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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Report Reference number	2018/FDC/ASR
Date	June 2018

Executive Summary: Air Quality in Our Area

Air Quality in Fenland

This report forms the 2018 Annual Status Report (ASR) for Fenland District Council and sets out the findings of a review of air quality in the district in 2017.

Fenland District is located in Cambridgeshire, bordering East Cambridgeshire, Huntingdonshire and Peterborough districts. The main market towns in Fenland are Chatteris, March, Whittlesey and Wisbech. The district covers an area of 546 sq km (211 sq miles), whilst the 2011 Census records the population of Fenland at 95,300, growing by about 14% since 2001.

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].

The Local Air Quality Management (LAQM) regime was introduced by The Environment Act 1995, this requires local authorities to review and assess air quality in their areas from time to time. The first round of review and assessment (1997-2003) resulted in the declaration of Air Quality Management Areas (AQMAs) in Wisbech for industrial pollutants; sulphur dioxide and PM_{10} caused by a coal-fired boiler at Princes Foods. During the second round of review and assessment (2003-2005) instances of nitrogen dioxide exceedence were identified in Wisbech around town centre roads, which resulted in the declaration of an AQMA. Exceedences of the SO_2 15-minute mean objective due to industrial emissions resulted in the declaration of the districts fourth AQMA in Whittlesey in 2006.

The review of the new monitoring data from 2017 has identified the following:

[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 objectives for nitrogen dioxide were met at all the monitoring locations (20 passive monitoring sites), both inside and outside the AQMA; with generally good data capture. Whilst all sites were within the objectives there were some sites that did show a slight rise in levels from previous years whilst others showed a slight reduction.

- The objectives for sulphur dioxide were met at the monitoring location (2 continuous monitoring sites) within the Whittlesey AQMA.

- The assessment of new sources has not identified any specific new sources that have not been considered previously. A detailed assessment of any new sources is not therefore required.

Fenland District Council will continue monitoring at all existing sites within the District, and has expanded the Diffusion Tube locations for 2018. It is recognised that greater partnership working within and amongst local authority's and transport planners is vital to implement any significant improvements with regards to air quality particularly associated with impacts form highways and new development, partnership working will continue to ensure air quality issues are addressed.

The next air quality review and assessment report will be the 2019 ASR.

Actions to Improve Air Quality

Fenland District Council has declared four Air Quality Management Areas (AQMA's), one for nitrogen dioxide, one for PM_{10} and two for sulphur dioxide. Automatic monitors and nitrogen dioxide diffusion tube monitoring sites measure sulphur dioxide, and nitrogen dioxide concentrations within the District.

It is concluded that there is no requirement for the Council to proceed to a Detailed Assessment for any pollutants.

For the forthcoming year the diffusion tube network has been expanded following local concerns in specific areas, whilst to progress the Councils Health & Wellbeing strategy an Air Quality Action Plan is being developed. Work is underway to formally revoke the AQMAs that are no longer warranted.

The following actions are being taken by the authority:

- Work is progressing on the revocation of the SO_2 and PM_{10} AQMAs within Wisbech, the source of the pollution has been removed. The site is permitted by the Environment Agency but due to the change of fuel source from coal to gas, PM_{10} and SO_2 are now no longer an issue, to the extent that they are not required to monitor as part of their Environmental Permit. The permit requires monitoring of NO_2 levels, our own monitoring in the vicinity is consistently below the objective level.

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Conclusions and Priorities

Air quality within the district continues to meet the relevant standards, to ensure that this trend continues the priority for the coming year is to work to revoke the Wisbech AQMAs as well as to develop and implement an Air Quality Plan to supplement the Councils Health and Wellbeing Strategy. Work is also underway to improve the councils Air Quality web pages, and an expansion of the diffusion tube programme has started following engagement with the local community.

Local Engagement and How to get Involved

Fenland District Council encourages the reduction in the number of car journeys undertaken, switching off car engines when stationary, community champions have been provided with transport training to enable them to assist others to access transport and help promote walking and cycling. Engagement with a local town council has promoted the work being undertaken.

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1 Local Air Quality Management

This report provides an overview of air quality in the Fenland District Council area 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 Fenland District 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 Fenland District 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/list?la=F&country=england&pollutant=all

– see full list at http://uk-air.defra.gov.uk/aqma/list

Alternatively, see Appendix D: Maps of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Work is underway to revoke AQMA Wisbech (1) and AQMA Wisbech (2), as the source of the pollution has been removed. The site is permitted by the EA but due to the change of fuel source from coal to gas, PM_{10} and SO_2 are now no longer an issue. The permit requires limits for NO_2 to be met, monitoring of NO_2 levels in the vicinity are below the action level.

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
AQMA Whittlesey	2006	SO_2 15 Minute Mean	Whittlesey	An area along roads and cycle routes to the west and northwest of Whittlesey brickworks and an area covering roads, footpaths, dwellings, schools and public open spaces to the east of Whittlesey brickworks.	NO	15-Minute Mean objective is likely to be breached based on modelling	Exceedances	15-Minute Mean within objective	Exceedances	No Formal Action Plan as monitoring consistently shows no exceedance of the objectives	N/A	N/A
AQMA Wisbech (1)	2001	SO_2 15 Minute Mean	Wisbech	An area in central Wisbech surrounding the Princes Food site.	NO	Number of 15 minute mean concentrations >266 $\mu g/m^3$ = 1300	Exceedances	Source removed	Exceedances	Proposal to Revoke as source removed	N/A	N/A

AQMA Wisbech (2)	2001	PM_{10} 24 Hour Mean	Wisbech	An area in central Wisbech surrounding the Princes Food site.	NO	Number of daily means > 50 $\mu g/m^3$ (gravimetric) = 38 (modelled)	Exceedances	Source removed	Exceedances	Proposal to Revoke as source removed	N/A	N/A
AQMA Wisbech (3)	2006	NO_2 Annual Mean	Wisbech	An area extending along the B198 Lynn Road between Freedom Bridge Roundabout and Mount Pleasant Road and along the A1101, from Sandylands, along Churchill Road to just past Westmead Avenue.	NO	40.9	$\mu g/m^3$	31.3	$\mu g/m^3$	No formal Action Plan as monitoring consistently shows no exceedance of the objectives	N/A	N/A

☒ **Fenland District 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 Fenland

Defra's appraisal of last year's ASR concluded that objectives are being met for all sources and pollutants and that that work should progress on the revocation process. Although monitoring results are within the objectives due to the location of some of the monitoring locations future reports should correct NO_2 results for distance as outlined in the Technical Guidance (TG16). This has been carried out using the NO_2 fall off with distance calculator available on the Defra website.

