



Forest Heath

District Council

2016 Air Quality Annual Status Report (ASR)

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

June 2016

Forest Heath District Council

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Executive Summary: Air Quality in Our Area

Why Air Quality Matters

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 billion³.

The most recent indicator for Forest Heath suggests that 5.3% percent of mortality in persons in the age range 30+years is attributable to poor air quality. This can be compared to the East of England mortality rate of 5.6% for the same period (www.phoutcomes.info/).

Improving the air quality will help to improve the long term health of our local communities, make our towns more attractive places to visit and therefore improve the local economy.

Improving air quality in Forest Heath will not only help to reduce the impact on human health, but it will also reduce damage to water quality, biodiversity and crops, all of which are important within the district.

Air Quality in Forest Heath

Air Quality in Forest Heath is generally good. Our monitoring focuses on the two towns of Newmarket and Brandon, which are the main areas of concern, although we also monitored in Mildenhall, Lakenheath, Red Lodge, Kentford, Elveden, Beck Row and Exning during 2015. We monitor for the pollutant Nitrogen Dioxide, as this is considered to be the major pollutant of concern in the District and is considered a reasonable proxy for the other major potential pollutants of PM₁₀ and PM_{2.5}.

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

Generally, levels of pollutants at monitoring points that have had long term (i.e. at least 5 years) monitoring are showing a decrease in pollution. However, this is very gradual and shows yearly fluctuations that do not fit the long term trend, i.e. levels of pollutants can increase in some years despite an overall downward trend.

Newmarket has an existing Air Quality Management Area along the High Street and Old Station Road, although given the continued long term decline in pollutant levels in this area together with a lack of receptors for the annual mean objective at monitored locations and the highly unlikely breach of the hourly limit, we are proposing to amend the AQMA to comprise of Old Station Road only. We are gathering further data to enable us to reach the same conclusion for Old Station Road, which we anticipate will be revoked in two to three years time once sufficient monitoring data is collected.

As most of the pollution within Forest Heath originates from road traffic, the District Council has to work closely with Suffolk County Council, who is the responsible authority for the maintenance and strategic planning of the local road network. We also work closely with the Forest Heath Planning department to ensure new developments are appropriately controlled and mitigation is provided where required.

Actions to Improve Air Quality

The new dual carriageway section of the A11 trunk road between Mildenhall and Thetford opened in December 2014. One of the drivers for the improvement of this road was the adverse environmental effects (e.g. poor air quality) through Elveden. Monitoring in 2012 within the village recorded levels of Nitrogen Dioxide at $47.9\mu\text{g}/\text{m}^3$ and $59.6\mu\text{g}/\text{m}^3$. Monitoring in 2015 at the same locations recorded levels of $11.7\mu\text{g}/\text{m}^3$ and $13.8\mu\text{g}/\text{m}^3$, which demonstrates a significant improvement in air quality for the residents of Elveden.

The new dual carriageway section of the A11 trunk road was also anticipated to have a positive impact on the air quality in Brandon, as traffic travelling to Norfolk (in particular Swaffham) is now directed via the new A11 and the A134 rather than along the A1065 through Brandon. Following the first full year of data, it is apparent that the levels of Nitrogen Dioxide in Brandon have reduced slightly, but not substantially. Detailed monitoring will continue in Brandon to confirm any long term improvements that may be achieved.

Forest Heath District Council also funded a study into the air quality impacts in the village of Lakenheath, which currently has several outstanding major planning applications. The report concluded that, if all the developments were approved, the concentrations of Nitrogen Dioxide would remain well below the objectives.

Improved signage for the off street car parks in Newmarket is due to be implemented in 2016. This will prevent unnecessary trips along the High Street as people will be directed to the closest car park in the most direct manner.

There have been no other specific targeted actions or specifically funded projects, however, broad action continues throughout the District using our influence through the planning process. For example, we are now requesting, for larger developments, all new dwellings with off street parking should be provided with an electric vehicle charge point to encourage the uptake of zero emission electric vehicles.

Local Priorities and Challenges

Air Quality in Forest Heath is generally good, however, significant growth is expected in the medium term. Forest Heath District Council is currently undertaking a review of its Site Allocations Local Plan, which will help to shape the future of the Districts growth. We will help to influence this process, ensuring that the proposed allocations take into account areas of less good air quality.

We will also start better defining the levels of Nitrogen Dioxide in the Old Station Road area of the Newmarket AQMA to allow us to move forward with any required actions or to allow us to move towards revocation of this AQMA, depending on the results of monitoring.

How to Get Involved

Forest Heath District Council continuously aims to improve air quality. However, the actions of individuals will also help to improve air quality. Simple actions such as walking or cycling rather than using a car; choosing economic cars with a proven good environmental performance; or moving to electric vehicles will all help to improve the local air quality.

There are no specific air quality campaign groups within Forest Heath, however, a number of local community groups have shown an interest in assisting to improve air quality in their areas. We have also had community groups highlight areas where

Forest Heath District Council

they believe that air quality might be an issue and we are always willing to consider monitoring new areas if we consider that pollution may be a problem.

If you have any specific concerns about air quality in Forest Heath, please contact us at environment@westsuffolk.gov.uk or 01284 757400. If you have a more general enquiry, there are a number of websites where you can get information on air quality, including up to date air quality forecasts and results from the national monitoring network, such as the DEFRA website (<https://uk-air.defra.gov.uk>).

