Doncaster Council

2018 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management
June, 2018

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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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

There are seven areas of poor air quality in Doncaster, these Air Quality Management Areas (AQMAs) are declared due to the pollutant nitrogen dioxide. There are no other pollutants in Doncaster that exceed the air quality objectives. A decline in concentrations over the last 5-10 years can be observed in places however parts of the Borough continue to exceed, while a small number of areas do not show signs of the improvement expected nationally.

The 7 AQMAs are located near busy roads in the following areas; Town Centre along Church Way, Balby A630, Hyde Park along Carr House Road A18, Bawtry Road M18/A638, Conisbrough A630/Low Road, Skellow along the A1 and Hickleton A635. A new action plan is in place and will be published on Doncaster Council's website in due course.

The findings of this report conclude there are no new major sources of emissions identified in the Borough however monitoring will continue. New proposals requiring planning permission are expected to mitigate emissions in line with current best practice, to mitigate air quality impacts.

Actions to Improve Air Quality

The action plan is implemented and while all measures have not yet been started a number are well underway.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

The main activity through-out 2017 focussed on funded measures such as cycling and walking and a bid was submitted for retrofitting buses to improve emissions.

The ECOstars scheme is now continuing following concerns that funding would be withdrawn in 2018. The scheme is currently under a tendering process and will re-start in summer 2018. Doncaster Council will propose that focus is on the local HGV fleets operating in the Borough that we do not currently have engagement with. In addition it is hoped that a Taxi scheme can be devised to stimulate engagement with Doncaster's Hackney and Private Hire Vehicles.

The technical planning guidance, based heavily on the West Yorkshire Technical Planning Guidance, has been trialled for use within the Pollution Control section for our assessment of air quality from developments. There are still some difficulties obtaining appropriate mitigation for large developments with a push under the NPPF to reduce conditions. The use of EV charging has been a successful mitigation technique however there will need to be careful consideration on how these are applied in future.

Conclusions and Priorities

The report confirms that there continues to be air quality issues across parts of the Borough and that the AQMA designations remain in place. There are some locations where air quality does not appear to be improving in line with predictions and interventions will need to be considered to achieve compliance within the coming years.

A small number of sites have been found to exceed the nitrogen dioxide objective outside of the AQMAs, of these one area will require designating as an AQMA. This area is Marr along the A635 and it is proposed, subject to approval, that declaration be fast tracked. An amendment to the current AQMA7 will be considered as the exceedance is a result of the same stretch of road – the A635.

Doncaster Council needs to prioritise engaging with partners who can bring forward more innovative and significant measures to tackle poor air quality in certain parts of the Borough.

Local Engagement and How to get involved

Doncaster Council publishes the ASR and Action Plan on its website. Daily air quality information is published via websites, twitter, newspapers and on local radio as a way to inform residents, schools and businesses of the current levels of air quality. Doncaster Council also engages 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 over the coming year. The Council currently engages with the South Yorkshire Passenger Transport Executive and as such the bus operators, Sheffield City Region and individual South Yorkshire Councils and to some extent Highways England. Doncaster Council is also an active member of the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG).

The Council has presented at a Parish Council meeting and will continue to engage with interested parties as the opportunities arise. A briefing note on air quality in Doncaster will be produced for the local Chamber of Commerce to develop business engagement.

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 obtained via www.doncaster.gov.uk or by the contact details at the front of this report.

(School anti-idling promotional work, Doncaster, 2017)

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1 Local Air Quality Management

This report provides an overview of air quality in Doncaster during 2017. 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 can be found in Table E.1 in Appendix E.

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 must prepare an Air Quality Action Plan (AQAP) within 12-18 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. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=80. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides a map of air quality monitoring locations in relation to the AQMA(s).

We propose to amend AQMA7 to encompass a further exceedance in the village of Marr (see monitoring section).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
AQMA1	Declared August 1st 2001	NO2 Annual Mean	Doncaster	An area along Church Way through the town centre of Doncaster encompassing the main shopping precinct, transport interchange, college and residential properties.	NO	53	µg/m3	41	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public

AQM A2	Declared August 1st 2001	NO2 Annual Mean	Doncaster	An area along the A630 from Balby to the A1 at Warmsworth encompassing residential properties.	YES	53	µg/m3	52	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
AQM A3	Declared August 1st 2001	NO2 Annual Mean	Doncaster	An area encompassing residential properties along the A18.	NO	43	µg/m3	39	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
AQM A4	Declared June 1st 2003	NO2 Annual Mean	Doncaster	An area encompassing a residential estate following the M18 where it crosses the A638.	YES	43	µg/m3	43	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
AQM A5	Declared April 1st 2012	NO2 Annual Mean	Doncaster	A residential area along the A630 in Conisbrough including the junction with Low	YES	49	µg/m3	46	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public

				Road.								
AQAM6	Declared December 1st 2013	NO2 Annual Mean	Doncaster	A residential area along the A1.	YES	51	µg/m3	53	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
AQMA7	Declared February 1st 2014	NO2 Annual Mean	Doncaster	A village with residential properties along the A635.	YES	86	µg/m3	106	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public
AQMA7	Declared February 1st 2014	NO2 1 Hour Mean	Doncaster	As above	YES	95	µg/m3	100	µg/m3	Doncaster Air Quality Action Plan 2017 (Draft)	Jun-17	http://www.doncaster.gov.uk/services/environmental/air-quality-reports-available-to-the-public

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

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

Defra's appraisal of last year's ASR concluded that based on the evidence provided the conclusions of the ASR submitted in 2017 were acceptable. Detailed commentary included recommending further monitoring to be established in the current AQMAs to explore revocation. Monitoring studies have been implemented in 2 AQMAs so far and a full 12 months data will be available towards the end of 2018. Once complete further studies will be conducted in other AQMAs where the possibility of revocation should be investigated.

The Air Quality Action Plan 2016 was also appraised and comments made including observations regarding lack of source apportionment and the need for more detailed quantification of the measures detailed within the plan. The source apportionment exercise was included in the appendices originally but is now in the main body of the document. Additionally, as part of Doncaster Councils partnership working with other Authorities, the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG), a question was posed to the LAQM helpdesk to further establish a method for quantifying measures for action planning across the region. The resulting response, included in Appendix C, has been used to quantify the measures put forward in the air quality action plan.

The Action Plan is considered a working document, while there are a limited number of measures contained within the current plan, the original plan from 2003 contained over 50 measures. Many of these measures where successfully completed and have therefore not been retained within the new plans, however they remain in place and therefore should be considered when reviewing the Councils action on air quality. The toolkit of measures within LAQM.TG(16) was used as a basis for developing measures that a local authority has at its disposal to improve air quality. Since the 2003 plan 33 out of the 51 measures contained within the guidance have been implemented in Doncaster, many of those not implemented require outside partners to bring forward measures. It is therefore noted that Doncaster Council will need to engage these bodies and organisations in the AQAP Steering Group.

Doncaster Council has taken forward a number of direct measures during the current reporting year of 2017 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans.

Progress is briefly described in Table 2.2, while all the measures have not yet begun a number are well underway. The principal challenges and barriers to implementation that Doncaster Council anticipates facing are resource issues and ability to access funding - much of which is limited, due to the need to prioritise Clean Air Zone authorities to funding streams such as Clean Bus Technology Fund.

Doncaster Council expects the following measures to be completed over the course of the next reporting year: Fuelling Change Campaign, ECOstars and the Technical Policy Guidance implementation.

ECOstars funding doubts led to a slowing down of activity towards 2018 however new contracts are to be awarded in summer 2018. This includes provision for a Taxi scheme in South Yorkshire and a view to renew focus on Doncaster based HDV fleets.

The technical planning guidance documents are now finalised and Pollution Control have trialled its use for screening planning proposals internally. The process is successful in considering the wider emissions increase of development and provides the basis for mitigation across a range of sites. In particular supporting the provision of EV charging in developments.

Progress on the Fuelling Change Campaign has been slower than expected due to new legal requirements placed on drawing up contracts for partnership working. The procurement process is however due to start in July with contract awards likely in September 2018. An electric demonstration vehicle has been purchased and is currently put to awareness raising use within the Council.

Doncaster Council's priorities for the coming year are to engage partners to explore measures that the Council cannot deliver.

Doncaster anticipates, using basic quantification of the AQAP that if all the measures of the AQAP are implemented a reduction of nitrogen dioxide of between 7.5µg/m^3 and 10 µg/m^3 could in theory be achieved. Therefore the measures stated above and

in Table 2.2 can potentially achieve compliance in AQMA1, 2, 3, 4 and 5 by the end of 2022.

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 AQMA6 and AQMA7.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Fuelling Change Campaign	Public Information	Via other mechanisms	Doncaster Council (Defra Funded)	April - June 2017	July 2017 - March 2018	No. of views of video and webpages	Low	Legal contracts between partner authorities still ongoing - no estimate for completion given. Defra have agreed that we can roll over spend but we must update them frequently between progress reports.	March 2018	Procurement and Supplier Issues
2	ECO stars Fleet Recognition Scheme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	South Yorkshire Steering Group (Access Fund)	pre-2016	July 2017 - March 2020	No. of scheme members.	Low	SCR rejected bid for funding scheme. Defra funding bid successful. Procurement of contracts underway.	Mar-19	Funding streams ceasing.
3	Air Quality Planning and Technical Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Doncaster Council (Environmental Protection Budget)	April 2017 - June 2017	July 2017 - June 2020	% of applications with air quality mitigation included.	Low	Being used as standard guidance in Pollution Control.	June 2020	Buy-in from Development Control. Conflict with NPPF conditions test.
4	Clean Air Plans	Promoting Low Emission Transport	Low Emission Zone (LEZ)	Defra/ Doncaster Council (Defra Funded)	August 2017 - December 2019	44166	TBC	High	33 authorities in addition to those already requiring a CAZ need to provide more information. Doncaster is considered to be achieving and therefore no funding directly available.	December 2020	Subject to funding and need.

5	Sustainable Travel Access Fund Projects	Promoting Travel Alternatives	Promotion of cycling	SCR (Access Fund)	Pre- April 2017	May 2017 - March 2018	TBC	Low	4 Areas of work - Dr Bike serviced 487 bikes. Adult and family cycle training - 282 attendees. Cycle package - 14 sessions and active travel schools.	March 2018	
6	Investigate emission standards via taxi licensing	Promoting Low Emission Transport	Taxi Licensing conditions	Doncaster Council - Licensing (Doncaster Council Funded)	July 2017 - July 2018	April 2019	% increase in Euro VI and ULEV licensed taxis	Medium	Licensing conditions have no specific date for refresh and therefore if necessary and required can be done for emissions at any time.	April 2020	Financial impacts.
7	Future Transport (Fleet) Policy	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Doncaster Council - Transport (Doncaster Council Funded)	April 2017 - April 2018	May 2018 - March 2020	% Fleet as Diesel/ Petrol/ ULEV/ Hybrid.	Medium	% fleet 96/1/0.1/1.5	Policy in place Summer 2018	Funding availability and availability to appropriate technology.
8	20mph Speed Limits	Traffic Management	Reduction of speed limits, 20mph zones	Doncaster Council - Safer Roads Team (Doncaster Council Funded)	June 2017	July 2017 - March 2020	Speed Survey Results	Low	Legal Traffic Regulation Orders (TROs) drafted. Consultation - TRO proposals currently advertised on site, in local press and on website inviting comments (statutory process). Preliminary signing/road marking designs in progress.	March 2020	Funding being withdrawn.
9	Co-ordination of road works on key routes	Traffic Management	Other	Doncaster Council - Highways (Doncaster Council Funding)	July 2017 - September 2017	October 2017 - December 2017	Reduction in journey time on key routes	Low	New software – contact live from January 2018. Roadwords.org.	March 2020	Introduction of enhanced coordination software and dissemination of disruption to road user.
10	Cycling Strategy	Promoting Travel Alternatives	Promotion of cycling	Doncaster Council - Transportation (Doncaster Council Funded)	Adopted 2013	2013 - 2020	• numbers of people cycling •number of journeys by bicycle • improve health by increasing cycling as part	Low	New cycling route – IPORT to Woodfield Plantation – will be monitored for use. Investment in Trans-Pennine route – double usage and was a success.	March 2020	Funding and uptake