Fenland District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Fenland District Council expects the following measures to be completed over the course of the next reporting year: March Area Transport Study, provide air quality data to assist with strategy development. Fenland District Council's priorities for the coming year are to progress revocation of the PM_{10} and SO_2 AQMAs within Wisbech.

Fenland District Council anticipates that the measures stated above and in Table 2.2 will maintain compliance with the objectives throughout the district.

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	Improve traffic management at key junctions	Traffic Management	UTC, Congestion management, traffic reduction	CCC	2016	Ongoing	Reduced congestion and increased average speeds through the AQMA	Maintain level below standards	Access Strategy amended, following the public consultation feedback, awaiting committee sign off	2021	Lengthy Timescale / Funding
2	Consideration of Air Quality Impacts when providing comments on planning applications within an AQMA or where an AQMA could be impacted or created.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	FDC	On-going	On-going	Planning response time	Maintain levels below Standard	90% response rate	On-going	
3	Fletton Liaison Meetings	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	EA / FDC	On-going	On-going	Maintain levels below Standard	Reduced vehicle emissions	Implementation on-going	On-going	
4	Encouraging modal shift	Promoting Travel Alternatives	Promotion of walking	FDC	2016	Ongoing	Reduced vehicle use and increased use of public transport / Active Travel	Maintain levels below Standard	Transport & Access Group, 36 community champions have been provided with transport training to enable them to assist others to access transport and help promote walking and cycling		

5	Develop Air Quality Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	FDC	2018	2019	Publish Plan	Maintain levels below Standard	Planning Stage extended to incorporate requirements of Health and Wellbeing Strategy	2019	Staffing Levels
6	March Area Transport Study	Traffic Management	UTC, Congestion management, traffic reduction	CCC	2017	Ongoing	Maintain levels below Standard	Maintain levels below Standard	Data acquisition	2020	

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.

Currently there is no monitoring of $PM_{2.5}$ undertaken by Fenland District Council, therefore no concentration values can be reported or estimated using the method described in box 7.7 of LAQM.TG(16).

The 2017 DEFRA background maps for the Fenland District Council area (2015 based) show that all background concentrations of $PM_{2.5}$ are far below the 2020 annual mean AQS objective for $PM_{2.5}$. The highest background concentration is predicted at 12.4 µg/m^3 this is contained within the 1 x 1km grid square with the grid reference of 546500, 310500. This is an area or mixed residential and industrial use around Lynn Road in Wisbech.

Key indicators of the state of public health have been developed through the Public Health Outcomes Framework (PHOF) following the Health and Social Care Act 2012. The Public Health Outcomes Framework data tool compiled by Public Health England includes an indicator applicable to air pollution. Indicator 3.01 Fraction of mortality attributable to particulate air pollution, provides data on the mortality burden of $PM_{2.5}$ within England and on a county and local authority scale. The fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.3% (2016 data), the fraction within the Fenland District is 5.3% equal to England as a whole and very slightly lower tha average for the East of England as a whole (5.4%).

There are currently no smoke control areas within the District however work is planned to update the Councils web pages to include information regarding the burning of solid fuel.

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.

Fenland District Council did not carry out any automatic monitoring for pollutants during 2017. Monitoring data for SO_2 has been supplied by Forterra Building Products Limited (formally Hanson). As part of their Environmental Permit they monitor at two locations in the vicinity of the brickworks in Whittlesey. Forterra operates continuous ambient monitoring stations (CAMS) to the east-southeast of the former Saxon Works (Park Lane CAMS) and to the north of the Kings Dyke Works (Bradley Fen CAMS). Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D.

3.1.2 Non-Automatic Monitoring Sites

Fenland District Council undertook non- automatic (passive) monitoring of NO_2 at 20 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.

Following the bias adjustment process, all the nitrogen dioxide diffusion tubes showed compliance with the annual mean objective for nitrogen dioxide, both within and outside the NO_2 AQMA. A majority of the monitoring results for the reporting period compare favourably to the results of previous years demonstrating the improving trend recorded over recent years, data capture remains good across the district.

Any annual means greater than 60µg/m^3 may indicate that an exceedance of the 1-hour mean objective is also likely. No such exceedances were recorded at any monritong site.

Fenland District Council has examined the results from monitoring in the district. Concentrations both within the AQMA and outside of it are all below the national objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment, and further highlights that consideration of revoking the AQMAs is warranted.

3.2.2 Particulate Matter (PM_{10})

Fenland District Council does not currently monitot for this pollutant.

3.2.3 Particulate Matter ($PM_{2.5}$)

Fenland District Council does not currently monitor for this pollutant.

3.2.4 Sulphur Dioxide (SO_2)

Table A. in Appendix A compares the ratified continuous monitored SO_2 concentrations for 2017 with the air quality objectives for SO_2.

These results confirm that the sulphur dioxide objectives are being achieved, for the 15-minute, hourly and daily air quality objectives at locations of relevant exposure within the current AQMA.

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)
AM1	Park Lane	Urban Background	526382	296859	SO2	YES	UV Fluorescence	0	N/A	1.5
AM2	Bradley Fen	Industrial	523924	297974	SO2	YES	UV Fluorescence	0	N/A	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

