South Holland District Council
Annual Status Report 2020

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2020 Air Quality Annual Status Report (ASR)

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

August 2020

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Executive Summary: Air Quality in Our Area

Air Quality in South Holland District Council

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 main source of air pollution in the district is road traffic emissions from major roads, notably the A16, A17 and A151 which connect South Holland with North Lincolnshire, the Humber estuary and South West Lincolnshire. There are currently no Air Quality Management Areas (AQMAs) declared in South Holland.

During 2019, annual mean NO_2 concentrations have been recorded as under 10µg/m^3 at both automatic monitoring sites for the second year running, and all non-automatic monitoring sites have recorded NO_2 concentrations below 35µg/m^3. Increases in the NO_2 annual mean concentration was observed in 2019 at SH6, SH7, SH8/9/10, and SH16. Concentrations at SH 16 have been inreasing year on year, and the concentrations at SH 6 and SH 7 have had a large increase of up to 9.9µg/m^3 from that reported in 2018. This significant increase at sites SH6 and SH7 is a result of the tubes being repositioned to be closer to the A17, which is the main road traffic source. At other locations where more than one years worth of monitoring data is available, concentrations have remained consistent or have decreased.

At both automatic monitoring sites, the annual mean PM_{10} concentrations are well below the annual mean PM_{10} AQS objective of 40µg/m^3, with the maximum reported concentration being 14.2µg/m^3 at site CM2, and the number of exceedances of the daily mean objective is considerably lower than the permitted 35 with no exceedences recorded at either of the sites.

[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

In addition to NO_2 and PM_{10} monitoring performed at Westmere School, Ozone was also measured. The AQS objective for ground level O_3 (to be met by 2005) states that the maximum daily concentration (measured as an 8-hour mean) of 100µg/m^3 should not be exceeded more than 10 times per year. During 2019 the number of exceedances reached 17 which is the highest reported since 2013. There has been a continual increase year on year since 2015; prolonged and increased periods of warm weather may be contributing to the increase in exceedances.

Actions to Improve Air Quality

There are no designated AQMAs within South Holland District Council, therefore the Council has not produced an Air Quality Action Plan (AQAP) and as such the Council has not published any specific measures related to control and mitigation of sources of local air quality issues. Despite this, South Holland District Council have identified, passed approval, and secured funding to install six EV charging points across the district.

Conclusions and Priorities

In 2019, the annual mean NO_2 concentrations at all monitoring locations in South Holland District continue to report well below the 40µg/m^3 air quality objective. Annual mean NO_2 concentrations were recorded below 10µg/m^3 at both automatic monitoring sites and below 35µg/m^3 at all non-automatic monitoring sites.

South Holland District Council reviewed their monitoring strategy in 2019, and as a result relocated 5 diffusion tubes in order to target potentially problematic areas. None of these new sites are in exceedance, however SH 2 reported the highest annual mean NO_2 concentration in 2019 of 32.1µg/m^3.

As the annual mean concentrations at all the sites are well below 60µg/m^3, this indicates that an exceedance of the 1-hour mean objective is unlikely at these sites.

South District Council's priorities for the coming year include:

- Continuing with the current NO_2 diffusion tube monitoring network to identify any exceedances of the annual mean air quality objective;
- Continue to monitor at the new locations in order to determine the trend in NO_2 concentrations;

- Continue to monitor at locations where the annual mean NO_2 concentrations have shown an increase in 2019;
- Ensure new developments meet the requirements of planning policies and guidance in relation to air quality;
- Progress with the installation and commissioning of the six EV charging points located across the district; and
- Proceed to the 2021 Annual Status Report.

Local Engagement and How to get Involved

A variety of actions can be undertaken by everyone to help keep air pollution low, and protect their health when levels rise:

- Don't light a bonfire when pollution levels are high.
- Try to use your car less often - walk, cycle or use public transport.
- Cycling or walking is healthier for both the environment, and for you.
- Ask your employer, school or college about developing a green travel plan.
- Do not drive your car when there are warnings of high air pollution. You will normally receive pollution warnings on your local regional news and weather forecast.

The South Holland air quality webpages can be found at http://shollandair.aeat.com/.

The website allows users to find out what the latest pollution levels in South Holland area are, find out more about air pollution, and view data for individual automatic monitoring stations in the local authority area.

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1 Local Air Quality Management

This report provides an overview of air quality in South Holland District Council during 2019. 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 South Holland 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.

South Holland District Council currently does not have any AQMAs. For reference, a map of South District Council's monitoring locations is available in Appendix D.

2.2 Progress and Impact of Measures to address Air Quality in South Holland District Council

Defra's appraisal of last year's ASR concluded that the report is well structured, detailed, and provides the information specified in the Guidance. Additionally, the following comments were made:

- *"The presentation was excellent and all aspects of the template were met satisfactorily.*
- *The Council's continuing evaluation of the monitoring program is welcomed to ensure worst case relevant exposure is captured. Any updates should be reported on in the 2020 ASR.*
- *The report included measures to address $PM_{2.5}$ and links to Public Health outcomes Frameworks. This is encouraged to be continued in future ASRs.*
- *QA/QC was robust. However, given that use of the national bias adjustment factor would have resulted in higher reported concentrations than those obtained using the local bias adjustment factor, more discussion would have been welcomed on why the local factor was chosen. It is recognised that this would have had no effect on exceedances.*
- *Overall the report satisfies the criteria of relevant standards and is a good source for members of the Public to find out about air quality in their area. The Council should continue their good work and submit an Annual Status Report in 2020."*

The Council continues to review and update their monitoring strategy in order to target areas of potential exceedance and to capture relevant exposure. A review in 2019 was carried out, which resulted in the relocation of the following diffusion tube sites:

- SH2 was relocated from Nutten Stoven to Winsover Road (Urban Background)
- SH3 was relocated from Priory Road to Woodfield Close (Urban Background)
- SH6 and SH7 have been repositioned to be closer to the A17 (the main road traffic source) to endeavour to provide a more accurate measurement of the roadside levels. Previously both sites were located at a distance from the road, and it was felt these locations served little purpose.

- SH11 was relocated from Metalair to Donington (A52) (Roadside)

Additionally a new tube was deployed:

- SH19 has been deployed, replacing SH14, and has been positioned in Whaplode (Roadside)

All relocations and replacements were carried out at the start of 2019 in line with the LAQM Diffusion Tube Calendar to ensure a full years' worth of data is available at the new locations. All other monitoring located have remained in place. The Council will continue to review and update the monitoring strategy as required.

The SHDC CM1 Urban Background site has been used once again for this year's local bias adjustment due to this site reporting slightly higher values than site CM2. Further discussion on the choice of the local bias adjustment factor over the national factor is given in Appendix C.

Both NO2 and PM10 AQS objectives continue to have been met within South Holland District in the last five years, however the Council is committed to continually improving the local air quality. The South East Lincolnshire Local Plan was formally adopted in March 2019. Policy 30 details the approach required for new developments that have an impact on air quality, stating that:

"Development proposals will not be permitted where, taking account of any proposed mitigation measures, they would lead to unacceptable adverse impacts upon:

1. *health and safety of the public;*
2. *the amenities of the area; or*
3. *the natural, historic and built environment;*

by way of:

4. *air quality, including fumes and odour….*

Planning applications, except for development within the curtilage of a dwelling house as specified within Schedule 2, Part 1 of The Town and Country Planning (General Permitted Development)(England) Order 2015, or successor statutory instrument, must include an assessment of:

9. *impact on the proposed development from poor air quality from identified sources;*

10. *impact on air quality from the proposed development; and*
11. *impact on amenity from existing uses.*

Suitable mitigation measures will be provided, if required. Proposals will be refused if impacts cannot be suitably mitigated or avoided."

Across South East Lincolnshire, the focus of the Air Quality actions will centre on the understanding that:

- Due to the strong base of scientific evidence that particulates and Nitrogen Dioxide pollution from traffic emissions are a contributor to premature death (29,000 in the UK in 2008, 25,000 of these in England), with Nitrogen Dioxide also strongly linked, there is a requirement to avoid increasing traffic pollution at locations which currently fall below the threshold for the declaration of an AQMA, but which could potentially reach this threshold in the future if unchecked;
- Councils have a duty to ensure that the national air quality objectives are met in their area;
- National air quality objectives will evolve over time to further reduce negative impacts on human health and the environment.