Table of Contents

Executive Summary: Air Quality in Our Area	i
Why Air Quality Matters	i
Air Quality in Forest Heath	i
Actions to Improve Air Quality	ii
Local Priorities and Challenges.....	iii
How to Get Involved.....	iii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas.....	2
2.2 Progress and Impact of Measures to address Air Quality in Forest Heath	3
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and or Concentrations.....	5
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	6
3.1 Summary of Monitoring Undertaken	6
3.1.1 Automatic Monitoring Sites	6
3.1.2 Non-Automatic Monitoring Sites.....	6
3.2 Individual Pollutants	6
3.2.1 Nitrogen Dioxide (NO ₂).....	6
Appendix A: Monitoring Results	9
Appendix B: Full Monthly Diffusion Tube Results for 2015	17
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	21
Appendix D: Map(s) of Monitoring Locations	22
Appendix E: Summary of Air Quality Objectives in England	29
Appendix F: Detailed Assessment of Newmarket AQMA	30
F.1 Background.....	30
F.2 Detailed Assessment of Diffusion Tube Monitoring.....	31
F.2.1 High Street	31
F.2.1 Old Station Road.....	36
F.3 Recommendations	37
Glossary of Terms	39
References	Error! Bookmark not defined.

1 Local Air Quality Management

This report provides an overview of air quality in Forest Heath during 2015. 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 Forest Heath 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 the objectives.

A summary of AQMAs declared by Forest Heath 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/local-authorities?la_id=105.

We propose to amend Newmarket AQMA to exclude the High Street, which has consistently shown levels of NO₂ below the annual mean objective at relevant receptor locations, however, the AQMA will remain along Old Station Road, not because we consider the concentrations of Nitrogen Dioxide to be more significant than on the High Street, but rather because we have insufficient evidence to conclusively state that the levels are below the objectives along the whole length of this road. A detailed assessment of the AQMA is provided in Appendix F, which gives further details on the above.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Newmarket AQMA	<ul style="list-style-type: none"> NO₂ annual mean 	Newmarket	An area incorporating the High Street (from the White Hart Hotel), in Newmarket, to the Clock Tower gyratory and Old Station Road up to the junction with Rous Road.	Newmarket AQMA Action Plan

2.2 Progress and Impact of Measures to address Air Quality in Forest Heath

Forest Heath District Council has a number of identified measures for improving local air quality in the Newmarket AQMA. 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 on a number of measures has been slower than expected due to Suffolk County Council awaiting the results of the Design Brief for the High Street. Given that the findings of the design brief could influence some of the traffic management category (parking) actions, it is considered that any progress made now could be reversed or nullified by the findings of the Design Brief.

Forest Heath District Council expects the following measures to be completed over the course of the next reporting year:

- New signage throughout the Newmarket town centre to ensure traffic can locate parking and avoid unnecessary trips along High Street. Signage for car parks is currently inadequate throughout the town, and this has the result of some unnecessary trips along the High Street. The new and improved signage should prevent this.

Forest Heath District Council's priorities for the coming year are to continue to complete the Design Brief for the High Street which is a wide reaching assessment of the High Street setting. It is considered isolated actions prior to the completion of this Design Brief would be uneconomical.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	No Idling zone	Traffic Management	Anti-idling enforcement	Suffolk County Council	Suffolk County Council is reluctant to progress these actions until the Design Brief for the High Street has been completed as any actions could be reversed by the findings of the Design Brief. At the time of writing, the Design Brief has gone out to tender, but no preferred partner has yet been chosen.		Reduction in number of complaints and recorded incidents of idling vehicles	Continued reduction in NO ₂ levels	None	Unknown	-
2	Parking Restrictions on Old Station Road	Traffic Management	Other	Suffolk County Council			Improvements in traffic flow and speed	Continued reduction in NO ₂ levels	None	Unknown	-
3	Parking restrictions within bays along the High Street	Traffic Management	Other	Suffolk County Council			Improvements in traffic flow and speed	Continued reduction in NO ₂ levels	None	Unknown	-
4	Air Quality Awareness Campaign	Public information	Other	Forest Heath District Council	Ongoing	TBC	N/A	Continued reduction in NO ₂ levels	None	2017	-
5	Identify Section 106 Planning gains	Traffic Management	Other	Forest Heath District Council	Ongoing	Ongoing – when planning applications identified	Completion of funded projects	Continued reduction in NO ₂ levels	None	Ongoing	Limited significant developments that would influence the AQMA
6	Improved Car Park Signage	Traffic Management	Other	Suffolk County Council	Complete	September 2016	Reduced congestion	Continued reduction in NO ₂ levels	Planned and ready to implement	September 2016	New signage to direct people to car parks more efficiently and avoid unnecessary trips along High Street

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.

Forest Heath District Council is currently developing measures to address PM_{2.5}, and, as part of the Suffolk Air Quality Protection Group are intending to meet with Public Health Suffolk in the near future to ensure the actions are most appropriately targeted. Actions will be developed over the coming year and reported in the 2017 ASR.

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.

Forest Heath District Council has not undertaken automatic (continuous) monitoring during 2015. National monitoring results are available at <https://uk-air.defra.gov.uk/networks/>.

3.1.2 Non-Automatic Monitoring Sites

Forest Heath District Council undertook non-automatic (passive) monitoring of NO₂ at 39 sites during 2015. Table A.1 in Appendix A shows the details of the sites. None of the other pollutants with Air Quality Objectives were monitored during 2015 as they have been considered under previous rounds or reporting and are considered to be significantly below their relevant objectives.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.1 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2015 dataset of monthly mean values is provided in Appendix B.