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)
S1	A605	Roadside	527059	297205	NO2	NO	3	1	NO	2.1
S2	March Station Road	Roadside	541951	297762	NO2	NO	9	2	NO	2.3
S3	Ramnoth	Kerbside	546857	308553	NO2	YES	4	1	NO	2.2
S4	Orchard R'about	Kerbside	526852	297244	NO2	NO	6	2	NO	2.2
S5	Bowthorpe	Kerbside	546414	309585	NO2	YES	3	2	NO	2.2
S6	Kings Dyke	Roadside	525287	297404	NO2	NO	7	2	NO	2.1
S7	Cemetary Road	Roadside	527287	297156	NO2	NO	5	2	NO	2.2
S8	Westmead Avenue	Kerbside	546886	308366	NO2	YES	12	1	NO	2.2
S9	Thorney Toll	Kerbside	534132	303969	NO2	NO	1	1	NO	2.9
S10	Coates	Kerbside	530613	297702	NO2	NO	0	1	NO	2.5
S11	High Street March	Roadside	541658	296190	NO2	NO	1	2	NO	2.1
S12	AWS Lynn Road	Industrial	546588	310192	NO2	YES	10	N/A	NO	2.3
S13	Lynn Road / Mt Pleasant	Roadside	546661	310396	NO2	YES	4	1	NO	2.2
S14	Clare St / A141	Kerbside	538728	285743	NO2	NO	5	1	NO	2.1
S15	Weasenham Lane JCN	Roadside	546828	308543	NO2	YES	4	2	NO	2.2
S16	Lynn Road R'about	Roadside	546260	309987	NO2	YES	0	2	NO	2.2
S17	Weasenham / Cromwell	Roadside	545509	308731	NO2	NO	2	2	NO	2.2
S18	New Road	Roadside	540391	286415	NO2	NO	9	4	NO	2.3
S19	Broad St March	Roadside	541653	296769	NO2	NO	0	3	NO	2.1
S20	Napier	Roadside	546485	309389	NO2	YES	2	2	NO	2.2

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 (µg/m^3) (3)				
					2013	2014	2015	2016	2017
S1	Roadside	Diffusion Tube	100	100	27.9	25.8	22.6	24.4	23.3
S2	Roadside	Diffusion Tube	100	100	19.8	17.8	17.2	21.4	22.8
S3	Kerbside	Diffusion Tube	100	100	25.2	25.7	27.8	24.4	25.7
S4	Kerbside	Diffusion Tube	92	92	24.8	25.6	23.5	23.1	24.7
S5	Kerbside	Diffusion Tube	100	100		28.6	33.4	35.4	35.7
S6	Roadside	Diffusion Tube	100	100	23.1	21.7	20.2	19.4	20.6
S7	Roadside	Diffusion Tube	100	100	18.8	21.7	21.9	22.4	23.3
S8	Kerbside	Diffusion Tube	92	92	29.4	18.3	18.4	18.5	20.3
S9	Kerbside	Diffusion Tube	100	100	26.7	21.9	21.5	20.3	20.8
S10	Kerbside	Diffusion Tube	100	100	23.6	20	21.5	21	22.7
S11	Roadside	Diffusion Tube	100	100	23.5	22.8	22.6	21.4	19.9
S12	Industrial	Diffusion Tube	92	92	20.5	16.7	16.7	16.1	16.1
S13	Roadside	Diffusion Tube	92	92	30.9	31.8	29.8	27.1	26.3
S14	Kerbside	Diffusion Tube	100	100	19.9	21.4	21.6	19.5	18.9
S15	Roadside	Diffusion Tube	100	100	39.5	33	34.9	34.4	33.7
S16	Roadside	Diffusion Tube	92	92	33.6	32.7	32.1	30.5	29.7
S17	Roadside	Diffusion Tube	92	92	21.1	20.7	19.2	20.3	20.4
S18	Roadside	Diffusion Tube	100	100	16.7	17.1	15.3	15.3	14.8
S19	Roadside	Diffusion Tube	92	92	37.4	36.2	34	33.3	35.8
S20	Roadside	Diffusion Tube	100	100		36.4	31.4	31.8	29.0

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

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.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

