 92.3 | 28.0 | 27.0 | 26.4 | - | 23.7 |
| DT13 | 462242 | 400134 | Roadside | 92.3 | 92.3 | **44.0** | **41.0** | 38.3 | 28.8 | 30.6 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT14 | 461362 | 400777 | Roadside | 100.0 | 100.0 | **44.0** | 37.0 | 37.3 | 28.9 | 29.9 |
| DT15 | - | - | - | - | - | - | - | - | - | - |
| DT16 | - | - | - | - | - | - | - | - | - | - |
| DT17 | - | - | - | - | - | - | - | - | - | - |
| DT18 | - | - | - | - | - | - | - | - | - | - |
| DT19 | - | - | - | - | - | - | - | - | - | - |
| DT20 | - | - | - | - | - | - | - | - | - | - |
| DT21 | 456182 | 401254 | Roadside | 100.0 | 100.0 | **50.0** | **50.0** | **46.2** | 36.9 | 37.6 |
| DT22 | 455679 | 401000 | Roadside | 100.0 | 100.0 | **50.0** | **52.0** | **46.1** | 37.5 | 37.1 |
| DT23 | 451457 | 398659 | Kerbside | 92.3 | 92.3 | **41.0** | **40.0** | 37.6 | 29.8 | 28.7 |
| DT24 | 451419 | 398540 | Roadside | 100.0 | 100.0 | **41.0** | **43.0** | 39.1 | 32.0 | 31.2 |
| DT25 | 455635 | 401002 | Roadside | 100.0 | 100.0 | **41.0** | **41.0** | 37.9 | 29.9 | 30.6 |
| DT26 | 456130 | 401258 | Roadside | 100.0 | 100.0 | 38.0 | 39.0 | 34.2 | 27.1 | 28.3 |
| DT27 | 457010 | 402060 | Roadside | 100.0 | 100.0 | **48.0** | **45.0** | **40.0** | 33.6 | 31.9 |
| DT28 | 457022 | 402136 | Roadside | 100.0 | 100.0 | **52.0** | **57.0** | **49.0** | **40.4** | **40.8** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT29 | 464986 | 399697 | Roadside | 65.4 | 65.4 | 19.0 | 16.0 | 15.9 | - | 11.7 |
| DT30 | 465719 | 400140 | Roadside | 90.4 | 90.4 | 18.0 | 19.0 | 16.0 | 13.6 | 14.2 |
| DT31 | 466895 | 400405 | Roadside | 90.4 | 90.4 | 17.0 | 16.0 | 14.1 | 11.6 | 11.2 |
| DT32 | 467174 | 400372 | Roadside | 90.4 | 90.4 | 18.0 | 19.0 | 15.4 | 13.0 | 19.2 |
| DT33 | 468620 | 404175 | Rural | 73.1 | 73.1 | 12.0 | 11.0 | 8.7 | 7.9 | 7.2 |
| DT34 | 467755 | 408643 | Roadside | 75.0 | 75.0 | 23.0 | 21.0 | 18.5 | 14.4 | 13.7 |
| DT35 | 469056 | 407623 | Rural | 40.4 | 40.4 | 12.0 | 13.0 | 9.9 | - | 8.3 |
| DT36 | 457615 | 403630 | Roadside | 100.0 | 100.0 | **41.0** | 37.0 | 31.9 | 27.9 | 27.1 |
| DT37 | 457379 | 403460 | Roadside | 100.0 | 100.0 | **41.0** | **41.0** | 39.0 | 29.9 | 29.0 |
| DT38 | 464046 | 411818 | Urban Background | 100.0 | 100.0 | 18.0 | 19.0 | 15.6 | 13.8 | 14.1 |
| DT39 | 452219 | 410224 | Roadside | 100.0 | 100.0 | **47.0** | **41.0** | 36.7 | 27.6 | 28.1 |
| DT40 | 452195 | 410302 | Roadside | 100.0 | 100.0 | **48.0** | **45.0** | 38.1 | 28.9 | 30.3 |
| DT41 | 452180 | 410377 | Roadside | 100.0 | 100.0 | **55.0** | **48.0** | **40.8** | 30.4 | 31.5 |
| DT42 | 452180 | 410404 | Suburban | 100.0 | 100.0 | **46.0** | **43.0** | 38.0 | 26.7 | 28.2 |
| DT43 | 452195 | 410389 | Roadside | 100.0 | 100.0 | **43.0** | **40.0** | 34.0 | 24.4 | 25.2 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT44 | 448230 | 405305 | Kerbside | 100.0 | 100.0 | **79.0** | **70.0** | **67.0** | **50.7** | **51.0** |
| DT45 | 447966 | 405303 | Roadside | 100.0 | 100.0 | 25.0 | 25.0 | 22.0 | 16.8 | 15.9 |
| DT46 | 448148 | 405297 | Suburban | 100.0 | 100.0 | 37.0 | **40.0** | 35.0 | 24.9 | 26.0 |
| DT47 | 448058 | 405319 | Kerbside | 82.7 | 82.7 | **100.0** | **91.0** | **76.0** | **59.4** | **54.1** |
| DT48 | 448235 | 405321 | Kerbside | 100.0 | 100.0 | **90.0** | **87.0** | **80.0** | **55.8** | **55.2** |
| DT49 | 451331 | 405223 | Kerbside | 100.0 | 100.0 | **46.0** | **43.0** | 37.0 | 27.4 | 28.3 |
| DT50 | 468749 | 413300 | Roadside | 100.0 | 100.0 | **40.0** | **41.0** | 38.0 | 28.5 | 30.4 |
| DT51 | 451445 | 398574 | Roadside | 100.0 | 100.0 | 34.0 | 35.0 | 31.0 | 24.3 | 24.6 |
| DT52 | 451485 | 398511 | Roadside | 100.0 | 100.0 | **43.0** | **44.0** | 39.0 | 30.9 | 33.2 |
| DT53 | 451452 | 398645 | Kerbside | 100.0 | 100.0 | **42.0** | **43.0** | 36.2 | 29.1 | 30.4 |
| DT54 | 451442 | 398647 | Roadside | 100.0 | 100.0 | **48.0** | **47.0** | **44.1** | 36.1 | 37.1 |
| DT55 | 451626 | 398691 | Roadside | 84.6 | 84.6 | 36.0 | 34.0 | 31.0 | 23.4 | 23.6 |
| DT56 | 448042 | 399884 | Roadside | 63.5 | 63.5 | **40.0** | **41.0** | 38.0 | 28.3 | 34.5 |
| DT57 | 448005 | 399860 | Roadside | 100.0 | 100.0 | 38.0 | **45.0** | 37.0 | 27.0 | 27.9 |
| DT58 | 451683 | 405225 | Kerbside | 100.0 | 100.0 | **46.0** | **43.0** | 38.0 | 31.6 | 29.8 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DT59 | 451514 | 405246 | Roadside | 75.0 | 75.0 | 22.0 | 23.0 | 20.0 | - | 13.4 |
| DT60 | 457870 | 403839 | Roadside | 100.0 | 100.0 | - | **43.5** | 36.9 | 29.3 | 28.7 |
| DT61 | 457791 | 403767 | Roadside | 100.0 | 100.0 | - | **42.0** | 37.0 | 27.4 | 27.5 |
| DT62 | 457733 | 403740 | Roadside | 100.0 | 100.0 | - | **53.1** | **45.3** | 32.9 | 34.8 |
| DT63 | 457701 | 403579 | Roadside | 84.6 | 84.6 | - | **49.7** | **42.3** | 28.9 | 35.0 |
| DT64 | 457345 | 403433 | Roadside | 100.0 | 100.0 | - | **48.6** | **44.1** | 33.2 | 32.9 |
| DT65 | 457995 | 402506 | Roadside | 82.7 | 82.7 | - | 38.6 | 34.0 | 27.7 | 26.3 |
| DT66 | 458142 | 402563 | Roadside | 100.0 | 100.0 | - | **42.9** | 37.5 | 30.9 | 32.9 |
| DT67 | 458259 | 402582 | Roadside | 100.0 | 100.0 | - | 38.0 | 31.8 | 26.3 | 27.6 |
| DT68 | 462520 | 400757 | Roadside | 100.0 | 100.0 | - | - | - | 16.4 | 16.9 |
| DT69 | 462500 | 400708 | Roadside | 90.4 | 90.4 | - | - | - | 18.2 | 18.7 |