With the formal adoption of the South East Lincolnshire Local Plan 2011-36, air quality is recognised as a material consideration in the consideration/determining of planning applications. This enables the Council to require further assessment by developers and apply conditions to permissions.

South East Lincolnshire requires an air quality assessment and proposed mitigation to be offered by the developer for a large scale housing development such as the installation of electric vehicle charge points, provision of cycle /safe pedestrian routes, bus interchanges, contributions to road improvement schemes, or combinations of these, to ensure the Council can keep control of air quality in the future.

Transport measures would be addressed County-wide by Lincolnshire County Council, and may include:

- Company Vehicle Procurement -Prioritising uptake of low emission vehicles;
- Priority parking for LEV's;

- Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging;
- Public Vehicle Procurement -Prioritising uptake of low emission vehicles;
- Taxi emission incentives; and
- Taxi Licensing conditions.

In 2019, South Holland District Council have identified and passed approval for six sites for the installation of EV charging points in Spalding, Holbeach, Sutton Bridge and Crowland. Additionally, a bid for grant funding for the Office of Low Emission Vehicle's (OLEV) On-Street Residential Chargepoint Scheme has been successful in order to support this project.

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

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

The Public Health Outcomes Framework indicator for the fraction of deaths attributable to $PM_{2.5}$ in South Holland District is 5.0% during 2018, which is above the regional average of 4.9%, but below the national average of 5.2%.

There is currently no ongoing monitoring of $PM_{2.5}$ within the District, and no specific measures in place to address $PM_{2.5}$ concentrations, as the air quality across the District is considered good. The current Defra 2019 background maps for South Holland District Council (2017 based[4]) show that all background concentrations of $PM_{2.5}$ are below the 2020 annual mean AQS objective for $PM_{2.5}$. The highest concentration is predicted to be 9.3µg/m^3 within the 1km x 1km grid square with the centroid grid reference of 523500, 308500. This is an area that encompasses a stretch of the A16.

Traffic emissions are the main cause of particulate emissions within the District, and as such, the implementation of the transport measures given in Section 2.2 will

[4] Defra Background Mapping data for local authorities (2017-based), available online at https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

continue to contribute to the reduction of $PM_{2.5}$ concentrations experienced across the District.

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.

South Holland District Council undertook automatic (continuous) monitoring at 2 urban background locations during 2019. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at http://shollandair.aeat.com/.

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

South Holland District Council undertook non- automatic (passive) monitoring of NO_2 at 15 sites during 2019. 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[5], “annualisation” (where the data capture falls below 75%), and distance correction[6]. 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. Note that the concentration data presented in Table A.3 represents the concentration at the location of the monitoring site, following the application of bias adjustment and

[5] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[6] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Figure A.1 shows the trend of the annual mean NO_2 concentrations recored at the automatic and the non-autmoatic monitoring sites for the last 5 years. Sites SH 2, 3, 6, 7, 11, 14 and 15 were relocated at the start of 2019, therefore only one years worth of data is available for these locations, however all sites remain well below the annual mean NO_2 AQS objective of 40µg/m^3. The highest concentration recorded in 2019 is at SH 2 (Winsover Road), with a concentration of 32.1µg/m^3. As all concentrations measured are below 36µg/m^3 (10% of the AQS objective), distance correction calculations have not been applied.

Where more than one years worth of data is available, it can be seen that concentrations in 2019 remain consistent, or have decreased compared to that of 2018. This is however not the case with site SH 16, where concentrations have been increasing year-on-year, with an increase of 1.0µg/m^3 from 2018, and Sites SH 6 and SH 7, where concentrations have dramatically increased by 8.7µg/m^3 and 9.9µg/m^3 respectively. The large increase at sites SH 6 and SH 7 is a result of the tubes being relocated and positioned closer to the A17, which is the main source of local road traffic emissions. Additionally, concentrations reported at SH 8/9/10 also slightly increased from 2018, by 0.4µg/m^3 to a total of 9.6µg/m^3. Despite these increases, concentrations still remain below 40µg/m^3, however monitoring at these locations should continue in order to monitor future trends and further potential increases.

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. The highest 1-hourly concentration measured at sites CM1 and CM during 2019 were 68.0µg/m^3 and 78.0µg/m^3. Furthermore, there were no recorded exceedances of the 1 hour AQS objective in the last 5 years.

In addition to the direct measurements made at the continuous monitoring sites CM1 and CM2, it is possible to infer the risk of the 1 hour AQS objective at the diffusion tube monitoring sites. LAQM.TG(16) provides an empirical relationship that states exceedances of the 1-hour objective are unlikely when the annual mean concentration

is below 60µg/m^3. Given that the highest recorded annual mean concentration at any of the diffusion tube monitoring sites is 32.1µg/m^3, it is possible to conclude that there have been no exceedances of the NO_2 hourly mean objective in the last five years at these locations.

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.

Figure A.2 shows the trend of the annual mean PM_{10} concentrations recorded at both automatic monitoring sites, CM1 and CM2, from the past 5 years. The 2019 annual mean PM_{10} concentrations remain well below the annual mean PM_{10} AQS objective of 40µg/m^3. The annual mean concentration recorded is 14.2µg/m^3 at site CM2. Additionally, the 2019 concentrations have remained relatively consistent with that of previous years, however CM1 has shown a slight increase from 2018, with an increase of 0.6µg/m^3, whilst CM2 has shown a decrease of 1.3µg/m^3. CM2 shows no significant trend of the previous 5 years, however CM1 has shown an increase since 2017.

Table A.6 shows the number of exceedances of the PM_{10} 24-hour mean AQS objective recorded at both CM1 and CM2 over the past 5 years. The number of exceedances in 2019 at both sites is 0, and continues to be well below the permitted 35.

3.2.3 Other Pollutants

In addition to monitoring NO_2 and PM_{10}, the automatic analyser located at Westmere School also monitors Ozone (O_3) concentrations. There is no requirement to report this data for LAQM purposes; hence however the results presented are for information only and discussed herein for completeness.

O_3 is a trans-boundary pollutant; its sources can be frequently spatially distant from the measured site of the concentration.

The AQS objective for ground level O_3 (to be met by 2005) states that the maximum daily concentration (measured as an 8-hour mean) of 100µg/m^3 should not be exceeded more than 10 times per year.

Table A.7 summarises the number of exceedances over the last 5 years. The number of exceedances of maximum daily concentration (measured as an 8-hour mean) of 100µg/m^3 in 2019 is 17, greater than the permitted 10.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Spalding Monkhouse School	Urban Background	523168	322454	NO2, PM10	N	Chemiluminescence, TEOM corrected by VCM	1	25	3
CM2	Westmere School	Urban Background	547264	321709	NO2, O3, PM10	N	Chemiluminescence, UV Absorption,TEOM corrected by VCM	14	190	3

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 (Easting)	Y OS Grid Ref (Northing)	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)
SH 1	21 Millfield Gardens	Urban Background	524388	310520	NO2	N	6.8	0.3	NO	1.9
SH 2	Lamp post 20 Winsover Road	Urban Background	524292	322587	NO2	N	0	1.3	NO	2.6
SH 3	Woodfield Close	Urban Background	525694	321999	NO2	N	7	1.7	NO	2.05
SH 4	46 The Hollies	Urban Background	536523	325078	NO2	N	8.4	1.4	NO	2.2
SH 5	Station Road, Surfleet	Roadside	526585	328726	NO2	N	24.9	1.1	NO	2.1
SH 6	Boston Rd_A17	Roadside	535525	325589	NO2	N	4	1.8	NO	2.1
SH 7	Gedney_A17	Roadside	541013	324393	NO2	N	9	2.1	NO	2.1
SH8/9/10	Westmere (Triplicate)	Urban Background	547264	321709	NO2	N	69.4	61.2	YES	N/A
SH 11	A52 Donington	Roadside	520932	336052	NO2	N	49	1.5	NO	2.1
SH 13	Pinchbeck Road	Kerbside	524595	323793	NO2	N	20.7	2	NO	2.1
SH 19(14)*	Whaplode	Roadside	532684	324311	NO2	N	7	4	NO	1.9
SH 15	Church Street, Pinchbeck	Roadside	524182	325804	NO2	N	12	1.7	NO	2
SH 16	Gosberton	Roadside	524203	331510	NO2	N	7	1.9	NO	2.2
SH 17	High Street, Spalding	Roadside	524892	322571	NO2	N	0	0.9	NO	1.9
SH 18	BP Garage	Roadside	524191	321328	NO2	N	1.5	3.9	NO	2.1

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.