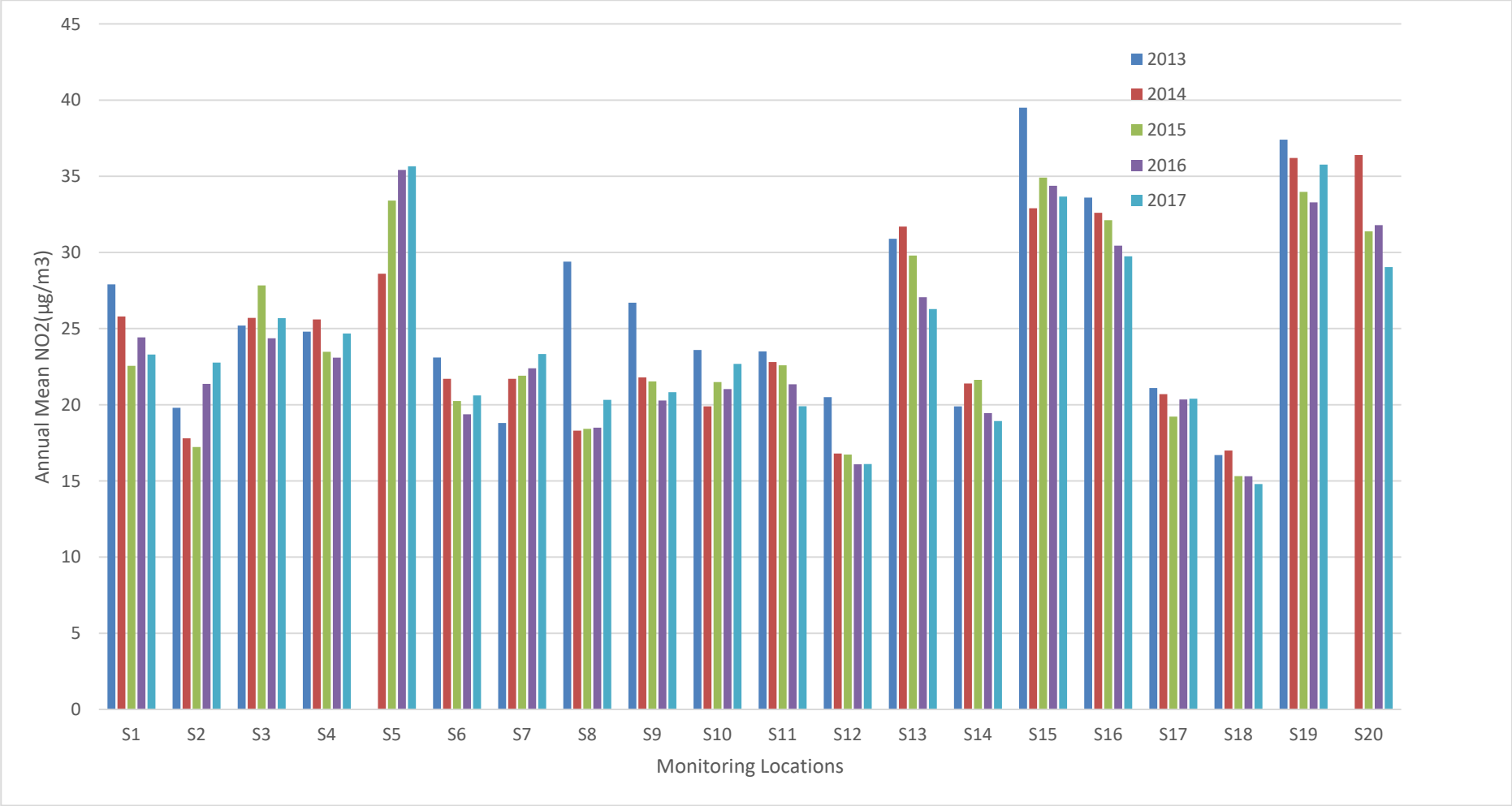


Table A.4 – SO_2 Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	Number of Exceedances 2017 (percentile in bracket) [3]		
				15-minute Objective (266 µg/m^3)	1-hour Objective (350 µg/m^3)	24-hour Objective (125 µg/m^3)
AM1	Urban Background	99.8	99.8	4	0	0
AM2	Industrial	98.7	98.7	2	0	0

Notes:

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)

(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 relevant percentiles are provided in brackets.

Figure A.2 – Trends in SO_2 Concentrations

	2011	2012	2013	2014	2015	2016	2017	National Objectives
	Park Lane CAMS (AM1)							
Number of 15 minute means exceeding 266 (µg/m^3)	5	1	4	4	1	1	4	35
Number of hourly means exceeding 350 (µg/m^3)	0	0	0	0	0	0	0	24
Number of daily means exceeding 125 (µg/m^3)	0	0	0	0	0	0	0	3
% Data Capture	99	100	99	99	99	100	99	90
	Bradley Fen CAMS (AM2)							
Number of 15 minute means exceeding 266 (µg/m3)	10	4	1	2	0	8	2	35
Number of hourly means exceeding 350 (µg/m^3)	0	0	0	0	0	0	0	24
Number of daily means exceeding 125 (µg/m^3)	0	0	0	0	0	0	0	3
% Data Capture	99	98	99	99	99	99	98	90

Notes:

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)

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 ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.77) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
S1	51.2	33.2	29.6	29.6	25.6	22.5	21.9	23.9	29	27.1	38.8	30.5	30.3	23.3	19.4
S2	41.6	35.3	33	24.6	21.2	19.1	21.8	25.4	26.5	30.2	38.9	37.1	29.6	22.8	17.8
S3	42.6	38.9	34.6	26.7	21.9	23.5	23.7	27.5	27.1	42.2	44.9	46.6	33.4	25.7	22.7
S4	50.6	39.3	35.1	24.8		22.7	23.5	25.2	28.2	35.9	36.2	30.6	32.1	24.7	19.6
S5	56.2	47.6	52.1	34.5	39.9	38.9	33.4	42	48.3	49.6	63.6	49.3	46.3	35.7	31.3
S6	40.9	32.5	33.4	24.4	24.2	21.7	22.9	20.1	22.7	24.3	25.6	28.5	26.8	20.6	16.5
S7	51.2	36.1	35.5	25.9	22.3	20.6	20.4	21.2	26.2	29.6	38.7	35.7	30.3	23.3	19.3
S8	39.2	28.3	28.6	23.1	14.5		15.8	16.6	21.4	25.9	36.1	40.7	26.4	20.3	18.3
S9	40.1	33.8	32.1	24.2	22.9	21.8	18.5	27.3	23.7	23.9	25.9	30.2	27.0	20.8	20.8
S10	38.2	35.3	36.9	25.2	20.2	25	19.7	23.7	31.5	28	35.3	34.4	29.5	22.7	22.7
S11	46.6	27.1	33.4	23.6	24.6	17.4	16.8	19.3	21.9	23.3	29.2	26.7	25.8	19.9	18.9
S12	24.1		27.3	16.8	15.1	15.8	15.1	17	20.2	23.1	29.2	26.4	20.9	16.1	16.1
S13	42	40.5	38.2	29.2		31.5	26.2	30.3	33	32.8	36.9	34.8	34.1	26.3	23.0
S14	30.4	27.7	29.2	24.1	20.2	20.8	21	24.1	23.3	25.8	24.8	23.7	24.6	18.9	15.5
S15	47.8	45.6	54.8	42.02	36.3	40.1	32.3	39.9	39.3	46.4	58.3	41.8	43.7	33.7	29.2

S16	42.9	49.3	45.2	34.38	38.6	31.7	27.7	32.5		35.3	44.9	42.4	38.6	29.7	29.7
S17	44.3	29.4	30.9	20.246	25.2		16.9	19.8	22.9	25.8	26.5	29.2	26.5	20.4	19.3
S18	39.7	23.9	20.8	14.707	17.6	12	11.4	12.9	17	15.5	25	19.9	19.2	14.8	12.9
S19	50.8	44.9	46.4	42.975	35.3	34.7	35.7		39.7	27.5	109.443	43.4	46.4	35.8	35.8
S20	53.5	44.5	39.9	33.9	37.6	32.5	30.8	31.1	35.9	34	41.3	37.4	37.7	29.0	27.7

☒ **National bias adjustment factor used**

☒ **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

Diffusion Tube Bias Adjustment Factors

Diffusion tube values have been multiplied by a bias correction factor of 0.77 obtained from the DEFRA LAQM Helpdesk national bias adjustment database (version 03/18).

Discussion of Choice of Factor to Use

No local co-location information was available so a bias adjustment factor was obtained from the national bias adjustment database which is available at: http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html.

Adjustment factors are derived from data from diffusion tubes which were co-located with real-time analysers.

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection.