In general, long term trends continue to show a slight decrease in concentrations, although this is not consistently shown at all sites every year, with some sites showing a slight increase on previous years. None of the monitoring sites in the borough exceeded, or were close to exceeding, a value of $60\mu\text{g}/\text{m}^3$ which indicates that an exceedance of the 1 hour objective for NO_2 is highly unlikely to occur.

Newmarket

Only a single diffusion tube within Forest Heath returned a value exceeding the annual mean objective, this being the tube located at the taxi rank on Newmarket High Street, which returned an annual mean of $40.0\mu\text{g}/\text{m}^3$. This location is within the Newmarket AQMA, but is not a relevant receptor for the annual mean objective and should be distance adjusted to the façade of the adjacent properties, which would be result in a value of $34.4\mu\text{g}/\text{m}^3$. All other monitoring in Newmarket was below the annual mean objective. A detailed assessment of the Newmarket AQMA is given in Appendix F.

Mildenhall

Monitoring in Mildenhall remains well below the annual mean objective, other than the site on Kingsway, which was $35.5\mu\text{g}/\text{m}^3$, although this does not warrant any action at present. The three sites in Mildenhall that have shown levels consistently below the objectives have been moved for the 2016 monitoring year to ensure that any potential hotspots are identified.

Villages

Monitoring locations in Lakenheath, Beck Row, Red Lodge, Exning and Kentford remain well below the annual mean objective. A number of the monitoring locations in these villages have been discontinued for the 2016 monitoring year as results have shown consistent values well below the objectives. A new monitoring location was commenced along the A1101 in Icklingham as this road had not previously been monitored.

Two monitoring sites were reinstated in Elveden (adjacent to the old A11) following the completion of the new A11 dual carriageway in December 2014, which now by-passes the village. Unsurprisingly, these two monitoring locations indicate a significant drop since they were last measured in 2012 at which time the A11 was a

highly congested single carriageway going through the village. No further action is required at Elveden and monitoring is due to cease in these locations.

Brandon

The new A11 dual carriageway was also anticipated to reduce traffic (and therefore pollution) in Brandon, as it would provide a fast alternative route to Swaffham (Via the A11 and the A134). The majority of locations in Brandon have shown a decrease in NO₂ annual mean concentrations, although not a substantial decrease. The exception to this is the monitoring location outside 52 London Road, which has increased marginally from 37.8µg/m³ to 39.4µg/m³ (now the highest concentration in Brandon).

A major planning application was submitted in 2015 for a 1,600 dwelling development to the northwest of Brandon, which would include a relief road. Although the developers suggest this would ease the traffic and pollution through Brandon in the long term, there would possibly be shorter term negative impacts as the initial dwellings are constructed prior to the completion of the relief road. The determination date for this application is not known.

Significant monitoring will continue in Brandon, however, it is not currently considered necessary to undertake a detailed assessment.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Site ID / 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 / Elveden School	Roadside	581569	279465	NO ₂	N	13.8	2.3	N	2.2
S2 / Elveden PO	Roadside	582163	279907	NO ₂	N	4.9	1.7	N	2.2
S3 / Brdn - Town Hall	Urban centre	578406	286460	NO ₂	N	0 - hourly N/A - annual	N/A	N	2.4
S4 / Brdn – London Road / Stores St	Roadside	578351	286503	NO ₂	N	2.7 ⁽³⁾	1.6	N	2.2
S5 / Brdn - 52 London Rd	Roadside	578206	286407	NO ₂	N	7.0	1.1	N	2.2
S6 / Brdn - London Rd/Coulson Lane	Roadside	578270	286467	NO ₂	N	7.6	1.5	N	2.1
S7 / Brdn - London Rd/Church Road	Kerbside	578073	286254	NO ₂	N	8.0	<1.0	N	2.1
S8 / Brdn - Hellesdon House, High St	Roadside	578372	286774	NO ₂	N	0	1.5	N	2.3
S9 / Brdn - Riverside Lodge, High St	Kerbside	578372	286867	NO ₂	N	3.3	<1.0	N	2.4
S10 / Brdn - 'Boots', High St	Roadside	578395	286633	NO ₂	N	0 - hourly 0.5 - annual	2.5	N	2.3

Site ID / 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)
S11 / Brdn - 175 Thetford Rd	Roadside	579160	286357	NO ₂	N	8.5	1.7	N	2.1
S12 / Lakenheath - Zebra Crossing	Kerbside	571378	282855	NO ₂	N	3.5	<1.0	N	2.1
S13 / Lakenheath - Albert Rolph Drive	Suburban	572071	281607	NO ₂	N	20.0	1.0	N	2.2
S14 / Beck Row - Bird in Hand	Roadside	568819	277788	NO ₂	N	N/A	1.7	N	2.1
S15 / Mild - Market Place/High St	Roadside	571068	274639	NO ₂	N	0 - hourly 3.2 - annual	3.0	N	2.4
S16 / Mild - Taxi rank/Bus station	Other	571273	274641	NO ₂	N	0.3 – hourly 18 - annual	N/A	N	2.2
S17 / Mild - 14 Kingsway	Roadside	571326	274780	NO ₂	N	0.5	2.0	N	2.1
S18 / Mild - Field Road	Roadside	571127	275174	NO ₂	N	13.0	1.5	N	2.2
S19 / Redlodge - Top of Nmkt Road	Kerbside	570009	270763	NO ₂	N	13.0	<1.0	N	2.2
S20 / Redlodge - End of Heath Fm Rd	Other (A11 Back-ground)	569096	270282	NO ₂	N	N/A	N/A	N	2.2
S21 / Kentford - Station Rd/Bury Rd	Roadside	570156	266657	NO ₂	N	N/A	3.0	N	1.5