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

☒ **Diffusion tube data has been bias adjusted.**

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

**Notes:**

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

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

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

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

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

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

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

**Figure A.1a – Trends in Annual Mean $NO_2$ Concentrations, AQMA 1**

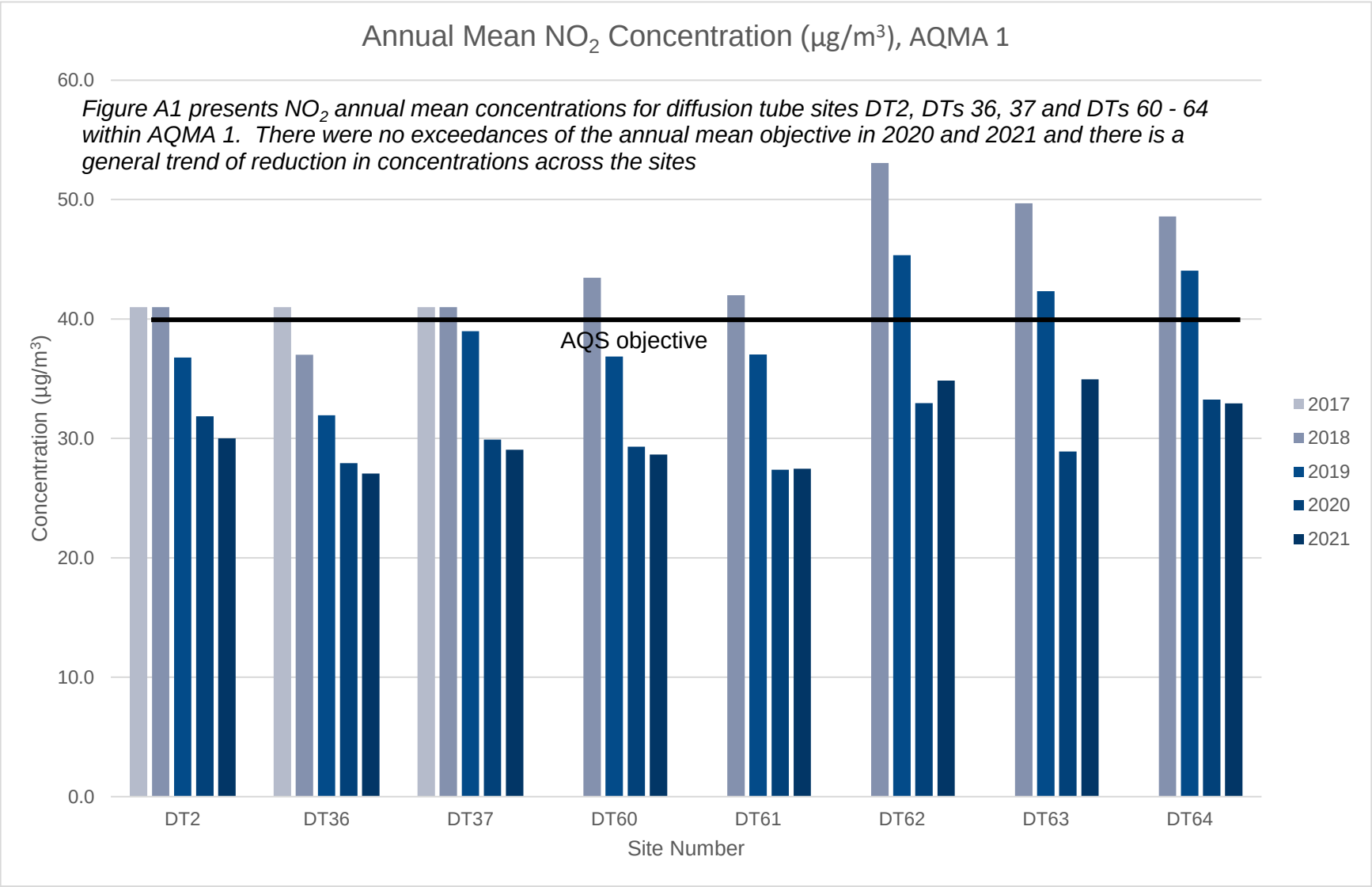


**Figure A.1b – Trends in Annual Mean $NO_2$ Concentrations, AQMA 2**

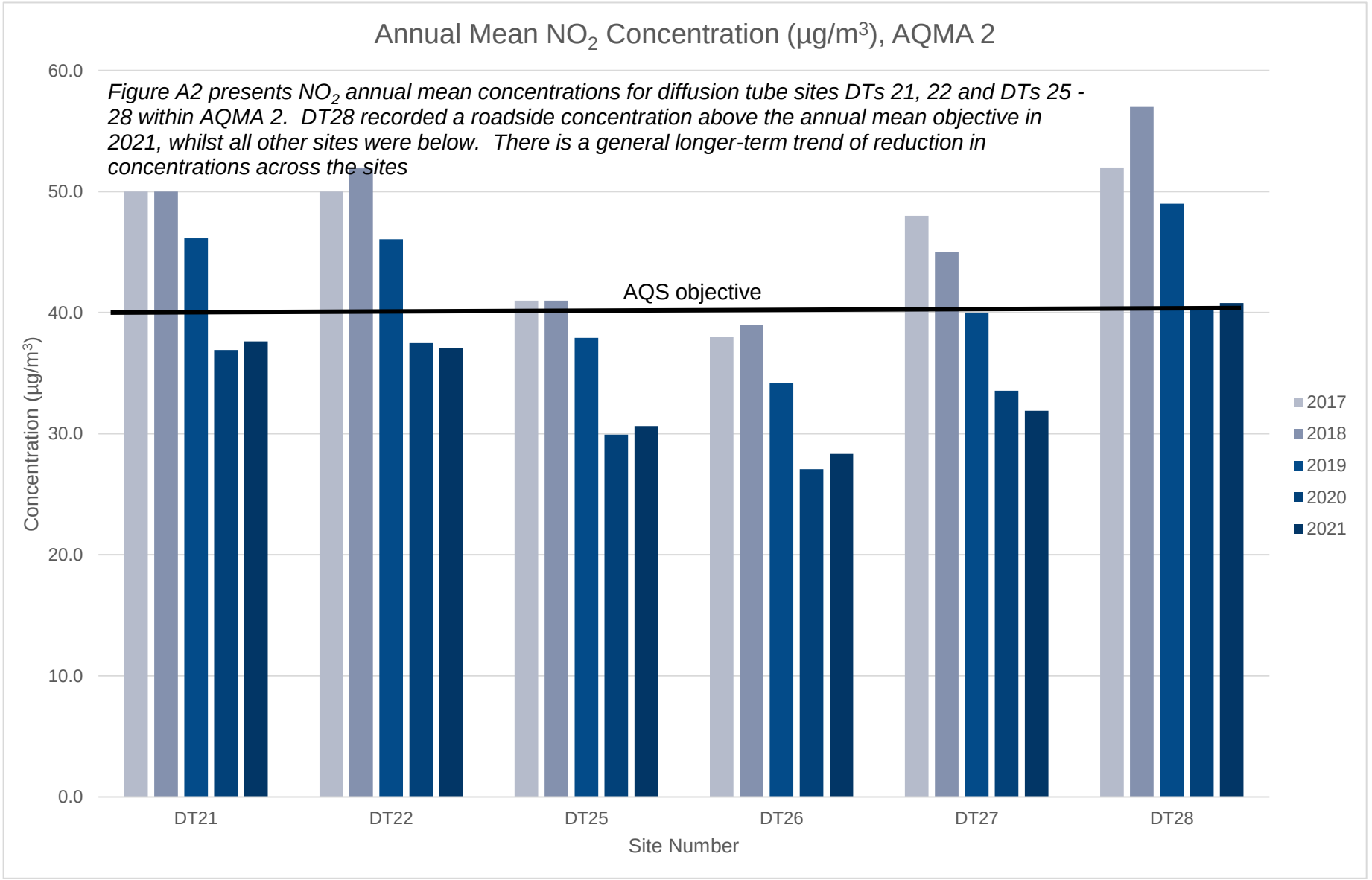


**Figure A.1c – Trends in Annual Mean $NO_2$ Concentrations, AQMA 3**

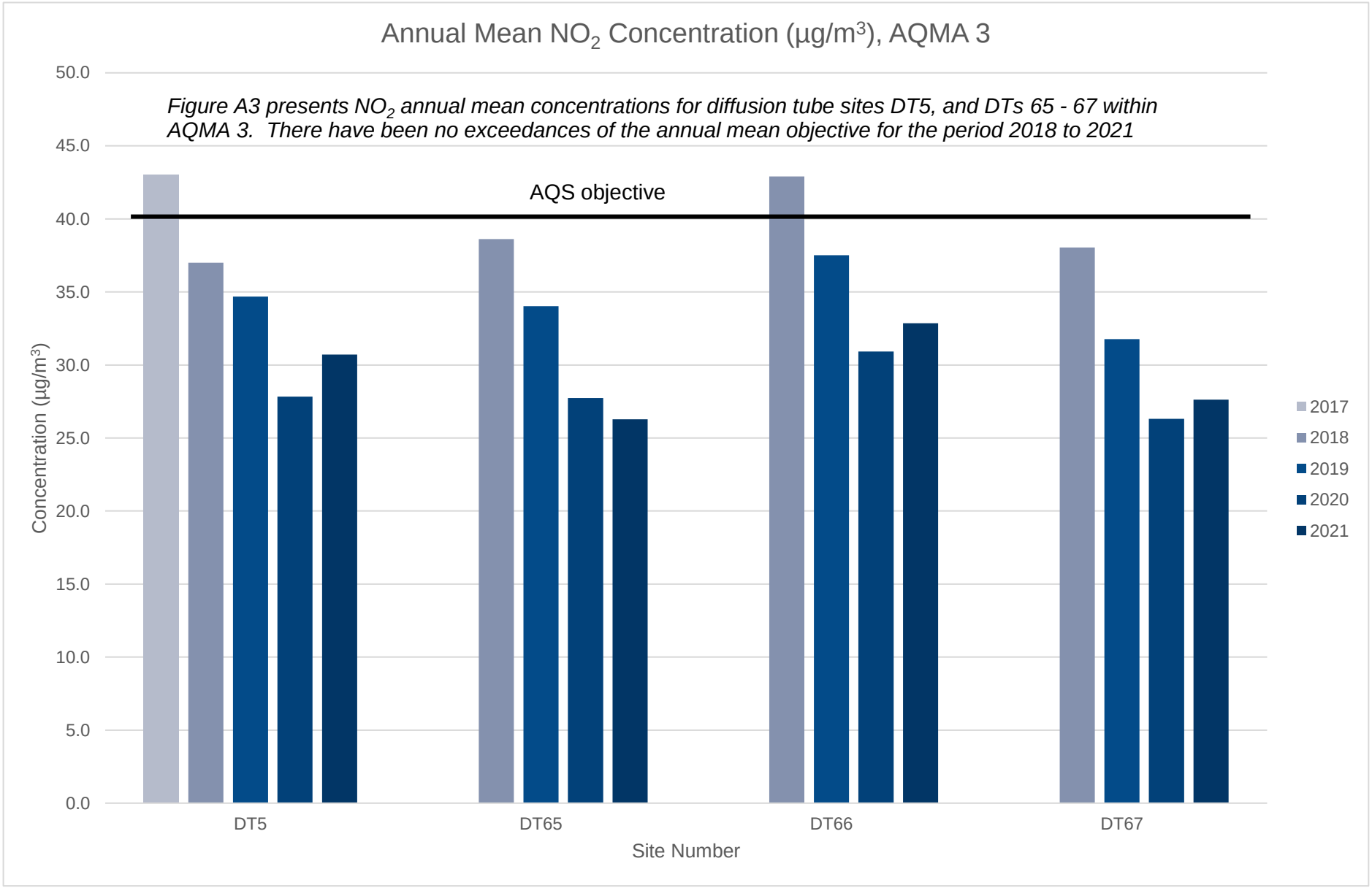


**Figure A.1d – Trends in Annual Mean $NO_2$ Concentrations, AQMA 4**

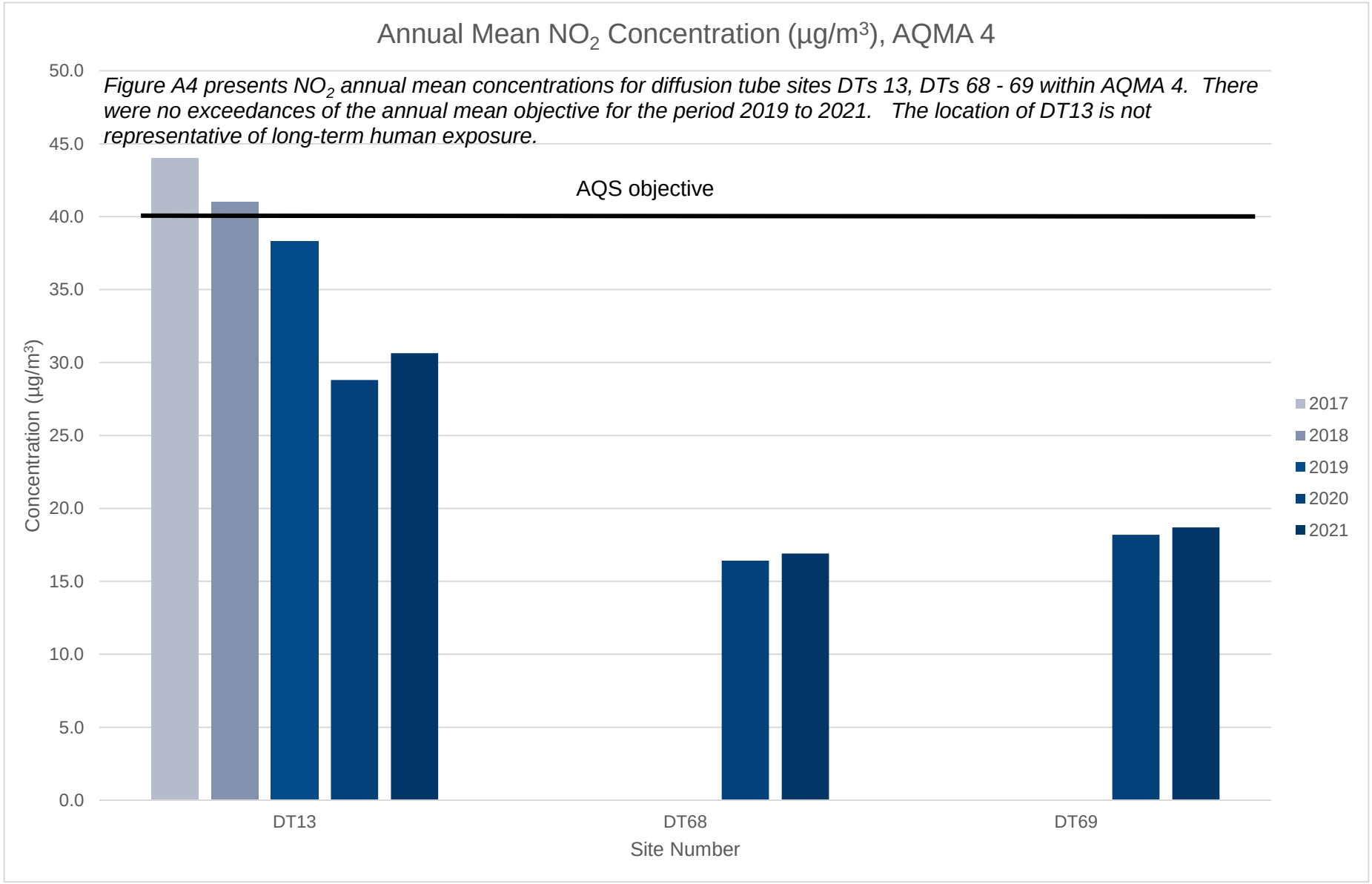


**Figure A.1e – Trends in Annual Mean $NO_2$ Concentrations, AQMA 5**

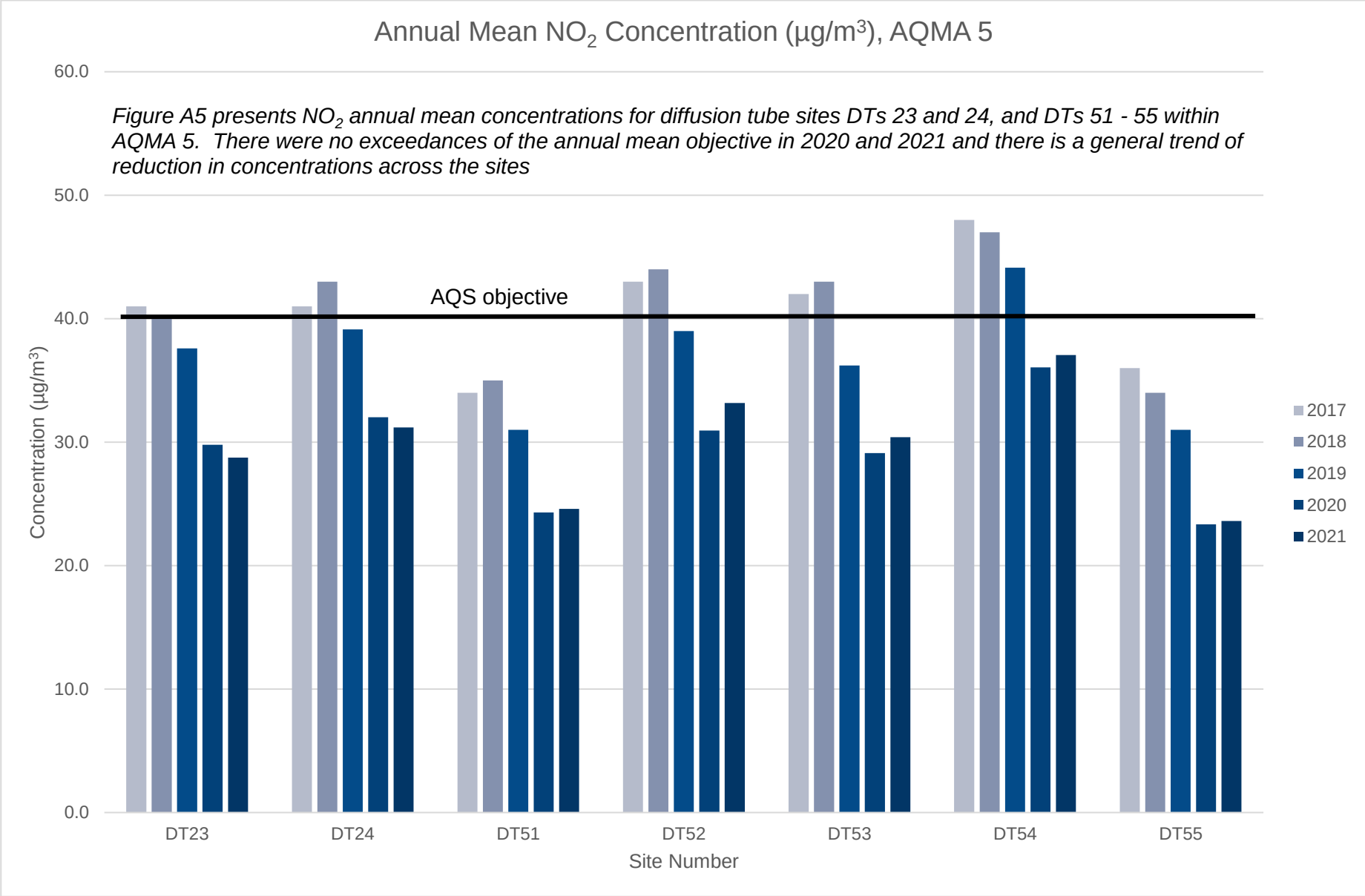


**Figure A.1f – Trends in Annual Mean $NO_2$ Concentrations, AQMA 6**

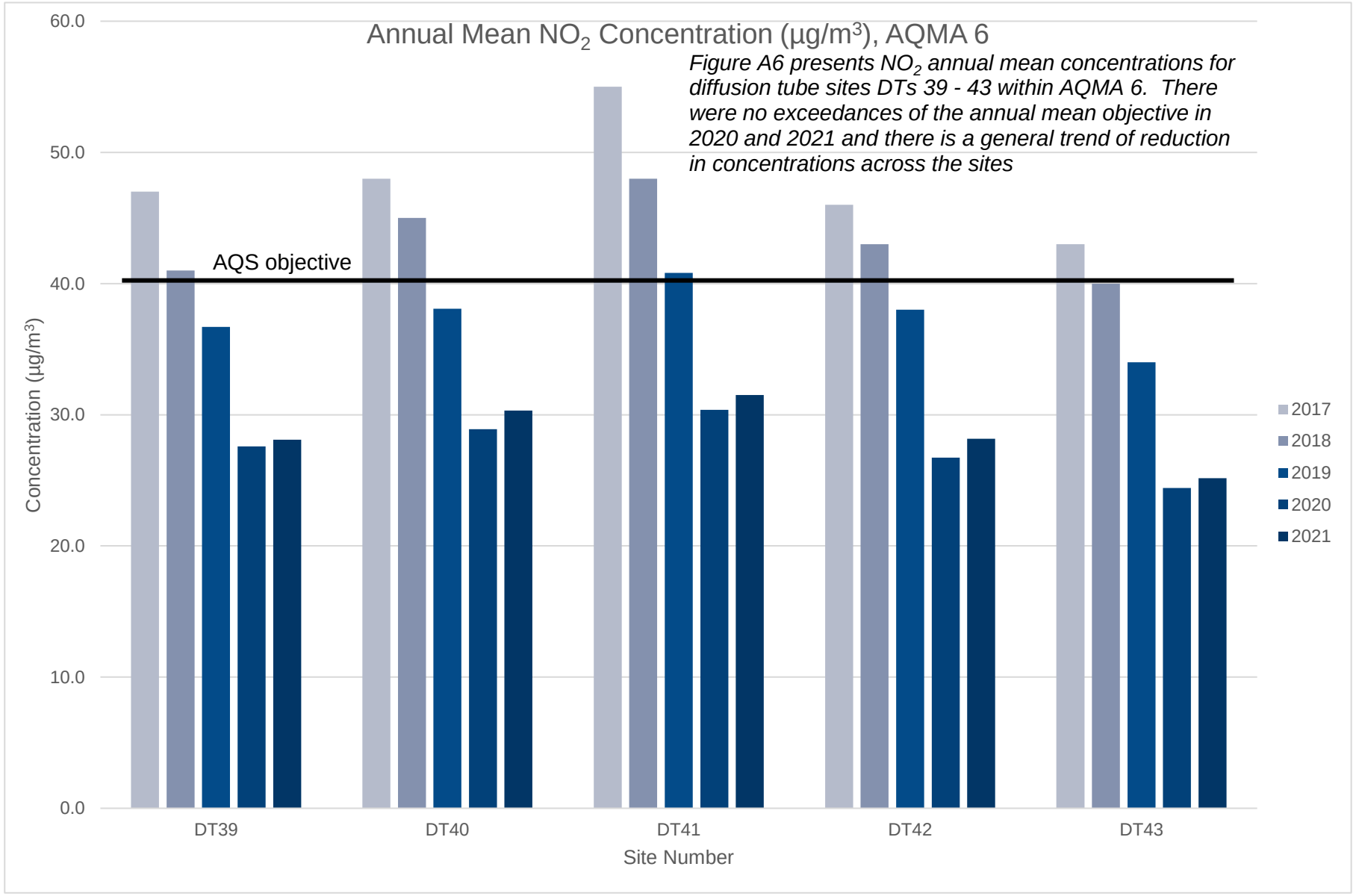


**Figure A.1g – Trends in Annual Mean $NO_2$ Concentrations, AQMA 7**

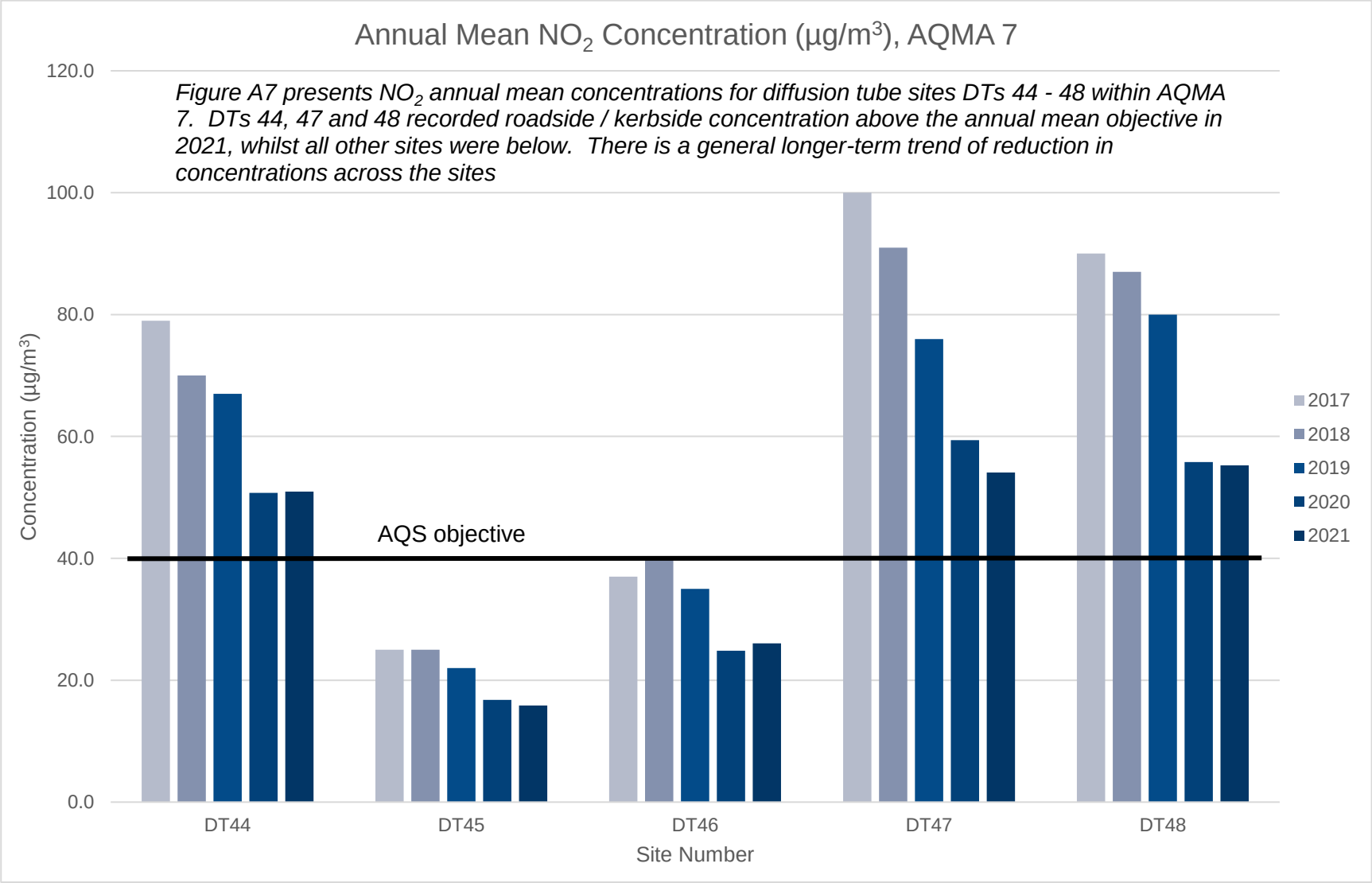


**Figure A.1h – Trends in Annual Mean $NO_2$ Concentrations, AQMA 7A**

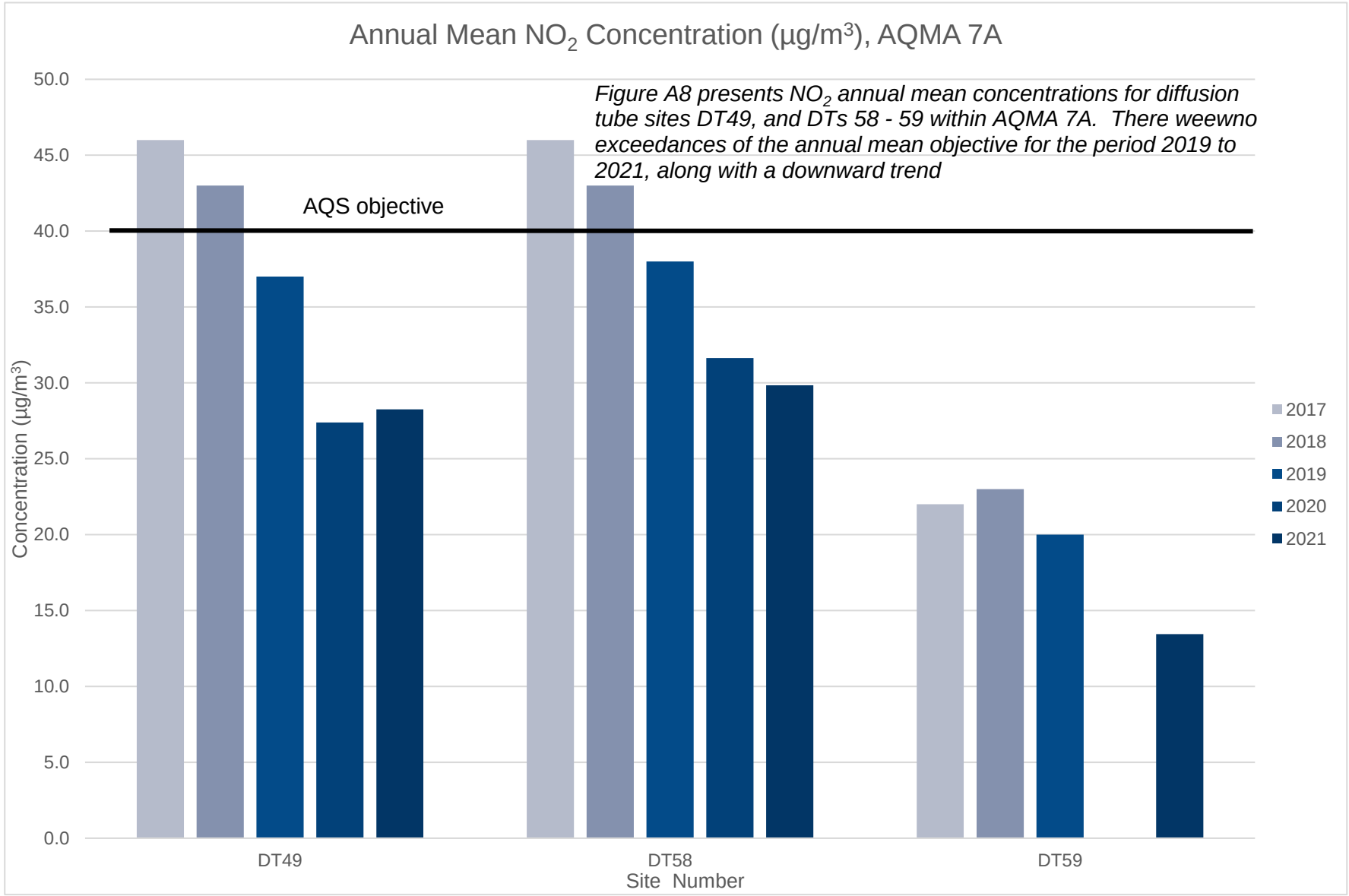


**Figure A.1i – Trends in Annual Mean $NO_2$ Concentrations, Airport**

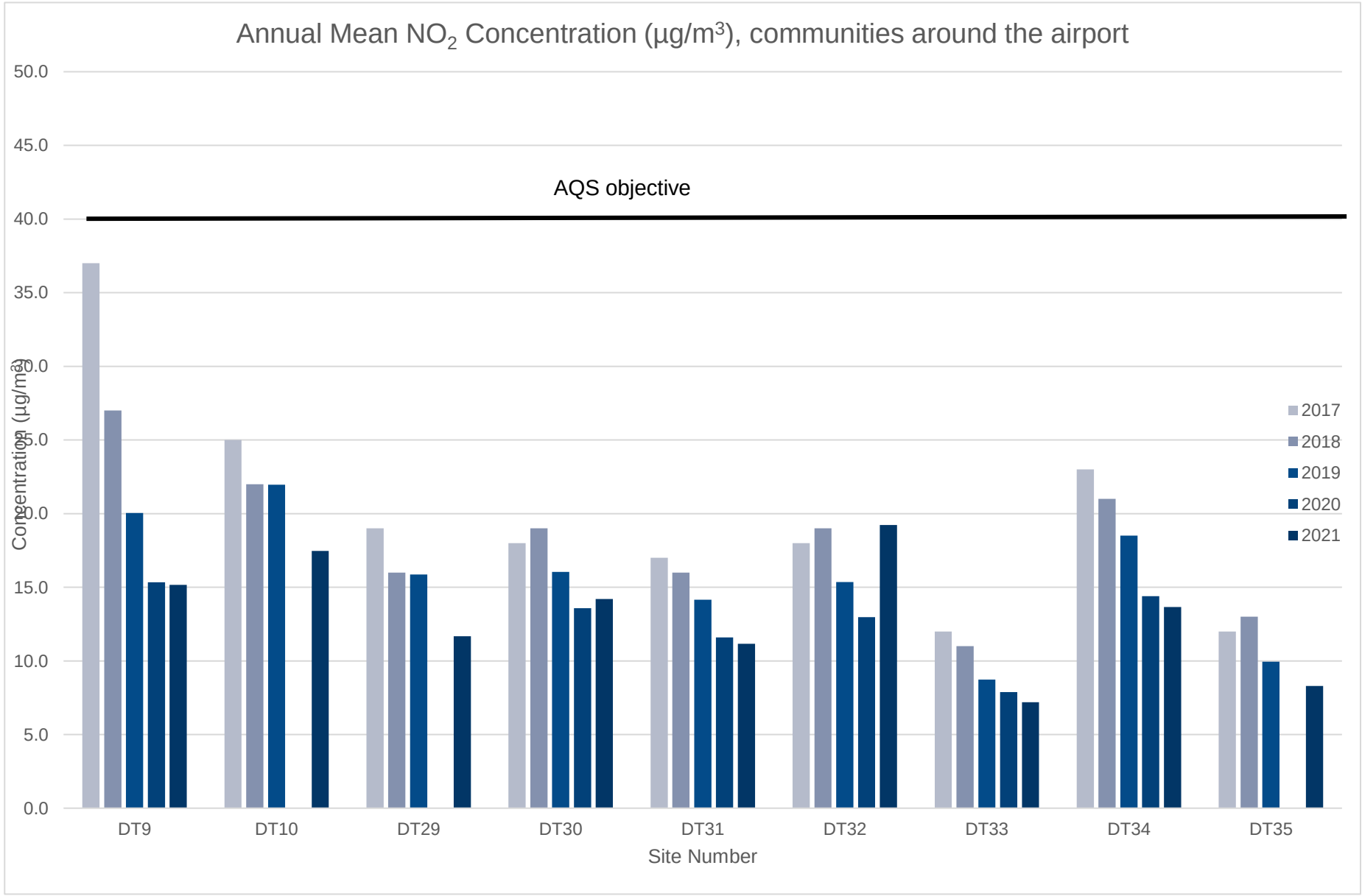