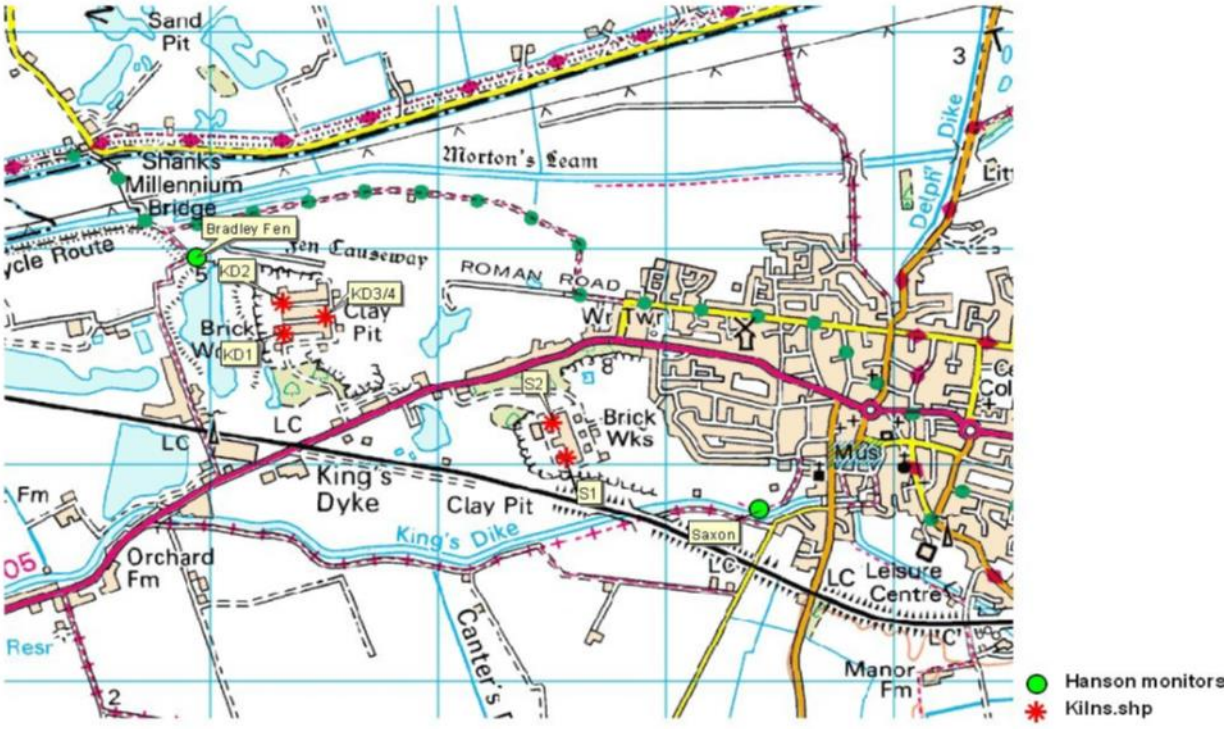
In the WASP intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, SOCOTEC (formerly ESG) currently holds the highest rank of a Satisfactory laboratory. Entering the parameters for ESG Didcot, and a 50% triethanolamine (TEA) in acetone preparation method for 2017 gave an adjustment factor of 0.77 which has been applied to the Fenland data.

Appendix D: Maps of Monitoring Locations and AQMAs

Automatic Monitoring Sites

Fenland District Council does not currently operate any automatic monitoring sites. Monitoring of SO_2 is undertaken by Forterra Building Products (formerly Hanson) at two locations in the vicinity of the brickworks in Whittlesey. As part of their environmental permit Forterra operate a continuous ambient monitoring station (CAMS) to the east-southeast of the former Saxon Works (Park Lane CAMS (formerly Saxon) and a second CAMS to the north of the Kings Dyke Works (Bradley Fen CAMS).

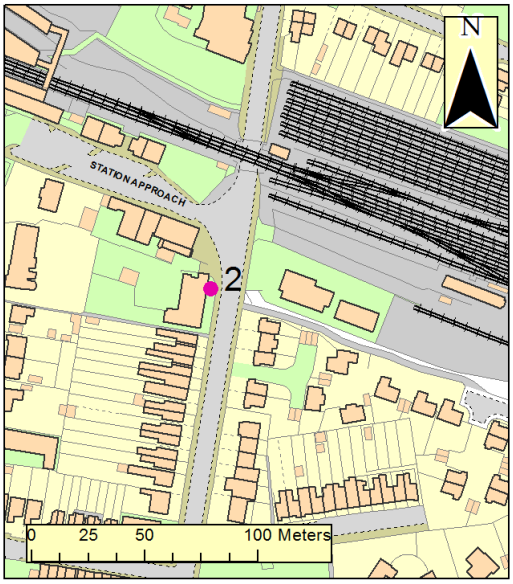
Figure D.1 Map of Automatic Monitoring Sites run by Forterra in Whittlesey



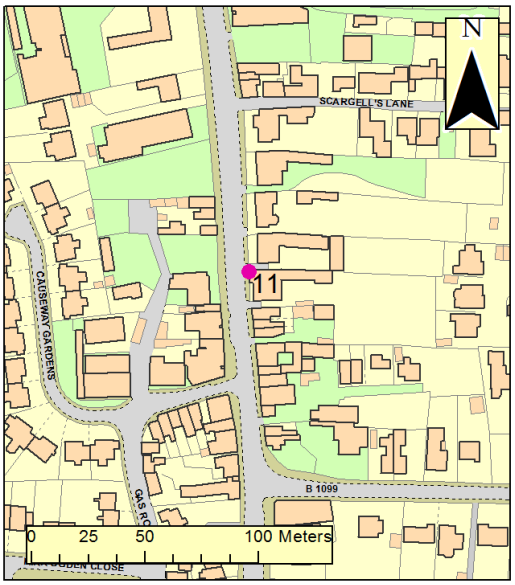
Note: Kilns S1 and S2 no longer operate and the permit for this site has been surrendered.