							of everyday life		Strategy presented to Exec board today.		
11	Quality Bus Partnership	Promoting Low Emission Transport	Other	Doncaster Council (Bus Operator Funding)	Doncaster Council-Transportation	2016	•Reduce and limit traffic congestion and thereby air through investment in higher Euro Engine specifications • Provide high quality choice for those with use of a car • Reduce environmental impact	Low	CBTF bid submitted however not successful because we cannot meet the air quality requirements of the bid. The reason provided is that we reach compliance already with regard to national modelling - the AQMAs were not counted for the criteria.	March 2020	Partnership maintains commitments. Funding. Accessibility and profitability issues.
12	Investigate green barriers	Other	Other	Doncaster Council – Environmental Protection	January – December 2018	n/a	n/a	Medium	Not currently feasible with resources available, several articles have been reviewed with mixed results about the effectiveness of such measures. LC has flagged up to Highways England but not supported.	June 2020	Evidence to support impact being available. Funding and resources.
13	Parking Strategy	Policy Guidance and Development Control	Other policy	Doncaster Council - Transportation	2018	Jan-19	TBD e.g.no of spaces or no. of EV charging installed	Low	Developing evidence for parking provision across town centre.	June 2020	Parking is currently underutilised therefore plans to consolidate parking under strategy being developed.
14	Walking Strategy	Alternatives to private vehicle use	Other	Doncaster Council - Transportation	2018	Jan-19	TBC	Low	Strategy at Cabinet in June 2018.	June 2020	Two aspects of walking for function and pleasure.
15	Highways Planned Maintenance Scheme	Traffic Management	Other	Doncaster Council - Highways	Early 2018	Summer 2018	No. of works co-ordinated	Low	Apply AQMA status to scheme value management criteria.	June 2020	None.

	Priority										
16	Procurement	Policy Guidance and Development Control	Sustainable Procurement Guidance	Doncaster Council - Procurement	2018	2019	TBC	Medium	Example guidance forwarded to Senior Procurement Officer.	June 2020	Availability of Procurement Officers.

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 Framework indicator for Doncaster obtained from the Public Health website in 2018 stands at 5% which is lower than the national average.

No monitoring data is available locally and no national monitoring is carried out within the Borough.

PM_{10} data can be used to estimate $PM_{2.5}$ following guidance in TG(16). A national ratio can be used in the absence of a suitable local site; applying this ratio to PM_{10} monitoring in Doncaster produced the following results for $PM_{2.5}$;

Carr House Road, Doncaster – 12.2 µg/m^3.

Market Place, Doncaster – 12.4 µg/m^3.

Low Road, Conisbrough – 13.2 µg/m^3.

These concentrations appear to generally agree with national modelling, if a little higher.

National modelling suggests that concentrations are low across Doncaster. The highest concentration in 2017 was 10.83µg/m^3 close to the M18 in the south-west of Doncaster close to the border with Rotherham.

In an attempt to tackle emissions Doncaster Council is taking the following measures to address $PM_{2.5}$:

- Smoke Control Orders are in place across Borough with complaint led enforcement
- Promotion of ULEV, modal shift and active travel in the AQAP
- Public Health Action Plan (see appendices).

Many of these measures are contained within Doncaster Councils current and previous AQAP and while aimed primarily at reducing nitrogen dioxide concentrations will also have a beneficial impact on particulate emissions.

While concentrations are low and do not indicate a need to monitor specifically for $PM_{2.5}$ it is acknowledged that it is a non-threshold pollutant and a review of monitoring will take place as funding for new monitoring becomes available.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Doncaster Council undertook automatic (continuous) monitoring at 6 sites during 2017. Table A.1 in Appendix A shows the details of the sites.

National monitoring results are available at https://uk-air.defra.gov.uk/networks/site-info?uka_id=UKA00612.

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 (passive) monitoring of NO_2 at 59 long-term sites during 2017. Table A.2 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Year on year data analysis must be undertaken with caution as a number of measures may influence a brief change in concentrations which is not sustained over longer term trends, however an overview from the previous year may highlight areas where future monitoring should focus.

A large number of non-automatic monitoring results increased from 2016, some of which were significant. DT7 has increased by 8ug/m^3, from below to above the objective, this site is located near to the new link road – Great Yorkshire Way – where the carriage way and junction is likely to have led to increased flows and standing traffic at this location. The site has now been removed due to accessibility issues and a location closer to relevant exposure will be identified so that this increase can be properly considered. Currently using the distance corrector and following procedure Paragraphs 7.77-7.79 in LAQM.TG(16) this site does not exceed at property façade.

Reviewing the data for 2017 it should be noted in most cases the exceedance's shown in Table A.3 are located within the existing AQMAs and confirm that these designations remain valid.

DT4, DT7, DT14, DT49, DT50 and DT56 exceed at locations outside of an AQMA, however only 2 remain close to or above the objective at property façade. The rest do not exceed at locations where there is relevant exposure and no further action is required. Monitoring will continue at all these locations.

DT49 is located in Marr which is east of AQMA7 on the same main road between Barnsley and Doncaster, the A635. Concentrations have on a number of occasions exceeded at roadside and continue to do so when corrected to facade using the procedure laid down in LAQM.TG(16). Further monitoring has been sited (DT58 and DT59), the results confirm that there are non-compliant concentrations where relevant exposure exists. An AQMA designation will be required. Modelling will be carried out to define the boundary however considering the proximity to AQMA7 it is

likely that an amendment could be made to encompass this area. It is proposed that a fast-track AQMA, subject to approval will be the preferred option and shall be in place within 12 months.

DT50 has hovered around the objective but when distance corrected remains below the objective, a review of the site of this monitoring point may be required to ensure this reflects the worst case location.

Automatic data remains a concern with the aging instrumentation and some issues with communications, therefore while data ratification and annualisation procedures have been followed and all data included for completeness I would not at this time base any decisions on automatic data alone. Fortunately the information is complimented with a comprehensive network of non-automatic monitoring which support the conclusions made regarding AQMA designation.

In last year's ASR recommendations were made to carry out further monitoring to investigate whether revocation could be considered in 3 of the AQMAs. Monitoring began in winter of 2017 and so a full years data has not yet been obtained and will be reported in the next ASR. Data collected so far has been included in the appendices. This data indicates that a number of non-compliant locations remain where relevant exposure exists and revocation of the AQMA will not be possible. The raw data for these studies have been included in Appendix C.

There are three non-automatic sites with annual means above 60 µg/m^3 indicating that the 1-hour mean could be exceeded, each of these are located within an AQMA declared for non-compliance of both the annual and hourly mean – AQMA7. Automatic monitoring trends show no exceedances, beyond those allowed within the objective, of the hourly mean since 2013.

Trend graphs have been produced for each individual AQMA and a selection of sites outside the AQMAs.

In general the trend overall is a slight downward one over the last 5 or 10 years depending on the dataset available. The exception to this is AQMA 7 and to a lesser extent some sites in AQMA 6, in these AQMAs the trend shows a slight increase at most locations with significant increases at some monitoring locations.

The trend downward is not as significant as the national forecast predict, using the tool advised by Defra to forecast when compliance will be achieved many of the

AQMAs are expected to reach compliance before 2020, the current monitored data does not support this but the new AQAP is in place and continued monitoring will confirm whether this prediction will prove accurate.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

There are no AQMAs designated for PM_{10} in Doncaster.

Monitoring continues to support that conclusion, and regularly identifies concentrations well below the objective for both annual and daily means.

Site CM5 is the most suitable in terms of relevant exposure and is only 48% of the objective and therefore unlikely to exceed at roadside.

The trend graphs show a steady decrease over the past 5 years.

3.2.3 Particulate Matter ($PM_{2.5}$)

Doncaster Council has not carried out any $PM_{2.5}$ monitoring in 2017. Section 2.3 details predicted $PM_{2.5}$ concentrations within Doncaster using recognised methods.

3.2.4 Sulphur Dioxide (SO_2)

Doncaster Council has not carried out SO_2 monitoring in 2017.

Previous monitoring and rounds of assessment indicated that concentrations of SO_2 were well below the objectives due to interventions related to domestic emissions. Therefore it was deemed suitable to cease monitoring.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Unit 1 A18 Carr House Road	Roadside	458027	402475	NO2; PM10	Y	Chemiluminescent Analyser; TEOM	4	1.7m	3
CM2	Unit 3 Market Place	Urban centre	457669	403611	NO2; PM10	Y	Chemiluminescent Analyser; TEOM	30.7	20m	3
CM3	Unit 4 A1/A630 Grosvenor Terrace	Roadside	454964	400745	NO2	Y	Chemiluminescent Analyser	15.7	7.3m	3
CM4	Unit 6 A638 Bawtry Road	Roadside	462278	400111	NO2	Y	Chemiluminescent Analyser	20	2.2m	3
CM5	Unit 10 A6023 Low Road, Conisbrough	Roadside	451438	398528	NO2; PM10	Y	Chemiluminescent Analyser; TEOM	17	2.95m	2
CM6	A1, Skellow	Roadside	452185	410380	NO2	Y	Chemiluminescent	11	2.5m	2

Notes:

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
DT1	North Bridge (North)	Kerbside	456946	403763	NO2	N	20+	0.8	N	2
DT2	North Bridge (South)	Roadside	457308	403458	NO2	Y	20+	9.2	N	2
DT3	Regent Sq.	Kerbside	457952	403123	NO2	N	1	0.5	N	2
DT4	South Parade	Roadside	457975	403134	NO2	N	20+	2	N	2
DT5	Bennethorpe Road	Kerbside	459113	402842	NO2	Y	20+	0.5	N	2
DT6	Carr House Road	Roadside	459533	402768	NO2	N	20+	6.8	N	2
DT7	Sheep bridge Lane	Kerbside	462899	399328	NO2	N	20+	1	N	2
DT8	Hayfield Lane	Roadside	463023	399428	NO2	N	20+	2.3	N	2
DT9	Hurst Lane	Kerbside	463888	398416	NO2	N	20+	0.8	N	2
DT10	Hayfield Lane/Hurst Lane	Kerbside	464879	399699	NO2	N	20+	0.7	N	2
DT11	Gattison Lane	Roadside	461334	397977	NO2	N	13.3	2.3	N	2
DT12	West End Lane	Roadside	461164	398459	NO2	N	23.8	2	N	2
DT13	Bawtry Road	Roadside	462242	400134	NO2	Y	20+	3.5	N	2
DT14	Stoops Lane	Roadside	461362	400777	NO2	N	14	3.2	N	2
DT15	Dunniwood Avenue	Roadside	461875	400396	NO2	N	9.5	1.5	N	2
DT16	Burnham Close	Roadside	460703	400559	NO2	N	10.8	1.2	N	2