* Site SH 19 has replaced SH 14

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
CM1	523168	322454	Urban Background	Automatic	99.7	99.7	10.5	12.7	10.8	9.4	9.3
CM2	547264	321709	Urban Background	Automatic	99.6	99.6	9.0	11.3	11.2	9.4	9.3
SH 1	524388	310520	Urban Background	Diffusion Tube	100.0	100.0	10.5	12.9	10.7	11.1	10.3
SH 2	524292	322587	Urban Background	Diffusion Tube	100.0	100.0					32.1
SH 3	525694	321999	Urban Background	Diffusion Tube	100.0	100.0					11.0
SH 4	536523	325078	Urban Background	Diffusion Tube	100.0	100.0	10.7	14.0	12.1	10.6	10.1
SH 5	526585	328726	Roadside	Diffusion Tube	100.0	100.0	14.6	16.2	16.2	13.4	12.8
SH 6	535525	325589	Roadside	Diffusion Tube	91.7	91.7	19.7	25.9	19.9	19.2	27.9
SH 7	541013	324393	Roadside	Diffusion Tube	91.7	91.7	17.8	20.3	19.7	16.5	26.4
SH8/9/10	547264	321709	Urban Background	Diffusion Tube	91.7	91.7	10.1	11.0	11.2	9.2	9.6
SH 11	520932	336052	Roadside	Diffusion Tube	100.0	100.0					15.5
SH 13	524595	323793	Kerbside	Diffusion Tube	100.0	100.0	29.8	34.8	34.9	27.1	25.7
SH 19(14)	532684	324311	Roadside	Diffusion Tube	100.0	100.0					16.3
SH 15	524182	325804	Roadside	Diffusion Tube	100.0	100.0					22.3

SH 16	524203	331510	Roadside	Diffusion Tube	100.0	100.0	12.5	13.9	14.1	16.1	17.0
SH 17	524892	322571	Roadside	Diffusion Tube	100.0	100.0	24.3	27.5	24.2	22.8	20.3
SH 18	524191	321328	Roadside	Diffusion Tube	100.0	100.0	22.5	26.5	23.4	20.2	19.8

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

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

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

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.

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

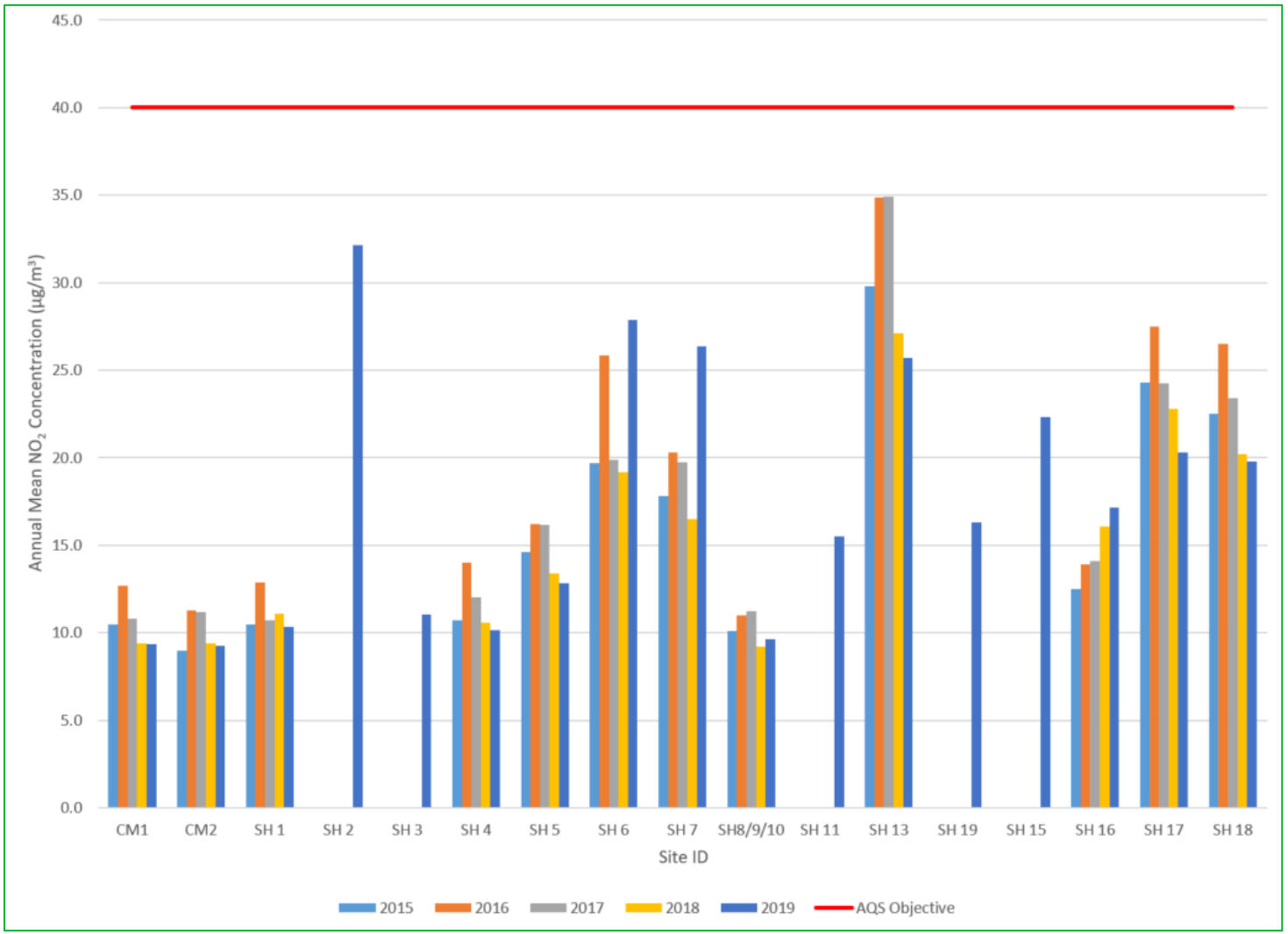


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
CM1	523168	322454	Urban Background	Automatic	99.7	99.7	0	0	0	0	0
CM2	547264	321709	Urban Background	Automatic	99.6	99.6	0	0	0	0	0

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	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
						2015	2016	2017	2018	2019
CM1	523168	322454	Urban Background	Automatic	97.5	15.4	13.5	11.8	13.1	13.7
CM2	547264	321709	Urban Background	Automatic	98.9	14.8	14.0	14.5	15.5	14.2