Site ID / 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)
S22 / Nmkt - Old Station Rd	Roadside	564707	263493	NO ₂	Y	2.0	1.7	N	2.2
S23 / Nmkt - Sun Lane	Urban Centre	564347	263340	NO ₂	Y	0 – hourly 12 - annual	10.0	N	2.4
S24 / Nmkt - 'Café Nero' crossing	Kerbside	564337	263343	NO ₂	Y	0 – hourly N/A - annual	<1.0	N	2.4
S25 / Nmkt - 'KFC' downpipe	Roadside	564307	263338	NO ₂	Y	0 – hourly 0 - annual	6.5	N	2.3
S26 / Nmkt - 'White Hart' crossing	Kerbside	564233	263274	NO ₂	Y	0 – hourly 5.9 - annual	<1.0	N	2.4
S27 / Nmkt - Park area	Urban Background	564138	263301	NO ₂	N	0 – hourly N/A - annual	N/A	N	2.5
S28 / Nmkt - Blackbear lane/High St	Kerbside	564043	263159	NO ₂	N	3.0	<1.0	N	2.2
S29 / Nmkt - Taxi rank	Roadside ⁽⁴⁾	564362	263381	NO ₂	Y	0 – hourly N/A - annual	<1.0	N	2.5
S30 / Nmkt - Market St 'EE'	Urban Centre	564380	263407	NO ₂	Y	0 – hourly N/A - annual	11.0	N	2.0
S31 / Nmkt - Clock tower crossing	Roadside	564550	263544	NO ₂	Y	0 – hourly 0.3 - annual	2.5	N	2.4
S32 / Nmkt - 'Cancer Research' downpipe	Urban Centre	564516	263474	NO ₂	Y	0 – hourly N/A - annual	13.0	N	2.4

Site ID / 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)
S33 / Nmkt - 'Rutland Arms' crossing	Kerbside	564480	263464	NO ₂	Y	0 – hourly N/A - annual	<1.0	N	2.4
S34 / Nmkt - 'Savers' lamppost	Roadside ⁽⁴⁾	564383	263381	NO ₂	Y	0 – hourly 5.5 - annual	2.5	N	2.3
S35 / Nmkt - Station Approach	Kerbside	564375	262849	NO ₂	N	N/A	<1.0	N	2.4
S36 / Nmkt - Exning Rd substation	Roadside	563776	264094	NO ₂	N	N/A	1.5	N	2.4
S37 / Exning - Church St	Roadside	562214	265466	NO ₂	N	9.7	1.2	N	2.2
S38 / Nmkt - Nimbus Way	Other (A14 Back-ground)	563205	265853	NO ₂	N	16.0	<1.0 (Nimbus Way)	N	2.3
S39 / Nmkt - Tesco roundabout	Roadside	563886	265165	NO ₂	N	N/A	2.4	N	2.1

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property). All figures relate to distance to relevant receptor for annual mean unless otherwise specified.

(2) N/A if not applicable.

(3) Receptor not adjacent to tube, but distances correct if monitoring location transposed along road to receptor location

(4) Where tubes are located adjacent to indented parking bays along Newmarket High Street, the distance to the kerb has been taken as the distance from the edge of the carriageway with flowing traffic rather than from the physical kerb.

Table A.2 – Annual Mean NO₂ Monitoring Results

Site ID / Name	Site Type	Monitoring Type	Valid Data Capture 2015 (%) ⁽¹⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽²⁾				
				2011	2012	2013	2014	2015
S1 / Elveden School	Roadside	Diffusion Tube	83	48.0	47.9	-	-	11.7
S2 / Elveden PO	Roadside	Diffusion Tube	92	66.0	59.6	-	-	13.8
S3 / Brdn - Town Hall	Urban centre	Diffusion Tube	92	16.0	12.0	15.3	14.5	14.1
S4 / Brdn – London Road / Stores St	Roadside	Diffusion Tube	100	37.0	36.9	37.0	36.9	33.0
S5 / Brdn - 52 London Rd	Roadside	Diffusion Tube	83	-	39.3	40.4	37.8	39.4
S6 / Brdn - London Rd/Coulson Lane	Roadside	Diffusion Tube	92	-	37.3	33.9	28.4	27.4
S7 / Brdn - London Rd/Church Road	Kerbside	Diffusion Tube	92	36.0	35.6	34.3	35.6	33.5
S8 / Brdn - Hellesdon House, High St	Roadside	Diffusion Tube	92	-	31.2	28.6	27.4	26.3
S9 / Brdn - Riverside Lodge, High St	Kerbside	Diffusion Tube	100	-	32.9	36.6	32.5	27.9
S10 / Brdn - 'Boots', High St	Roadside	Diffusion Tube	83	-	38.5	38.6	38.5	35.4
S11 / Brdn - 175 Thetford Rd	Roadside	Diffusion Tube	100	19.0	22.7	18.9	19.0	17.3
S12 / Lakenheath - Zebra Crossing	Kerbside	Diffusion Tube	83	20.0	21.2	21.4	19.2	18.7
S13 / Lakenheath - Albert Rolph Drive	Suburban	Diffusion Tube	100	15.0	16.7	12.2	14.3	12.7