**Figure A.1j – Trends in Annual Mean $NO_2$ Concentrations, Rossington**

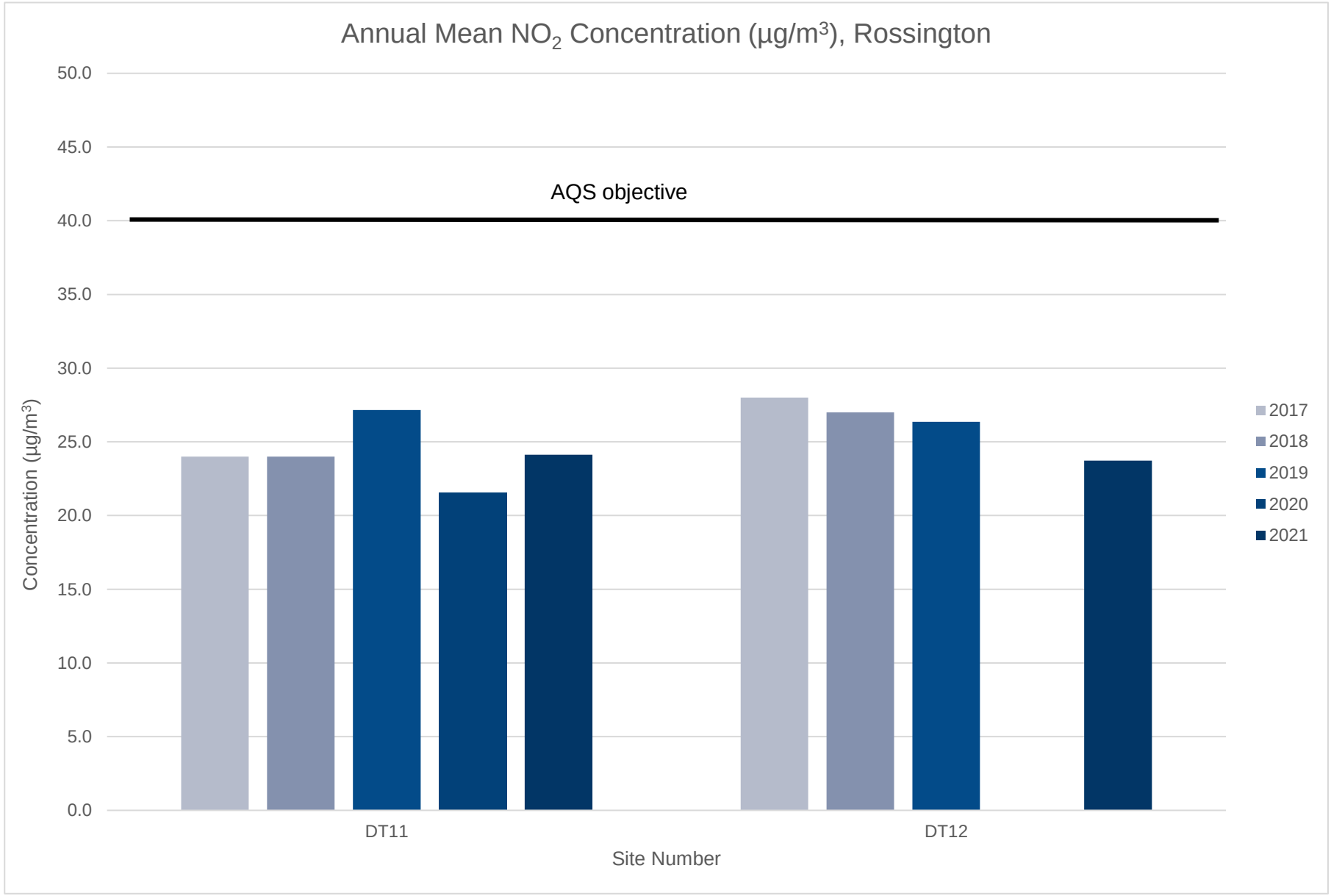


**Figure A.1.k – Trends in Annual Mean $NO_2$ Concentrations, Thorne and Stainforth**

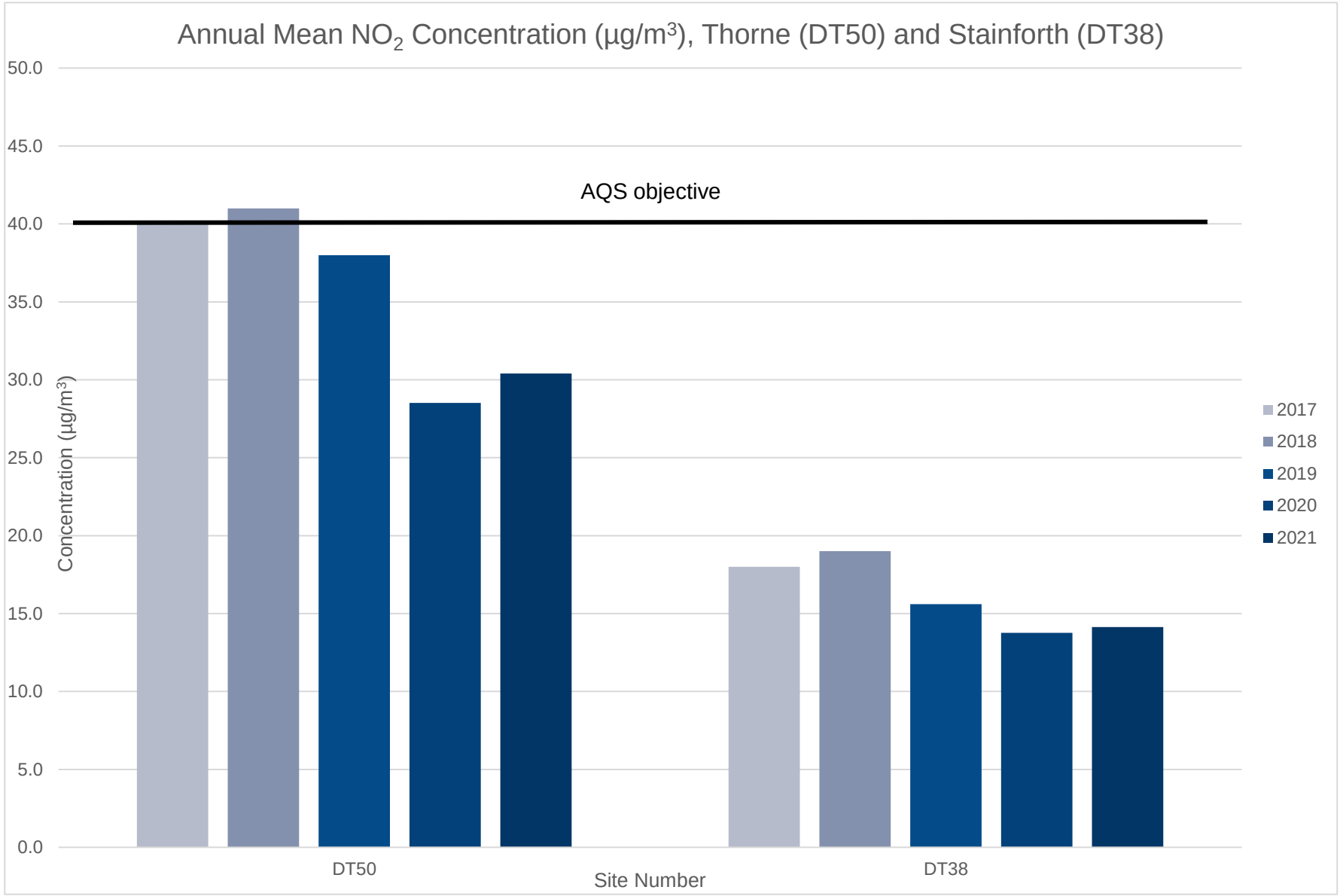


**Figure A.1l – Trends in Annual Mean $NO_2$ Concentrations, near Great Yorkshire Way**

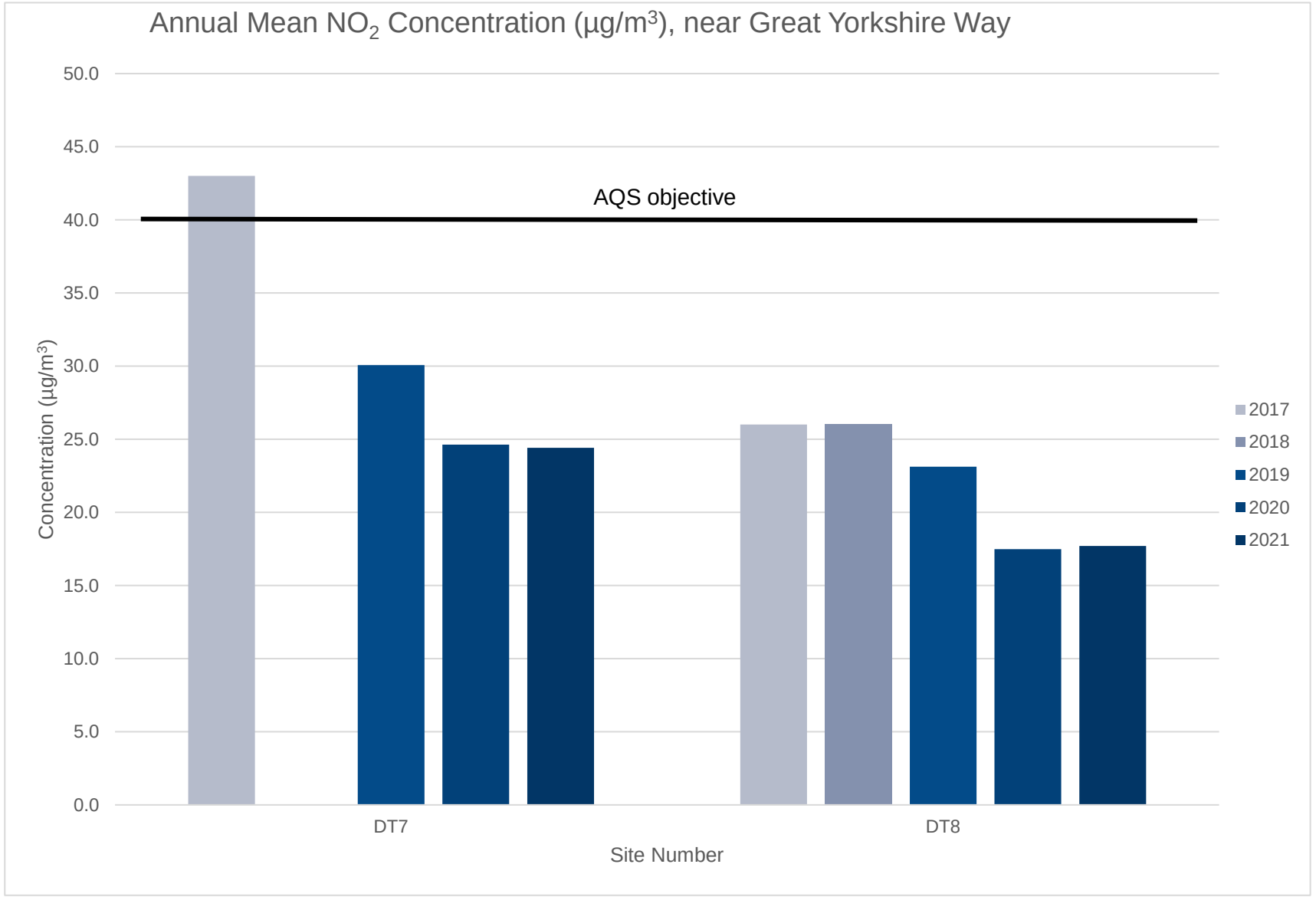


**Figure A.1.m – Trends in Annual Mean $NO_2$ Concentrations, Mexborough**

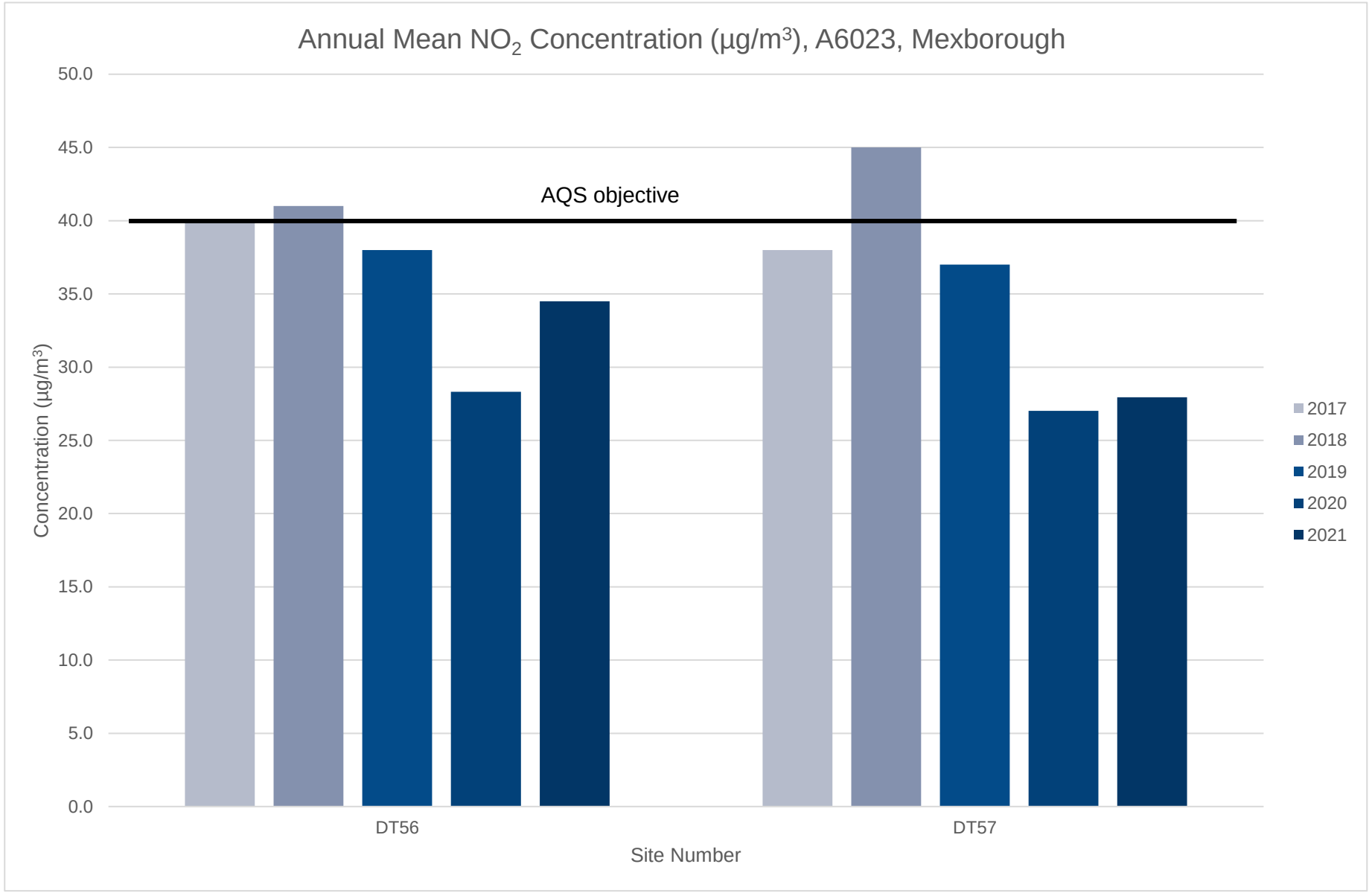


**Figure A.1.n – Trends in Annual Mean $NO_2$ Concentrations, Doncaster Centre**

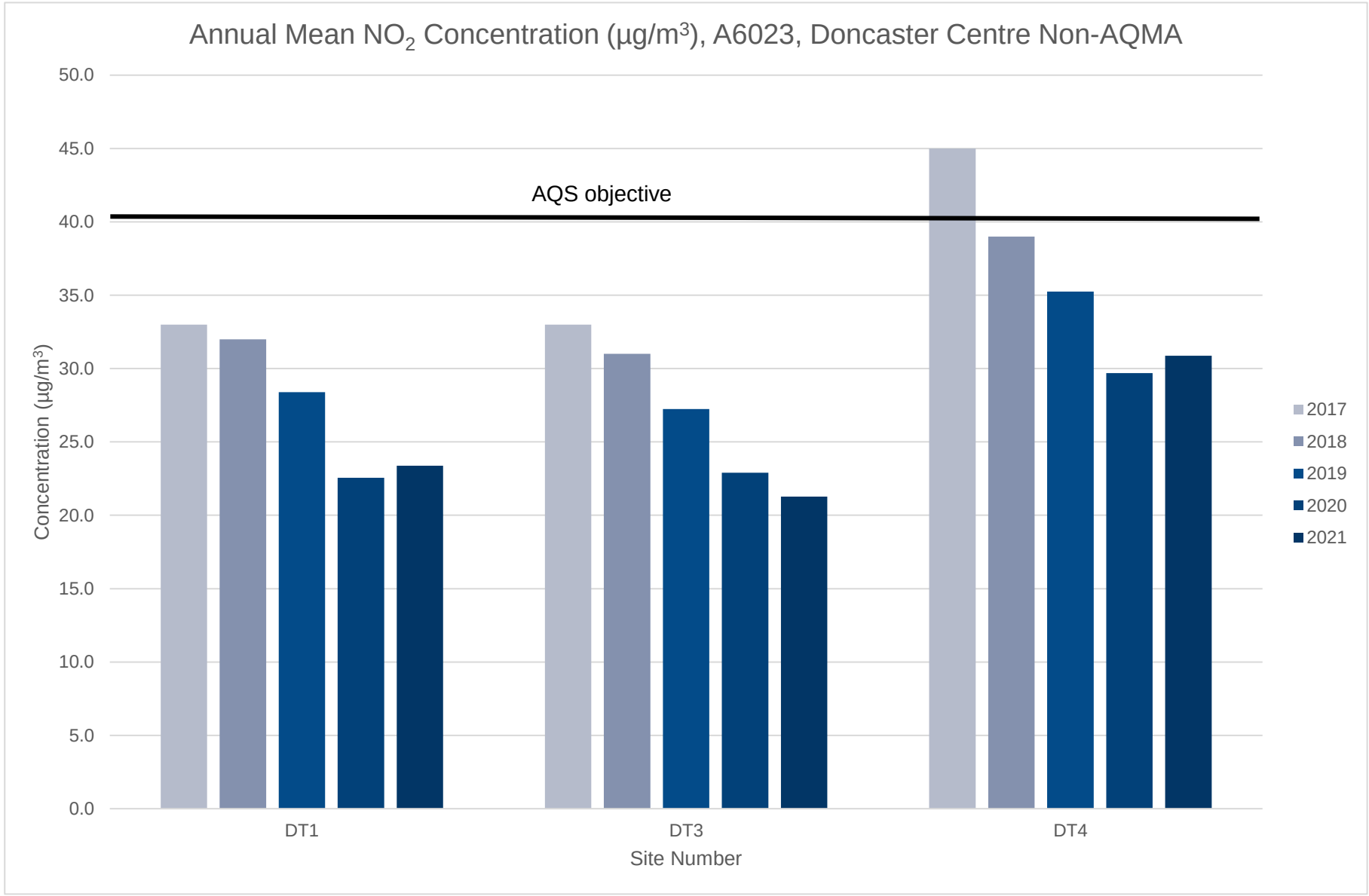


**Figure A.1.o – Trends in Annual Mean $NO_2$ Concentrations, Bawtry Road**

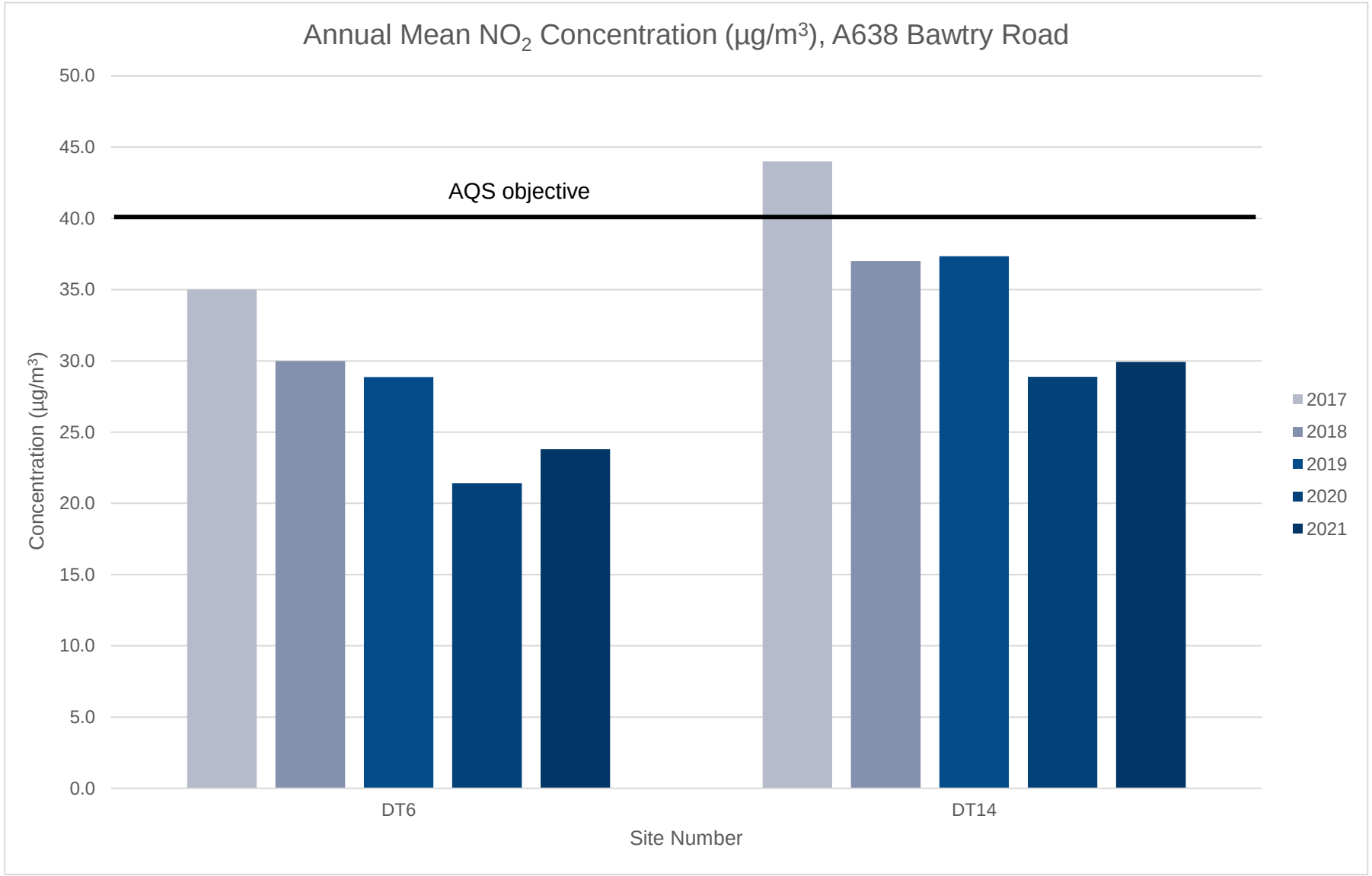


**Figure A.1.p – Trends in Annual Mean $NO_2$ Concentrations, Continuous Monitoring Stations**

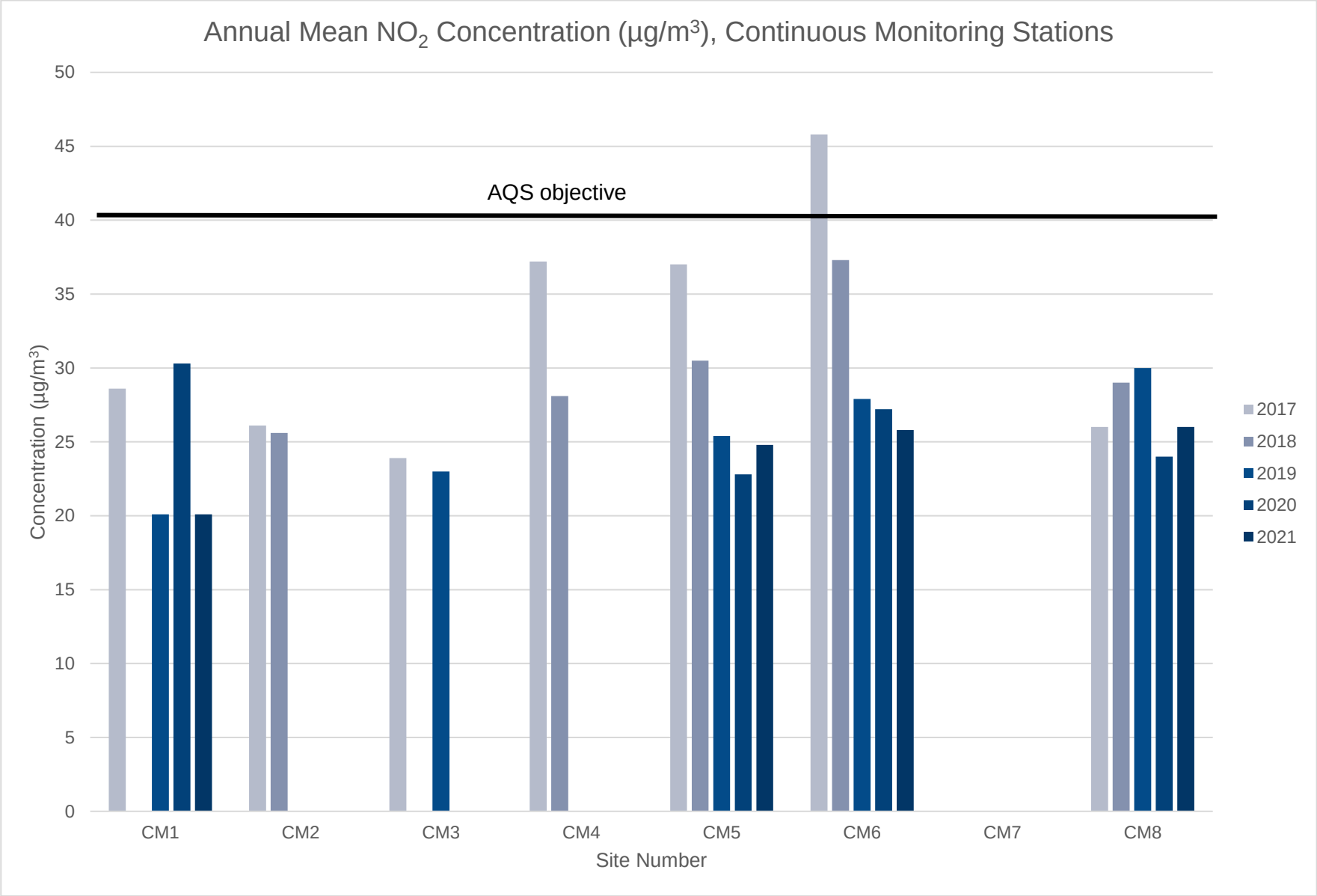


**Table A.5 – 1-Hour Mean $NO_2$ Monitoring Results, Number of 1-Hour Means > 200µg/m$^3$**

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| CM1 | 458027 | 402475 | Roadside | 76.3 | 76.3 | 0 (46) | 0 (94) | - | 0 (48) | 0 (97) |
| CM2 | 457669 | 403611 | Urban centre | - | - | 0 (127) | 0 | 0 | - | - |
| CM3 | 454964 | 400745 | Roadside | - | - | 3 (153) | 0 | - | 0 (114) | - |
| CM4 | 462278 | 400111 | Roadside | - | - | 0 (22) | 0 (114) | 0 | - | - |
| CM5 | 451438 | 398528 | Roadside | 75.3 | 75.3 | 0 (62) | 0 (116) | 0 | 0 (58) | 0 (96) |
| CM6 | 452185 | 410380 | Roadside | 76.5 | 76.5 | 0 (63) | 6 | 0 | 0 | 0 (78) |
| CM7 | 448067 | 405300 | Roadside | - | - | - | - | - | - | - |
| CM8 | 457249 | 402747 | Roadside | 99 | 99 | 0 | 0 | 0 | 0 | 0 |