☐ **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

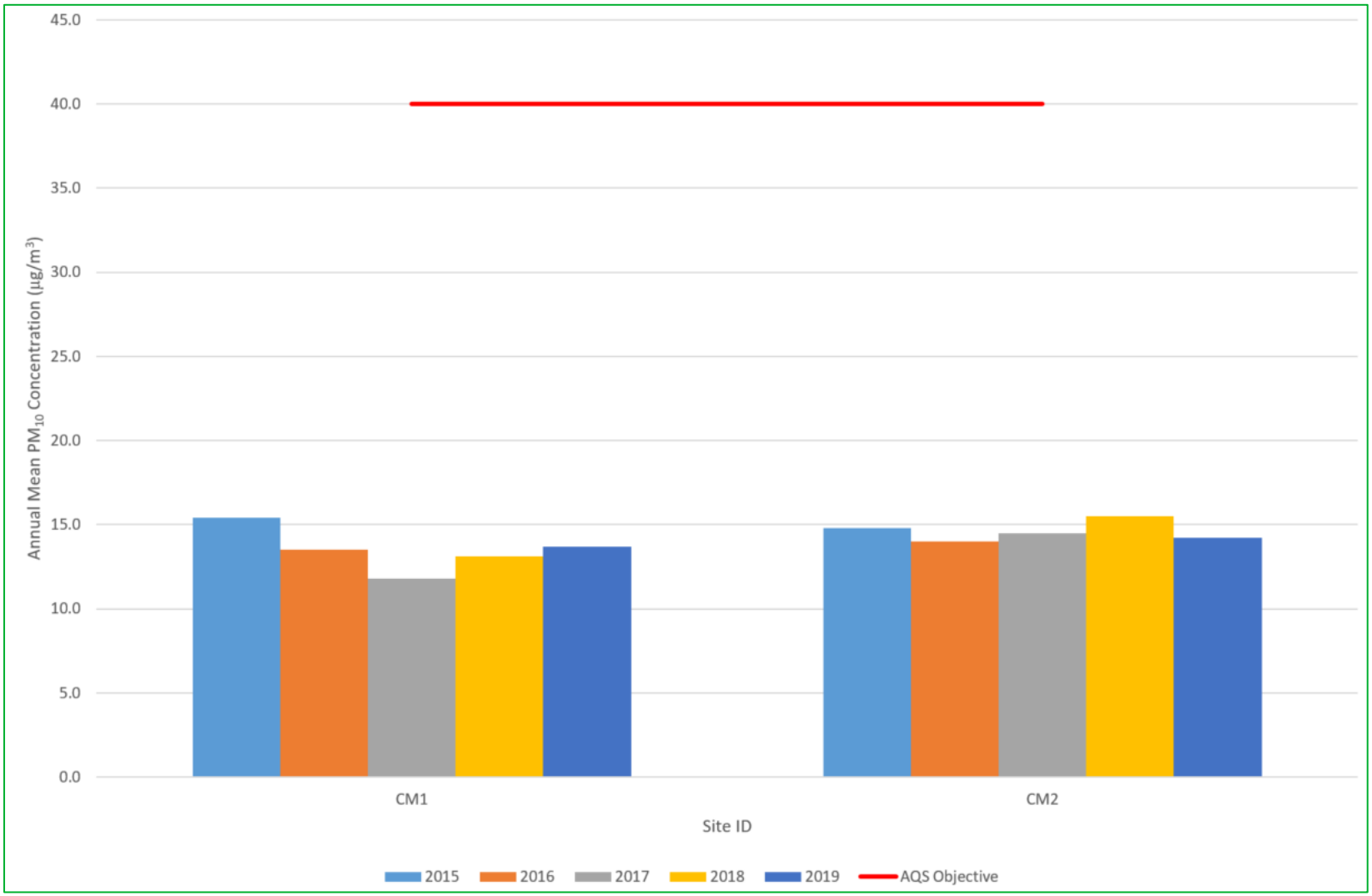


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
						2015	2016	2017	2018	2019
CM1	523168	322454	Urban Background	Automatic	97.5	1	2	0	1	0
CM2	547264	321709	Urban Background	Automatic	98.9	1	1	1	1	0

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.

Table A.7 – Results of Westmere School Automatic Ozone Monitoring

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	O_3 - Number of Exceedances of Maximum Daily Concentration (8-hour running mean)				
				2015	2016	2017	2018	2019
CM2	Urban Background	96.2	99.5	10	3	6	16	17

Notes:

Exceedance of the O_3 objective: 8-hour mean of 100 µg/m^3, 10 exceedances allowed per 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%).

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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 (0.8) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
SH 1	524388	310520	20.4	21.3	11.2	11.4	7.9	7.2	5.9	7.5	10.5	15.3	16.4	20.4	12.9	10.3	
SH 2	524292	322587	43.4	49.0	31.8	40.7	38.5	37.9	40.0	35.4	33.9	47.7	36.2	47.5	40.2	32.1	
SH 3	525694	321999	22.6	21.9	13.4	11.9	8.5	8.4	8.6	8.2	10.9	15.4	15.1	20.5	13.8	11.0	
SH 4	536523	325078	21.1	20.2	12.0	11.1	8.6	6.1	7.8	7.8	10.3	14.1	15.8	17.3	12.7	10.1	
SH 5	526585	328726	22.8	22.8	17.7	8.8	13.4	12.6	12.8	12.3	14.4	15.8	18.9	20.3	16.0	12.8	
SH 6	535525	325589	41.4	28.2	41.0	42.0		32.8	37.7	26.2	32.1	32.2	39.8	30.0	34.8	27.9	
SH 7	541013	324393	40.1	41.0	33.3	21.5		28.1	33.6	33.4	32.5	30.2	34.8	34.1	32.9	26.4	
SH 8/9/10	547264	321709	19.7	20.6	12.3	9.1		5.5	6.8	7.7	9.4	12.5	16.1	16.9	12.0	9.6	
SH 8/9/10	547264	321709	17.0	20.1	11.7	9.7		5.3	6.8	7.9	9.3	11.9	13.0	15.9			
SH 8/9/10	547264	321709	17.7	20.5	12.2	9.1			6.9	7.4	9.0	12.6	14.2	16.7			
SH 11	520932	336052	29.6	29.0	19.0	19.5	18.7	15.5	3.9	15.9	16.5	21.0	20.5	23.2	19.4	15.5	
SH 13	524595	323793	40.3	38.1	33.9	24.0	26.4	28.4	31.3	27.9	33.0	35.9	28.0	38.5	32.2	25.7	
SH 19(14)	532684	324311	33.1	22.7	21.0	16.6	18.4	14.6	16.7	15.3	18.0	21.4	24.7	22.2	20.4	16.3	

SH 15	524182	325804	34.8	31.7	24.7	27.8	28.7	24.4	25.3	22.0	25.3	31.9	29.0	29.1	27.9	22.3	
SH 16	524203	331510	30.8	26.3	20.2	19.6	17.3	16.8	16.2	13.9	19.0	23.5	28.1	23.2	21.2	17.0	
SH 17	524892	322571	35.4	35.3	22.3	26.2	23.0	23.7	22.0	20.9	23.8	30.9	4.2	36.7	25.4	20.3	
SH 18	524191	321328	36.4	30.8	26.3	19.4	21.4	19.7	20.0	19.4	22.0	27.8	24.1	29.7	24.8	19.8	

☒ **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 in the final column**

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

QA/QC of Automatic Monitoring

South Holland District Council contracts data management for their continuous analysers to Ricardo-AEA. The Quality Assurance/Quality Control (AQ/QC) procedures employed by Ricardo-AEA are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures. The PM_{10} results have been corrected by Ricardo-EE who undertake the data management for the two automatic continuous monitoring sites. TEOM data were VCM corrected.

All monitoring locations recorded data capture of 75% or more, therefore it was not required to annualise any monitoring data.