Site ID / Name	Site Type	Monitoring Type	Valid Data Capture 2015 (%) ⁽¹⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽²⁾				
				2011	2012	2013	2014	2015
S14 / Beck Row - Bird in Hand	Roadside	Diffusion Tube	100	21.0	21.2	18.4	18.5	18.2
S15 / Mild - Market Place/High St	Roadside	Diffusion Tube	100	23.0	23.5	24.2	22.6	22.7
S16 / Mild - Taxi rank/Bus station	Other	Diffusion Tube	100	19.0	16.7	16.9	17.0	16.4
S17 / Mild - 14 Kingsway	Roadside	Diffusion Tube	100	32.0	37.7	35.6	33.5	35.5
S18 / Mild - Field Road	Roadside	Diffusion Tube	58	27.0	23.0	21.5	21.9	20.6
S19 / Redlodge - Top of Nmkt Road	Kerbside	Diffusion Tube	42	21.0	20.5	19.2	16.3	19.3
S20 / Redlodge - End of Heath Fm Rd	Other (A11 Back-ground)	Diffusion Tube	92	21.0	21.4	18.8	17.8	20.7
S21 / Kentford - Station Rd/Bury Rd	Roadside	Diffusion Tube	100	22.0	22.1	20.8	20.0	19.5
S22 / Nmkt - Old Station Rd	Roadside	Diffusion Tube	100	37.0	34.4	28.2 ⁽⁴⁾	34.4 ⁽³⁾	32.1
S23 / Nmkt - Sun Lane	Urban Centre	Diffusion Tube	75	19.0	21.1	20.7	19.7	19.9
S24 / Nmkt - 'Café Nero' crossing	Kerbside	Diffusion Tube	92	38.0	36.4	37.4	35.2	33.4
S25 / Nmkt - 'KFC' downpipe	Roadside	Diffusion Tube	92	34.0	37.6 ⁽⁴⁾	35.2	32.2	29.8
S26 / Nmkt - 'White Hart' crossing	Kerbside	Diffusion Tube	67	42.0	43.7	41.8 ⁽⁴⁾	38.6	36.8

Site ID / Name	Site Type	Monitoring Type	Valid Data Capture 2015 (%) ⁽¹⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽²⁾				
				2011	2012	2013	2014	2015
S27 / Nmkt - Park area	Urban Background	Diffusion Tube	92	17.0	17.1	17.0	14.3	14.0
S28 / Nmkt - Blackbear lane/High St	Kerbside	Diffusion Tube	83	31.0	31.5	30.1	28.3	29.3
S29 / Nmkt - Taxi rank	Roadside	Diffusion Tube	92	43.0	42.0	40.5	42.9	40.0
S30 / Nmkt - Market St 'EE'	Urban Centre	Diffusion Tube	92	22.0	23.6	22.2	21.1	20.5
S31 / Nmkt - Clock tower crossing	Roadside	Diffusion Tube	92	35.0	38.2	35.8	32.8	34.4
S32 / Nmkt - 'Cancer Research' downpipe	Urban Centre	Diffusion Tube	100	26.0	23.1	22.2	21.3	20.6
S33 / Nmkt - 'Rutland Arms' crossing	Kerbside	Diffusion Tube	100	34.0	44.6 ⁽⁴⁾	35.8	34.6	33.4
S34 / Nmkt - 'Savers' lamppost	Roadside	Diffusion Tube	92	37.0	36.4	36.2	37.1	34.6
S35 / Nmkt - Station Approach	Kerbside	Diffusion Tube	92	15.0 ⁽⁴⁾	23.7 ⁽⁴⁾	15.9	13.1	13.9
S36 / Nmkt - Exning Rd substation	Roadside	Diffusion Tube	100	21.0	21.1	20.4	17.8	18.1
S37 / Exning - Church St	Roadside	Diffusion Tube	100	24.0	23.9	25.7	27.9	27.4
S38 / Nmkt - Nimbus Way	Other (A14 Back-ground)	Diffusion Tube	100	26.0	27.4	33.0 ⁽⁴⁾	22.7	25.4

Site ID / Name	Site Type	Monitoring Type	Valid Data Capture 2015 (%) ⁽¹⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽²⁾				
				2011	2012	2013	2014	2015
S39 / Nmkt - Tesco roundabout	Roadside	Diffusion Tube	100	32.0 ⁽⁴⁾	26.9 ⁽⁴⁾	28.5	26.7	26.6

Notes: Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) data capture for the 2015, monitoring was carried out for the whole year at all sites.

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

(3) Incorrectly reported in 2015 USA

(4) Based on less than 75% data recovery and not annualised in relevant reports. Values should be treated with caution.

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2015

Site ID / Name	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾
	S1 / Elveden School	18.9	19.9	15.8	13.7	10.2	9.4	12.5	15.6	11.2	-	17.5		
S2 / Elveden PO	20.9		17.2	17	14.2	11.5	14.1	18.3	18	19.1	19.5	17.2	17.0	13.8
S3 / Brdn - Town Hall	22.8	18.1	18.9	15.9	12.7	10.5	12.3	-	18.6	21	20.2	20.6	17.4	14.1
S4 / Brdn – London Road / Stores St	46.4	45.9	43.2	36.7	35.2	30.4	34.1	40.8	46.9	46.9	43.5	39.6	40.8	33.0
S5 / Brdn - 52 London Rd	53.7	53.3	44.5	40.7	39.7	-	-	43.8	49.6	51.8	60.2	48.8	48.6	39.4
S6 / Brdn - London Rd/Coulson Lane	40.7	45.3	33.3	28.8	31.7	23.6	-	31.4	34.1	31.7	40.7	30.5	33.8	27.4
S7 / Brdn - London Rd/Church Road	42.6	47.4	39.7	34.6	31.3	-	34.8	42.2	44.6	46.3	42.6	48.3	41.3	33.5
S8 / Brdn - Hellesdon House, High St	37.6	28.9	32.9	32.1	31.9	30.8	29.4	32.7	35	34.7	-	31.3	32.5	26.3
S9 / Brdn - Riverside Lodge, High St	37.4	39.8	38.6	30.3	23.5	29.9	31.5	35.6	38.7	42.4	32.8	32.1	34.4	27.9