**Notes:**

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

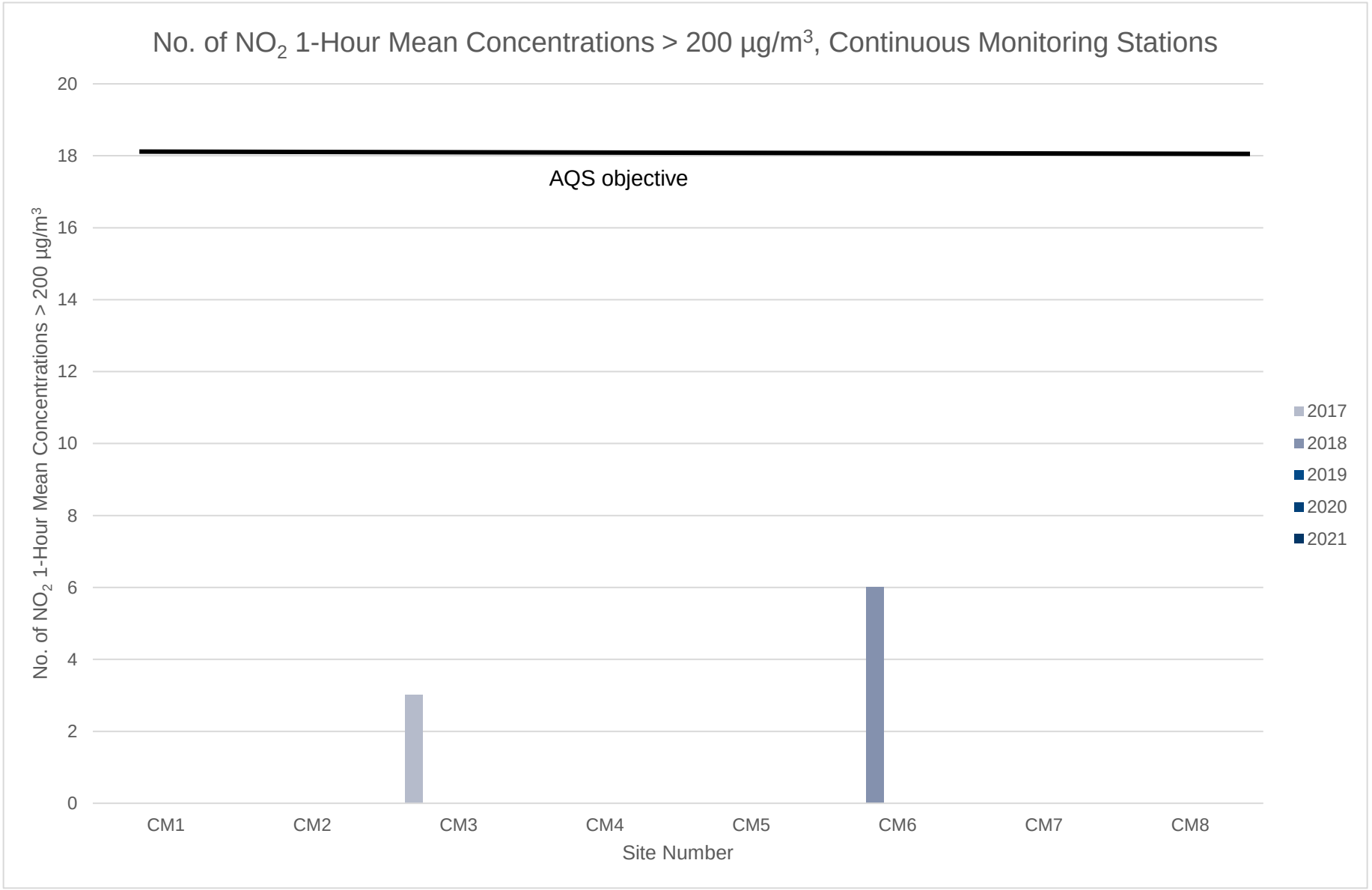
Exceedances of the $NO_2$ 1-hour mean objective (200µg/m$^3$ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

**Figure A.2 – Trends in Number of $NO_2$ 1-Hour Means > 200µg/m$^3$**



### 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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| CM2 | 457669 | 403611 | Urban Centre | 87 | 87 | 17.7 | 16.7 | - | 22.1 | 18.3 |
| CM1 | 458027 | 402475 | Roadside | 92 | 69 | 17.4 | 18.4 | 15.3 | - | 16.6 |
| CM5 | 451438 | 398528 | Roadside | 88.5 | 51.4 | 18.8 | 21.8 | 17.4 | - | 20.3 |

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

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

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

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

**Figure A.3 – Trends in Annual Mean $PM_{10}$ Concentrations**

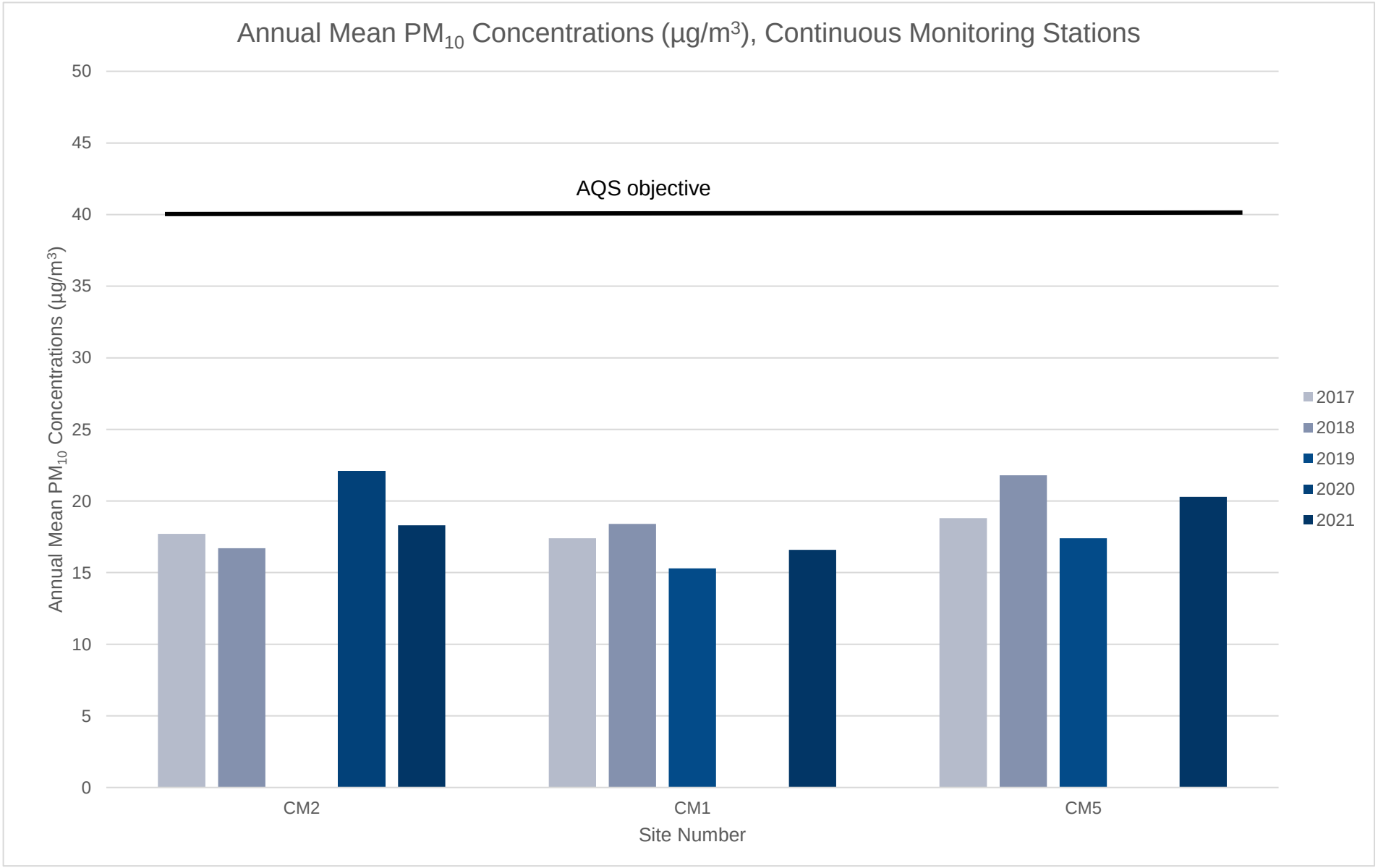


**Table A.7 – 24-Hour Mean $PM_{10}$ Monitoring Results, Number of $PM_{10}$ 24-Hour Means > 50µg/m$^3$**

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| CM2 | 457669 | 403611 | Urban Centre | 87 | 87 | 4 | 2 | - | 0 (34.5) | 1 |
| CM1 | 458027 | 402475 | Roadside | 92 | 69 | 3 | 2 | 0 | - | 0 (26) |
| CM5 | 451438 | 398528 | Roadside | 88.5 | 51.4 | 4 | 3 | 1 | - | 0 (34) |

**Notes:**

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

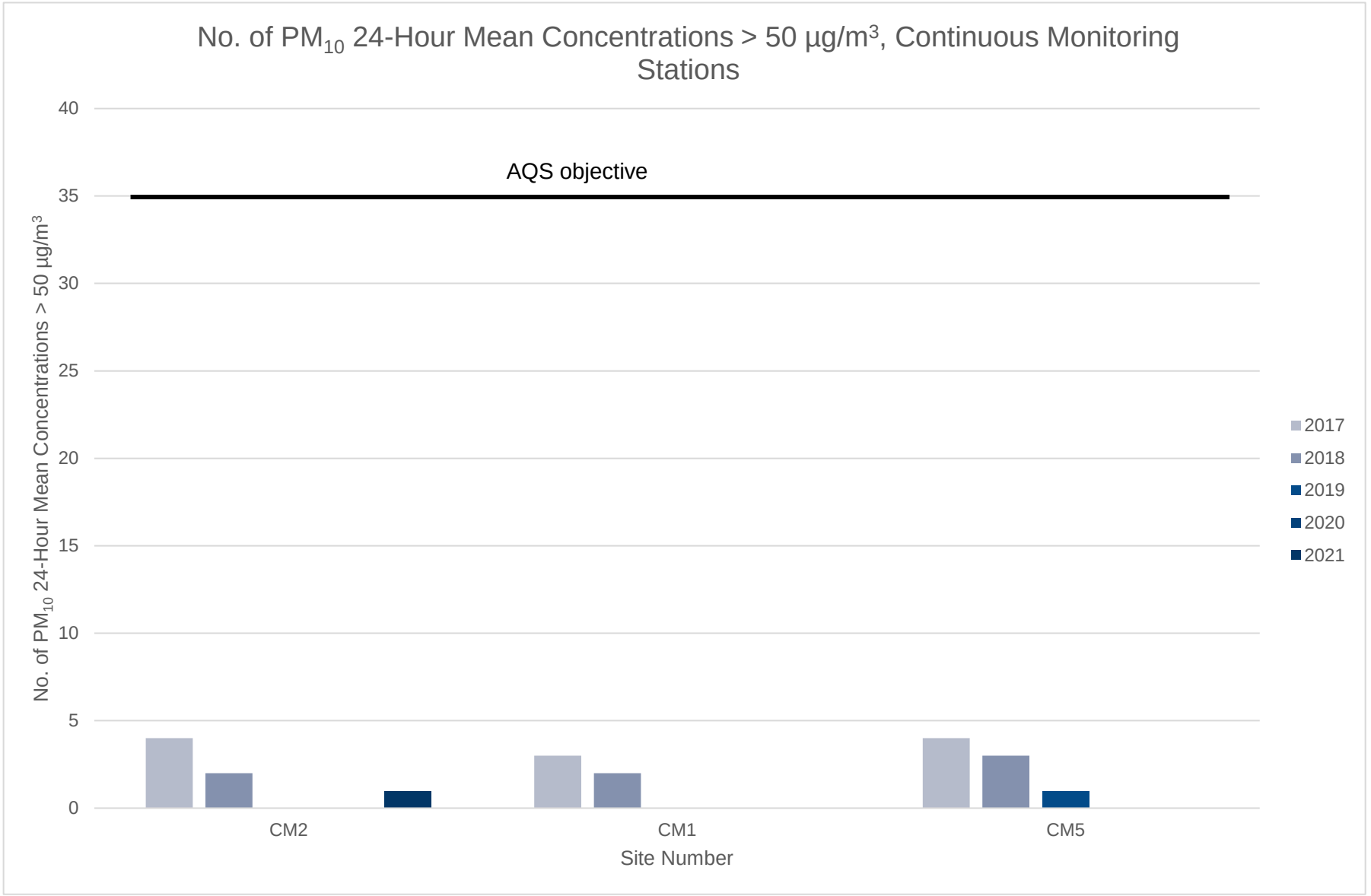
Exceedances of the $PM_{10}$ 24-hour mean objective (50µg/m$^3$ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

**Figure A.4 – Trends in Number of 24-Hour Mean $PM_{10}$ Results > 50µg/m³**



### 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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| CM2 | 457669 | 403611 | Urban Centre | 81.5 | 81.5 | - | - | - | 9.2 | 9.2 |

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

**Notes:**

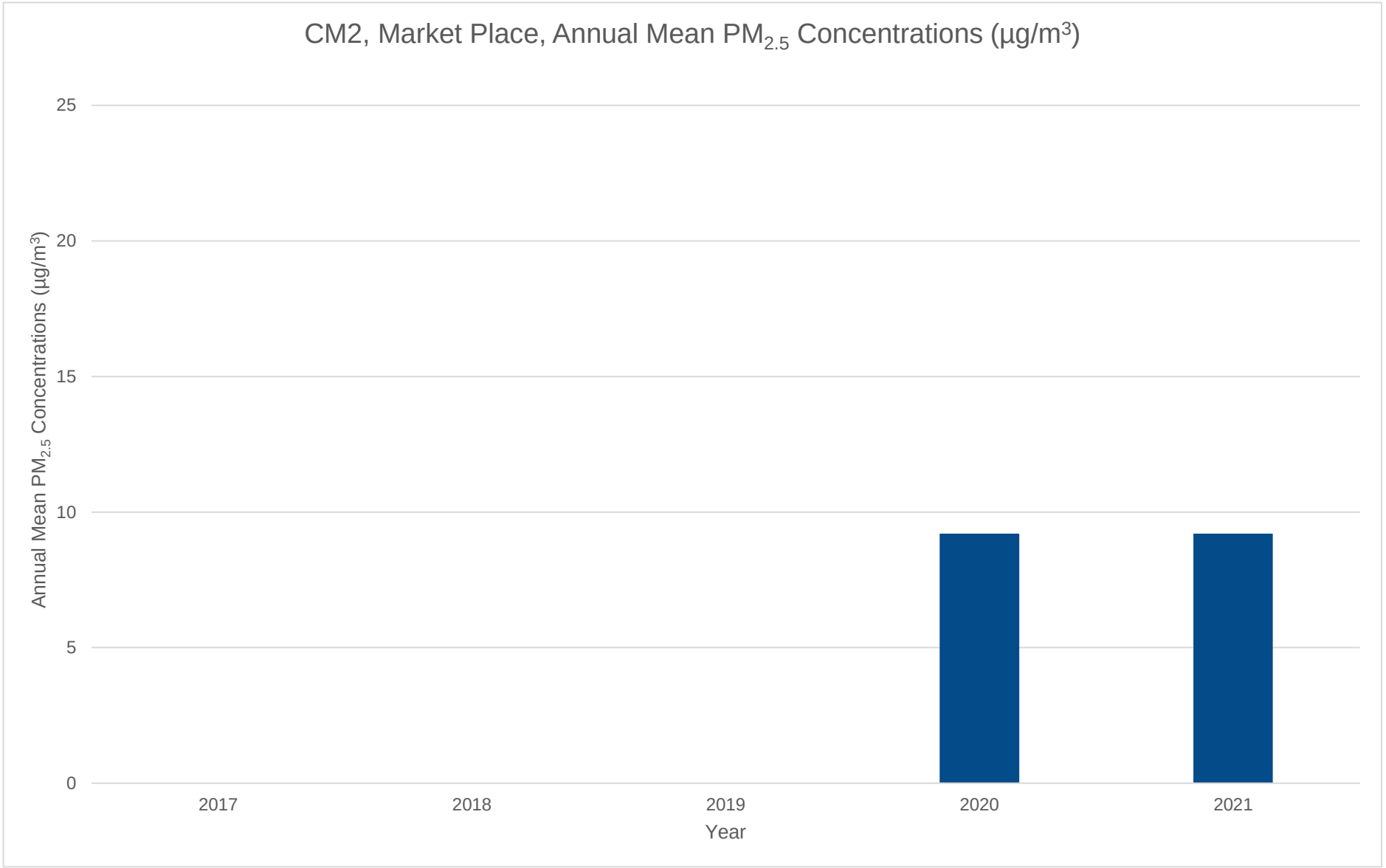
The annual mean concentrations are presented as $\mu g/m^3$.

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

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

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

**Figure A.5 – Trends in Annual Mean $PM_{2.5}$ Concentrations**



## Table A.9 – $SO_2$ 2021 Monitoring Results, Number of Relevant Instances

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | **Number of 15-minute Means > 266µg/m$^3$** | **Number of 1-hour Means > 350µg/m$^3$** | **Number of 24-hour Means > 125µg/m$^3$** |
|---|---|---|---|---|---|---|---|---|

**Notes:**

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

Exceedances of the $SO_2$ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

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

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

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

Doncaster Council does not undertake $SO_2$ monitoring.