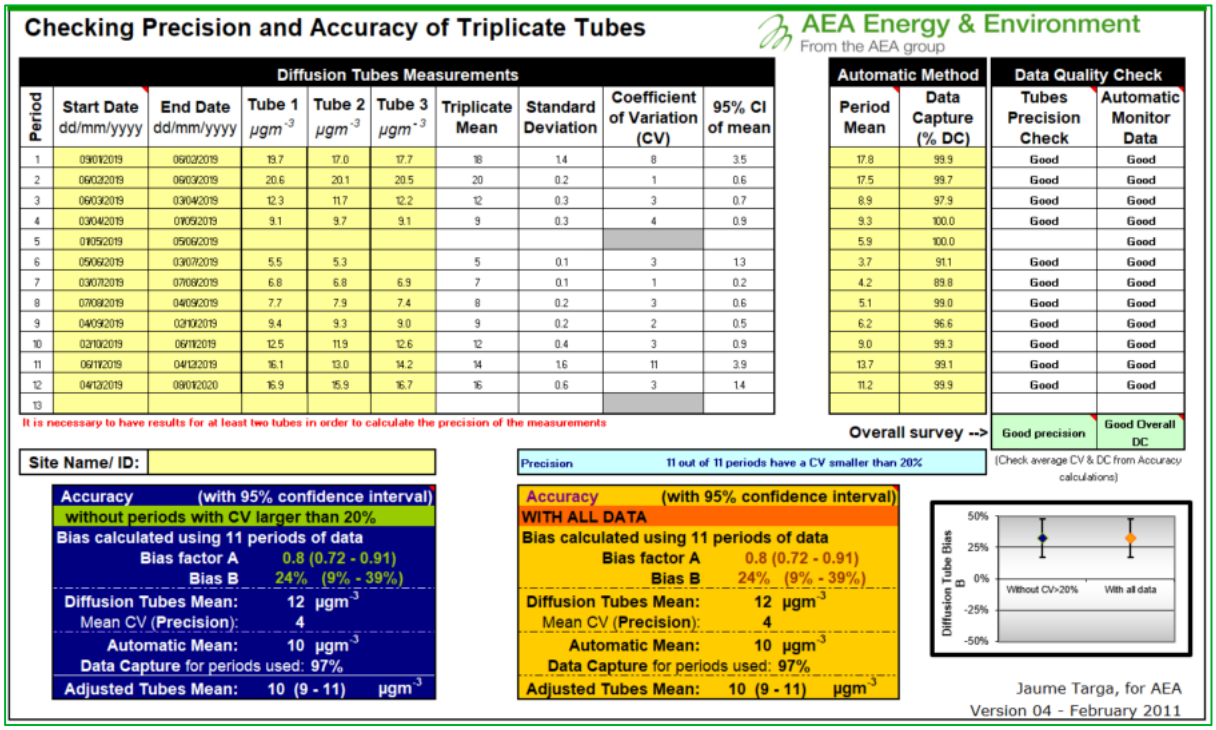
Diffusion Tube Monitoring Data

The diffusion tube data has been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube concentration and continuous monitoring, the latter assumed to be a more accurate method of monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method. With regard to the application of a bias adjustment factor for diffusion tubes, the Defra Technical Guidance LAQM.TG(16) and the LAQM Helpdesk recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

The national bias adjustment factor is 0.89 (based on 29 studies) as derived from the national bias adjustment calculator (Spreadsheet Version Number: 06/20).

A local bias adjustment factor can be calculated due to the presence of a co-location monitoring site at CM2 Westmere School, where SH 8/9/10 is situated. Using the Diffusion Tube Bias Adjustment Factor Spreadsheet (Figure C.1), a local factor of 0.8 has been calculated.

Figure C.1 – Local Diffusion Tube Correction Factor Calculation



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm-3	Tube 2 µgm-3	Tube 3 µgm-3	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	03/01/2019	06/02/2019	19.7	17.0	17.7	18	1.4	8	3.5
2	06/02/2019	06/03/2019	20.6	20.1	20.5	20	0.2	1	0.6
3	06/03/2019	03/04/2019	12.3	11.7	12.2	12	0.3	3	0.7
4	03/04/2019	01/05/2019	9.1	9.7	9.1	9	0.3	4	0.9
5	01/05/2019	05/06/2019							
6	05/06/2019	03/07/2019	5.5	5.3		5	0.1	3	1.3
7	03/07/2019	07/08/2019	6.8	6.8	6.9	7	0.1	1	0.2
8	07/08/2019	04/09/2019	7.7	7.9	7.4	8	0.2	3	0.6
9	04/09/2019	02/10/2019	9.4	9.3	9.0	9	0.2	2	0.5
10	02/10/2019	06/11/2019	12.5	11.9	12.6	12	0.4	3	0.9
11	06/11/2019	04/12/2019	16.1	13.0	14.2	14	1.6	11	3.9
12	04/12/2019	08/01/2020	16.9	15.9	16.7	16	0.6	3	1.4
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
17.8	99.9	Good	Good
17.5	99.7	Good	Good
8.9	97.9	Good	Good
9.3	100.0	Good	Good
5.9	100.0		Good
3.7	91.1	Good	Good
4.2	89.8	Good	Good
5.1	99.0	Good	Good
6.2	96.6	Good	Good
9.0	99.3	Good	Good
13.7	99.1	Good	Good
11.2	99.9	Good	Good
Overall survey -->		Good precision	Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 11 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A: 0.8 (0.72 - 0.91)
Bias B: 24% (9% - 39%)
Diffusion Tubes Mean: 12 µgm-3
Mean CV (Precision): 4
Automatic Mean: 10 µgm-3
Data Capture for periods used: 97%
Adjusted Tubes Mean: 10 (9 - 11) µgm-3

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A: 0.8 (0.72 - 0.91)
Bias B: 24% (9% - 39%)
Diffusion Tubes Mean: 12 µgm-3
Mean CV (Precision): 4
Automatic Mean: 10 µgm-3
Data Capture for periods used: 97%
Adjusted Tubes Mean: 10 (9 - 11) µgm-3

Jaume Targa, for AEA
Version 04 - February 2011

Choice of Bias Adjustment Factor

The 2019 monitoring data has been adjusted using the local factor as opposed to the national factor. Historically, a local factor has been used, and the 2019 local factor remains relatively consistent with the previous reporting years. The bias adjustment factors used over the previous 5 years are presented in Table C.1. Although the 2019 factor remains lower than the 2017 and 2018 factors, the local factor is more accurate than the national factor as it is more representative of the South Holland area. Additionally, the 2019 national factor is not significantly different from the local factor.

Furthermore, the co-located diffusion tubes have good precision, and the automatic monitor has a good overall data capture. It should be noted however that the co-location site is an urban background location, and therefore NO_2 concentrations and emission sources may not be directly representative of all of the diffusion tubes deployed within the Council's boundary.

Table C.1 – Bias Adjustment Factors Applied in the Last 5 Years

Monitoring Year	Bias Adjustment Factor Used	National / Local Factor
2015*	0.96 (0.86)	National (Local)
2016	1.19	Local
2017	1.02	Local
2018	0.83	Local
2019	0.8	Local

Notes: * - 2016 ASR provided both the 2015 local and national factors, however the national factor was utilised. In the 2017 ASR, the 2015 data was updated using the local factor and these results have been carried forwards into future reports.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Gradko International Limited utilising the 50% Triethanolamine (TEA) in acetone preparation method.

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The laboratory follows the procedures set out in the Harmonisation Practical Guidance and participates in the AIR proficiency-testing (AIR-PT) scheme. Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme. Laboratory performance in the AIR-PT is also assessed by the National Physical Laboratory (NPL), alongside laboratory data from the monthly NPL Field Inter-Comparison Exercise.

In the 2019 AIR-PT results, AIR-PT AR030 (January to February 2019), AIR-PT AR031 (April to May 2019), AR033 (July to August 2019) and AR034 (September to November 2019), Gradko scored 100% for all periods except AR030 where it scored 75%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Additionally, the precision of the NO_2 diffusion tubes supplied by Gradko International Ltd has been classified as 'good' for all observations during 2019. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Precision summary results are available from the LAQM website, at: https://laqm.defra.gov.uk/diffusion-tubes/precision.html.

NO_2 Fall-off with distance from the road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated, using the NO_2 fall-off with distance calculator available on the LAQM Support website.

Fall-off calculation has not been applied to any of the 2019 data as the results were not within 10% of the NO_2 annual mean objective of 40µg/m^3.

Planning Applications in 2019

Table C.2 provides detail on planning applications in relation to Air Quality within the District Council.