DT17	Lindrick Close	Roadside	459947	401538	NO2	N	7.5	3	N	2
DT18	Cantley Lane	Roadside	460342	402108	NO2	N	12.5	1.2	N	2
DT19	Gliwice Way (Dome)	Roadside	459745	402638	NO2	N	20+	3.3	N	2
DT20	Gliwice Way (Town)	Roadside	459721	402650	NO2	N	20+	2.3	N	2
DT21	Hall Flat Junction	Roadside	456164	401227	NO2	Y	6	1.5	N	2
DT22	Warde Avenue	Roadside	455679	401000	NO2	Y	10.7	2.5	N	2
DT23	Low Road	Kerbside	451457	398659	NO2	N	1.2	1	N	2
DT24	Clifton Hill Junction	Roadside	451419	398540	NO2	N	2.7	2.2	N	2
DT25	Waverley Avenue	Roadside	455635	401002	NO2	Y	20+	1.5	N	2
DT26	High Road	Roadside	456130	401258	NO2	Y	20+	2.5	N	2
DT27	Belmont Avenue	Roadside	457010	402056	NO2	Y	1	1.5	N	2
DT28	Mansfield Road	Roadside	457022	402141	NO2	Y	0.3	3.7	N	2
DT29	Airport – Hayfield Lane	Roadside	464986	399697	NO2	N	0	8.7	N	2
DT30	Airport – Gate House Lane	Roadside	465719	400140	NO2	N	9.3	6	N	2
DT31	Airport – Mosham Road	Roadside	466895	400405	NO2	N	0	11.3	N	2
DT32	Airport – Rose Cottage	Roadside	467174	400372	NO2	N	0	5.5	N	2
DT33	Airport – Hatfield Moors	Background	468629	404336	NO2	N	20+	N/A	N	2
DT34	Airport – Hatfield Woodhouse	Roadside	467755	408643	NO2	N	20+	2.3	N	2

DT35	Airport - Hollinbridge Lane	Background	469056	407623	NO2	N	20+	N/A	N	2
DT36	Market Place	Roadside	457615	403630	NO2	Y	20+	6.3	N	2
DT37	Church Way	Roadside	457379	403460	NO2	Y	4	4	N	2
DT38	Stainforth	Urban background	464046	411818	NO2	N	20+	9.3	N	2
DT39	Howden Avenue, Skellow	Roadside	452219	410224	NO2	N	0	7	N	2
DT40	Hill Crest, Skellow	Kerbside	452195	410302	NO2	N	0.3	7.6	N	2
DT41	Five Lane Ends, A1, Skellow	Roadside	452180	410377	NO2	N	6.65	9.35	N	2
DT42	Skellow – Crabgate Lane	Roadside	452180	410402	NO2	N	15	1	N	2
DT43	Skellow – Hampole Balk	Roadside	452192	410389	NO2	N	12	1.8	N	2
DT44	Hickleton – Sue Ryder Care Home	Kerbside	448221	405303	NO2	N	3	1	N	2
DT45	Hickleton – Doncaster Road	Roadside	447966	405303	NO2	N	0	14.4	N	2
DT46	Hickleton – Barnsley Road	Roadside	448149	405296	NO2	N	0	3.6	N	2
DT47	Hickleton – Opp. Fir Tree Close	Kerbside	448054	405319	NO2	N	0.3	0.8	N	2
DT48	Hickleton – John O'Gaunts	Kerbside	448218	405320	NO2	N	0.3	0.8	N	2
DT49	Marr	Kerbside	451331	405219	NO2	N	0	3.1	N	2

DT50	Thorne – King Street	Roadside	468749	413300	NO2	N	0.5	2	N	2
DT51	Willow Street, Conisbrough	Roadside	451446	398582	NO2	Y	20+	2.1	N	2
DT52	Doncaster Road (Junction), Conisbrough	Roadside	451485	398514	NO2	Y	2	2	N	2
DT53	27 Low Road, Conisbrough	Kerbside	451453	398632	NO2	Y	0	1.88	N	2
DT54	32/34 Low Road, Conisbrough	Roadside	451440	398652	NO2	Y	0.3	1.78	N	2
DT55	Doncaster Road, Conisbrough	Roadside	451624	398690	NO2	Y	0	6	N	2
DT56	Mason Arms, Mexborough	Roadside	448047	399880	NO2	N	3	4	N	2
DT57	Doncaster Road, Mexbrough	Roadside	448004	399862	NO2	N	13	2	NO	2
DT58	Barnsley Road, Marr	Kerbside	451824	405228	NO2	NO	0.3	1	NO	2
DT59	Bus Stop, Marr	Roadside	451514	405247	NO2	NO	0	18	NO	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2013	2014	2015	2016	2017
CM1	Roadside	Automatic	n/a	75	29.6	n/a	n/a	20	28.6
CM2	Urban Background	Automatic	n/a	97	30.4	**n/a**	**n/a**	**46.8**	26.1
CM3	Roadside	Automatic	n/a	93	**50.2**	**n/a**	**n/a**	**43.1**	23.9
CM4	Roadside	Automatic	99	40	35.3	**n/a**	**n/a**	**n/a**	37.2
CM5	Roadside	Automatic	Data loss too sparodic	57	37.4	**n/a**	**31.2 (6 months)**	31.6	37
CM6	Roadside	Automatic	n/a	93	35.9	**43.2**	39.6	39.2	**45.8**
DT1	Kerbside	Diffusion Tube	n/a	100	**30**	**36**	**32**	**33**	33
DT2	Roadside	Diffusion Tube	n/a	100	37	**42**	36	40	**41**
DT3	Kerbside	Diffusion Tube	n/a	100	**29**	**32**	**27**	**33**	33
DT4	Roadside	Diffusion Tube	n/a	100	**40**	**44**	39	**40**	**45**
DT5	Kerbside	Diffusion Tube	n/a	100	**40**	**44**	36	39	**43**
DT6	Roadside	Diffusion Tube	n/a	100	28	34	29	30	35
DT7	Kerbside	Diffusion Tube	n/a	83	27	34	27	35	**43**
DT8	Roadside	Diffusion Tube	n/a	100	27	30	24	28	26
DT9	Kerbside	Diffusion Tube	n/a	100	25	27	25	33	37
DT10	Kerbside	Diffusion Tube	n/a	100	21	24	19	23	25
DT11	Roadside	Diffusion Tube	n/a	75	24	24	20	25	24
DT12	Roadside	Diffusion Tube	n/a	100	22	24	21	27	28
DT13	Roadside	Diffusion Tube	n/a	100	**45**	**48**	39	**43**	**44**
DT14	Roadside	Diffusion Tube	n/a	100	**40**	**44**	38	**41**	**44**

DT15	Roadside	Diffusion Tube	n/a	n/a	23	25	20	23	Ceased
DT16	Roadside	Diffusion Tube	n/a	n/a	23	25	20	24	Ceased
DT17	Roadside	Diffusion Tube	n/a	n/a	23	21	21	23	Ceased
DT18	Roadside	Diffusion Tube	n/a	n/a	23	29	22	26	Ceased
DT19	Roadside	Diffusion Tube	n/a	n/a	**44**	**46**	39	**41**	Ceased
DT20	Roadside	Diffusion Tube	n/a	n/a	**42**	**44**	35	**40**	Ceased
DT21	Roadside	Diffusion Tube	n/a	100	**48**	**48**	**42**	**47**	**50**
DT22	Roadside	Diffusion Tube	n/a	100	**49**	**53**	**43**	**48**	**50**
DT23	Kerbside	Diffusion Tube	n/a	100	36	**42**	35	37	**41**
DT24	Roadside	Diffusion Tube	n/a	100	36	**43**	34	**40**	**41**
DT25	Roadside	Diffusion Tube	n/a	100	39	**41**	32	38	**41**
DT26	Roadside	Diffusion Tube	n/a	100	36	38	32	35	38
DT27	Roadside	Diffusion Tube	n/a	83	39	**41**	35	**44**	**48**
DT28	Roadside	Diffusion Tube	n/a	100	**51**	**54**	**43**	**52**	**52**
DT29	Roadside	Diffusion Tube	n/a	100	16	17	14	17	19
DT30	Roadside	Diffusion Tube	n/a	100	18	19	15	18	18
DT31	Roadside	Diffusion Tube	n/a	100	15	18	14	17	17
DT32	Roadside	Diffusion Tube	n/a	100	18	20	16	20	18
DT33	Background	Diffusion Tube	n/a	100	13	13	9	10	12
DT34	Roadside	Diffusion Tube	n/a	100	21	24	19	22	23
DT35	Background	Diffusion Tube	n/a	92	12	13	10	12	12
DT36	Roadside	Diffusion Tube	n/a	100	36	**41**	32	38	**41**
DT37	Roadside	Diffusion Tube	n/a	100	39	**46**	34	**41**	**41**
DT38	Urban background	Diffusion Tube	n/a	100	18	20	15	18	18
DT39	Roadside	Diffusion Tube	n/a	92	34	35	38	**45**	**47**

DT40	Kerbside	Diffusion Tube	n/a	100	**50**	**51**	**40**	**48**	**48**
DT41	Roadside	Diffusion Tube	n/a	100	**52**	**54**	**46**	**53**	**55**
DT42	Roadside	Diffusion Tube	n/a	100	**46**	**48**	38	**43**	**46**
DT43	Roadside	Diffusion Tube	n/a	100	**43**	**45**	36	**42**	**43**
DT44	Kerbside	Diffusion Tube	n/a	100	**74**	**79**	**66**	**78**	**79**
DT45	Roadside	Diffusion Tube	n/a	92	22	25	18	23	25
DT46	Roadside	Diffusion Tube	n/a	92	**40**	**43**	32	**41**	37
DT47	Kerbside	Diffusion Tube	n/a	100	**95**	**95**	**87**	**106**	**100**
DT48	Kerbside	Diffusion Tube	n/a	100	**95**	**94**	**80**	**93**	**90**
DT49	Kerbside	Diffusion Tube	n/a	100	**41**	**40**	34	**44**	**46**
DT50	Roadside	Diffusion Tube	n/a	100	38	**41**	33	**41**	**40**
DT51	Roadside	Diffusion Tube	n/a	100	34	36	29	32	34
DT52	Roadside	Diffusion Tube	n/a	100	**45**	**50**	37	**42**	**43**
DT53	Kerbside	Diffusion Tube	n/a	100	**46**	**46**	34	**42**	**42**
DT54	Roadside	Diffusion Tube	n/a	100	**48**	**53**	**40**	**46**	**48**
DT55	Roadside	Diffusion Tube	n/a	100	34	34	27	31	36
DT56	Roadside	Diffusion Tube	n/a	75	39	**41**	32	37	**40**
DT57	Roadside	Diffusion Tube	n/a	100	**45**	**43**	33	38	38
DT58	Kerbside	Diffusion Tube	n/a	n/a	**n/a**	**n/a**	**n/a**	**n/a**	**46**
DT59	Roadside	Diffusion Tube	n/a	n/a	**n/a**	**n/a**	**n/a**	**n/a**	22