# Appendix B: Full Monthly Diffusion Tube Results for 2021

### Table B.1 – $NO_2$ 2021 Diffusion Tube Results ($\mu g/m^3$)

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Easting) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (0.95) | Annual Mean: Distance Corrected to Nearest Exposure | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT1 | 456992 | 403757 | 30.0 | 28.0 | 20.0 | 26.0 | 21.0 | - | 17.0 | 23.0 | 28.0 | 23.0 | 23.0 | 31.0 | 24.5 | 23.4 | - | |
| DT2 | 457308 | 403458 | 38.0 | 39.0 | 26.0 | 28.0 | 32.0 | 25.0 | 24.0 | 30.0 | 37.0 | 34.0 | 38.0 | 27.0 | 31.5 | 30.0 | - | |
| DT3 | 457957 | 403152 | 30.0 | 24.0 | 21.0 | 19.0 | 20.0 | 16.0 | 17.0 | 21.0 | 26.0 | 28.0 | 24.0 | 22.0 | 22.3 | 21.3 | - | |
| DT4 | 457952 | 403123 | 40.0 | 27.0 | 27.0 | 37.0 | 36.0 | 30.0 | 26.0 | 31.0 | 41.0 | 34.0 | 33.0 | 27.0 | 32.4 | 30.9 | - | |
| DT5 | 459113 | 402842 | 41.0 | 37.0 | 26.0 | 33.0 | 35.0 | 25.0 | 25.0 | 28.0 | 41.0 | 34.0 | 32.0 | 30.0 | 32.3 | 30.7 | - | |
| DT6 | 459533 | 402768 | 33.0 | 26.0 | 24.0 | 20.0 | 22.0 | 22.0 | 18.0 | - | - | 30.0 | 30.0 | 25.0 | 25.0 | 23.8 | - | |
| DT7 | 462933 | 399568 | 34.0 | 25.0 | 21.0 | 25.0 | 19.0 | 24.0 | - | 22.0 | 31.0 | 32.0 | 29.0 | 20.0 | 25.6 | 24.4 | - | |
| DT8 | 462865 | 399334 | 29.0 | 21.0 | 17.0 | 20.0 | 16.0 | 17.0 | 15.0 | 18.0 | 20.0 | 14.0 | 14.0 | 22.0 | 18.6 | 17.7 | - | |
| DT9 | 463901 | 398398 | 21.0 | 14.0 | 16.0 | 12.0 | 14.0 | 14.0 | 12.0 | 16.0 | 18.0 | 17.0 | 20.0 | 17.0 | 15.9 | 15.2 | - | |
| DT10 | 464879 | 399699 | 29.0 | 17.0 | 17.0 | 18.0 | 14.0 | 15.0 | 14.0 | 15.0 | 18.0 | 18.0 | 23.0 | 22.0 | 18.3 | 17.5 | - | |
| DT11 | 461334 | 397977 | 33.0 | - | - | - | 26.0 | 22.0 | 22.0 | 21.0 | 25.0 | 25.0 | 23.0 | 31.0 | 25.3 | 24.1 | - | |
| DT12 | 461164 | 398459 | 33.0 | 25.0 | 22.0 | 24.0 | 24.0 | 21.0 | 20.0 | 23.0 | 28.0 | 26.0 | - | 28.0 | 24.9 | 23.7 | - | |
| DT13 | 462242 | 400134 | - | 37.0 | 26.0 | 34.0 | 32.0 | 31.0 | 25.0 | 31.0 | 33.0 | 36.0 | 31.0 | 38.0 | 32.2 | 30.6 | - | |
| DT14 | 461362 | 400777 | 42.0 | 29.0 | 30.0 | 24.0 | 33.0 | 22.0 | 28.0 | 28.0 | 36.0 | 32.0 | 35.0 | 38.0 | 31.4 | 29.9 | - | |
| DT15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DT16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DT17 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DT18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | **-** | **-** |
| DT20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | **-** | **-** |
| DT21 | 456182 | 401254 | 46.0 | 41.0 | 33.0 | 44.0 | 39.0 | 32.0 | 34.0 | 36.0 | 52.0 | 42.0 | 36.0 | 39.0 | 39.5 | 37.6 | 29.7 |
| DT22 | 455679 | 401000 | 52.0 | 38.0 | 39.0 | 46.0 | 40.0 | 37.0 | 37.0 | 33.0 | 38.0 | 29.0 | 40.0 | 38.0 | 38.9 | 37.1 | 28.1 |
| DT23 | 451457 | 398659 | 41.0 | 28.0 | - | 31.0 | 33.0 | 28.0 | 30.0 | 26.0 | 29.0 | 23.0 | 26.0 | 37.0 | 30.2 | 28.7 | **-** |
| DT24 | 451419 | 398540 | 45.0 | 30.0 | 33.0 | 36.0 | 33.0 | 31.0 | 31.0 | 31.0 | 31.0 | 21.0 | 38.0 | 33.0 | 32.8 | 31.2 | **-** |
| DT25 | 455635 | 401002 | 43.0 | 37.0 | 28.0 | 36.0 | 35.0 | 29.0 | 28.0 | 24.0 | 37.0 | 20.0 | 34.0 | 35.0 | 32.2 | 30.6 | **-** |
| DT26 | 456130 | 401258 | 43.0 | 31.0 | 27.0 | 29.0 | 28.0 | 28.0 | 22.0 | 24.0 | 33.0 | 23.0 | 35.0 | 34.0 | 29.8 | 28.3 | **-** |
| DT27 | 457010 | 402060 | 41.0 | 26.0 | 35.0 | 39.0 | 33.0 | 32.0 | 31.0 | 28.0 | 32.0 | 33.0 | 36.0 | 36.0 | 33.5 | 31.9 | **-** |
| DT28 | 457022 | 402136 | 54.0 | 38.0 | 42.0 | 57.0 | 43.0 | 47.0 | 42.0 | 40.0 | 41.0 | 27.0 | 39.0 | 44.0 | 42.8 | **40.8** | **40.3** |
| DT29 | 464986 | 399697 | 21.0 | 12.0 | - | - | - | 9.0 | - | 11.0 | 15.0 | 12.0 | 20.0 | 15.0 | 14.4 | 11.7 | **-** |
| DT30 | 465719 | 400140 | 22.0 | 15.0 | 12.0 | - | 12.0 | 11.0 | 11.0 | 13.0 | 19.0 | 13.0 | 18.0 | 18.0 | 14.9 | 14.2 | **-** |
| DT31 | 466895 | 400405 | 21.0 | 13.0 | 10.0 | - | 10.0 | 7.0 | 7.0 | 8.0 | 13.0 | 14.0 | 11.0 | 15.0 | 11.7 | 11.2 | **-** |
| DT32 | 467174 | 400372 | 23.0 | 15.0 | 13.0 | - | 23.0 | 19.0 | 18.0 | 20.0 | 23.0 | 20.0 | 25.0 | 23.0 | 20.2 | 19.2 | **-** |
| DT33 | 468620 | 404175 | 14.0 | 8.0 | - | - | 5.0 | 5.0 | 4.0 | 5.0 | 10.0 | - | 7.0 | 10.0 | 7.6 | 7.2 | **-** |
| DT34 | 467755 | 408643 | 17.0 | 15.0 | - | - | 11.0 | 9.0 | 9.0 | 12.0 | 18.0 | 18.0 | - | 20.0 | 14.3 | 13.7 | **-** |
| DT35 | 469056 | 407623 | - | - | - | - | 6.0 | 7.0 | 7.0 | 3.0 | - | - | 14.0 | | 7.4 | 8.3 | **-** |
| DT36 | 457615 | 403630 | 38.0 | 33.0 | 25.0 | 8.0 | 28.0 | 28.0 | 26.0 | 29.0 | 26.0 | 31.0 | 35.0 | 34.0 | 28.4 | 27.1 | **-** |
| DT37 | 457379 | 403460 | 27.0 | 39.0 | 24.0 | 34.0 | 20.0 | 32.0 | 26.0 | 31.0 | 33.0 | 27.0 | 35.0 | 38.0 | 30.5 | 29.0 | **-** |
| DT38 | 464046 | 411818 | 24.0 | 17.0 | 13.0 | 14.0 | 11.0 | 14.0 | 11.0 | 12.0 | 15.0 | 13.0 | 17.0 | 17.0 | 14.8 | 14.1 | **-** |
| DT39 | 452219 | 410224 | 36.0 | 32.0 | 26.0 | 28.0 | 28.0 | 30.0 | 23.0 | 30.0 | 31.0 | 30.0 | 31.0 | 29.0 | 29.5 | 28.1 | **-** |
| DT40 | 452195 | 410302 | 37.0 | 30.0 | 26.0 | 31.0 | 38.0 | 29.0 | 26.0 | 34.0 | 35.0 | 33.0 | 32.0 | 31.0 | 31.8 | 30.3 | **-** |
| DT41 | 452180 | 410377 | 40.0 | 34.0 | 29.0 | 27.0 | 42.0 | 28.0 | 29.0 | 38.0 | 28.0 | 33.0 | 35.0 | 34.0 | 33.1 | 31.5 | **-** |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT42 | 452180 | 410404 | 35.0 | 30.0 | 24.0 | 30.0 | 31.0 | 30.0 | 25.0 | 27.0 | 30.0 | 32.0 | 32.0 | 29.0 | 29.6 | 28.2 | - |
| DT43 | 452195 | 410389 | 35.0 | 23.0 | 24.0 | 24.0 | 26.0 | 23.0 | 23.0 | 26.0 | 29.0 | 26.0 | 28.0 | 30.0 | 26.4 | 25.2 | - |
| DT44 | 448230 | 405305 | 54.0 | 58.0 | 40.0 | 53.0 | 86.0 | 44.0 | 50.0 | 52.0 | 54.0 | 50.0 | 50.0 | 51.0 | 53.5 | **51.0** | 39.3 |
| DT45 | 447966 | 405303 | 24.0 | 21.0 | 12.0 | 17.0 | 16.0 | 15.0 | 11.0 | 12.0 | 19.0 | 16.0 | 18.0 | 19.0 | 16.7 | 15.9 | - |
| DT46 | 448148 | 405297 | 31.0 | 34.0 | 19.0 | 32.0 | 39.0 | 26.0 | 24.0 | 25.0 | 30.0 | 18.0 | 24.0 | 26.0 | 27.3 | 26.0 | - |
| DT47 | 448058 | 405319 | 71.0 | 60.0 | - | - | 64.0 | 49.0 | 48.0 | 58.0 | 58.0 | 49.0 | 54.0 | 57.0 | 56.8 | **54.1** | **51.3** |
| DT48 | 448235 | 405321 | 64.0 | 61.0 | 45.0 | 73.0 | 63.0 | 57.0 | 55.0 | 53.0 | 65.0 | 59.0 | 52.0 | 49.0 | 58.0 | **55.2** | **52.4** |
| DT49 | 451331 | 405223 | 40.0 | 33.0 | 24.0 | 33.0 | 27.0 | 27.0 | 25.0 | 23.0 | 33.0 | 26.0 | 34.0 | 31.0 | 29.7 | 28.3 | - |
| DT50 | 468749 | 413300 | 44.0 | 30.0 | 26.0 | 34.0 | 31.0 | 30.0 | 29.0 | 25.0 | 32.0 | 33.0 | 34.0 | 35.0 | 31.9 | 30.4 | - |
| DT51 | 451445 | 398574 | 38.0 | 30.0 | 21.0 | 23.0 | 24.0 | 25.0 | 20.0 | 21.0 | 25.0 | 28.0 | 26.0 | 29.0 | 25.8 | 24.6 | - |
| DT52 | 451485 | 398511 | 29.0 | 37.0 | 33.0 | 37.0 | 33.0 | 33.0 | 36.0 | 37.0 | 38.0 | 34.0 | 34.0 | 37.0 | 34.8 | 33.2 | - |
| DT53 | 451452 | 398645 | 42.0 | 36.0 | 31.0 | 37.0 | 35.0 | 30.0 | 29.0 | 28.0 | 36.0 | 29.0 | 26.0 | 24.0 | 31.9 | 30.4 | - |
| DT54 | 451442 | 398647 | 52.0 | 40.0 | 33.0 | 40.0 | 41.0 | 35.0 | 36.0 | 32.0 | 42.0 | 34.0 | 43.0 | 39.0 | 38.9 | 37.1 | 36.1 |
| DT55 | 451626 | 398691 | 36.0 | 26.0 | - | 22.0 | 20.0 | - | 17.0 | 20.0 | 28.0 | 25.0 | 26.0 | 28.0 | 24.8 | 23.6 | - |
| DT56 | 448042 | 399884 | 47.0 | 35.0 | 32.0 | - | 42.0 | 33.0 | 31.0 | 31.0 | 40.0 | - | - | - | 36.4 | 34.5 | - |
| DT57 | 448005 | 399860 | 42.0 | 29.0 | 26.0 | 32.0 | 30.0 | 19.0 | 27.0 | 25.0 | 30.0 | 27.0 | 33.0 | 32.0 | 29.3 | 27.9 | - |
| DT58 | 451683 | 405225 | 42.0 | 30.0 | 26.0 | 33.0 | 30.0 | 31.0 | 35.0 | 28.0 | 33.0 | 25.0 | 33.0 | 30.0 | 31.3 | 29.8 | - |
| DT59 | 451514 | 405246 | - | 19.0 | 13.0 | - | 13.0 | - | 9.0 | 10.0 | 16.0 | 12.0 | 17.0 | 18.0 | 14.1 | 13.4 | - |
| DT60 | 457870 | 403839 | 42.0 | 29.0 | 27.0 | 33.0 | 27.0 | 23.0 | 30.0 | 26.0 | 22.0 | 25.0 | 38.0 | 39.0 | 30.1 | 28.7 | - |
| DT61 | 457791 | 403767 | 42.0 | 27.0 | 30.0 | 30.0 | 22.0 | 22.0 | 24.0 | 24.0 | 21.0 | 31.0 | 39.0 | 34.0 | 28.8 | 27.5 | - |
| DT62 | 457733 | 403740 | 50.0 | 33.0 | 33.0 | 40.0 | 38.0 | 30.0 | 31.0 | 33.0 | 30.0 | 33.0 | 44.0 | 44.0 | 36.6 | 34.8 | - |
| DT63 | 457701 | 403579 | 47.0 | 31.0 | 29.0 | 45.0 | 38.0 | 36.0 | 29.0 | 38.0 | - | 31.0 | - | 43.0 | 36.7 | 35.0 | - |
| DT64 | 457345 | 403433 | 49.0 | 32.0 | 24.0 | 39.0 | 39.0 | 31.0 | 27.0 | 33.0 | 29.0 | 30.0 | 35.0 | 47.0 | 34.6 | 32.9 | - |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT65 | 457995 | 402506 | 41.0 | 27.0 | - | 30.0 | 23.0 | 19.0 | 19.0 | 27.0 | 26.0 | 29.0 | 35.0 | - | 27.6 | 26.3 | - |
| DT66 | 458142 | 402563 | 52.0 | 31.0 | 26.0 | 44.0 | 29.0 | 29.0 | 29.0 | 31.0 | 30.0 | 32.0 | 40.0 | 41.0 | 34.5 | 32.9 | - |
| DT67 | 458259 | 402582 | 45.0 | 26.0 | 29.0 | 34.0 | 26.0 | 24.0 | 18.0 | 26.0 | 23.0 | 29.0 | 35.0 | 33.0 | 29.0 | 27.6 | - |
| DT68 | 462520 | 400757 | 28.0 | 21.0 | 14.0 | 18.0 | 15.0 | 13.0 | 14.0 | 12.0 | 16.0 | 15.0 | 22.0 | 25.0 | 17.8 | 16.9 | - |
| DT69 | 462500 | 400708 | 29.0 | 20.0 | 16.0 | 21.0 | 17.0 | 14.0 | - | 14.0 | 19.0 | 18.0 | 22.0 | 26.0 | 19.6 | 18.7 | - |

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

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

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

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

☒ **Doncaster Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

**Notes:**

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

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

See Appendix C for details on bias adjustment and annualisation.

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

## New or Changed Sources Identified Within Doncaster Council During 2021

Doncaster Council has not identified any new sources relating to air quality within the reporting year of 2021. All Planning Applications in Doncaster can be viewed using the online portal.

## Additional Air Quality Works Undertaken by Doncaster Council During 2021

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

## QA/QC of Diffusion Tube Monitoring

Nitrogen dioxide diffusion tubes for 2021 were analysed by South Yorkshire Air Quality Samplers. This laboratory uses the analytical technique of the grid adsorbent being 50% triethanolamine (TEA) in acetone. Reagents used in the analysis are sulphanilamide and NEDA. The analytical technique used is spectrometry, at a wavelength of 540 nanometres.

South Yorkshire Air Quality Samplers participated in the WASP / AIR PT scheme for nitrogen dioxide and has previously participated within the survey's inter laboratory comparison scheme. Laboratory performance during 2021 were based only on one round AR042 (January – March 2021) of the AIR PT annual performance criteria for $NO_2$ diffusion tubes used in Local Air Quality Management. These were the only results available at the time of writing this report. For this AIR PT round, the results of the measurements based up a satisfactory z-score of < +/- 2 were 100%. Changing of tubes adhered to the 2021 Diffusion Tube Monitoring Calendar.

### Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Our Doncaster Council 2021 diffusion tube data have been annualised where

required using Defra's Diffusion Tube Data Processing Tool v2.0, following guidance within Chapter 7 of LAQM.TG16: NOx and $NO_2$ Monitoring, including the procedure laid out in Box 7.10.

The four background continuous monitoring sites within the region used to calculate the annualisation factors were Barnsley Gawber, Dewsbury Ashworth Grove, Leeds Centre and York Bootham. Annualised data are presented in Table C.2 below. The diffusion tubes sites requiring annualisation of 2021 data are DT29, DT35 and DT56.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from $NO_x/NO_2$ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Doncaster Council have applied a local bias adjustment factor of 0.95 to the 2021 monitoring data. A summary of bias adjustment factors used by Doncaster Council over the past five years is presented in Table C.1.

National factors had been used during review and assessment in Doncaster until 2014. The use of national bias had provided consistency, however on recommendations from previous review and assessment feedback a local co-location study was implemented.

The national factor is consistently low and with one of the sites being kerbside in London, it was felt that this became unrepresentative.

In 2019, 2020 and 2021, Doncaster Council conducted co-location studies within the Borough and these were completed in line with guidance provided within LAQM.TG16 Chapter 7: $NO_x$ and $NO_2$ Monitoring, $NO_2$ by Diffusion Tubes and using the Diffusion Tube Data Processing Tool.

The most important factors to be considered when deciding which bias-adjustment factor to use are:

• Tube exposure time (in our case 1 month, in line with diffusion tube calendar)

• Length of the monitoring study (one calendar year, however for 2021 the factor was restricted to ten months continuous monitoring data)

• QA/QC of the chemiluminescence analyser (carried out locally by National Physical Laboratory with data scaling and ratification undertaken by Council officers in line with LAQM.TG16)

• QA/QC of diffusion tubes (Air PT $NO_2$ as reported above)

• Siting of the co-location study (if roadside tubes are being factored it is important to use a roadside factor – the triplicate diffusion tube and continuous monitoring data were taken from roadside at our CM6 Skellow air quality monitoring stations adjacent to the A1 trunk road)

• Siting of other tubes in the survey - all sampling periods were periods were in line with the 2021 Diffusion Tube Monitoring Calendar.

The local factors from the last three years' are very similar (0.97, 0.92 and 0.95 for 2021, 2020 and 2019 respectively). This gives us confidence that application of the 2021 local factor is appropriate. For 2021, only ten months' continuous monitoring data were available to produce the factor (January to September and December 2021, with a two month gap of data within October and November 2021). This was subsequently discussed with the LAQM Helpdesk[10], who stated: "*Yes, there are no issues with using the 0.95 factor inclusive of December even if there is that gap in the monitoring. The preference would be to include as much data coverage for the year as possible. Within your ASR it may be worth discussing the approach you have used and the reasoning for this."*

For the ten months when data were available, the Diffusion Tube Data Processing Tool v2.0 concluded that there was good overall precision for the triplicate co-located diffusion tubes, with good data capture for the ten months' continuous monitoring data, despite the processing tool concluding that there was poor overall data capture for the year due to the missing two months. We do not consider this sufficient reason to reject the local factor, due to the loss of two months' data.

The local BAF calculations are reproduced in the below table:

[10] E-mail correspondence, Query Ref 8036: Use of local bias adjustment factor, 21/06/2022

**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 | 05/01/2021 | 02/02/2021 | 33.0 | 33.0 | 32.0 | 33 | 0.6 | 2 | 1.4 |
| 2 | 02/02/2021 | 03/03/2021 | 24.0 | 29.0 | 23.0 | 25 | 3.2 | 13 | 8.0 |
| 3 | 03/03/2021 | 31/03/2021 | 27.0 | 27.0 | 28.0 | 27 | 0.6 | 2 | 1.4 |
| 4 | 31/03/2021 | 05/05/2021 | 27.0 | 27.0 | 26.0 | 27 | 0.6 | 2 | 1.4 |
| 5 | 05/05/2021 | 02/06/2021 | 26.0 | 23.0 | 25.0 | 25 | 1.5 | 6 | 3.8 |
| 6 | 02/06/2021 | 30/06/2021 | 24.0 | 26.0 | 30.0 | 27 | 3.1 | 11 | 7.6 |
| 7 | 30/06/2021 | 04/08/2021 | 22.0 | 23.0 | 22.0 | 22 | 0.6 | 3 | 1.4 |
| 8 | 04/08/2021 | 01/09/2021 | 29.0 | 28.0 | 27.0 | 28 | 1.0 | 4 | 2.5 |
| 9 | 01/09/2021 | 28/09/2021 | 29.0 | 31.0 | 30.0 | 30 | 1.0 | 3 | 2.5 |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | 01/12/2021 | 05/01/2022 | 31.0 | 28.0 | 28.0 | 29 | 1.7 | 6 | 4.3 |
| 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 |
| 29.2 | 100 | Good | Good |
| 25.6 | 100 | Good | Good |
| 25.4 | 100 | Good | Good |
| 23.9 | 99.8 | Good | Good |
| 25 | 100 | Good | Good |
| 25 | 100 | Good | Good |
| 23 | 100 | Good | Good |
| 23 | 100 | Good | Good |
| 28.3 | 100 | Good | Good |
| | | | |
| | | | |
| 31.3 | 87 | Good | Good |
| | | | |
| Overall survey --> | | Good precision | Good Overall DC |

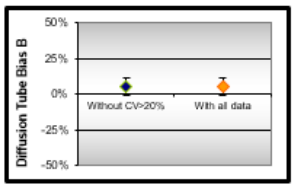
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 10 out of 10 periods have a CV smaller than 20%

| Accuracy (with 95% confidence interval) without periods with CV larger than 20% | |
|---|---|
| Bias calculated using 10 periods of data | |
| Bias factor A | 0.95 (0.9 - 1.01) |
| Bias B | 5% (-1% - 11%) |
| Diffusion Tubes Mean: | 27 µgm$^{-3}$ |
| Mean CV (Precision): | 5 |
| Automatic Mean: | 26 µgm$^{-3}$ |
| Data Capture for periods used: | 99% |
| Adjusted Tubes Mean: | 26 (25 - 28) µgm$^{-3}$ |

| Accuracy (with 95% confidence interval) WITH ALL DATA | |
|---|---|
| Bias calculated using 10 periods of data | |
| Bias factor A | 0.95 (0.9 - 1.01) |
| Bias B | 5% (-1% - 11%) |
| Diffusion Tubes Mean: | 27 µgm$^{-3}$ |
| Mean CV (Precision): | 5 |
| Automatic Mean: | 26 µgm$^{-3}$ |
| Data Capture for periods used: | 99% |
| Adjusted Tubes Mean: | 26 (25 - 28) µgm$^{-3}$ |




Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Furthermore, we note that fellow South Yorkshire local authorities, (Barnsley and Sheffield) who used the same laboratory in 2021 and participate in joint monitoring studies across South Yorkshire, reporting to the Sheffield City Region Air Quality and Climate group, had similar factors of 0.87 and 0.93 respectively in 2021. These other regional factors give further reassurance to the use our local factor in 2021.

### Table C.1 – Bias Adjustment Factor

| Monitoring Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
|---|---|---|---|
| **2021** | Local - Doncaster | - | 0.95 |
| **2020** | Local - Doncaster | - | 0.92 |
| **2019** | Local - Doncaster | - | 0.97 |
| **2018** | Local - Doncaster | - | 1.1 |
| **2017** | Local - Barnsley | - | 1.03 |

### $NO_2$ Fall-off with Distance from the Road

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

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

Subsequently, following use of the Diffusion Tube Data Processing Tool, our distance corrected data are found within Table C.4. Please note, the distance correction has only been applied for our monitoring sites where the roadside / kerbside annual mean concentration is greater than 36 µg/$m^3$ and the sites are not located at a point of relevant exposure (taking the limitations of the calculator into account).

## QA/QC of Automatic Monitoring

The QA/QC automatic monitoring procedures usually consists of bi-monthly calibrations performed manually on-site by the Local Site Operator (Doncaster Council). Daily data checks were carried out remotely by Doncaster Council staff in order to identify any early issues with analyser performance and communications.

An outside contractor performs six-monthly services and all units are covered by a service and maintenance agreement including call-out services.

Independent audits were carried out in February 2021 and 2022 by National Physical Laboratory. The conclusion of these were:

**February 2021**

*"In general your instrumentation was working within specification, with the following exceptions*

*There was a leak in the Conisbrough NOx analyser, at the analyser sample inlet bulkhead fitting. Prior to identifying and resolving the leak, the analyser zeroes were 9 ppb and 6 ppb, NOx and NO respectively.* Erroneous data were subsequently removed.

*There was an offset on the Conisbrough TEOM auxiliary mass flow controller. The offset was recorded as 4.3 l/min, which resulted in a total flow of 13.1 l/min, thereby not producing an accurate PM10 size fraction being sampled.* TEOM data have not been reported.

*There is a PMT cooler fault on the Skellow NOx analyser. This is likely to lead to poor data quality as temperatures increase if the site air conditioning is not able to keep the analyser*

*cool.* Data for the remainder of 2021 was however representative and have been reported.

*The channels on the Grass Market NOx analyser were somewhat out of balance with the instrument seeing -24 ppb of NO2 when sampling a 480 ppb NO/N2 cylinder. This may be related to the larger than usual error due to linearity/repeatability observed, of 15 and 13 ppb, NOx and NO."* Market Place $NO_2$ data for 2021 have not been reported due to data capture below 25% for the year

**February 2022**

*"In general, your instrumentation was found to be in good working order, and, subject to ongoing calibration and QA/QC, would be expected to yield robust data sets.*

*However, as seen before, there is an active cooler temperature fault on the Skellow NOx analyser, with the analyser zeroes seen to be drifting during the audit by approximately 25 ppb. This is probably due to the analyser responding to changes in enclosure temperature due to the enclosure door being open. This would affect the zeroes if the PMT cooler was not operating.* This issue will addressed in the 2023 ASR.