Site ID / Name	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 ⁽¹⁾
S10 / Brdn - 'Boots', High St	43	49	44.6	50.8	-	35.6	34.1	42.8	-	54.8	37.4	44.8	43.7	35.4
S11 / Brdn - 175 Thetford Rd	29.6	25.5	23.9	18.7	17.5	10.4	16.4	17.2	21.6	24.9	26.5	23.5	21.3	17.3
S12 / Lakenheath - Zebra Crossing	21.1	30.2	25.5	16.8	16	17.3	-	21.7	26.4	29.4	26.2	-	23.1	18.7
S13 / Lakenheath - Albert Rolph Drive	20.6	20.1	16	12.6	10.3	9.4	16.2	14.7	13.8	17.7	18.5	18.1	15.7	12.7
S14 / Beck Row - Bird in Hand	27.3	29.9	23.8	24.3	17.1	15.6	15.9	18.5	25.5	26.8	24	20.4	22.4	18.2
S15 / Mild - Market Place/High St	29.9	33.9	31.5	26.5	20.6	20.1	23.4	27.1	27.6	34.9	30.5	30.1	28.0	22.7
S16 / Mild - Taxi rank/Bus station	24.7	26.9	21.1	14	16.4	15.3	17.3	17.9	21	24	21.9	22.3	20.2	16.4
S17 / Mild - 14 Kingsway	30.4	57	45.5	26	38.8	39.8	44.8	47.1	51.4	50.6	41.9	52.9	43.9	35.5
S18 / Mild - Field Road	-	-	-	-	22.1	18.4	-	25.2	25.6	31.1	26.4	29.1	25.4 ⁽²⁾	20.6
S19 / Redlodge - Top of Nmkt Road	32.1	-	24.2	-	-	-	-	16.2	-	26.2	27	-	23.9 ⁽²⁾	19.3
S20 / Redlodge - End of Heath Fm Rd	34.4	29.2	29.5	22.7	17.5	-	20.9	20.5	24.4	27.1	28.7	25.7	25.5	20.7

Site ID / Name	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾	
S21 / Kentford - Station Rd/Bury Rd	19.5	23.2	25.5	25.4	21.3	20.1	21.3	25.9	26.4	30.2	22.4	27.1	24.0	19.5	
S22 / Nmkt - Old Station Rd	41.4	47.1	42.9	36.8	38.7	37.7	37.5	34.2	39.1	40	45.2	35.6	39.7	32.1	
S23 / Nmkt - Sun Lane	32.3	31.7	-	24.1	-	17.6	19.5	-	26.2	28.6	21.3	19.3	24.5	19.9	
S24 / Nmkt - 'Café Nero' crossing	49.3	55.3	43.5	39.1	25.7	32.9	35.9	39.2	41	49.5	-	42	41.2	33.4	
S25 / Nmkt - 'KFC' downpipe	45	42.6	42.6	36.9	29.3	32.3	33.3	31.4	-	48.2	34.6	28.1	36.8	29.8	
S26 / Nmkt - 'White Hart' crossing	55.2	51.7	-	45.3	-	42.2	43.4	39.4	-	-	44.9	34.6	45.5 ⁽²⁾	36.8	
S27 / Nmkt - Park area	20.4	24.6	16.9	16.3	12.3	9.6	14.2	14.3	19	-	22	20.6	17.3	14.0	
S28 / Nmkt - Blackbear lane/High St	40.4	42.7	37.3	33.7	-	-	30.6	32.5	34.8	41.9	36.3	32.1	36.2	29.3	
S29 / Nmkt - Taxi rank	69.8	57.1	53.9	46.9	49	42.1	50.5	40.9	47.9	-	48.6	36.4	49.4	40.0	
S30 / Nmkt - Market St 'EE'	31.1	-	26.5	27.1	20.8	18.3	21.6	23.7	27.9	26	29.2	25.7	25.3	20.5	
S31 / Nmkt - Clock tower crossing	61.9	35	40.2	41.6	41.2	32.3	-	37.2	45	47.2	50.4	35.3	42.5	34.4	

Site ID / Name	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾	
	S32 / Nmkt - 'Cancer Research' downpipe	30.8	29.5	28.6	28.5	21.8	20.1	21.8	21.8	28.4	31.2	22.1			20.3
S33 / Nmkt - 'Rutland Arms' crossing	41.3	49.8	36.3	37.7	34.7	37	38.4	40.5	42.3	42.3	49.9	45.2	41.3	33.4	
S34 / Nmkt - 'Savers' lamppost	47.3	49.1	44.8	43.5	39.6	30.1	37.2	-	43.5	43.5	48.5	43.1	42.7	34.6	
S35 / Nmkt - Station Approach	22.2	24.6	20.5	15.3	-	7.9	11.6	14.3	17	21.9	16.2	16.7	17.1	13.9	
S36 / Nmkt - Exning Rd substation	30.3	25.3	32.2	26.2	16.6	14.9	16	17.2	21.8	26.9	21	20.2	22.4	18.1	
S37 / Exning - Church St	43.3	38.8	26.4	33.9	26.9	24.9	27.1	32.5	39.3	44.7	31.5	36.4	33.8	27.4	
S38 / Nmkt - Nimbus Way	36.9	35.7	39.3	31.6	24	23.1	26.1	40.9	36.6	38.5	24.3	19.5	31.4	25.4	
S39 / Nmkt - Tesco roundabout	35.4	42.5	28.9	22.9	34.3	24.8	31.8	23.7	35.4	39.8	38	36.9	32.9	26.6	

(1) See Appendix C for details on bias adjustment

(2) Sites annualised in line with TG(16). Local roadside sites used in the absence of sufficient reliable continuous background sites.