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

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

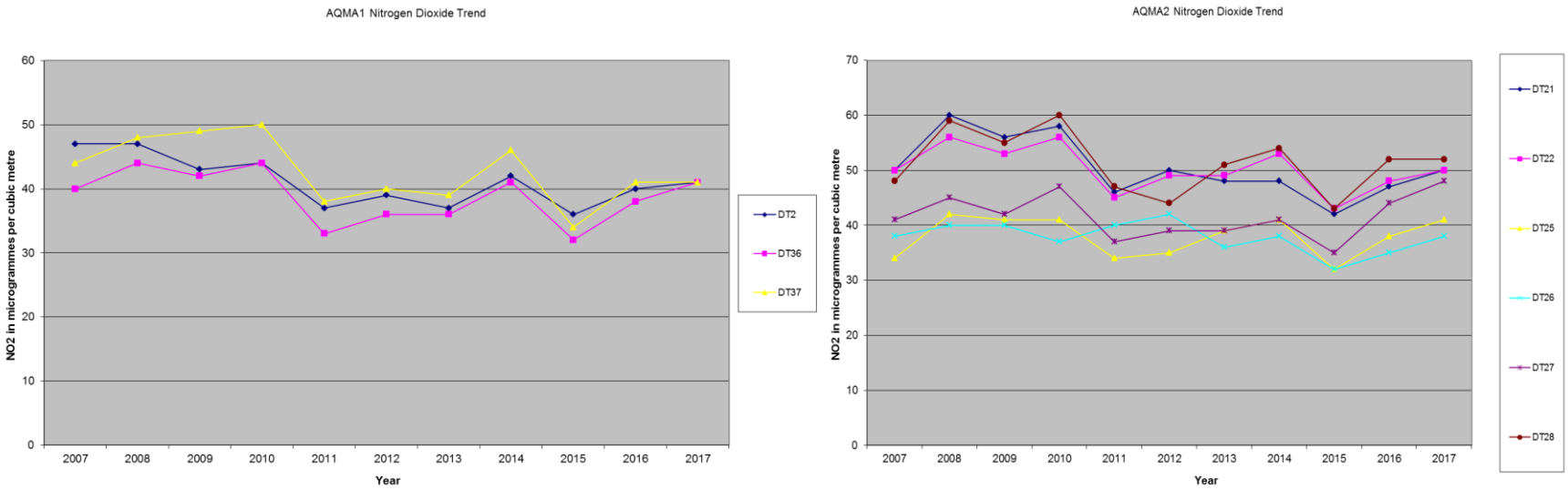
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

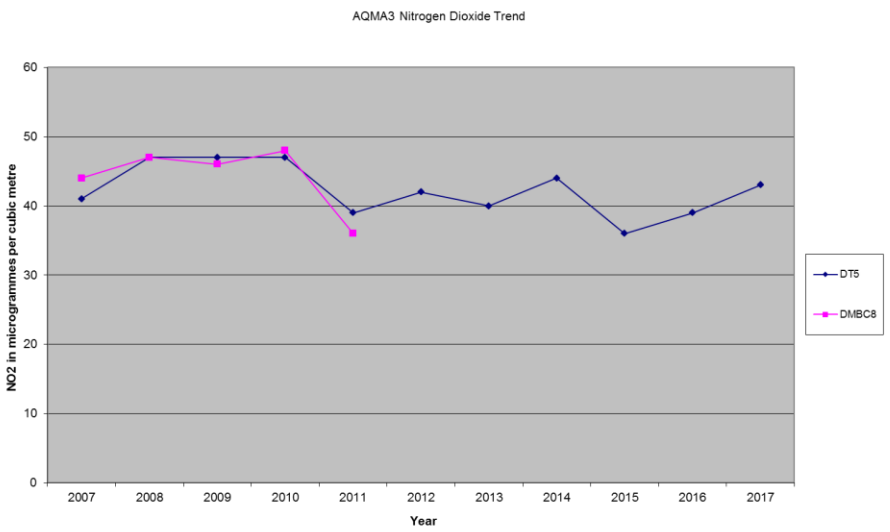
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

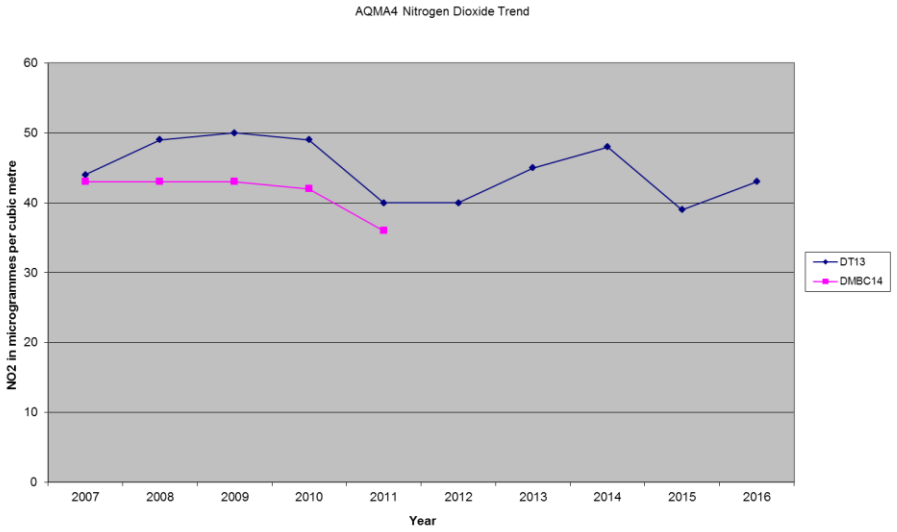
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

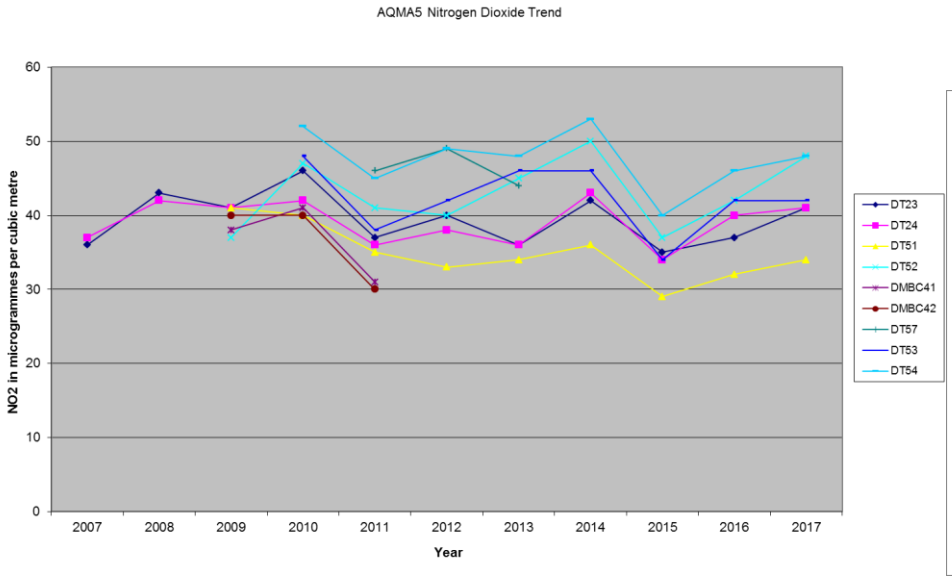
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

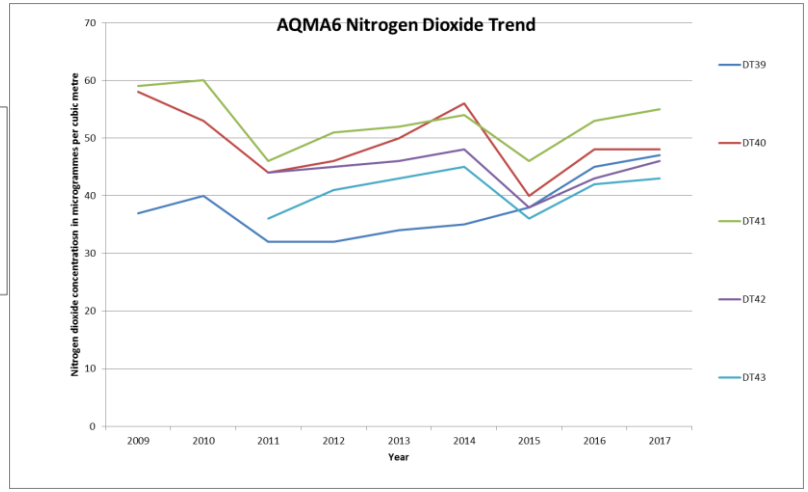
3.2.5 Figure A.1 – Trends in Annual Mean NO_2 Concentrations

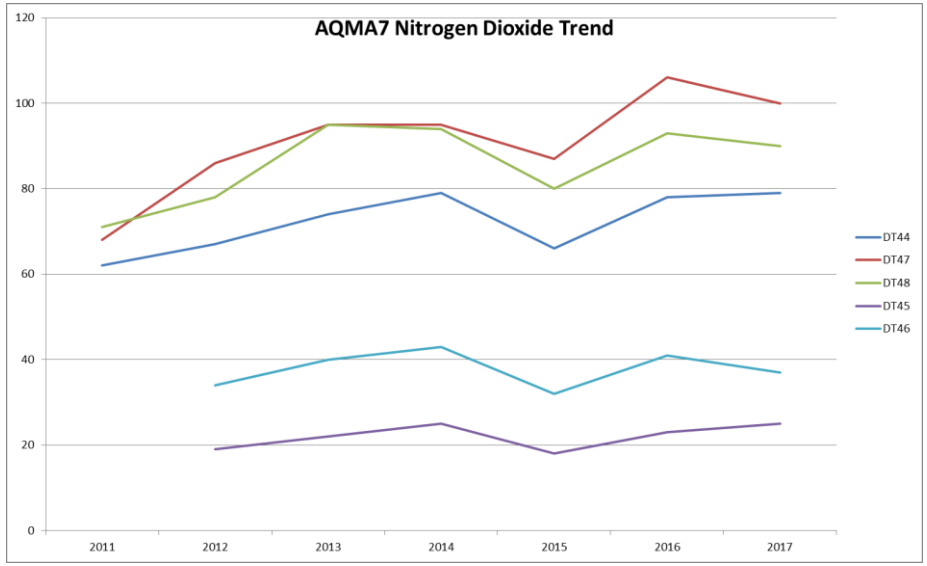



AQMA3 Nitrogen Dioxide Trend
NO2 in micrograms per cubic metre
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
DT5
DMBC8


AQMA4 Nitrogen Dioxide Trend
NO2 in micrograms per cubic metre
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Year
DT13
DMBC14


AQMA5 Nitrogen Dioxide Trend
NO2 in micrograms per cubic metre
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
DT23
DT24
DT51
DT52
DMBC41
DMBC42
DT57
DT53
DT54


AQMA6 Nitrogen Dioxide Trend
Nitrogen dioxide concentratioon in micrograms per cubic metre
70
60
50
40
30
20
10
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
DT39
DT40
DT41
DT42
DT43


AQMA7 Nitrogen Dioxide Trend
120
100
80
60
40
20
0
2011
2012
2013
2014
2015
2016
2017
DT44
DT47
DT48
DT45
DT46
NO2 in microgrmammes per cubic metre

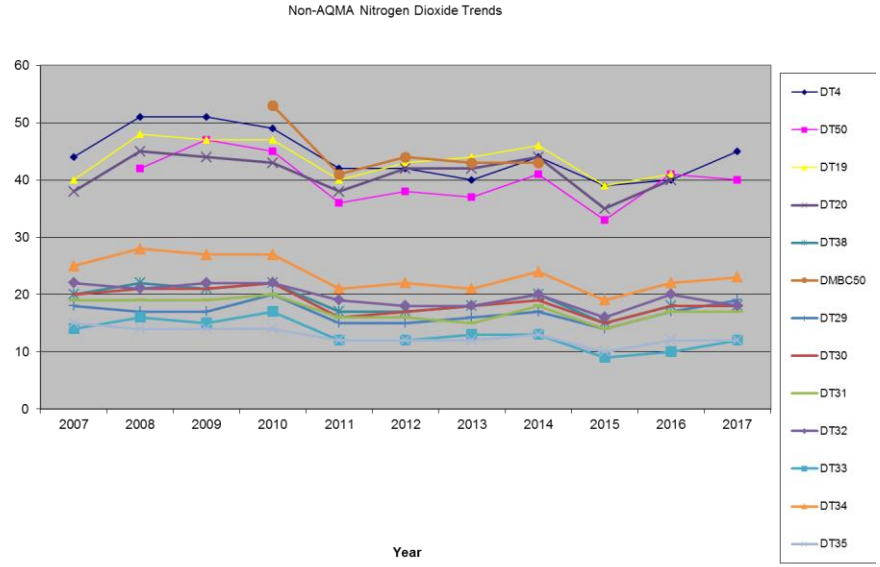

Non-AQMA Nitrogen Dioxide Trends
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
DT4
DT50
DT19
DT20
DT38
DMBC50
DT29
DT30
DT31
DT32
DT33
DT34
DT35

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2013	2014	2015	2016	2017
CM1	Roadside	Automatic	n/a	75	**0 (84.6)**	**No data**	**0(184.5)**	**0(45.5)**	**0 (93.6)**
CM2	Urban Centre	Automatic	n/a	97	0	**No data**	**n/a**	**0(126.6)**	0
CM3	Roadside	Automatic	n/a	93	1	**No data**	**n/a**	**3 (153.09)**	0
CM4	Roadside	Automatic	99	40	**1(136.2)**	**No data**	**n/a**	**0(21.5)**	**0 (114.4)**
CM5	Roadside	Automatic	n/a	57	1	**No Data**	**0(101.0)**	**0(62.1)**	**0 (115.6)**
CM6	Roadside	Automatic	n/a	93	**15(221.93)**	0	0	**0 (61.3)**	6

Notes:

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.**

(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%).