*It was not possible to measure the BAM flow rates at Doncaster market as one of the roof cage padlocks was to be seized".* This issue will addressed in the 2023 ASR.

Data from 2021 were subsequently scaled, validated and ratified in house, including the removal of erroneous data and applying relevant calculations in line with the technical guidance LAQM TG(16) to obtain the final data set. As part of the ratification process, data were also compared against regional AURN data sets in order to assess regional data trends and further detect erroneous data.

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

No additional correction was required to the $PM_{10}$ and $PM_{2.5}$ data from our CM2 Market Place site, as this uses the BAM (Beta Attenuation Monitor). Sites CM2 and CM5 have the TEOM (both $PM_{10}$ only), with the subsequent data requiring application of a correction factor. The VCM model was previously used to correct the TEOM results but this is no longer possible due to the lack of FDMS data. For our 2021 ASR, Doncaster Council consulted the LAQM Helpdesk for advice, and subsequently TEOM data was omitted from the 2021 report.

For this ASR we consulted again with the Helpdesk regarding this issue, as the TEOMS at CM1 and CM5 were still operational and subsequent data collected in 2021. Subsequently the advice received from the Helpdesk this year was:

*"Our recommendation for PM10 TEOM data is that you do produce the data with correction by multiplying by 1.3 (which is how data used to be corrected prior to the VCM) and that you heavily caveat it. For PM2.5 TEOM data, neither the VCM correction nor multiplying by 1.3 have ever been recommended and the data should therefore be reported uncorrected and heavily caveated."*

We have therefore applied the 1.3 factor to the 2021 data, but not have retrospectively applied this to the 2020 CM1 and CM5 TEOM data due to time constraints. We note the advice to apply a caveat to 2021 data, and therefore recommend that these data are treated with caution. We also note that the CM1 and CM5 data are however meeting the annual mean and 24-hour mean objectives by some margin and these data are also broadly similar to our CM2 data, which gives some confidence in publishing these data in this report. In 2022, we are currently in the process of replacing our TEOMs with another make of particulate monitors, which will not require application of the TEOM/VCM correction factor.

### Automatic Monitoring Annualisation

Data capture for our TEOMs (CM1 and CM5) during 2021 (calendar year) were 68.8% (data collected January to September 2021, data capture for this period was 92%) 51.4% (data collected January to July 2021; data capture for this period was 88.5%). As, annualisation is required for any site with data capture less than 75% but greater than 25%, these data were therefore annualised in accordance with Box 7.9 (Annualising Continuous Monitoring Data) and the annualisation data presented in Table C.2A. The annualisation was undertaken after application of the 1.3 correction factor discussed above.

### $NO_2$ Fall-off with Distance from the Road

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

Table C.4 details our diffusion tube data where distance correction has been applied (LAQM $NO_2$ fall-off with distance calculator). This correction has only been applied for those annual mean concentrations greater than 36 µg/$m^3$ and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account). Specifically, this applied to DTs 21, 22, 28, 44, 47, 48 and 54 in 2021. For our 2021 background concentration contribution to the correction, we have used the relevant background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018).

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

| Site ID | Annualisation Factor Barnsley Gawber | Annualisation Factor Dewsbury Ashworth Grove | Annualisation Factor Leeds Centre | Annualisation Factor York Bootham | **Average Annualisation Factor** | **Raw Data Annual Mean** | **Annualised Annual Mean** | Comments |
|---|---|---|---|---|---|---|---|---|
| DT29 | 0.8486 | 0.8451 | 0.8916 | 0.8252 | 0.8526 | 14.4 | 12.3 | |
| DT35 | 1.1437 | 1.1532 | 1.1664 | 1.2481 | 1.1779 | 7.4 | 8.7 | |
| DT56 | 0.9077 | 0.9633 | 1.0529 | 1.0597 | 0.9959 | 36.4 | 36.2 | |

## Table C.3A – Annualisation Summary (concentrations presented in µg/m$^3$, $PM_{10}$ data continuous data)

| Site ID | Annualisation Factor Sheffield Devonshire Green | Annualisation Factor Hull Freetown | Annualisation Factor Leeds Centre | Annualisation Factor York Bootham | **Average Annualisation Factor** | **Raw Data Annual Mean** | **Annualised Annual Mean** | Comments |
|---|---|---|---|---|---|---|---|---|
| CM1 | 0.9375 | 0.9655 | 0.942 | 0.922 | 0.9418 | 17.6 | 16.6 | CM1 data capture for period mean 92%, data capture for 2021 calendar year 68.8% |
| CM5 | 0.9302 | 0.9589 | 0.9286 | 0.9155 | 0.9333 | 21.8 | 20.3 | CM5 data capture for period mean 88.5%, data capture for 2021 calendar year 51.4% |

## Table C.4 – 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** | 10 | | | | |
| **Bias Factor A** | 0.95 (0.9 – 1.1) | | | | |
| **Bias Factor B** | 5% (-1 – 11%) | | | | |
| **Diffusion Tube Mean (µg/m$^3$)** | 27 | | | | |
| **Mean CV (Precision)** | 5 | | | | |
| **Automatic Mean (µg/m$^3$)** | 26 | | | | |
| **Data Capture** | 99 | | | | |
| **Adjusted Tube Mean (µg/m$^3$)** | 26 (25 – 28) | | | | |

**Notes:**

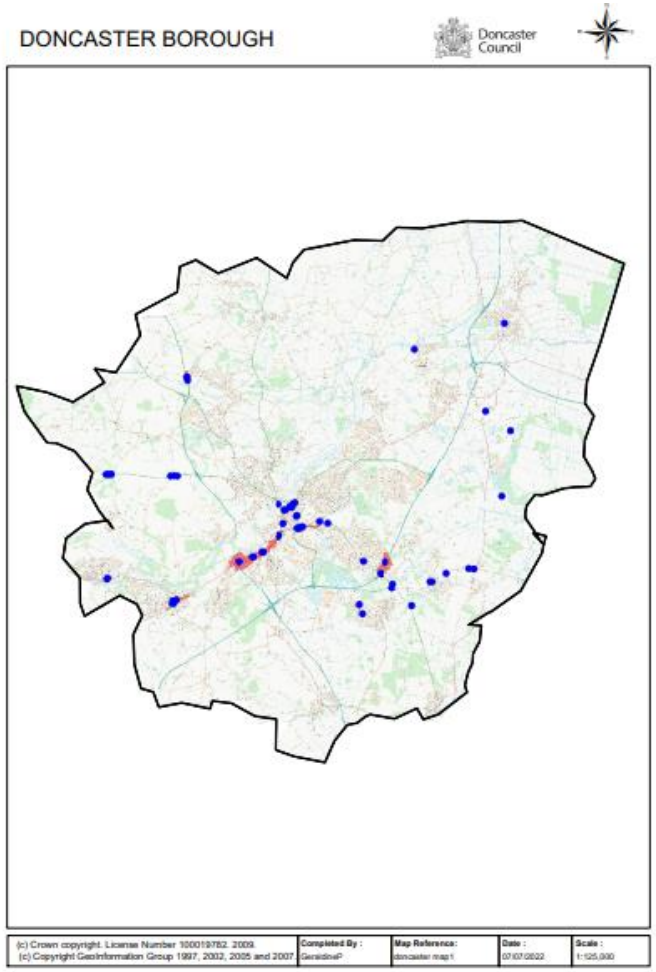
A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

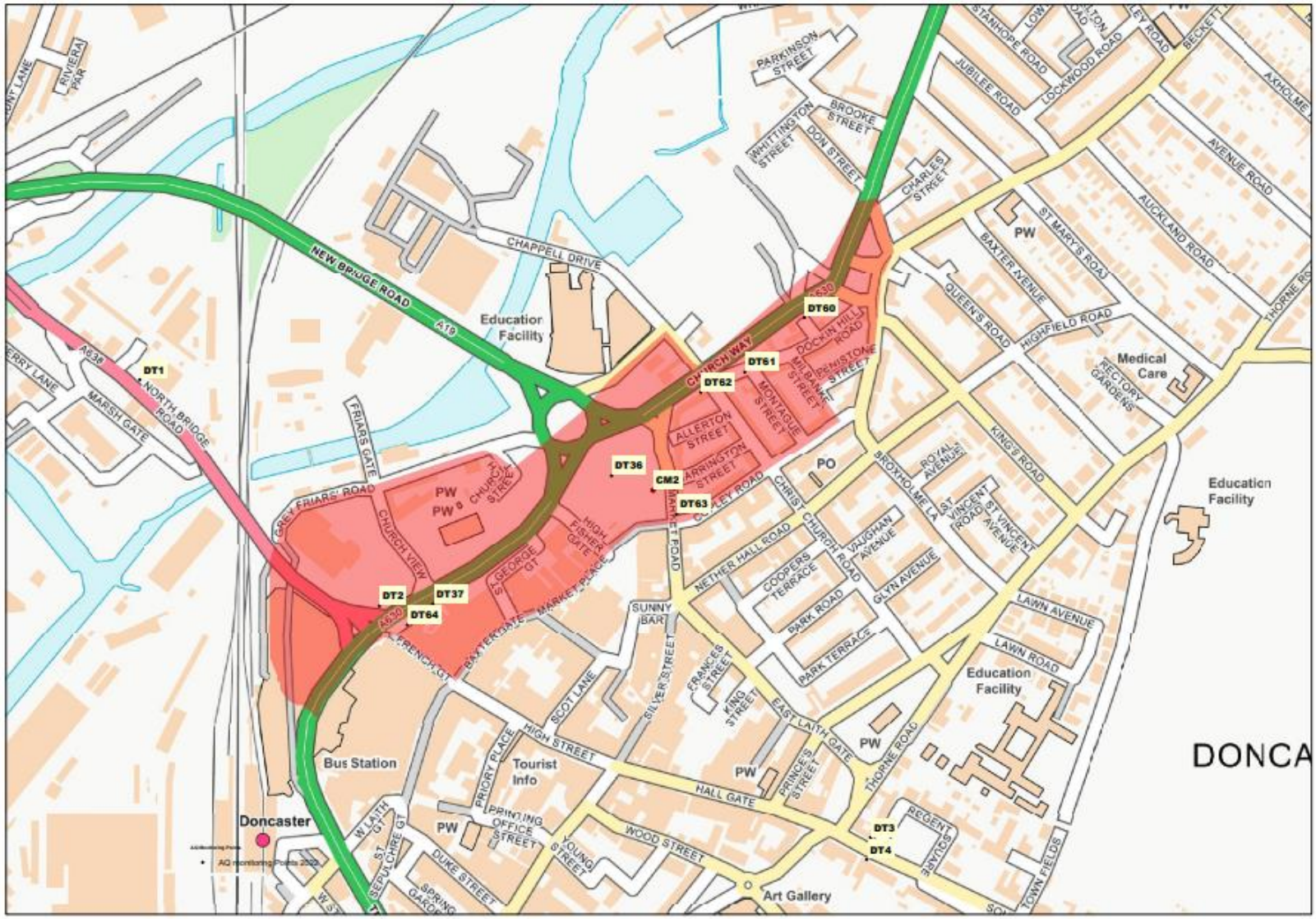
## Table C.5 – $NO_2$ Fall off With Distance Calculations (concentrations presented in µg/$m^3$)

| Site ID | Distance (m): Monitoring Site to Kerb | Distance (m): Receptor to Kerb | **Monitored Concentration (Annualised and Bias Adjusted** | **Background Concentration** | **Concentration Predicted at Receptor** | Comments |
|---|---|---|---|---|---|---|
| DT21 | 1.5 | 7.5 | 37.6 | 15.2 | 29.7 | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018) |
| DT22 | 2.5 | 13.2 | 37.1 | 15.2 | 28.1 | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018) |
| DT28 | 3.7 | 4 | 40.8 | 15.6 | **40.3** | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018)<br>*Predicted concentration at Receptor above AQS objective.* |
| DT44 | 1 | 4 | 51.0 | 9.2 | *39.3* | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018)<br>*Predicted concentration at Receptor within 10% the AQS objective.* |
| DT47 | 0.8 | 1.1 | 54.1 | 9.2 | **51.3** | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018)<br>*Predicted concentration at Receptor above AQS objective.* |
| DT48 | 0.8 | 1.1 | 55.2 | 9.2 | **52.4** | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018)<br>*Predicted concentration at Receptor above AQS objective.* |
| DT54 | 1.8 | 2.1 | 37.1 | 10.3 | *36.1* | Background concentration taken from Defra 1 $km^2$ $NO_2$ maps, estimated background for 2021 (base year 2018)<br>*Predicted concentration at Receptor within 10% the AQS objective.* |

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

## Figure D.1 – Maps of Automatic and Non-Automatic Monitoring Site






**Key**

| Monitoring Point | Location |
|---|---|
| CM2 | Market Place, Market Road, Doncaster |
| DT1 | A638 North Bridge adj. Council depot |
| DT2 | A638 North Bridge adj. Trafford Way |
| DT3 | Regent Sq. adj. South Parade |
| DT4 | South Parade opp. Regent Sq. |
| DT36 | Market Place Car Park, A630 Church Way |
| DT37 | A630 Trafford Way nr Frenchgate |
| DT60 | St Leger Place, adj. A630 Church Way |
| DT61 | Dockin Hill Road, adj. A630 Church Way |
| DT62 | A630 Church Way |
| DT63 | Market Road, adj. Market Place car park |
| DT64 | A630 Trafford Way nr Frenchgate |

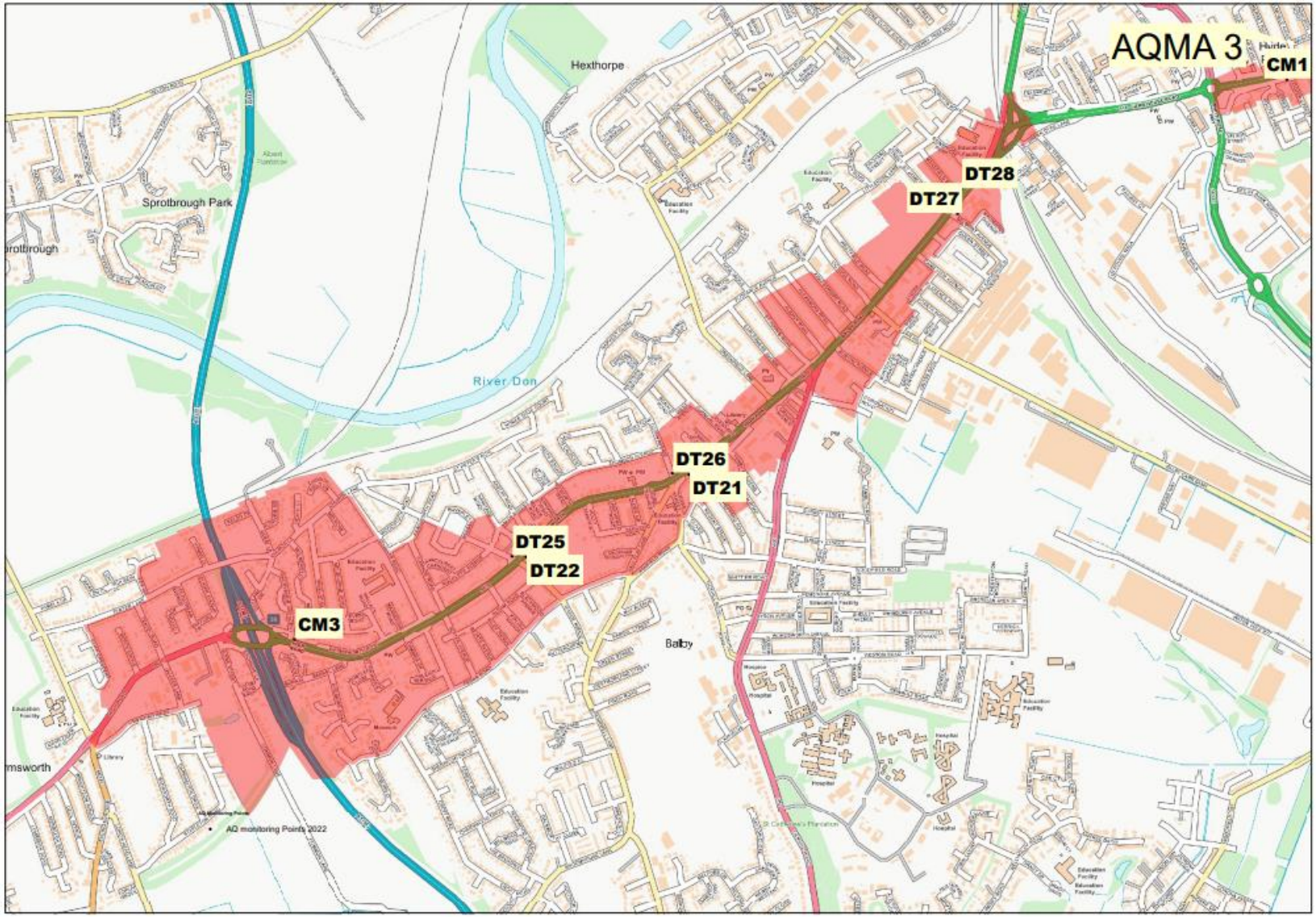
**Title :** AQMA 1

**Completed by:** GeraldineP

**Reference :** AQ REPORT MAP_MAY 2022

**Date :** 30/06/2022

**Scale :** 1:1,845




N

Key

| Mon Point | Location |
|---|---|
| CM3 | A1/A630 Grosvenor Terrace, Warmsworth |
| DT21 | A630, Balby, Hall Flat Junction |
| DT22 | A630, Warmsworth, nr Warde Ave. |
| DT25 | A630, Warmsworth, junc. Waverley Ave. |
| DT26 | A630 High Road, Balby, junc. Oswin Ave. |
| DT27 | A630 Balby Rd, Hexthorpe, junc. Belmont Ave. |
| DT28 | A630 Balby Rd, Hexthorpe, nr junc. Mansfield Rd |

**Title :**

**AQMA 2**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
06/07/2022

**Scale :**
1:4,313


**Key**

| Mon Point | Location |
|---|---|
| CM1 | A18 Carr House Road, Doncaster |
| DT5 | Bennethorpe Rd adj. A18 Carr House Rd |
| DT65 | Somerset Road, adj A18 Carr House Road |
| DT66 | A18 Carr House Road |
| DT67 | A18 Carr House Road |

**Title :**

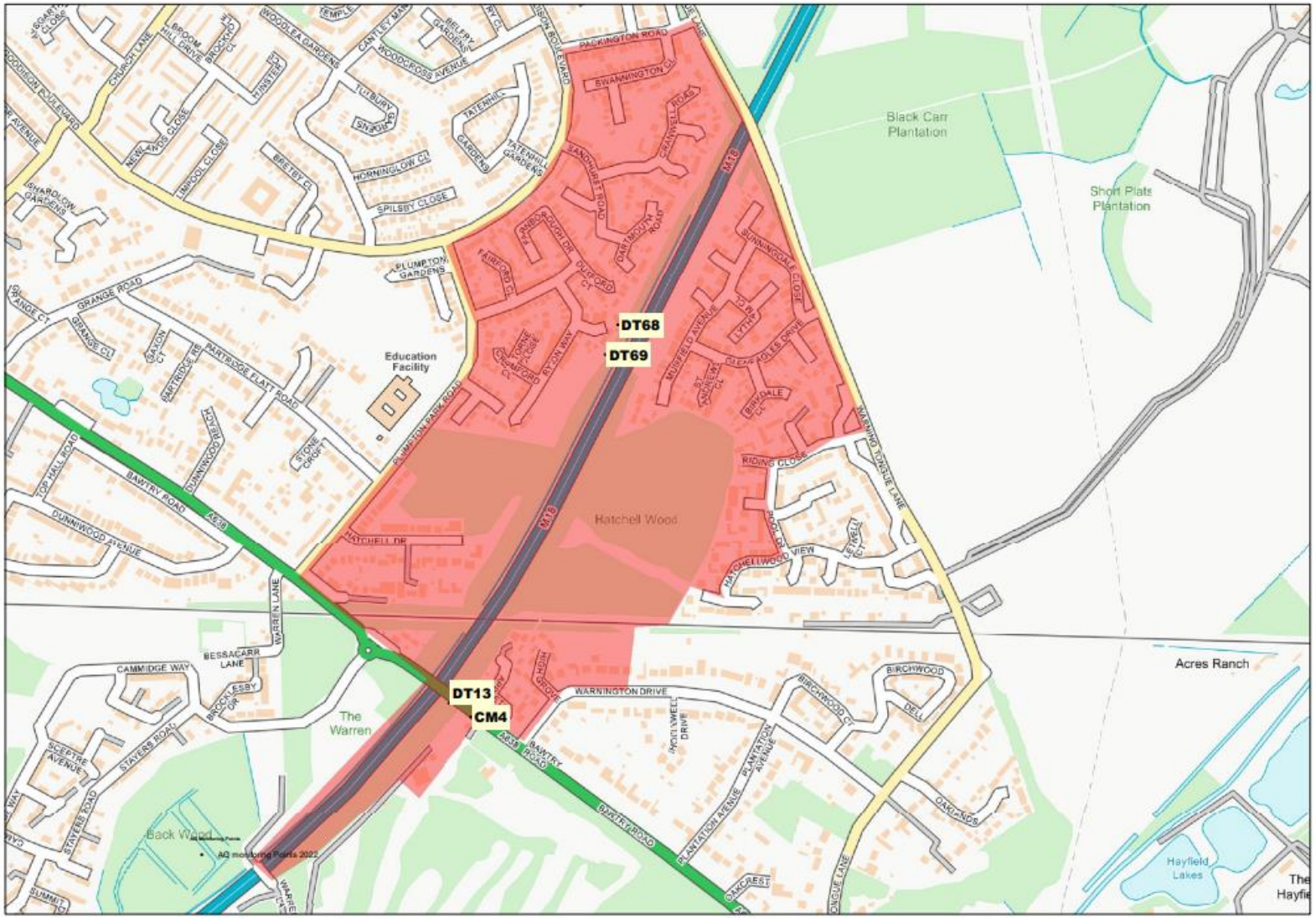
**AQMA 3**

**Completed by:** GeraldineP

**Reference :** AQ REPORT MAP_MAY 2022

**Date :** 06/07/2022

**Scale :** 1:1,725




N

**Key**

| Monitoring Point | Location |
|---|---|
| CM4 | A638 Bawtry Road, Bessacarr |
| DT13 | A638 Bawtry Road, Bessacarr, adj. M18 |
| DT68 | High Grove Court, nr M18, Bessacarr |
| DT69 | Footbridge, adj M18, Bessacarr |