Figure D.2 Map(s) of Non-Automatic Monitoring Sites

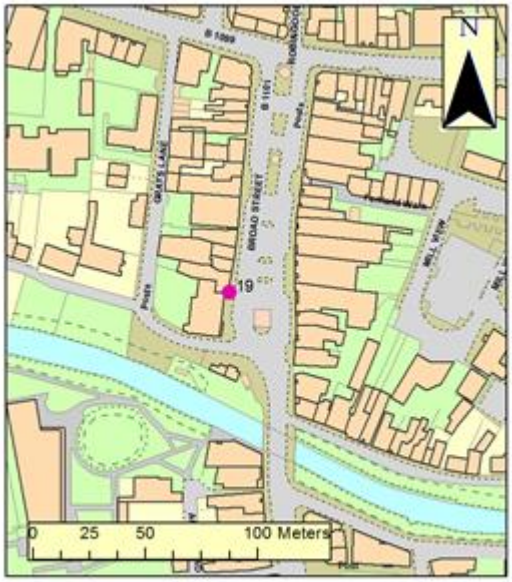
Tube 2 - Station Road March



Tube 11 - High Street March

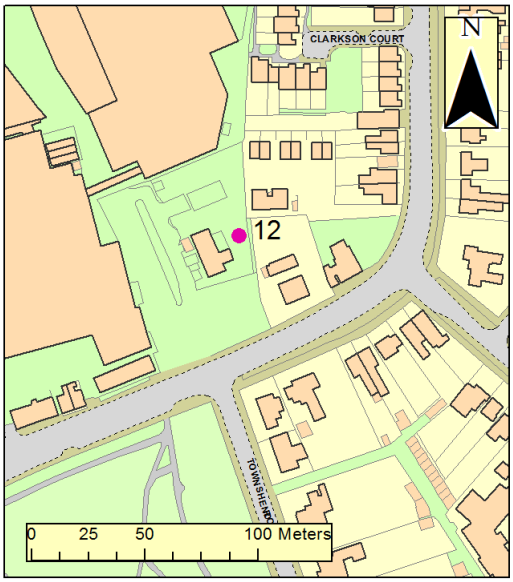


Tube 19 - Broad Street March

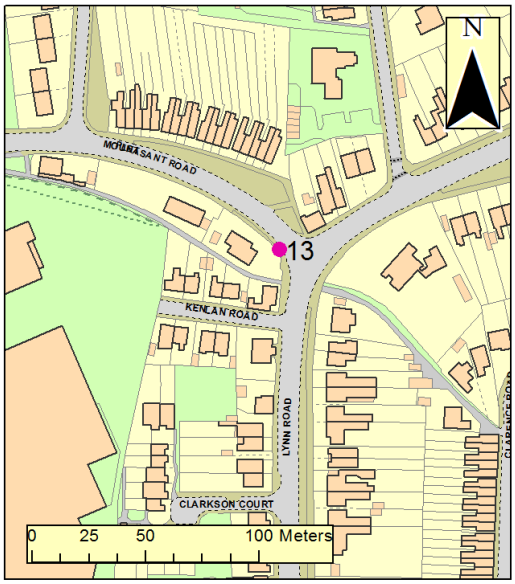


Tubes 3 Ramnoth, 8 Westmead & 15 Weasenham Wisbech

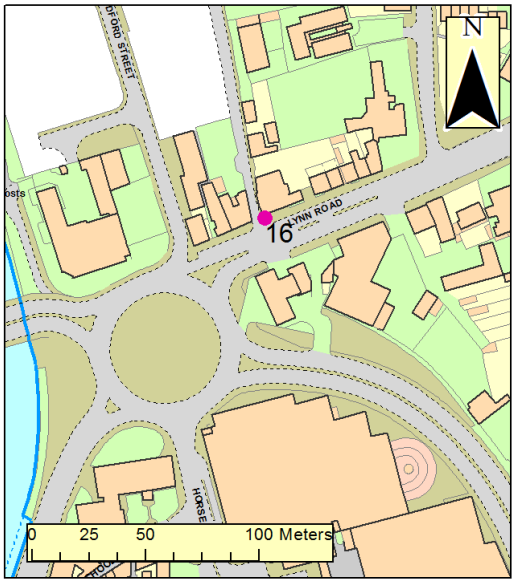
Tube 12 AWS Lynn Road Background Site Wisbech



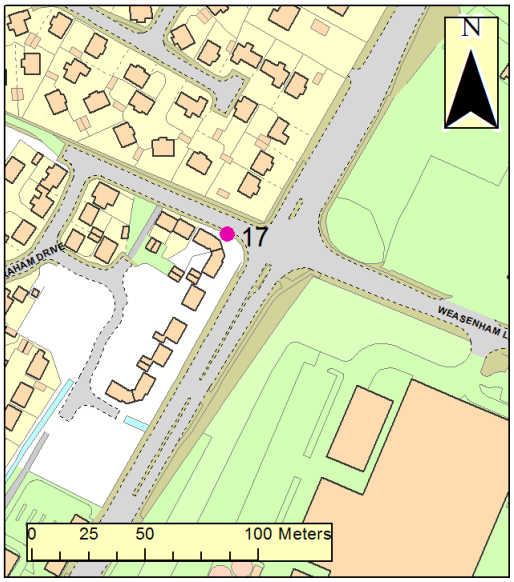
Tube 13 Lynn Road / Mount Pleasant Wisbech



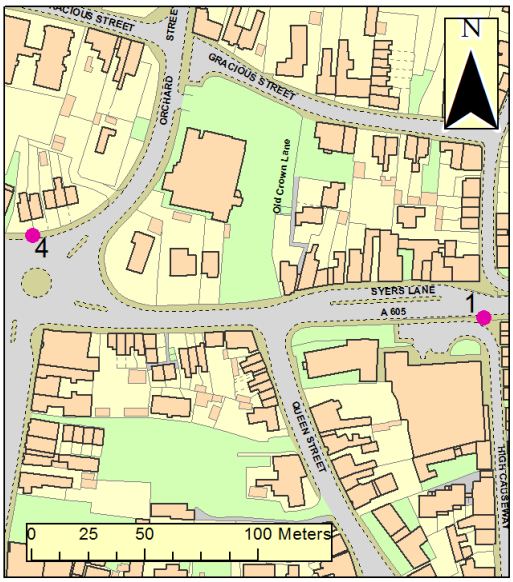
Tube 16 Lynn Road Wisbech



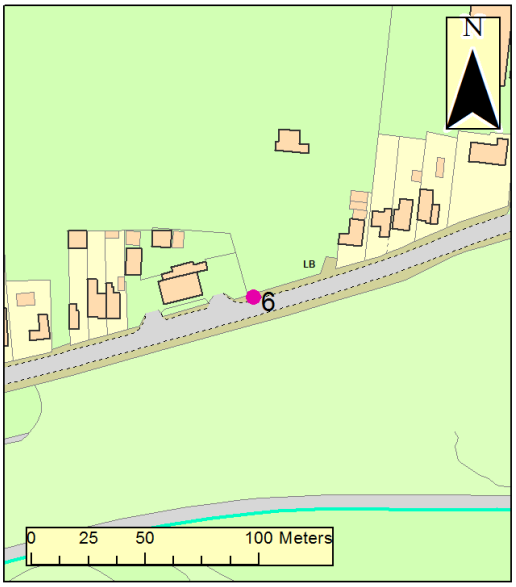
Tube 17 Cromwell Road / Weasenham Lane Wisbech