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

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
				2013	2014	2015	2016	2017
CM1	Roadside	n/a	88.5	**18.2**	**No data**	**15.5 (5 months)**	**17.7**	17.4
CM2	Urban Centre	n/a	99.7	19.2	**No data**	**No data**	18.5	17.7
CM5	Roadside	n/a	89.6	25.9	**No data**	**18.7 (6 months)**	19	18.8

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

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

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

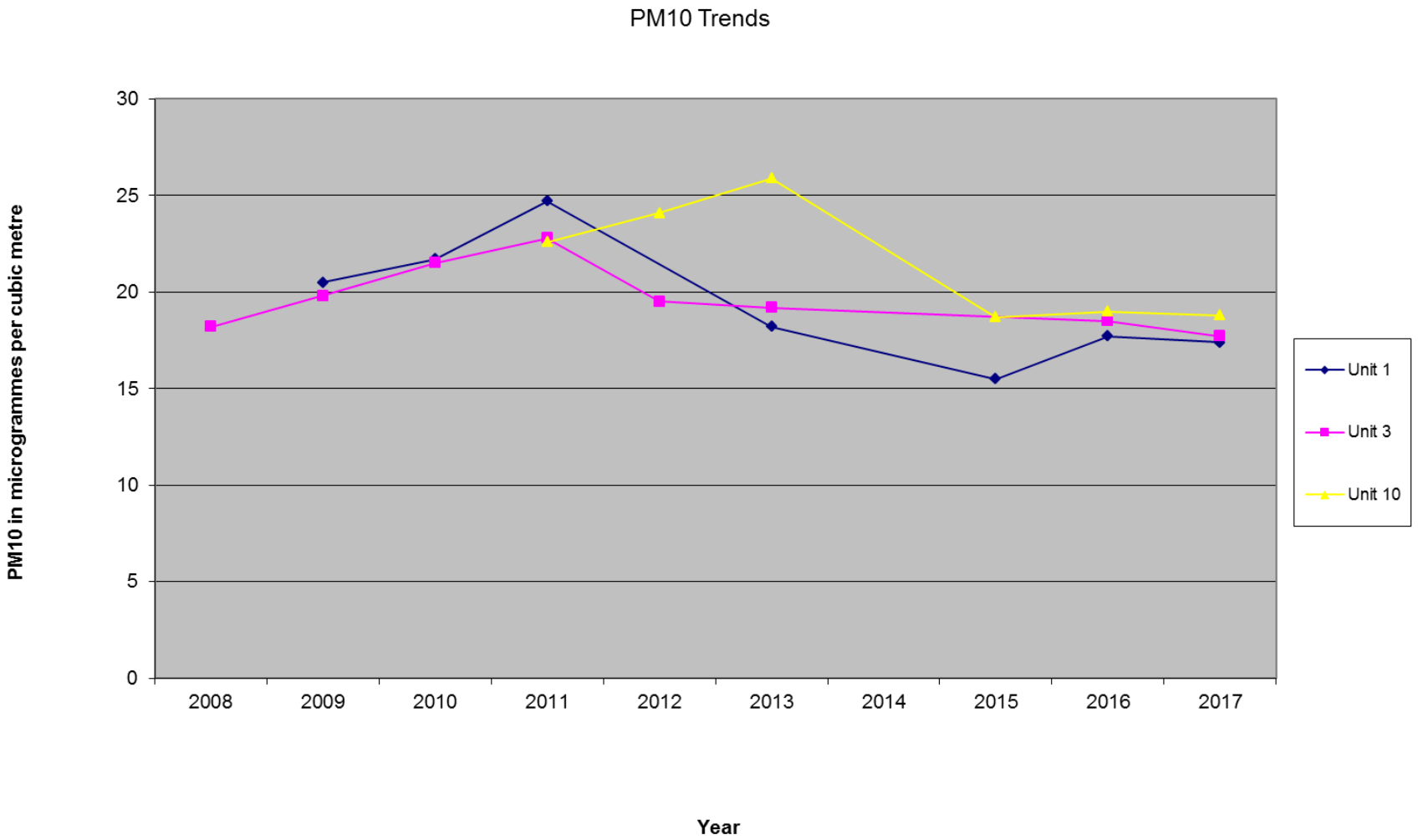


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2013	2014	2015	2016	2017
CM1	Roadside	n/a	88.5	**3(29)**	**No data**	0	**0 (27.3)**	3
CM2	Urban Centre	n/a	99.7	6	**No data**	**No data**	**0 (32.4)**	4
CM5	Roadside	n/a	89.6	11	**No data**	**1 (28)**	3	4

Notes:

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.**

(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%).

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

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT1	48	42	41	26	31	24	21	24	22	33	38	38	32	33	n/a
DT2	55	47	51	37	39	21	28	30	32	44	48	44	40	**41**	29
DT3	43	33	34	29	23	26	26	29	27	32	41	38	32	33	31
DT4	53	50	55	47	33	39	34	32	36	45	54	49	44	**45**	27
DT5	62	48	52	38	39	32	29	27	37	44	47	46	42	**43**	23
DT6	50	36	39	33	24	27	25	26	31	39	39	39	34	35	n/a
DT7	65	39	48	46	31	35	36	36	36	46	NR	NR	42	**43**	24
DT8	42	30	31	21	25	19	18	16	22	22	29	31	26	26	18
DT9	42	29	35	38	29	35	34	36	36	37	45	33	36	37	21
DT10	38	26	29	21	19	18	18	18	23	25	31	28	25	25	27
DT11	36	19	23	22	21	NR	16	16	NR	NR	29	30	24	24	19
DT12	43	25	31	24	22	22	18	17	25	27	34	33	27	28	19
DT13	64	40	54	38	37	31	36	34	43	42	50	41	43	**44**	28
DT14	57	47	46	39	39	40	35	34	35	44	44	48	42	**44**	30
DT15															
DT16															
DT17															
DT18															
DT19															
DT20															
DT21	71	57	58	39	38	43	41	37	48	52	42	52	48	**50**	37.0

DT22	22	62	63	44	54	49	41	44	47	48	57	55	49	**50**	35.0
DT23	57	40	46	35	33	31	34	35	39	41	42	45	40	**41**	37.0
DT24	48	37	43	31	36	34	37	36	40	42	50	39	39	**41**	37.0
DT25	60	48	49	36	38	32	32	28	38	40	39	38	40	**41**	24.0
DT26	55	42	41	31	31	29	29	27	35	42	42	41	37	38	24.0
DT27	59	50	54	45	NR	NR	34	33	41	44	55	49	46	**48**	**44.0**
DT28	69	53	59	43	49	45	44	39	46	53	54	52	51	**52**	**51.0**
DT29	28	20	20	17	12	11	12	14	28	15	23	24	19	19	**n/a**
DT30	29	19	21	15	15	12	11	13	17	15	20	22	17	18	16.0
DT31	26	19	21	14	12	11	12	13	15	14	21	24	17	17	**n/a**
DT32	17	18	23	19	15	12	13	16	13	18	24	25	18	18	**n/a**
DT33	19	13	13	8	7	6	7	10	11	12	15	18	12	12	**n/a**
DT34	35	27	29	19	18	16	15	16	19	23	26	29	23	23	17.0
DT35	21	NR	14	10	8	7	6	6	9	9	19	19	12	12	**n/a**
DT36	52	38	50	36	46	31	32	33	34	31	43	47	39	**41**	28.0
DT37	48	44	46	37	40	36	36	39	34	40	40	43	40	**41**	**41.0**
DT38	26	21	14	14	15	11	12	13	16	16	21	28	17	18	**n/a**
DT39	50	47	43	52	44	49	NR	40	41	43	48	48	46	**47**	**47.0**
DT40	52	46	50	46	49	42	39	45	44	47	51	50	47	**48**	**48.0**
DT41	62	52	56	56	46	48	50	53	55	45	61	51	53	**55**	**47.0**
DT42	58	44	47	48	44	37	33	36	41	44	58	49	45	**46**	27.0
DT43	50	44	42	42	37	35	36	38	38	40	54	47	42	**43**	29.0
DT44	83	98	87	58	88	79	62	78	65	66	80	75	77	**79**	**60.0**
DT45	37	26	25	17	NR	40	17	18	20	20	24	28	25	25	**n/a**
DT46	41	41	42	27	46	32	NR	37	30	24	35	35	35	37	**n/a**
DT47	130	95	95	110	94	98	90	91	89	93	93	90	97	**100**	**96.0**
DT48	95	78	94	71	106	84	95	88	96	75	90	82	88	**90**	**87.0**
DT49	56	42	43	46	42	38	39	45	46	43	49	49	45	**46**	**n/a**
DT50	49	39	46	35	36	29	32	31	35	37	47	47	39	40	39.0
DT51	40	36	37	27	31	25	25	30	32	35	38	44	33	34	22.0
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DT53	51	45	44	34	45	29	32	35	39	39	47	48	41	**42**	**n/a**
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DT57	47	41	45	34	35	31	29	32	32	35	44	43	37	38	26.0
DT58	52	46	44	49	52	43	42	38	41	40	44	44	45	**46**	**44.2**
DT59	28	27	26	20	18	18	17	17	18	23	25	25	22	22	22.5

☒ **Local bias adjustment factor used**

☐ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **Where applicable, data has been distance corrected for relevant exposure**

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.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Screening, Significantly Altered Emissions or New Developments

There have been no newly identified sources or significantly increased emissions in the Borough. All new developments with the potential to impact on air quality provide an Air Quality Assessment and would be required to mitigate any significant impacts. No developments have been granted planning permission that have significant emissions in 2017.

Diffusion Tube Bias Adjustment Factors

The tubes are supplied and analysed by South Yorkshire Air Quality Samplers. The tubes are prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes are then desorbed with distilled water and the extract analysed using a segmented flow auto analyser with ultraviolet detection.

The national factor for 2017 was 0.88 based on 2 studies.

A local factor from Barnsley Council of 1.03 was included in the national factor spreadsheet.

The results were downloaded on the 6 June 2018 from; http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Discussion of Choice of Factor to Use

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 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 is not representative.

The second study submitted onto the national bias is from our neighbouring authority of Barnsley MBC. The bias has been consistent here for many years and the automatic monitoring has excellent QA/QC management and therefore it is considered a good choice of factor to apply to the results.

The local regional factor of 1.03 has been used to adjust 2017 tubes in this report.