Table C.2 – Planning Applications in 2019

Date	Planning Reference	Proposed Development	Address	Status
Apr-19	H02-0062-19	Residential Development - outline application for the erection of up to 100 dwellings with associated landscaping and ancillary works (all matters reserved)- approved under appeal decision H02- 1087-14. Modification of Condition 5 relating to affordable housing	Land At Harvester Way Harvester Way Crowland	Approved
May-19	H03-1151-19	Erection of 66 dwellings and associated works	Caultons Field West Of Littleworth Drove Deeping St Nicholas Spalding	Approved
Dec-19	H14-0109-20	Erection of 72 dwellings, parking, landscaping and provision of public open space	Spalding Lifestyle And Garden Centre 210 Spalding Road Pinchbeck Spalding	Approved
Jan-Mar 2019	H14-0720-18	Proposed residential development of up to 96 dwellings	Land off Wardentree Lane, Pinchbeck, Spalding	Approved
Jan-Mar 2019	H14-1162-18	Erection of 100 dwellings and associated works - Outline approval H14-0355-17	Keston Nurseries, Mill Green Road, Pinchbeck	Approved
Jan-Mar 2019	H02-0158-17	Residential development of up to 100 dwellings and the widening of Crease Drove	Crease Drove, Crowland, Peterborough	Approved
Jan-Mar 2019	H01-0871-18	Residential development - up to 45 dwellings, including re-alignment of Mill Drove to Stonegate Road junction	Former Station Yard & Croft House Nursery, Mill Drove South, Cowbit	Received outline for permission
Jan-Mar 2019	H16-1117-18	Hybrid Application: Full Planning Application for 34 Dwellings and Associated Infrastructure together with an Outline Application for a Community Hall and Car Park	Land to the North of Witham Road,	Approved

			Wygate Park, Spalding	
Mar-19	H14-0326-19	Construction of Section 5 of Spalding Relief Road	Land parallel Vernatt's Drain and bound by B1356 Spalding Road to east	Approved
Mar-19	H16-0327-19	Construction of Section 1 of Spalding Relief Road	Land: South Drove Drain (west) and B1172 Spalding Common (east)	Approved
May-19	H03-0489-19	Installation of 13 No. containerised wood pellet biomass boilers and 13 No. wood pellet silos - (retrospective)	Deeping Farm, Main Road, Deeping St Nicholas, PE11 3BW	Approved

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

Figure D.1 – Map of Automatic Monitoring Site: Spalding

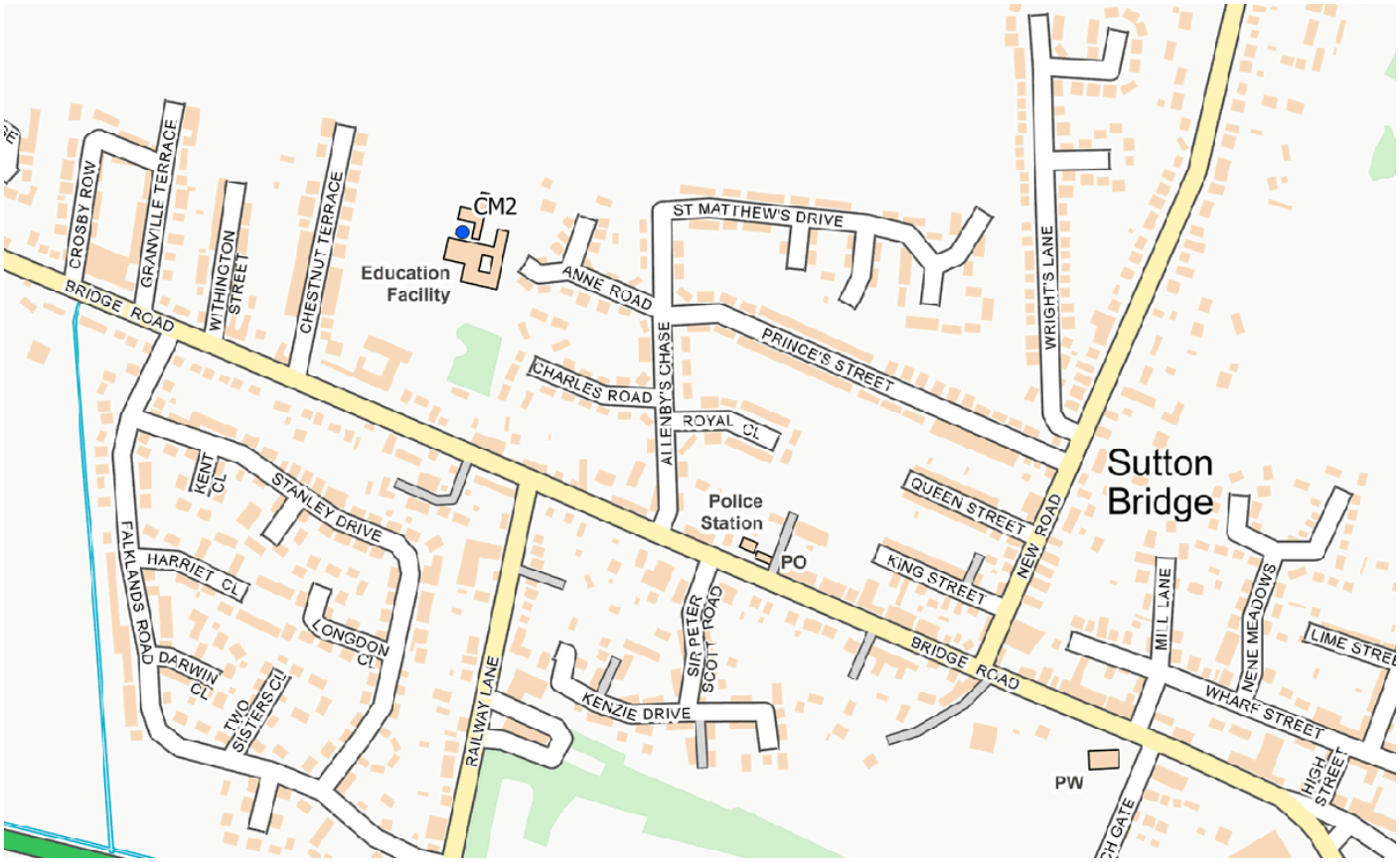
Legend

- Automatic Monitoring Loation

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location Spalding	
Title Map of Automatic Monitoring Site: Spalding	
By AS	**Approved**
Scale Not To Scale	**Job Ref** 9346399
Date August 2020	**Figure No.** D.1