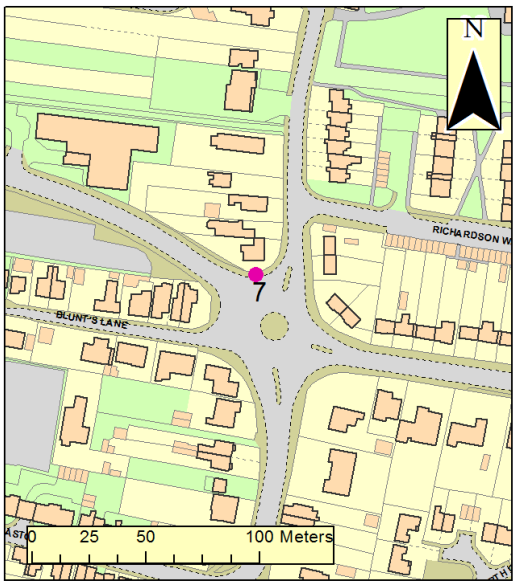
Tubes 4 Orchard Road & 1 A605 Whittlesey



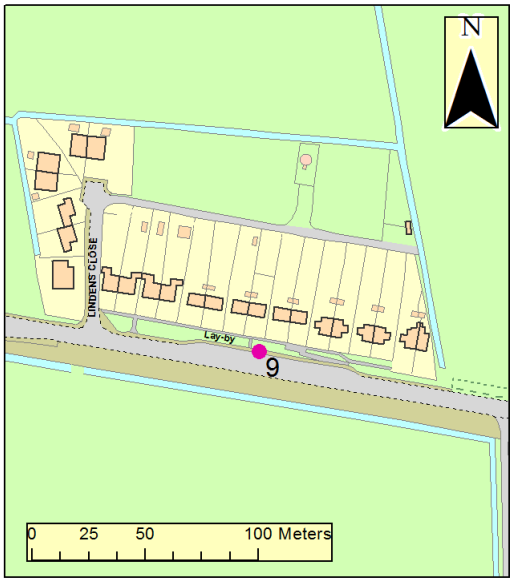
Tube 6 Kings Dyke Whittlesey



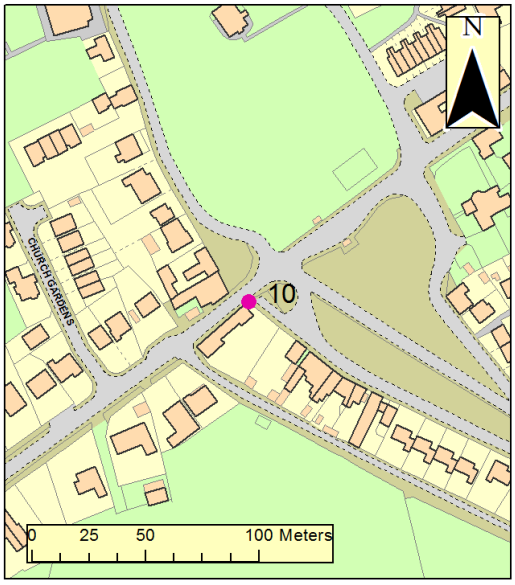
Tube 7 Cemetary Road Whittlesey



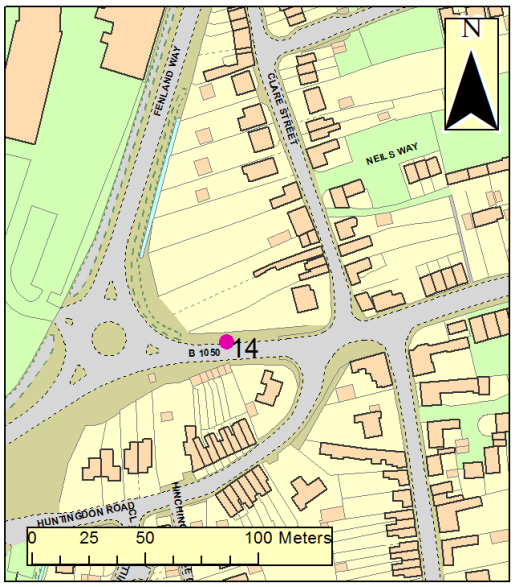
Tube 9 A47 Thorney Toll



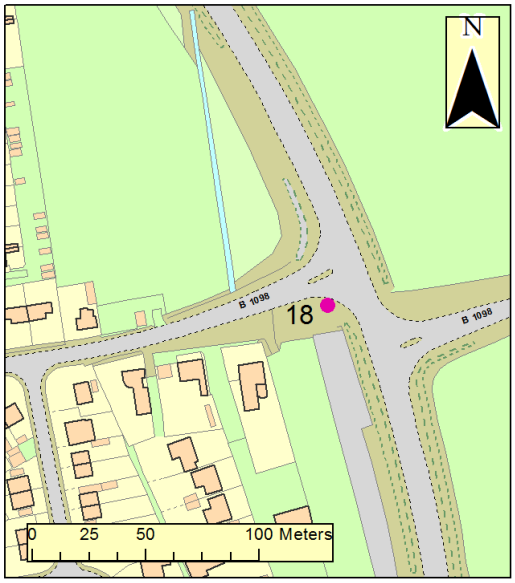
Tube 10 - (A605) Coates



Tube 14 - Clare Steet / A141 Chatteris



Tube 18 - New Road Chatteris



Tubes 5 Bowthorpe & 20 Naiper Wisbech

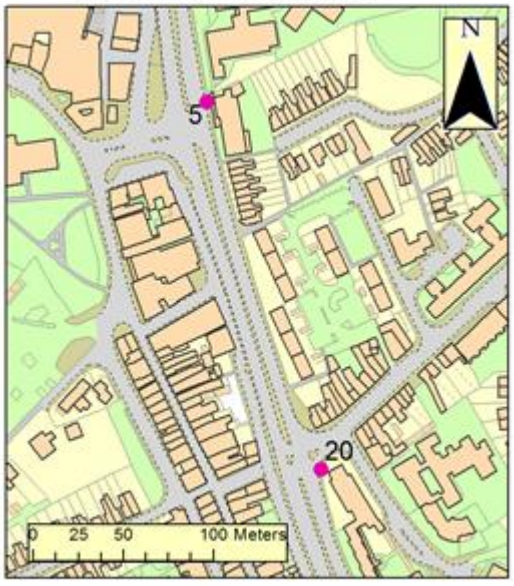
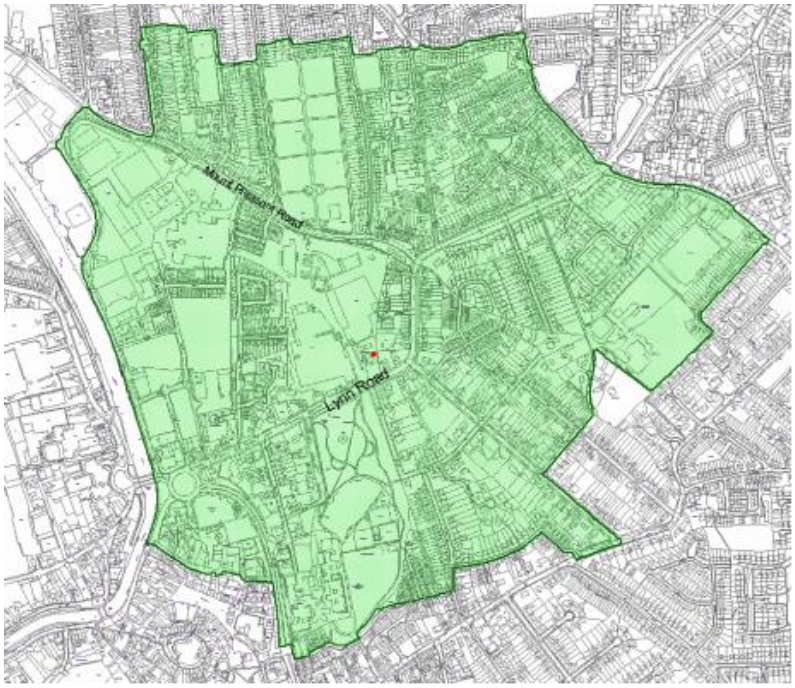
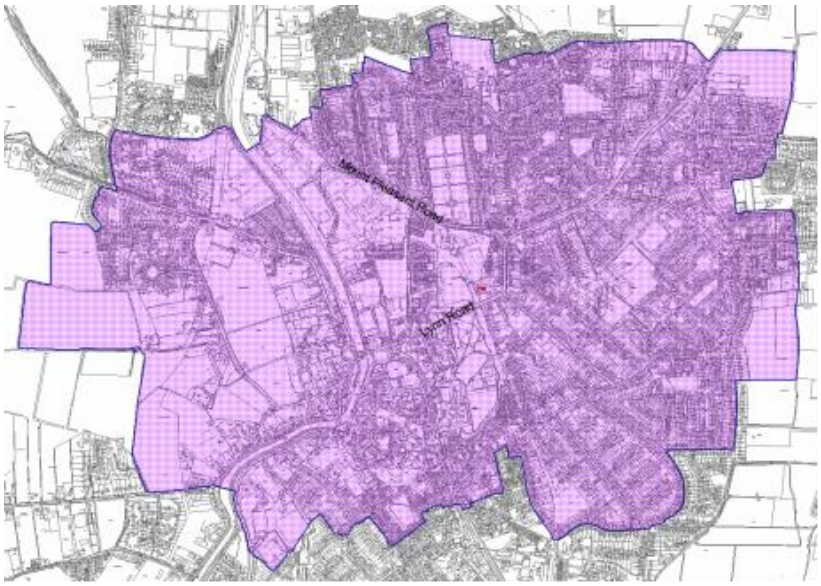


Figure D.3 PM_{10} AQMA in Wisbech



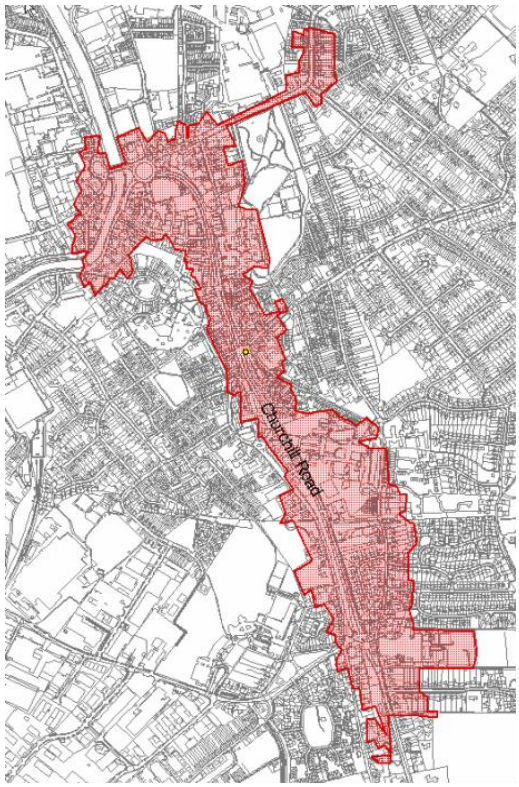
Green area =PM_{10} AQMA

Figure D.4 SO_2 AQMA in Wisbech



Purple area =SO_2 AQMA

Figure D.5 NO_2 AQMA in Wisbech



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Red area = NO_2 AQMA

Figure D.6 SO_2 AQMA in Whittlesey

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Blue areas = SO_2 AQMA

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
CCC	Cambridgeshire County Council
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

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3. Fenland DC (2005b). Detailed Assessment of Air Quality for Fenland District Council Further Assessment

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8. Fenland DC (2010/11) Progress Report

9. Fenland DC (2012) Air Quality Updating and Screening Assessment

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16. Review and Assessment Helpdesk/Website (2016) Bias Adjustment Spreadsheet (version 03/17 V2). http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

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