PM Monitoring Adjustment

PM_{10} data for 2017, 2016, 2015, 2013, 2012, and 2011 were corrected to gravimetric equivalent using King's College London Volatile Correction Method (VCM) for PM_{10} as prescribed by TG(16)). These results may therefore differ from previous years, which were corrected using the factor as per the relevant procedure at that time (up until and including 2007 date). Comparison against previous years should therefore be viewed with caution.

Short-term to Long-term Data Adjustment

Annualisation has been carried out where possible but because significant data loss occurred consistently across the year at some sites rather than for one long-term period the procedure in TG)16) could not be followed. This was the case for site reference CM5 in AQMA5.

QA/QC of Automatic Monitoring

The QA/QC procedure consists of bi-monthly calibrations performed manually on-site by the Local Site Operator (Doncaster Council). Daily data checks are carried out remotely.

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

The last independent full audit was carried out in November 2007, the analysers were found to be satisfactory with the exception of one TEOM which fell outside the standard parameters. This has now been rectified.

Data is scaled, validated and ratified in house and includes removing erroneous data and applying relevant calculations in line with the technical guidance LAQM TG(16) to obtain the final data set.

QA/QC of Diffusion Tube Monitoring

The Laboratory Performance in AIR NO2 Proficiency Testing scheme report covering 2017 lists South Yorkshire Air Quality Samplers as having the necessary number of samples across the five round period as **Satisfactory.** In 2009 procedures have been amended so that the laboratory is in line with the harmonisation procedures.

Precision was good throughout 2017.

Helpdesk Response to Measures Quantification Query

The following e-mail extract was received from the LAQM Helpdesk in May 2018.

“Quantification of emissions/concentrations reduction can be difficult for some measures, and cannot be readily applied to all measures. There are also various confounding factors that make direct attribution of concentration changes as a function of intervention measure implementation difficult. As a consequence, literature available on this is limited, noting that it is an area of current focus for Defra.

Quantification of the emissions reduction will often be easier (and cheaper) to achieve than an estimate of the concentration reduction, which would otherwise require the application of detailed dispersion models to make suitable predictions. We therefore suggest that where necessary you focus on estimates of emissions reduction.

Using the Emissions Factors Toolkit (EFT) is useful for estimating the emissions reduction that may be achieved through realisation of some road traffic intervention measures. For example, measures that will reduce congestion can be considered through application of the EFT, e.g. by varying the average speed on the queuing section of a road link as a proxy for the reduction in queuing traffic.

Where direct quantification of emissions reduction cannot be so readily achieved, one could apply best judgement in a qualitative manner. This could involve the application of a matrix based approach whereby each measure is assigned an indicative reduction of NO2 with associated timescales, example below, but do modify and update relative to your needs. This is comparable to, but does go slightly further than, the low / medium / high effect categories provided in the TG16 LAQM Toolbox.

Costs		Air Quality Impacts		Timescale	
Score	Approximate Cost (£)	Score	Indicative Reduction in NO_2 Concentration		Years
7	<100k	7	>5 µg/m³	Short (S)	< 2
6	100-500k	6	2-5 µg/m³		
5	500k-1million	5	1-2 µg/m³		
4	1-10 million	4	0.5 - 1 µg/m³		
3	10-50 million	3	0.2 – 0.5 µg/m³	Medium (M)	2-5
2	50-100 million	2	0 - 0.2 µg/m³		
1	>100million	1	0 µg/m³	Long (L)	>5

I hope this helps to provide some direction - happy to discuss further as required."

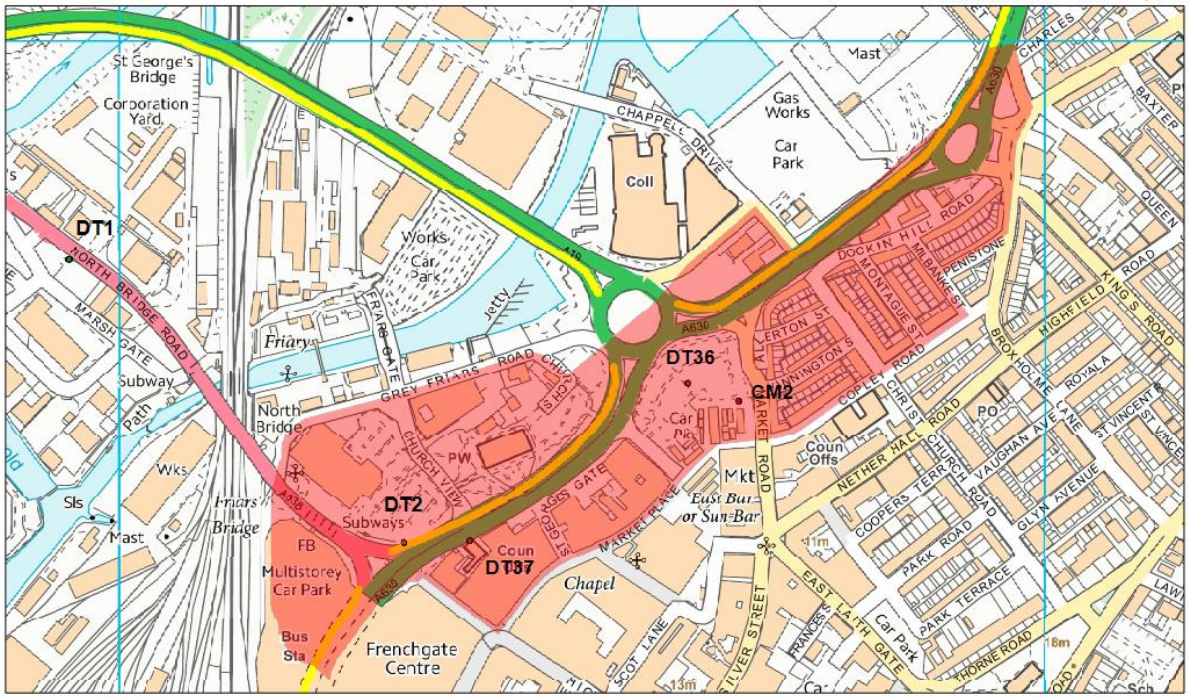
Partial Results for AQMA1 and AQMA3 Diffusion Tube Study

AQMA & Site ID	Monthly nitrogen dioxide concentrations (µg/m³)					
	Nov 2017	Dec 2017	Jan 2018	Feb 2018	March 2018	April 2018
AQMA1 -1	52	46	44	45	43	39
AQMA1 - 2	52	52	48	41	42	36
AQMA1 - 3	56	61	66	52	49	49
AQMA1 - 4	52	57	49	55	53	44
AQMA1 - 5	50	53	46	50	53	46
AQMA3 - 6	50	37	45	45	43	NR
AQMA3 - 7	56	52	44	43	46	45
AQMA3 - 8	44	43	40	37	41	36
AQMA3 - 9	39	38	32	31	32	26

AQMA3 - 10	52	49	37	43	42	34

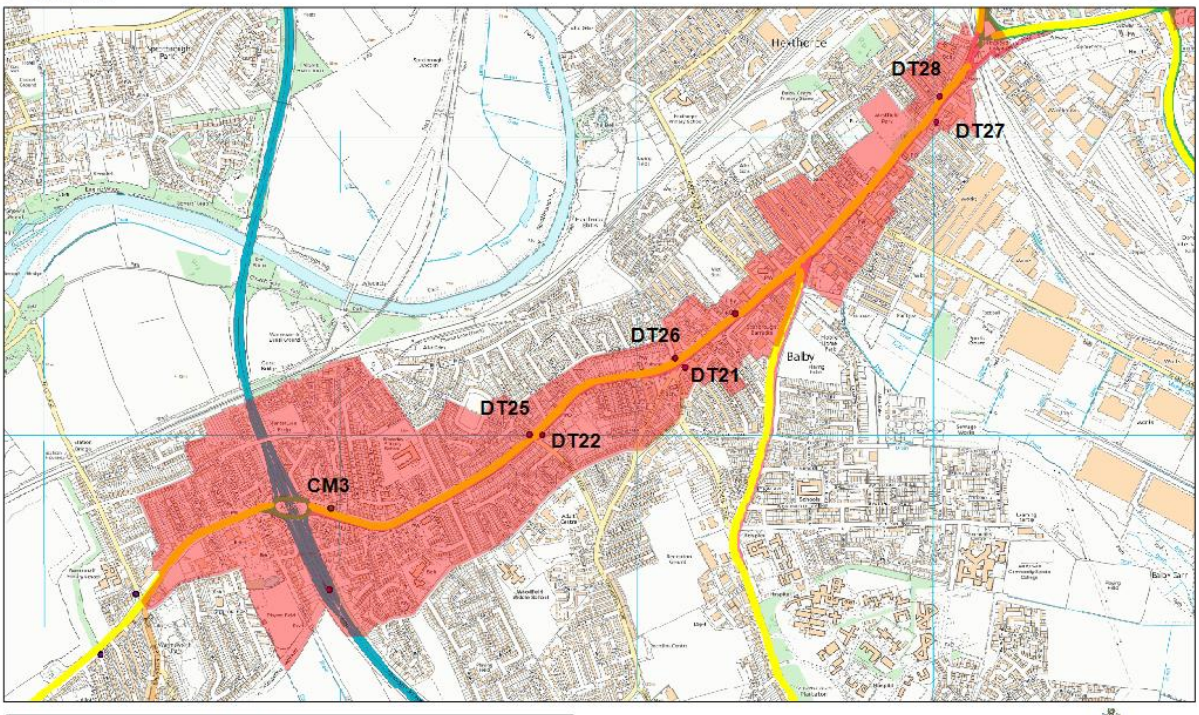
Appendix D: Map(s) of Monitoring Locations and AQMAs