Figure D.2 – Map of Automatic Monitoring Site: Sutton Bridge



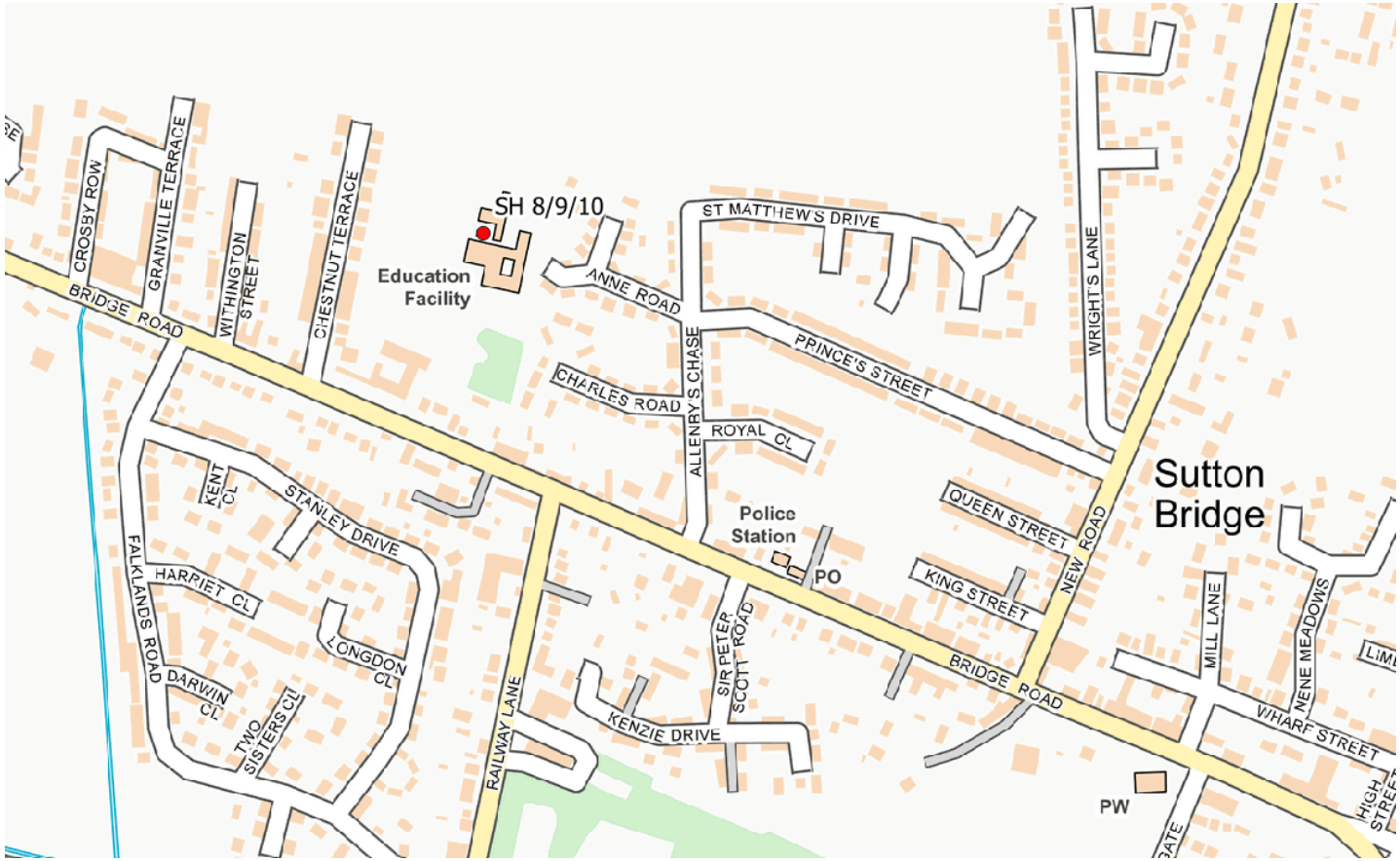
Legend

- Automatic Monitoring Loation

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location	
Sutton Bridge	
Title	
Map of Automatic Monitoring Site: Sutton Bridge	
By	**Approved**
AS	
Scale	**Job Ref**
Not To Scale	9346399
Date	**Figure No.**
August 2020	D.2

Figure D.3 – Map of Non-Automatic Monitoring Sites: Sutton Bridge



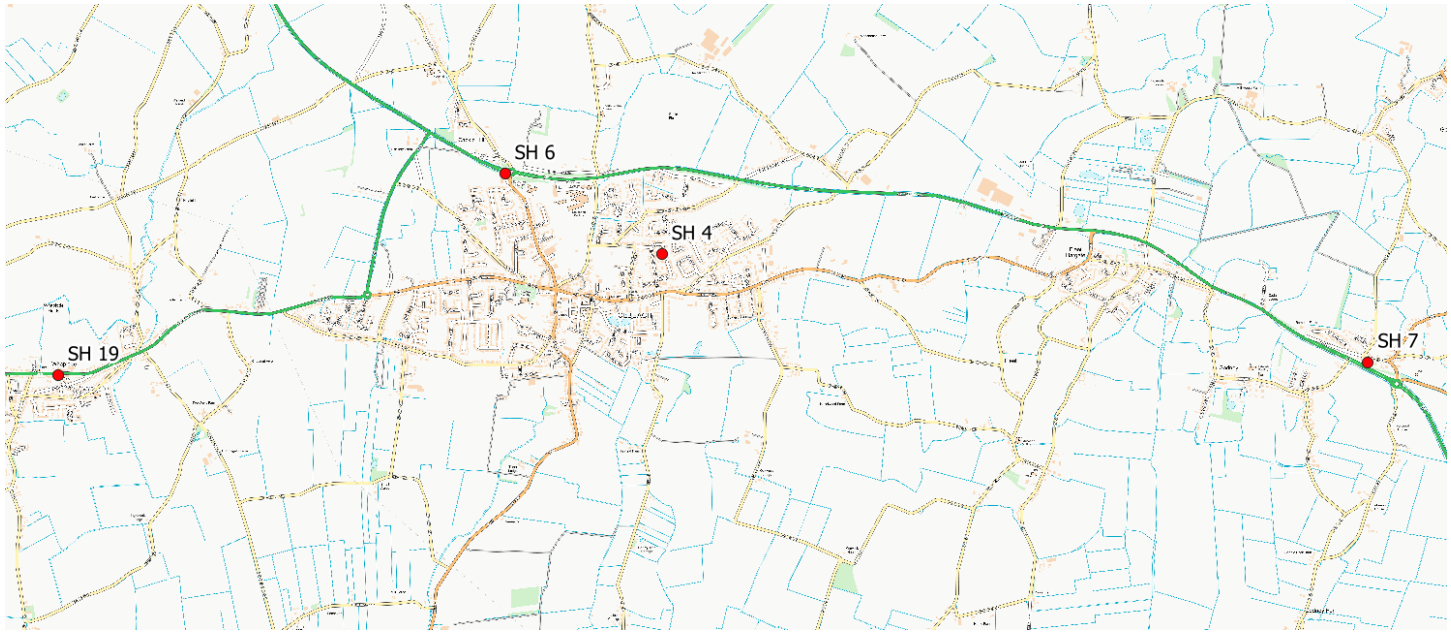
Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location Sutton Bridge	
Title Map of Non-Automatic Monitoring Sites: Sutton Bridge	
By AS	**Approved**
Scale Not To Scale	**Job Ref** 9346399
Date August 2020	**Figure No.** D.3

Figure D.4 – Map of Non-Automatic Monitoring Sites: Waplode, Holbeach and Gedney



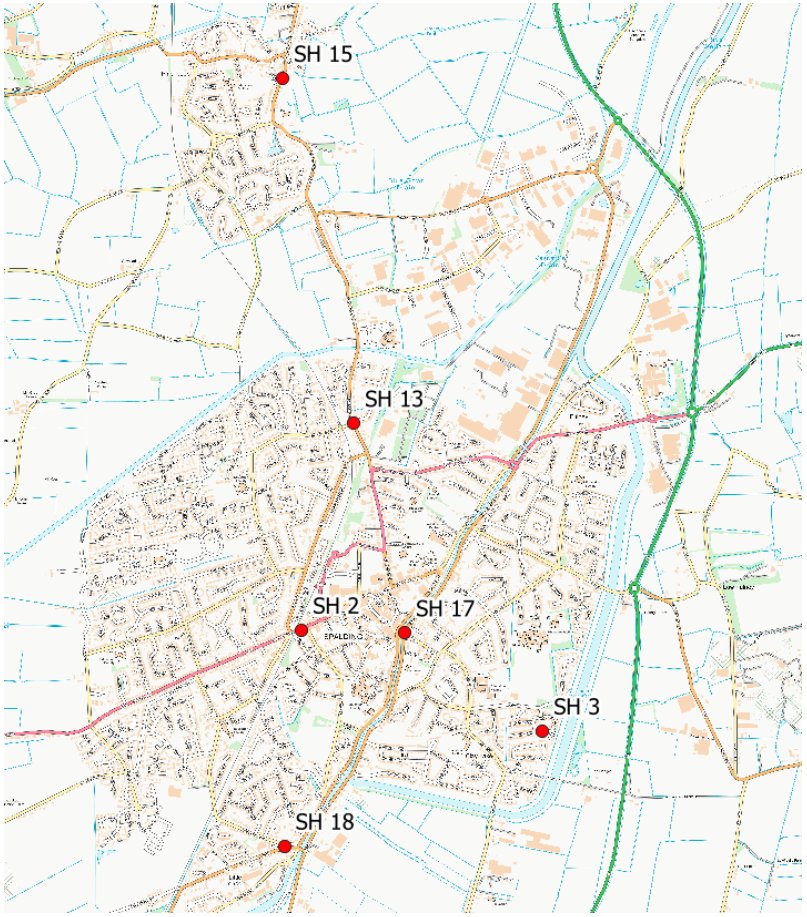
Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location	Waplode, Holbeach and Gedney
Title	Map of Non-Automatic Monitoring Sites: Waplode, Holbeach and Gedney
By	AS
Approved	
Scale	Not To Scale
Job Ref	9346399
Date	August 2020
Figure No.	D.4

Figure D.5 – Map of Non-Automatic Monitoring Sites: Spalding and Pinchbeck



Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location	
Spalding and Pinchbeck	
Title	
Map of Non-Automatic Monitoring Sites: Spalding and Pinchbeck	
By	**Approved**
AS	
Scale	**Job Ref**
Not To Scale	9346399
Date	**Figure No.**
August 2020	D.5