**Title :**

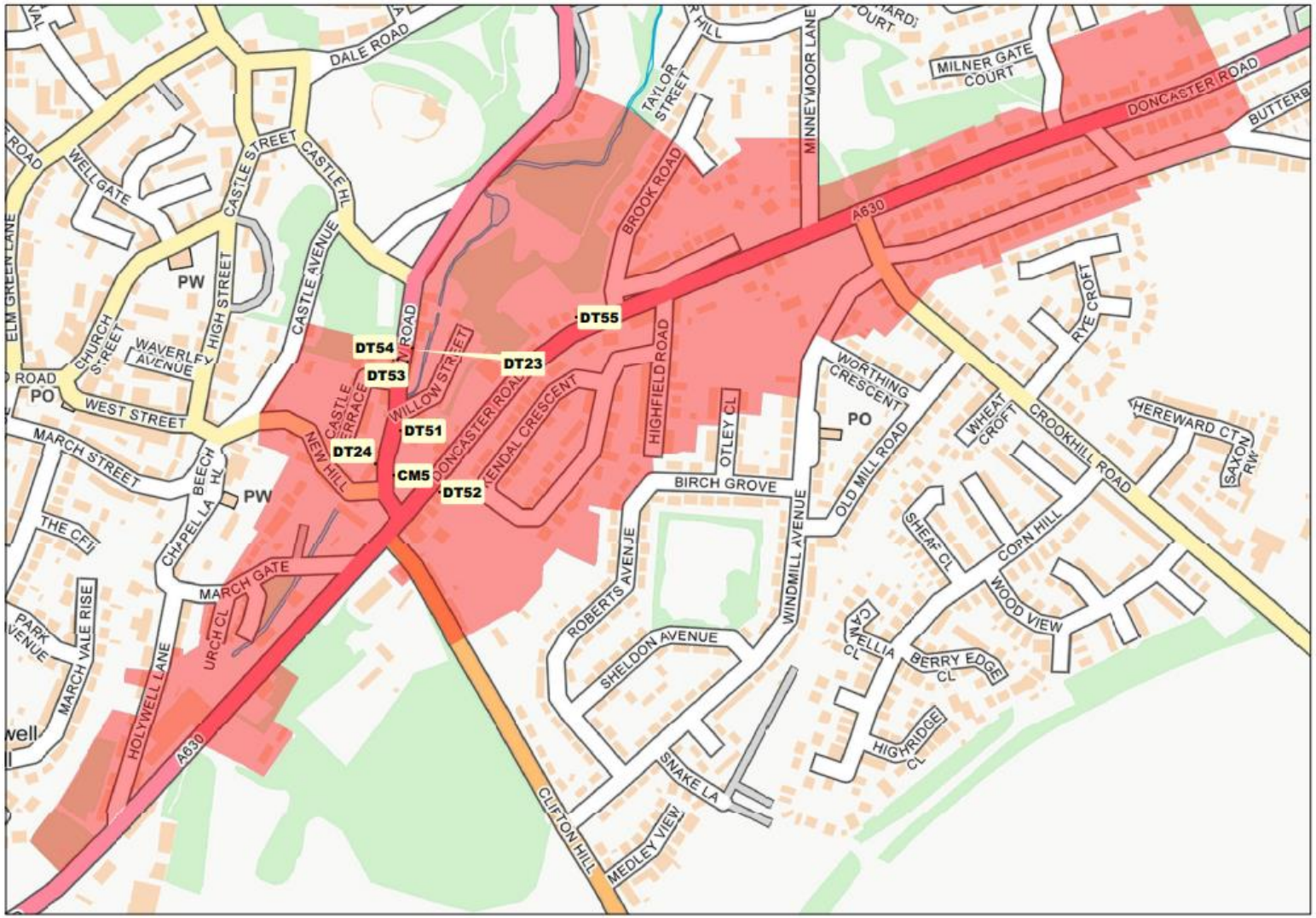
**AQMA 4**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:2,300




N

**Key**

| Monitoring Point | Location |
|---|---|
| CM5 | A6023 Low Road, Conisbrough |
| DT23 | A6023, Low Road, Conisbrough |
| DT24 | A6023, junction A630, Conisbrough |
| DT51 | A6023, Low Road, Conisbrough, junc. Willow St |
| DT52 | A630 Doncaster Road, Conisbrough |
| DT53 | A6023, Low Road, Conisbrough |
| DT54 | A6023, Low Road, Conisbrough |
| DT55 | A630 Doncaster Road, Conisbrough |

**Title :**

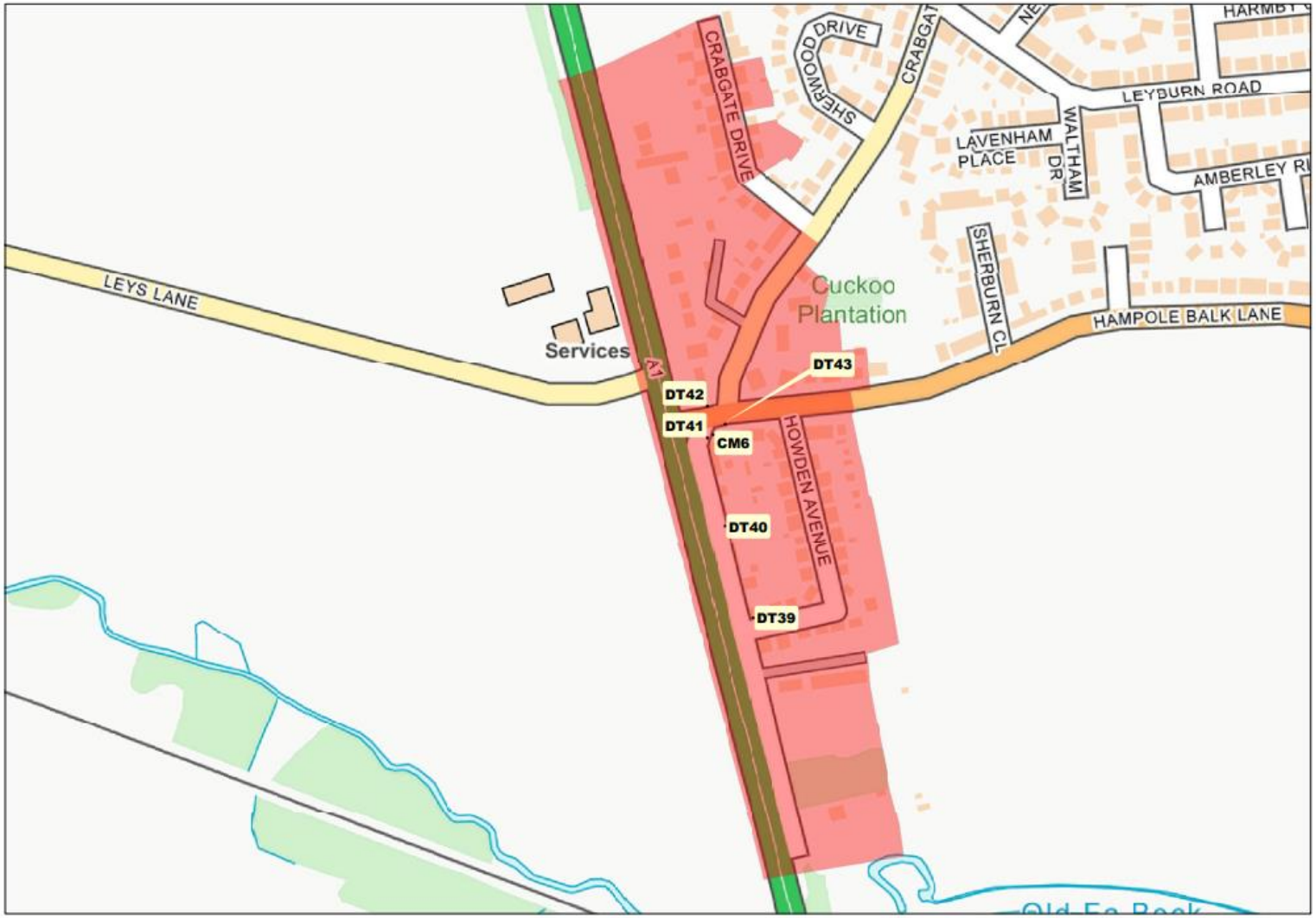
**AQMA 5**

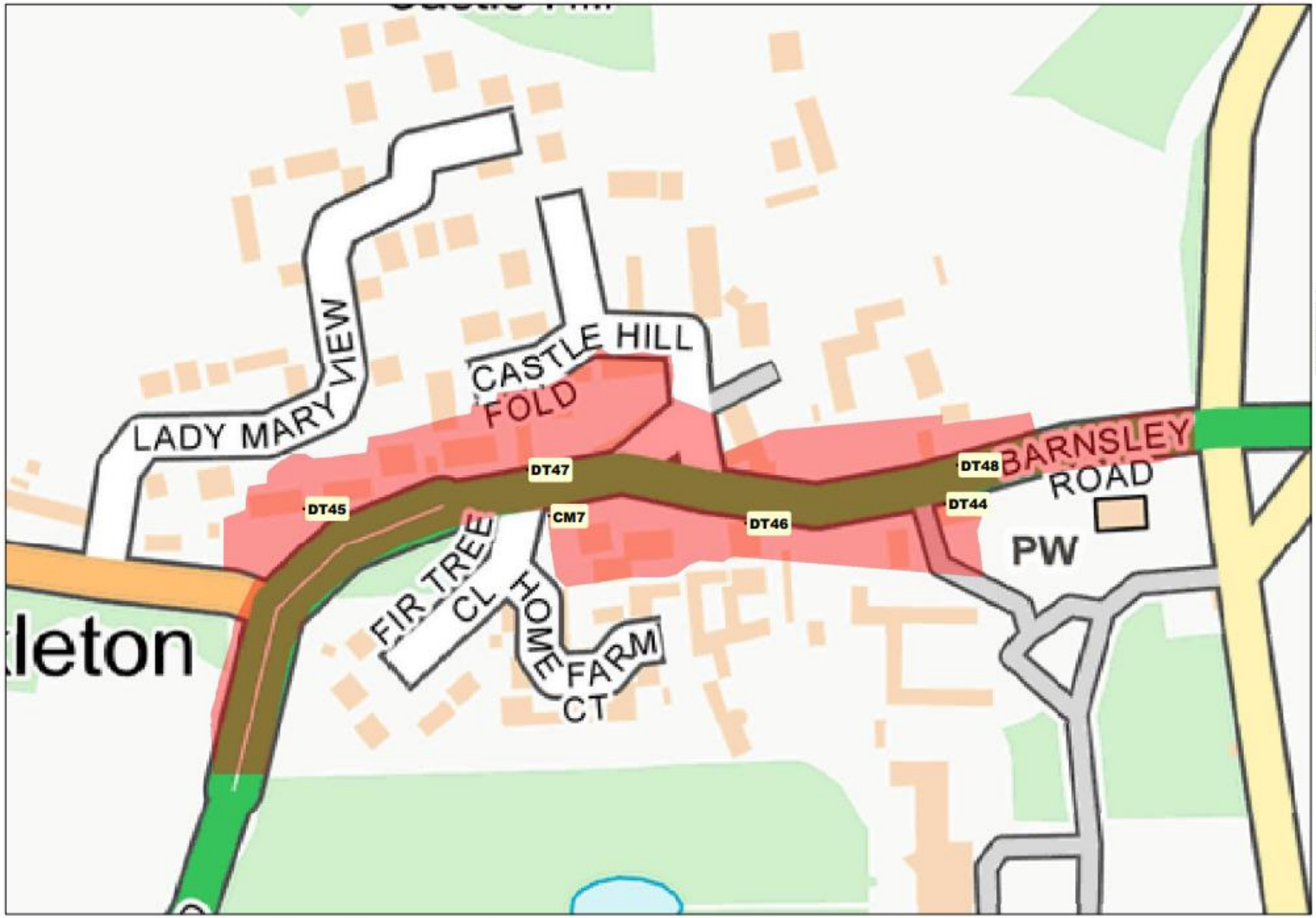
**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:1,438






N

**Key**

| Monitoring Point | Location |
|---|---|
| CM7 | Fir Tree Close, adj A635 Doncaster Road, Hickleton |
| DT44 | A635 Doncaster Road, Hickleton, adj. Sue Ryder Care Home |
| DT45 | A635 Doncaster Road, Hickleton |
| DT46 | A635 Doncaster Road, Hickleton |
| DT47 | A635 Doncaster Road, Hickleton, opp. Fir Tree Close |
| DT48 | A635 Doncaster Road, Hickleton |

**Title :**

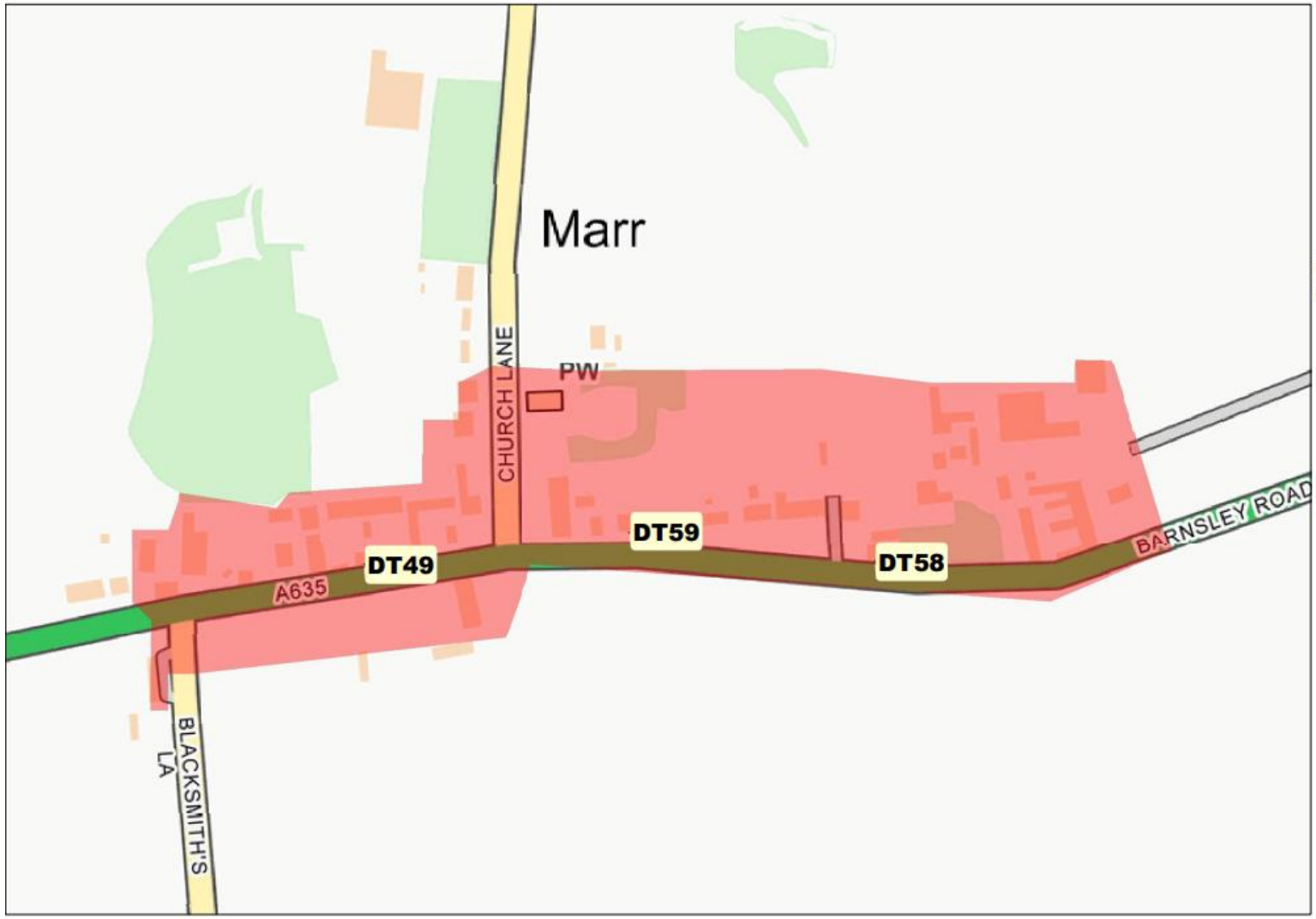
**AQMA 7**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:575




N

Key

| Monitoring Point | Location |
|---|---|
| DT49 | A635 Barnsley Road, Marr |
| DT58 | A635 Barnsley Road, Marr |
| DT59 | A635 Barnsley Road, Marr |

**Title :**

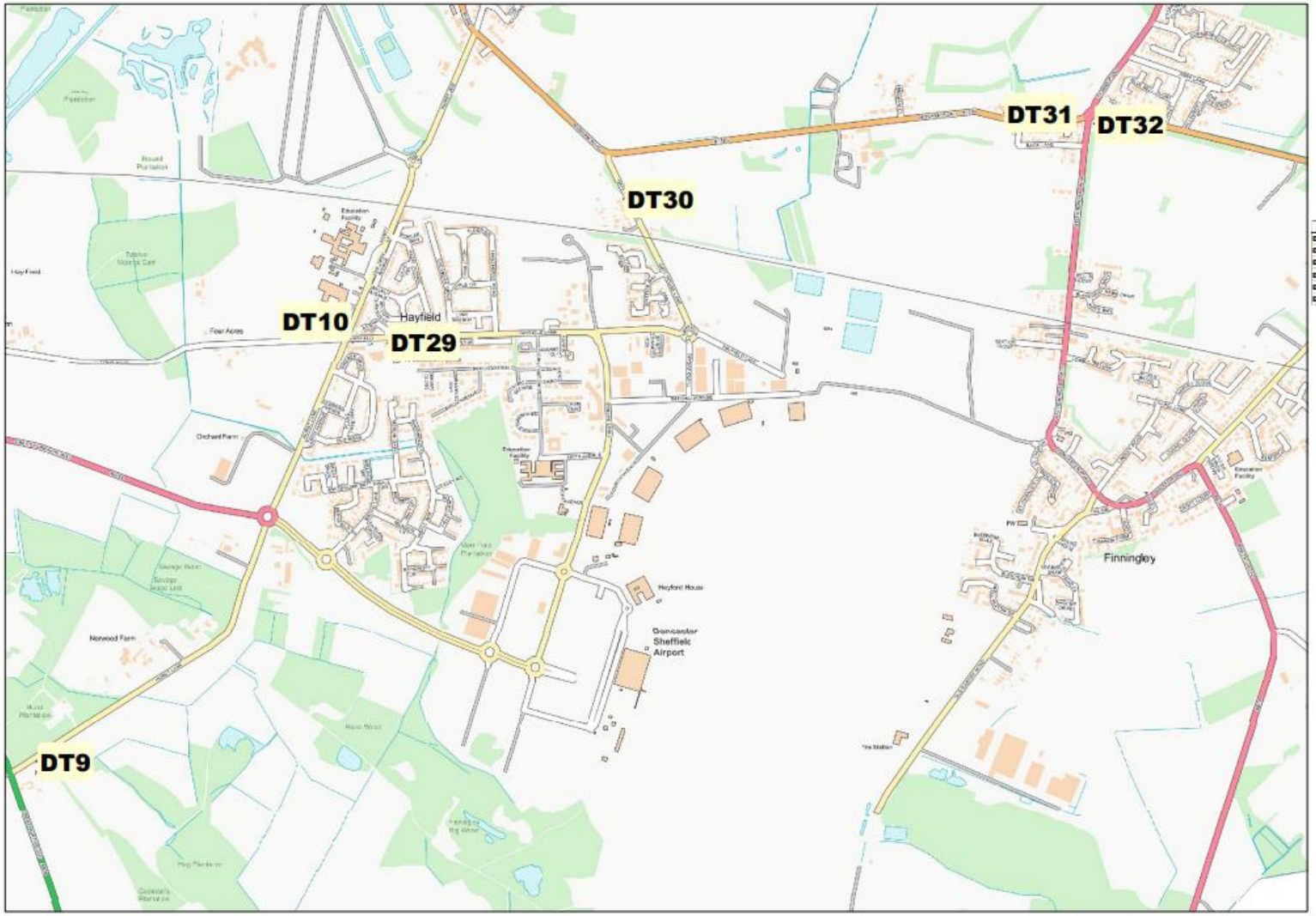
**AQMA 7A**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:962




N

**Key**

| Monitoring Point | Location |
|---|---|
| DT9 | Hurst Lane nr junc. A638 Bawtry Rd |
| DT10 | Hayfield Lane, Auckley, nr Hurst Lane |
| DT29 | Hayfield Lane, Auckley |
| DT30 | Gate House Lane, Auckley |
| DT31 | B1396 Mosham Road, Blaxton |
| DT32 | A614 Station Road, Blaxton |

**Title :**

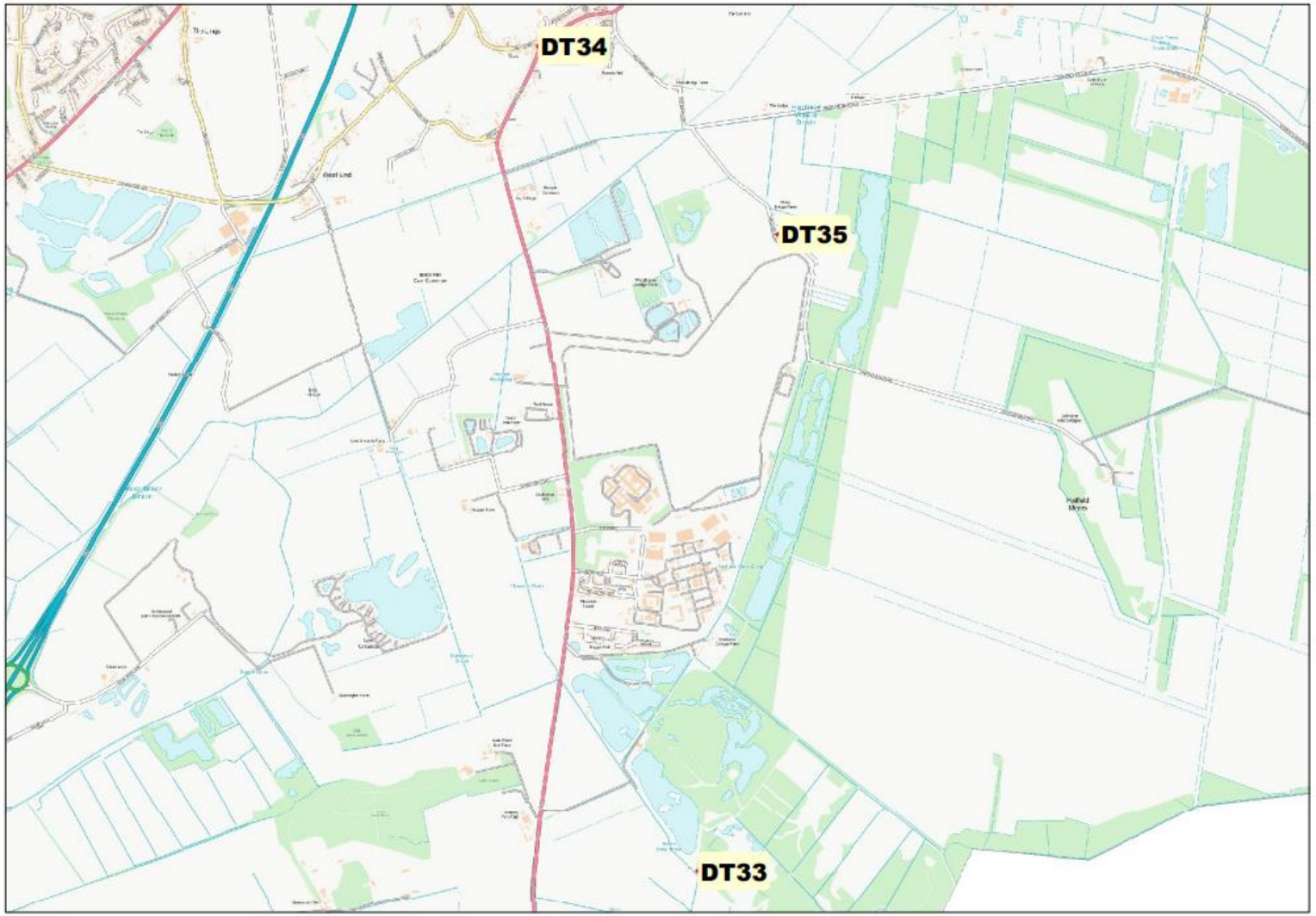
**AIRPORT**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:4,313