AQMA1



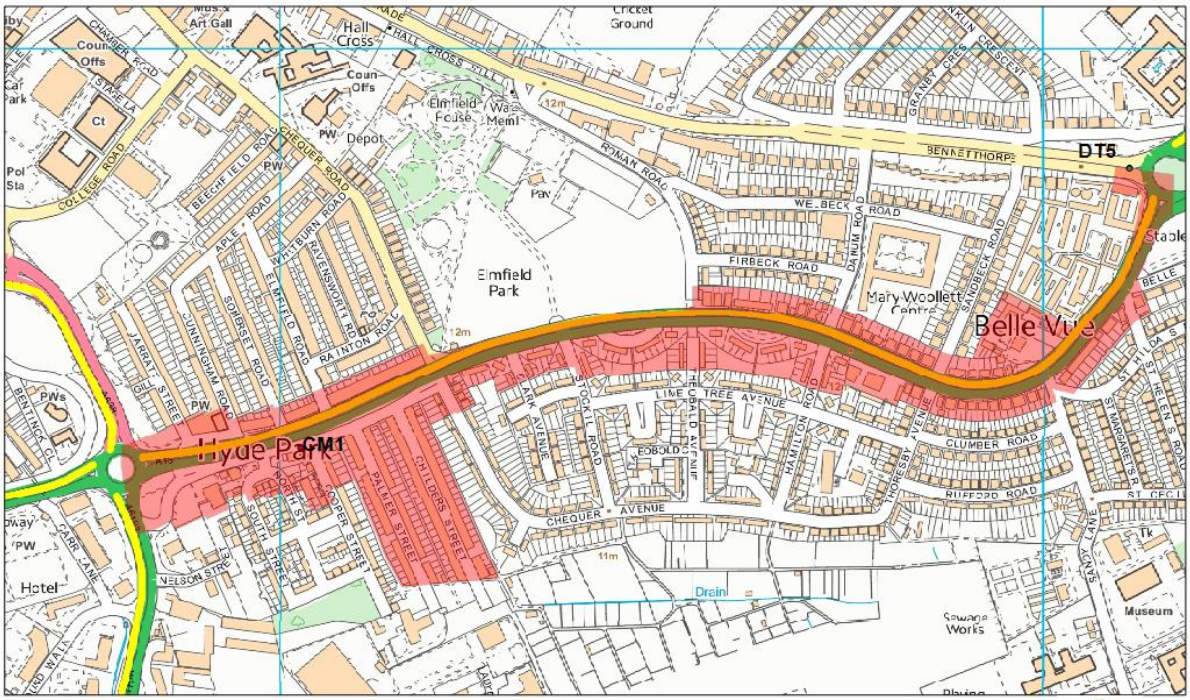
Doncaster

AQMA2



Doncaster

AQMA3



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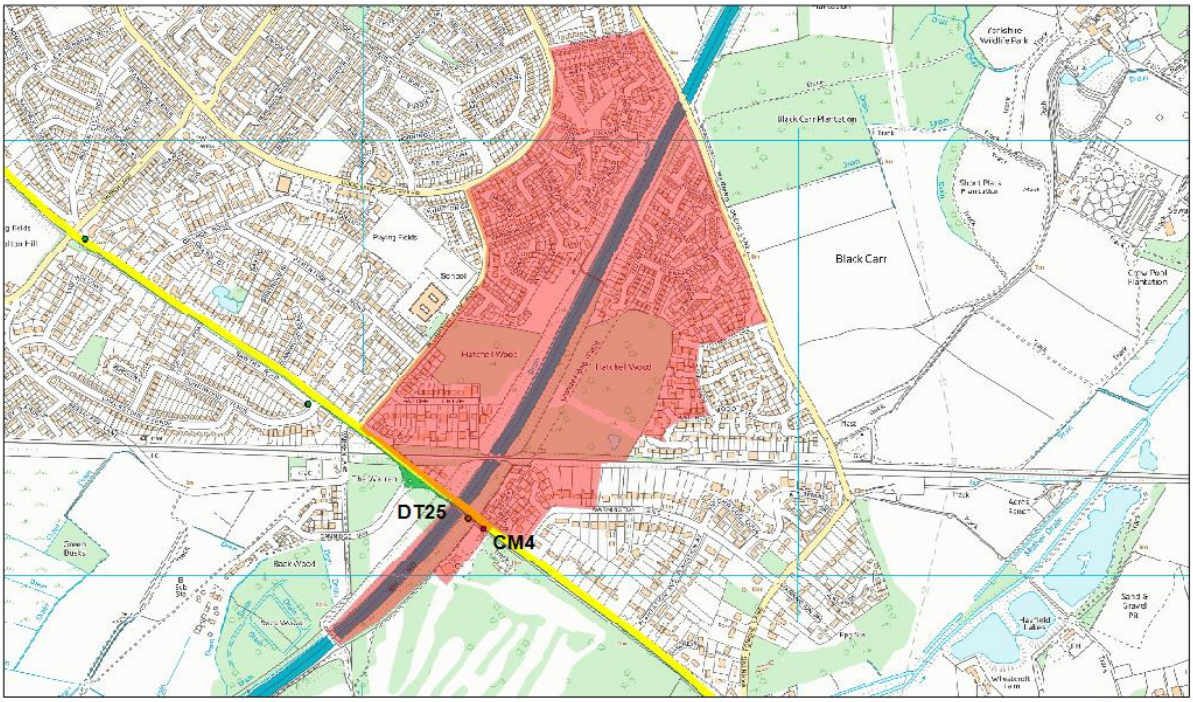
(c) Copyright GeoInformation Group 1997, 2002, 2005 and 2007.

Doncaster

AQMA4



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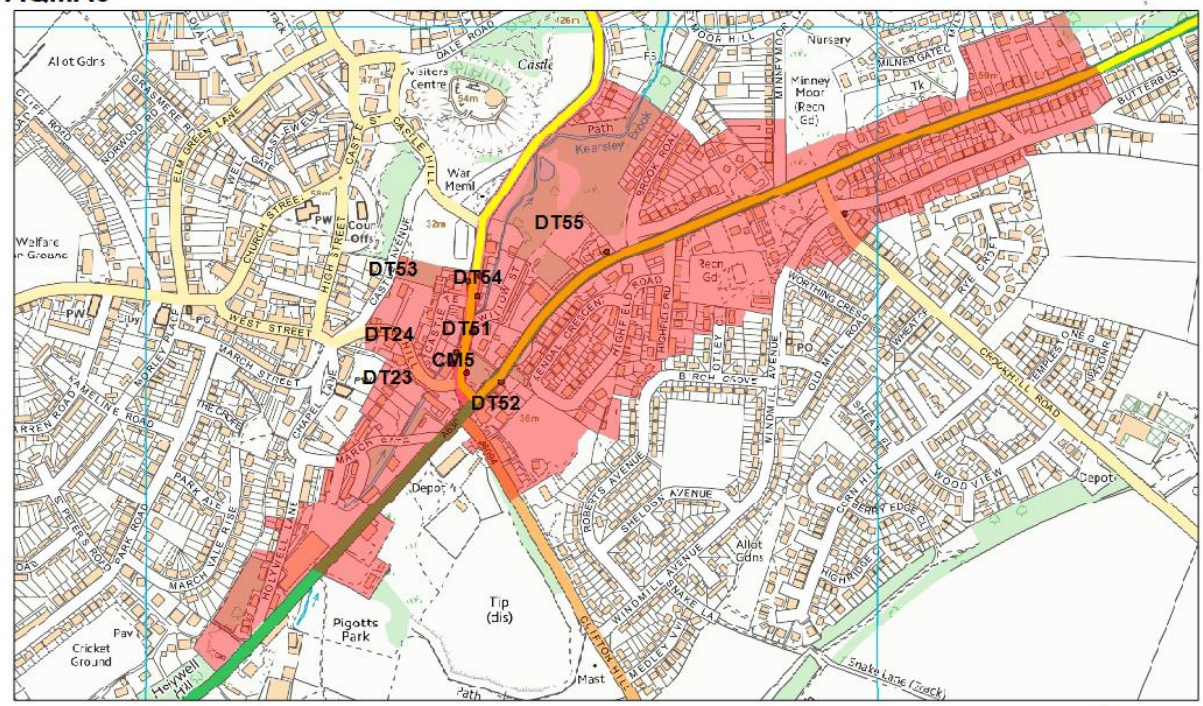
(c) Copyright GeoInformation Group 1997, 2002, 2005 and 2007.