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

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/16				
<p>Follow the steps below in the correct order to show the results of relevant co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p>								<p>This spreadsheet will be updated at the end of June 2016</p> <p>LAQM Helpdesk Website</p>		
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ² shown in blue at the foot of the final column.							
If a laboratory is not chosen, we have no data for this laboratory.	If a preparation method is not chosen, we have no data for this method at this laboratory.	If a year is not chosen, we have no data ²	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953							
Analysed By ¹	Method	Year ²	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)
ESG Didcot	50% TEA in acetone	2015	R	Dumfries and Galloway Council	12	35	30	14.6%	G	0.87
ESG Didcot	50% TEA in acetone	2015	B	Gravesham Borough Council	12	40	30	34.1%	G	0.75
ESG Didcot	50% TEA in acetone	2015	B	Gravesham Borough Council	12	30	23	29.8%	P	0.77
ESG Didcot	50% TEA in acetone	2015	UI	North Lincolnshire	11	24	18	36.5%	P	0.73
ESG Didcot	50% TEA in acetone	2015	R	Swale BC	11	38	32	19.3%	P	0.84
ESG Didcot	50% TEA in acetone	2015	R	Swale BC	10	48	39	21.0%	G	0.83
ESG Didcot	50% TEA in acetone	2015	R	Swale Borough Council	11	40	34	19.7%	P	0.84
ESG Didcot	50% TEA in acetone	2015	R	Wrexham County Borough Council	12	19	19	0.6%	G	0.99
ESG Didcot	50% TEA in acetone	2015	UC	Cardiff Council	10	26	26	1.6%	G	0.98
ESG Didcot	50% TEA in acetone	2015	KS	Marglebone Road Intercomparison	12	104	81	27.9%	G	0.78
ESG Didcot	50% TEA in acetone	2015	R	Vale of White Horse District Council	11	34	29	15.7%	G	0.86
ESG Didcot	50% TEA in acetone	2015	UI	Stockton on Tees	12	24	18	29.4%	G	0.77
ESG Didcot	50% TEA in acetone	2015	R	Stockton on Tees	12	17	14	21.5%	G	0.82
ESG Didcot	50% TEA in acetone	2015	KS	Suffolk Coastal DC	12	44	35	26.0%	P	0.79
ESG Didcot	50% TEA in acetone	2015	SU	Thanet District Council	9	17	15	10.6%	G	0.90
ESG Didcot	50% TEA in acetone	2015	R	Thanet District Council	12	27	23	17.8%	G	0.85
ESG Didcot	50% TEA in acetone	2015	B	Medway Council	12	21	12	77.3%	G	0.56
ESG Didcot	50% TEA in acetone	2015	R	Medway Council	11	32	23	42.6%	G	0.70
ESG Didcot	50% TEA in acetone	2015	R	North East Lincolnshire Council	10	34	28	21.2%	P	0.83
ESG Didcot	50% TEA in acetone	2015	R	North East Lincolnshire Council	11	39	28	38.6%	G	0.72
ESG Didcot	50% TEA in acetone	2015	R	North East Lincolnshire Council	11	55	47	16.2%	G	0.86
ESG Didcot	50% TEA in acetone	2015		Overall Factor² (21 studies)					Use	0.81