N

**Key**

| Monitoring Point | Location |
|---|---|
| DT33 | Hatfield Moors, off A614 Thorne Road |
| DT34 | A614 Bawtry Rd, Hatfield Woodhouse |
| DT35 | Hatfield Moors, Hollinbridge Lane. H'field, W'house |

**Title :**

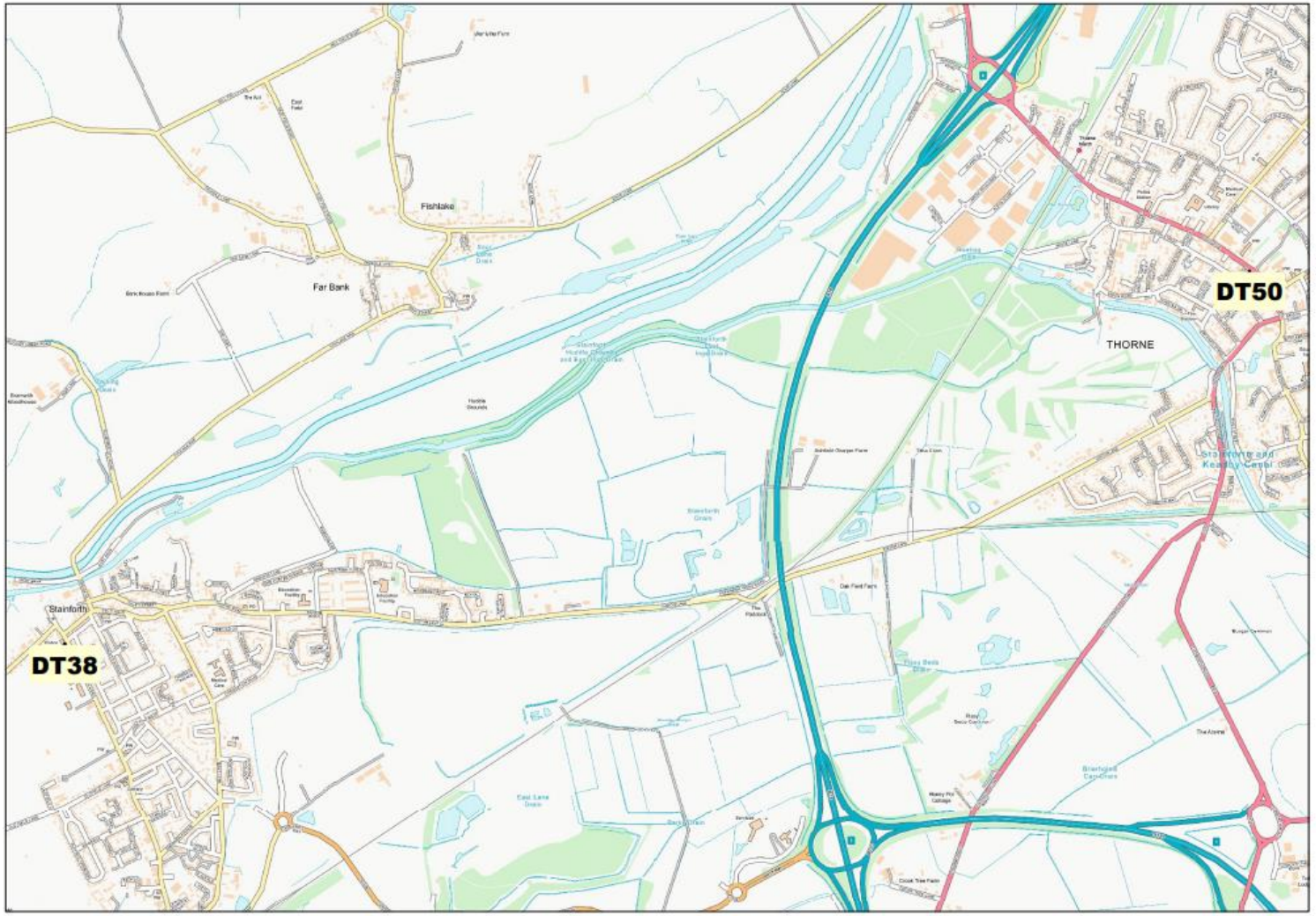
**HATFIELD MOORS**

**Completed by:** GeraldineP

**Reference :** AQ REPORT MAP_MAY 2022

**Date :** 07/07/2022

**Scale :** 1:7,544




N

**Key**

| Monitoring Point | Location |
|---|---|
| DT38 | Church Road, Stainforth |
| DT50 | A614 King Street, Thorne |

**Title :**

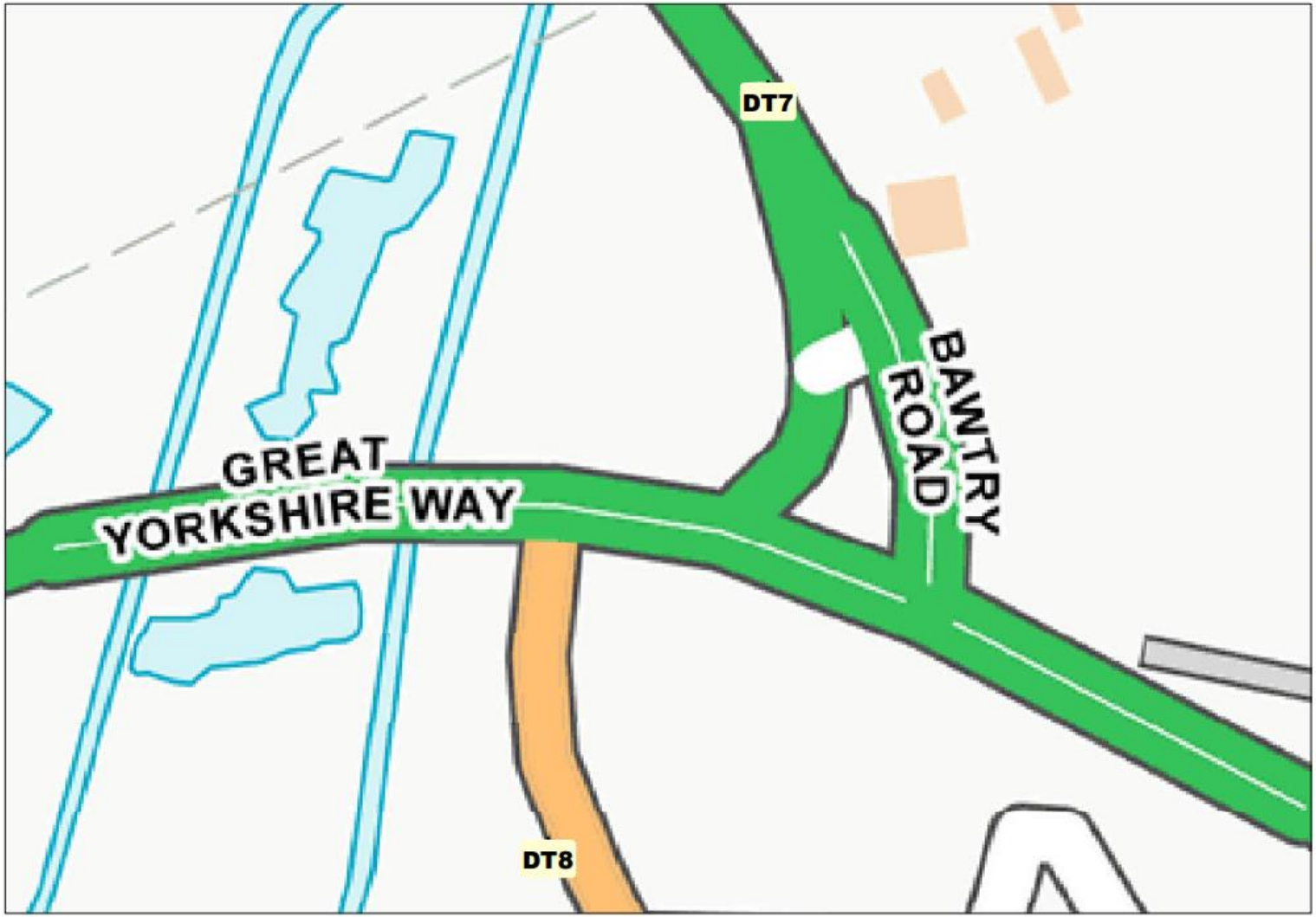
**STAINFORTH AND THORNE**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:5,533



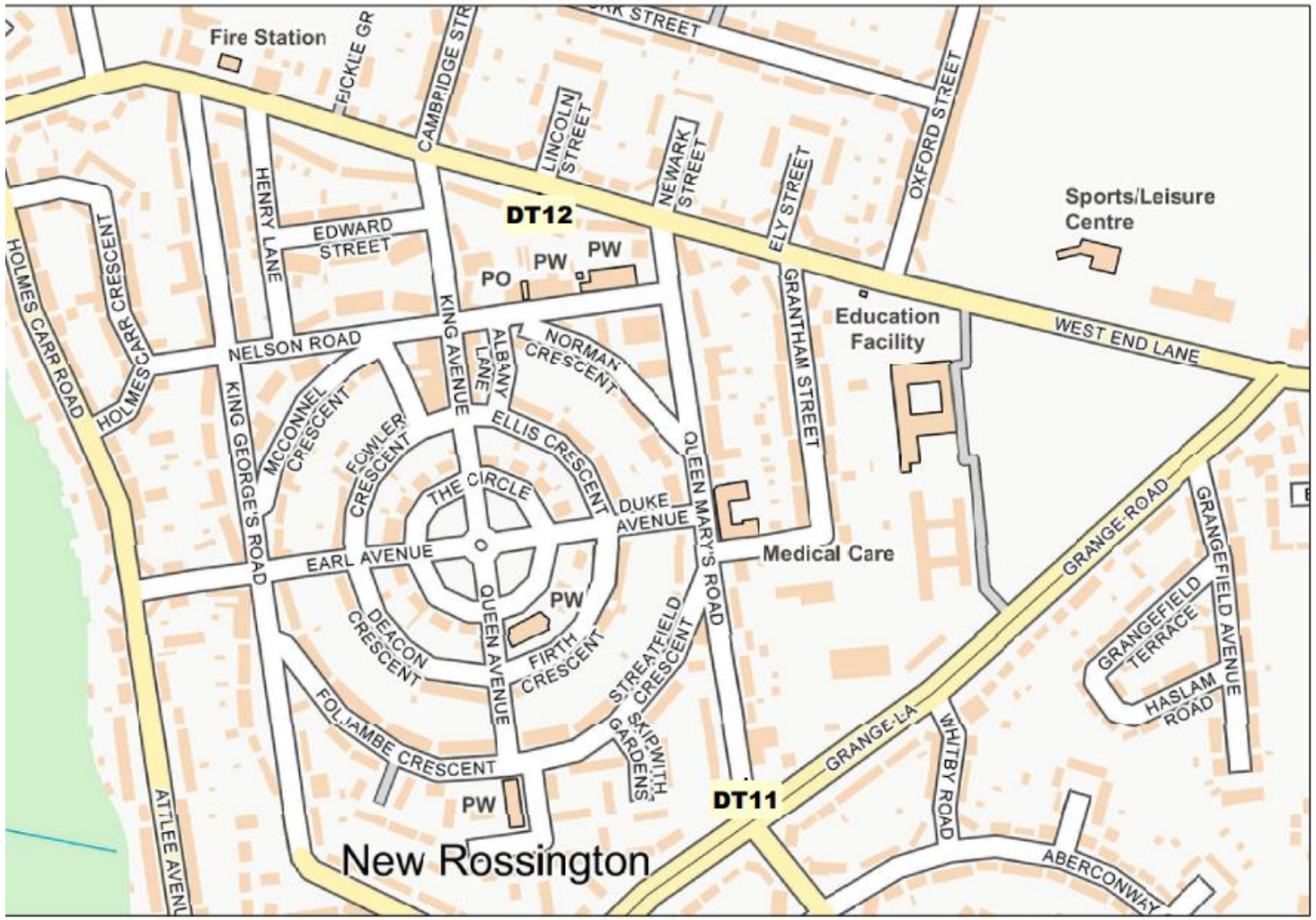

N

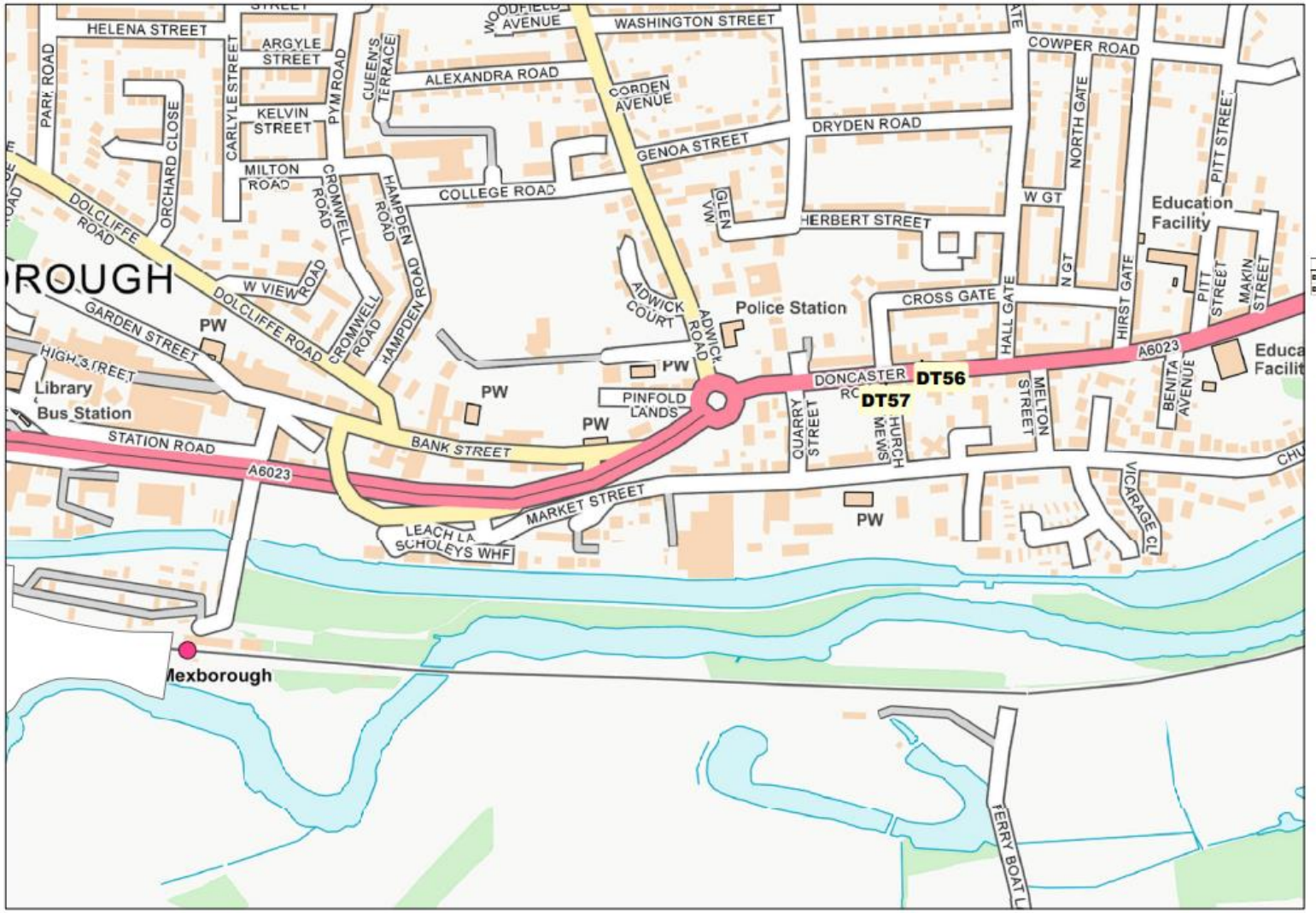
Key

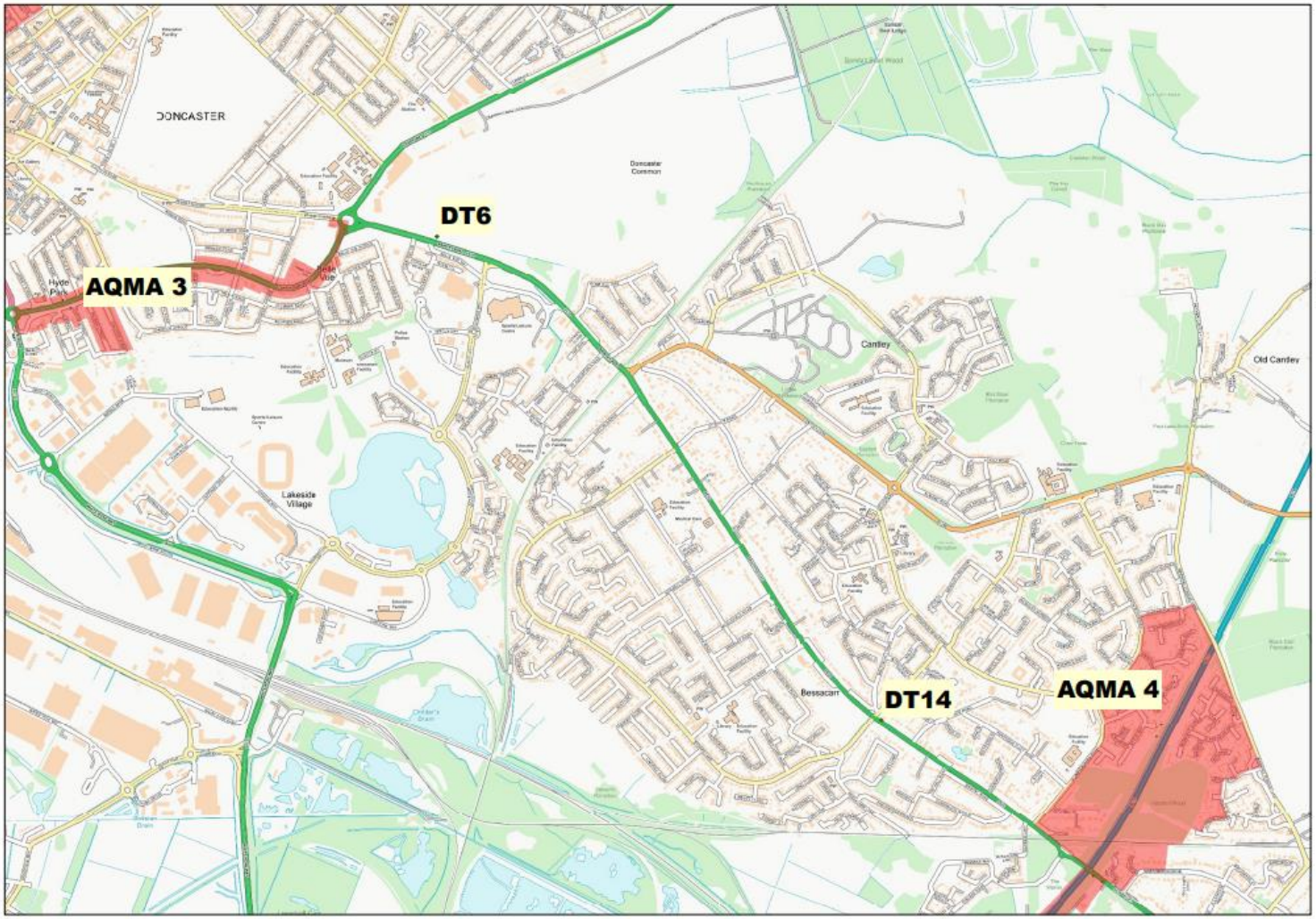
| Monitoring Point | Location |
|---|---|
| DT7 | A638 Bawtry Rd, adj. A6182 Gt. Yorkshire Way |
| DT8 | Sheep Bridge Lane, adj. A6182 Gt. Yorkshire Way |

**Title :**
**NEAR GREAT YORKSHIRE WAY**

**Completed by:** GeraldineP
**Reference :** AQ REPORT MAP_MAY 2022
**Date :** 07/07/2022
**Scale :** 1:431








N

Key

| Monitoring Point | Location |
|---|---|
| DT6 | A638 Bawtry Rd, adj. Racecourse |
| DT14 | A638 Bawtry Road, Bessacarr, adj. Church Ln |

**Title :**

**A638 Bawtry Road**

**Completed by:**
GeraldineP

**Reference :**
AQ REPORT MAP_MAY 2022

**Date :**
07/07/2022

**Scale :**
1:5,750

# Appendix E: Summary of Air Quality Objectives in England

### Table E.1 – Air Quality Objectives in England[11]

| 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 |

[11] The units are in micrograms 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 |
| BAM | Beta Attenuation Monitor |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways |
| EU | European Union |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Nitrogen Oxides |
| $PM_{10}$ | Airborne particulate matter with an aerodynamic diameter of 10µm or less |
| $PM_{2.5}$ | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| $SO_2$ | Sulphur Dioxide |

# References


- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Air Quality Archive Internet website: www.airquality.co.uk
- Defra website: http://www.defra.gov.uk/environment/quality/air/air-quality/
- Doncaster Metropolitan Borough Council Public Access: http://local.doncaster.gov.uk/PublicAccess/default.aspx
- Doncaster Metropolitan Borough Council, Pollution Control, Air Quality Review and Assessment Reports, Various, 1998 – 2021, Air Quality Action Plan, https://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
- Doncaster Metropolitan Borough Council, Strategic Transportation Unit
- DfT / Energy Savings Trust, June 2021, Fleet Report, Doncaster Council
- Sheffield City Region, Dft Emergency Active Travel Fund Bid, Tranche 2, SCR 2020
- LAQM Helpdesk – March 2021 NO2 PT Summary – AIR PT Rounds AR030, 31, 33, 34, 36, 37, 38, 40 and 42 Page 1 of 5 Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (January 2019 – March 2021). https://laqm.defra.gov.uk/documents/LAQM%20NO2%20Performance%20data_Up%20to%20March%202021_v2.pdf
- LAQM portal, https://laqm.defra.gov.uk/air-quality-assessment/
- Corporate Report AT015, Doncaster Council, Downloaded 25th June 2021, Agenda Item No (moderngov.co.uk)
- Public Health England: Public Health Outcomes Framework (https://data.england.nhs.uk/dataset/phe-indicator-30101)
- Air Quality Consultants, J504, April 2008, NO2 Concentrations and Distance from Roads

- Defra, DfT, May 2017, Tackling nitrogen dioxide in our towns and cities – A consultation
- Defra, 2019, PB 14554, Clean Air Strategy
- Local Air Quality Management Helpdesk, personal communication
- South Yorkshire Air Quality Samplers laboratory, personal communication