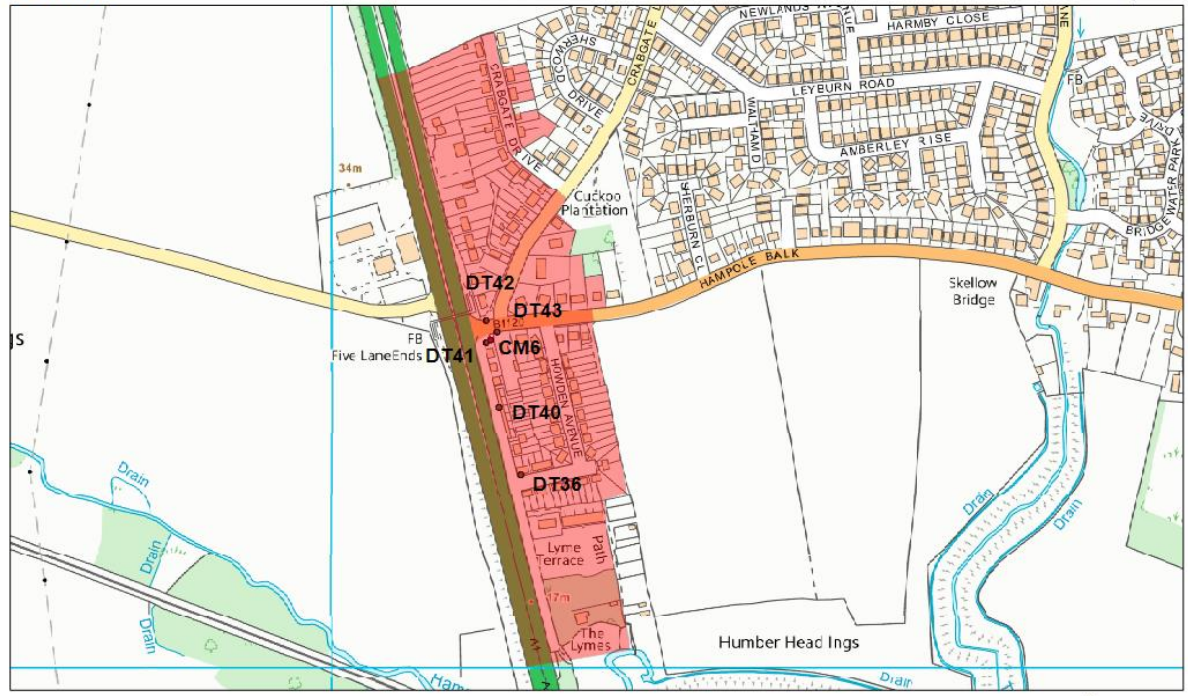
Doncaster

AQMA5



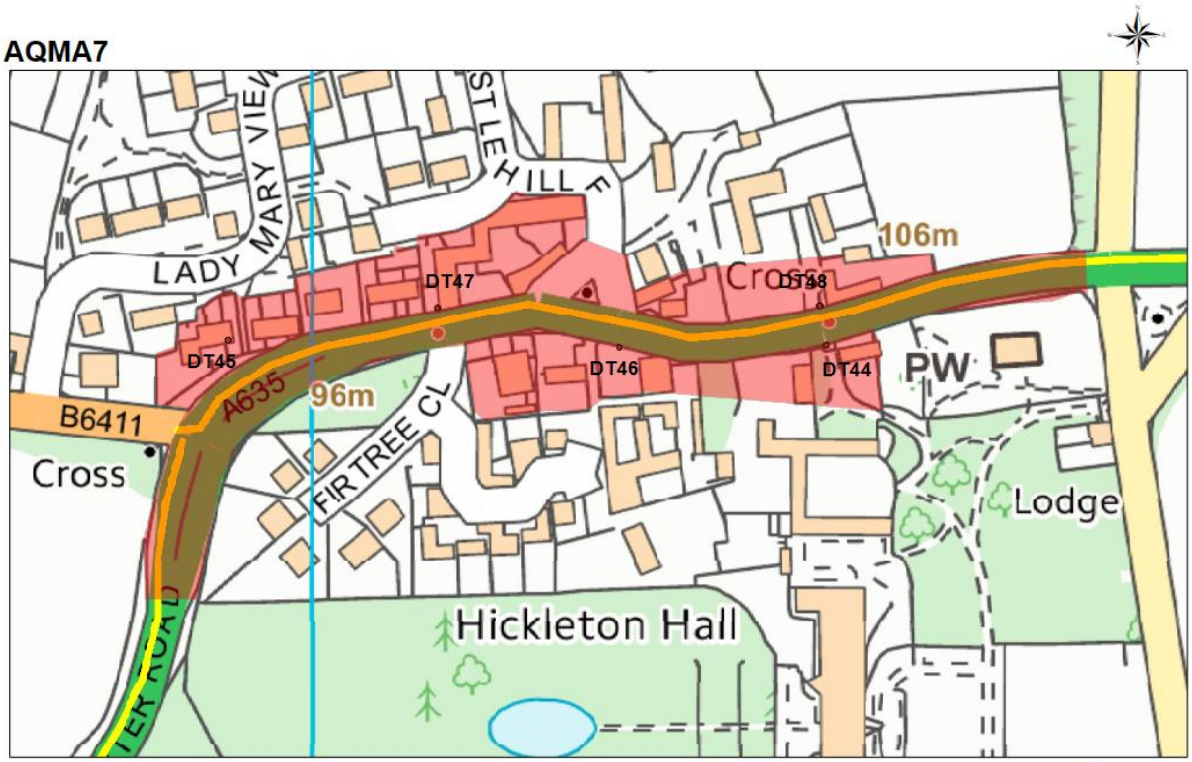
Doncaster

AQMA6

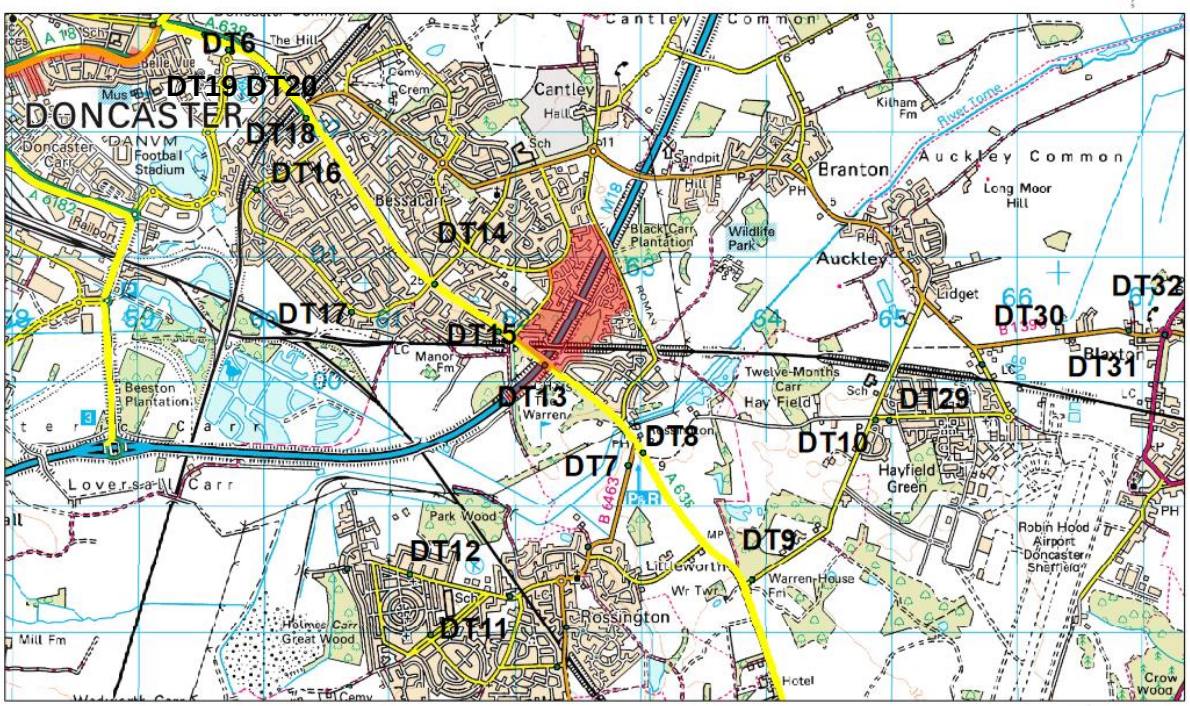


Doncaster

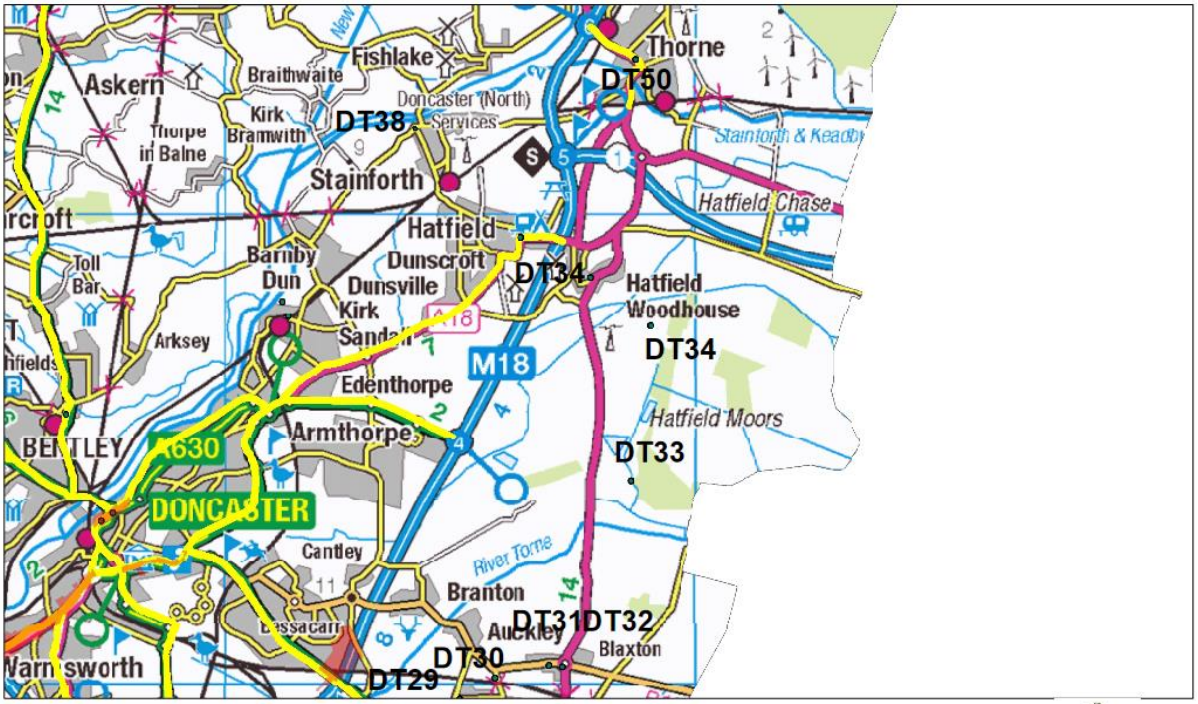
AQMA7



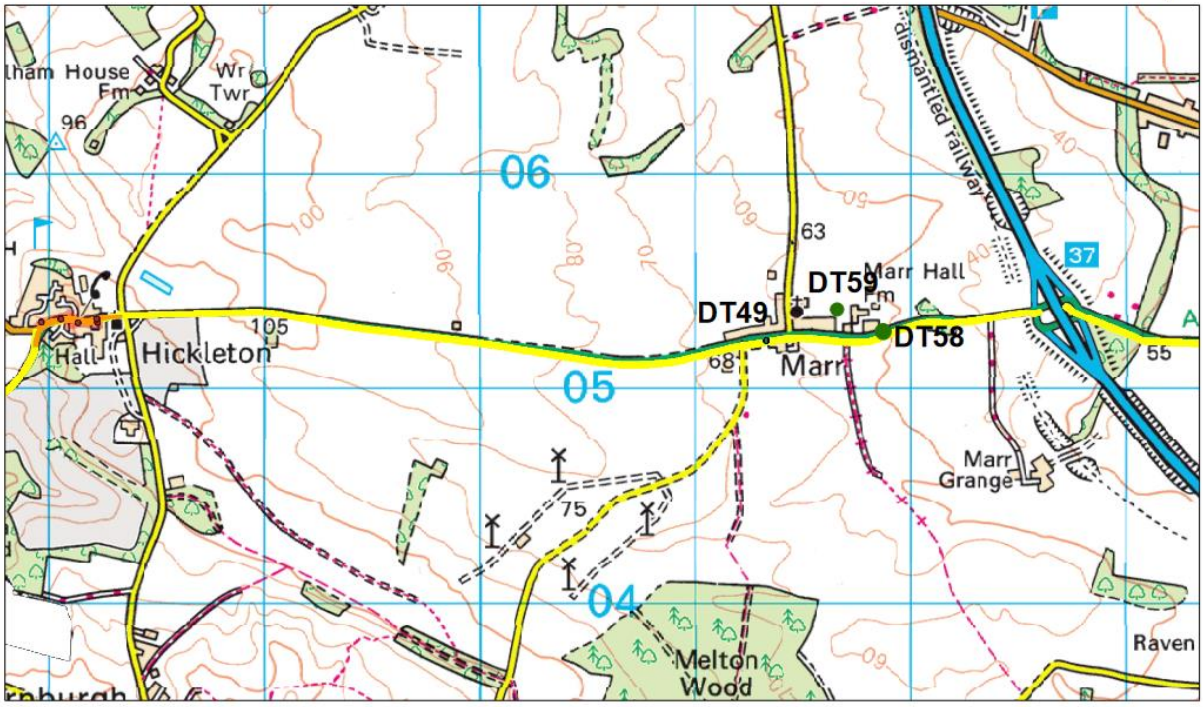
Non-AQMA Monitoring Sites



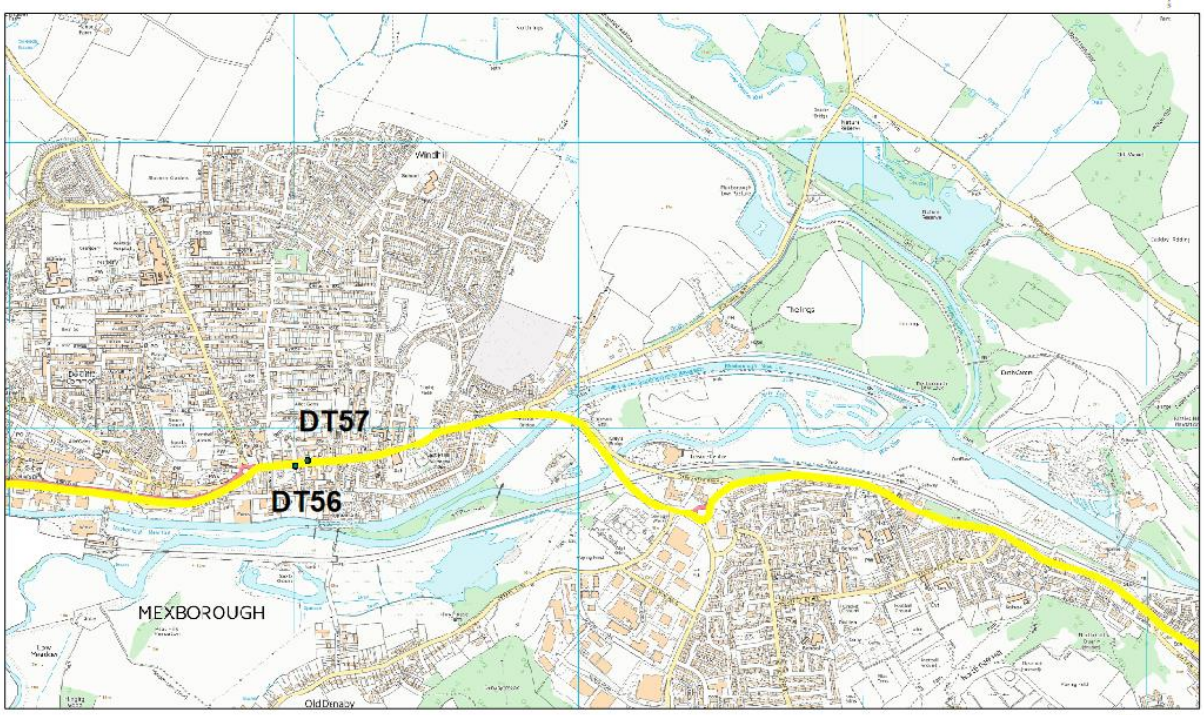
Non-AQMA Monitoring Sites



Marr Diffusion Tube Study



Non-AQMA Mexborough



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) 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

Air Quality Archive Internet website: www.airquality.co.uk

Defra website: http://www.defra.gov.uk/environment/quality/air/air-quality/

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Doncaster Metropolitan Borough Council, Pollution Control, Air Quality Review and Assessment Reports, Various, 1998 – 2017

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Downloaded June 2018

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Downloaded June 2018