Figure D.6 – Map of Non-Automatic Monitoring Site: Crowland

Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location
Crowland

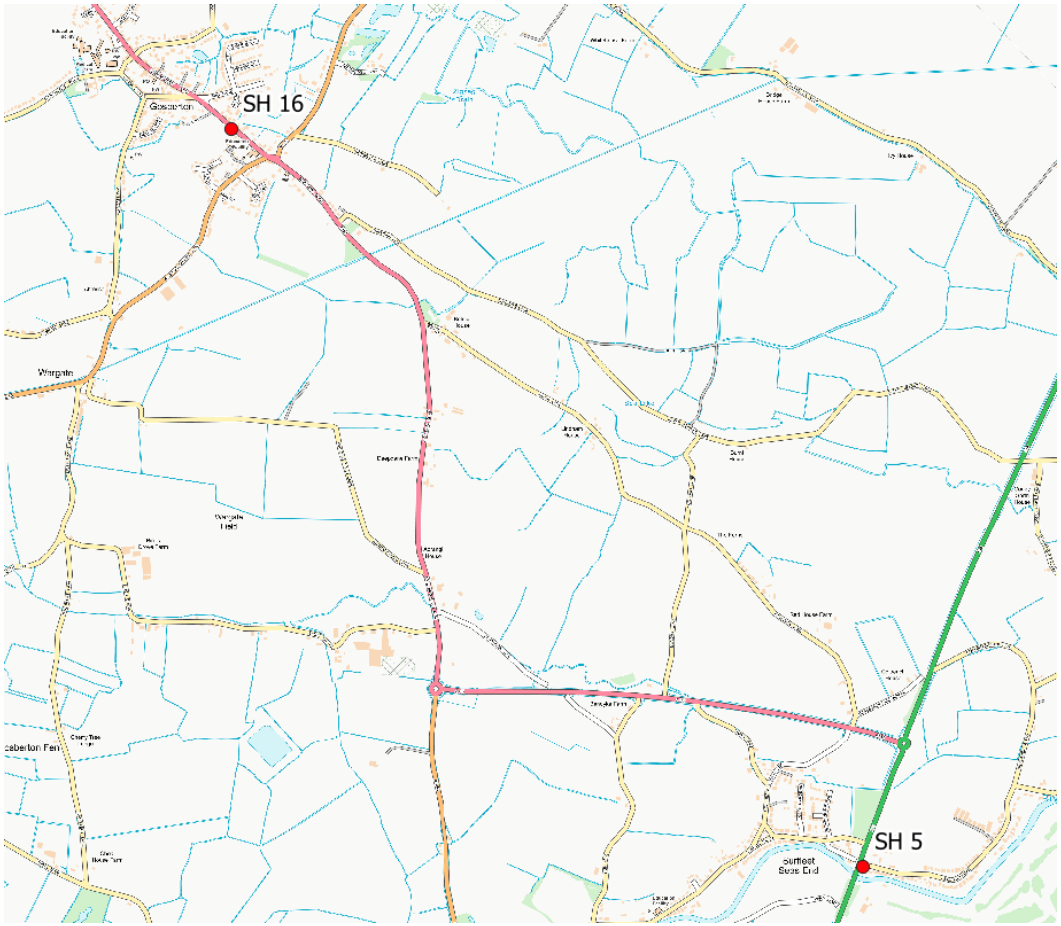
Title
Map of Non-Automatic Monitoring Sites: Crowland

By	Approved
AS	

Scale	Job Ref
Not To Scale	9346399

Date	Figure No.
August 2020	D.6

Figure D.7 – Map of Non-Automatic Monitoring Site: Gosberton and Surfleet



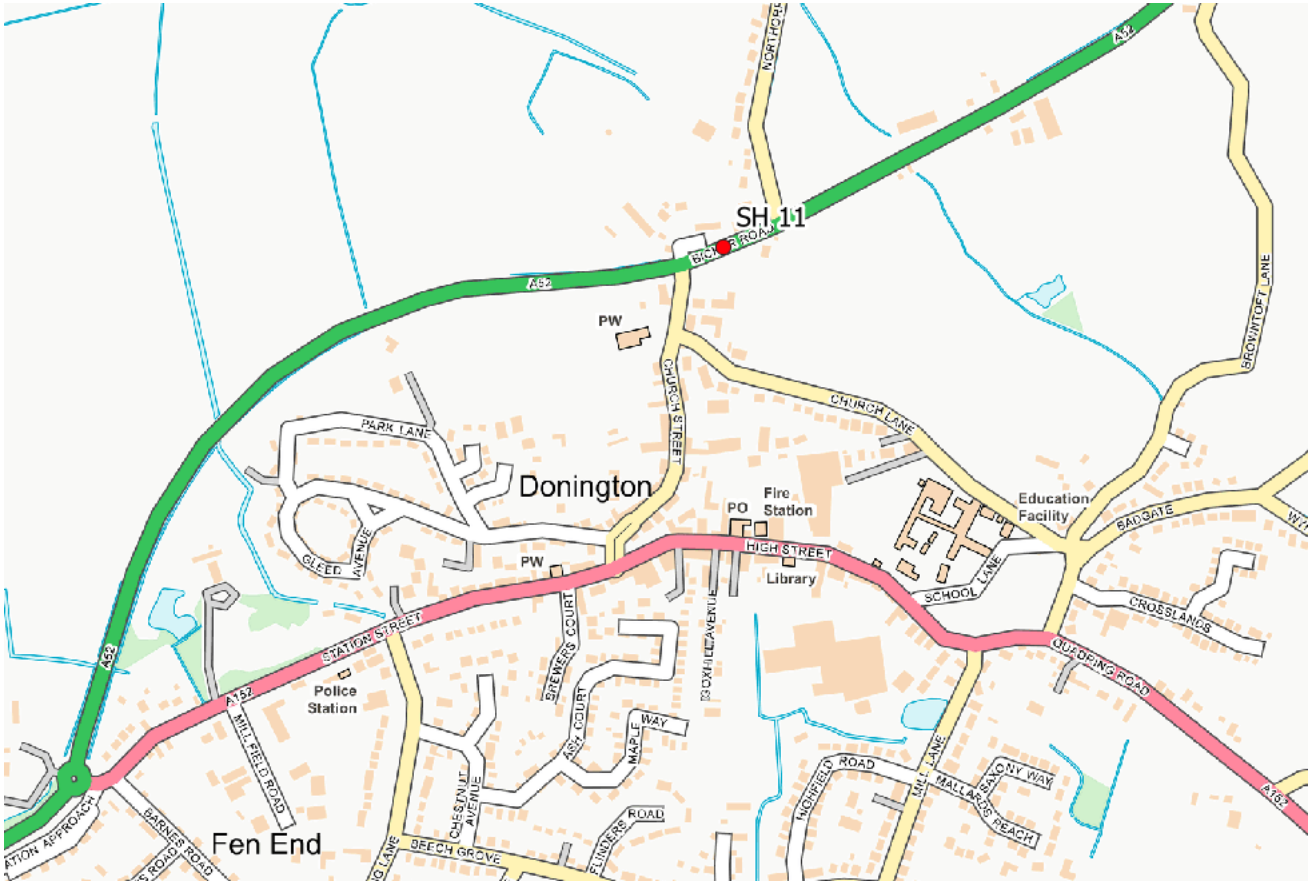
Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location	
Gosberton and Surfleet	
Title	
Map of Non-Automatic Monitoring Site: Gosberton and Surfleet	
By	**Approved**
AS	
Scale	**Job Ref**
Not To Scale	9346399
Date	**Figure No.**
August 2020	D.7

Figure D.8 – Map of Non-Automatic Monitoring Site: Donington



Legend

- Diffusion Tube Locations

Air Quality
Bureau Veritas
5th Floor
66 Prescott Street
London, E1 8HG

Location Donington	
Title Map of Non-Automatic Monitoring Site: Donington	
By AS	**Approved**
Scale Not To Scale	**Job Ref** 9346399
Date August 2020	**Figure No.** D.8

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[7]	
	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
Ozone (O_3)	100 µg/m^3, not to be exceeded more than 10 times a year	8-hour 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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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
O_3	Ozone

References

- Draft South East Lincolnshire Local Plan 2011-2036
- Local Air Quality Management; Technical Guidance LAQM.TG(16) Available at: http://laqm.defra.gov.uk/technical-guidance/
- AEA Energy and Environment (2011) AEA_DifTPAB_v04.xls, Available at: www.uk-air.com
- http://shollandair.aeat.com/
- National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 06/20 published in June 2020
- South Holland District Council 2018 Annual Status Report
- South Holland District Council 2019 Annual Status Report
- South Holland District Council 2019 ASR Appraisal Report