Appendix D: Map(s) of Monitoring Locations

Figure D.1 – Monitoring Locations - Elveden

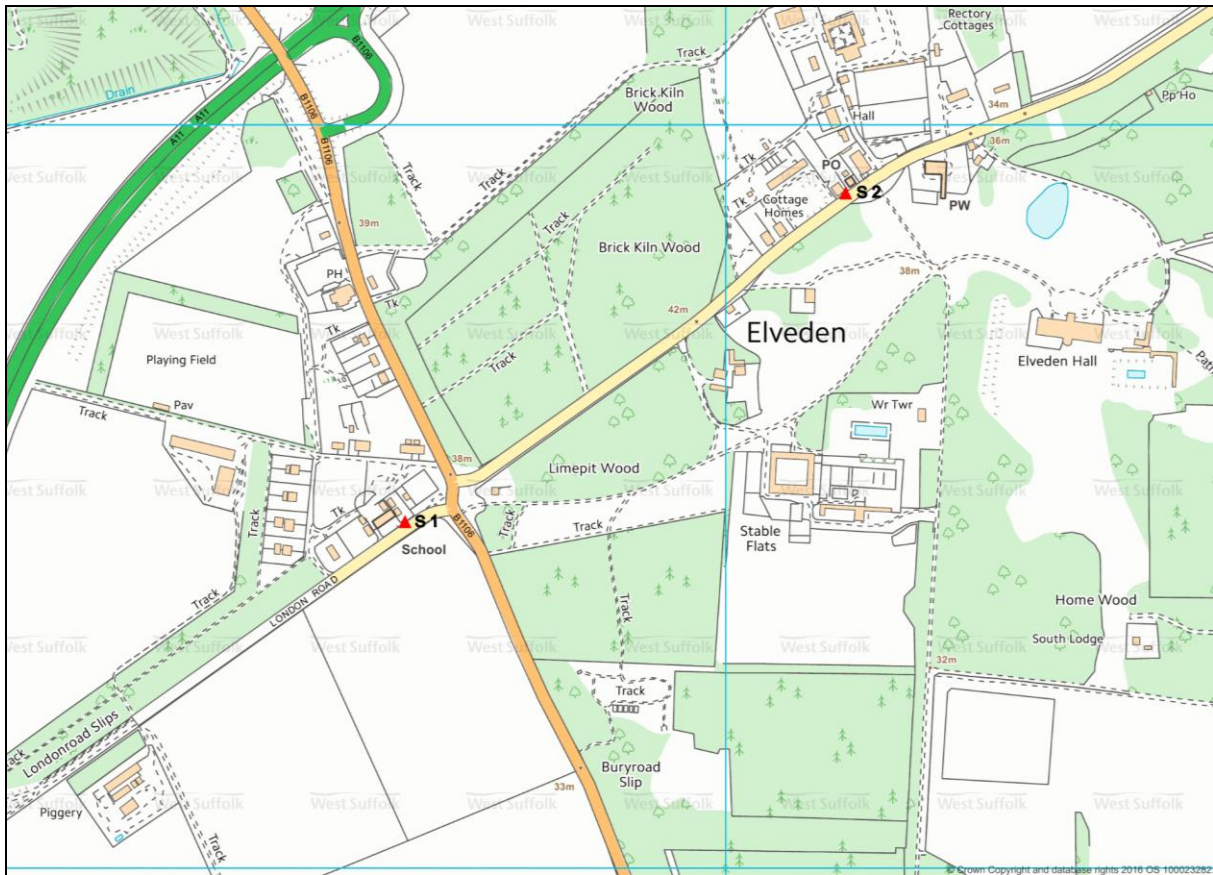


Figure D.2 - Monitoring Locations - Brandon

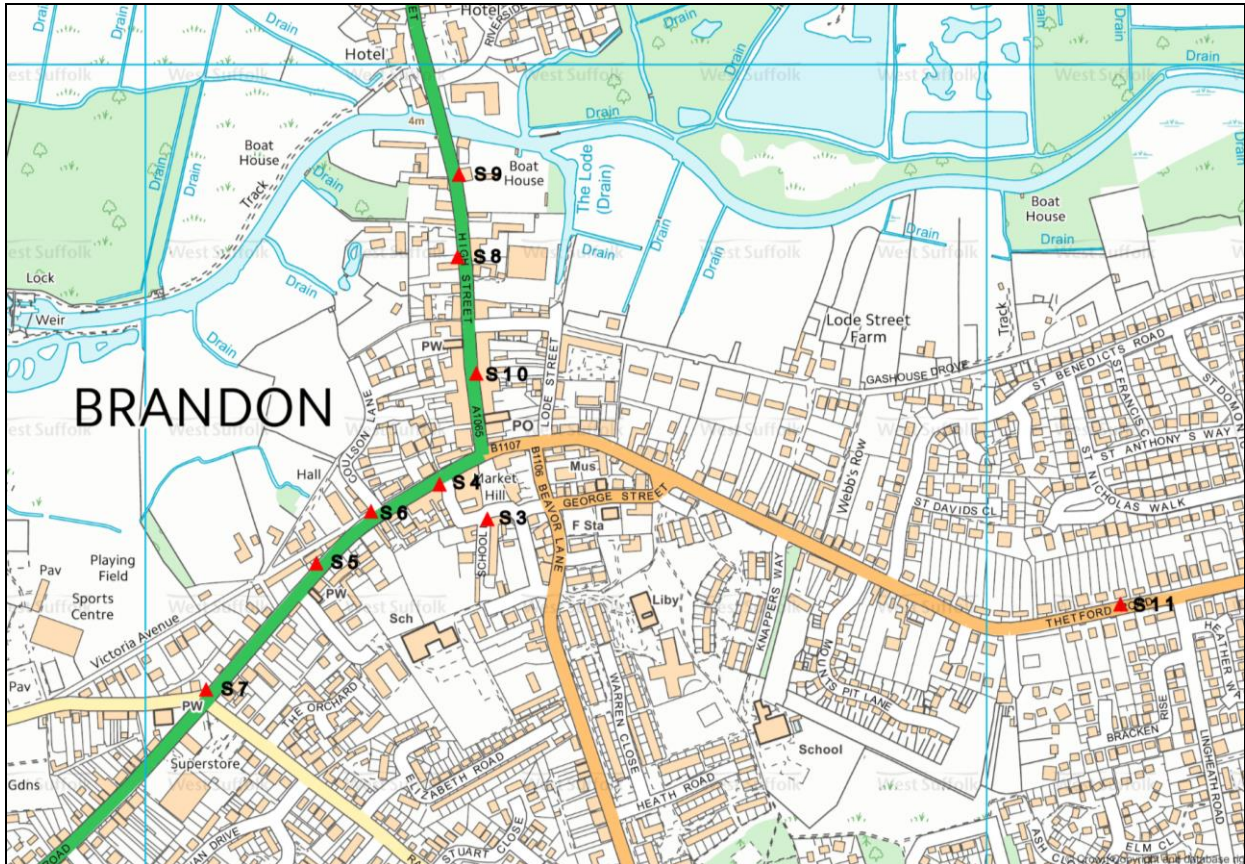


Figure D.3 – Monitoring Locations - Lakenheath

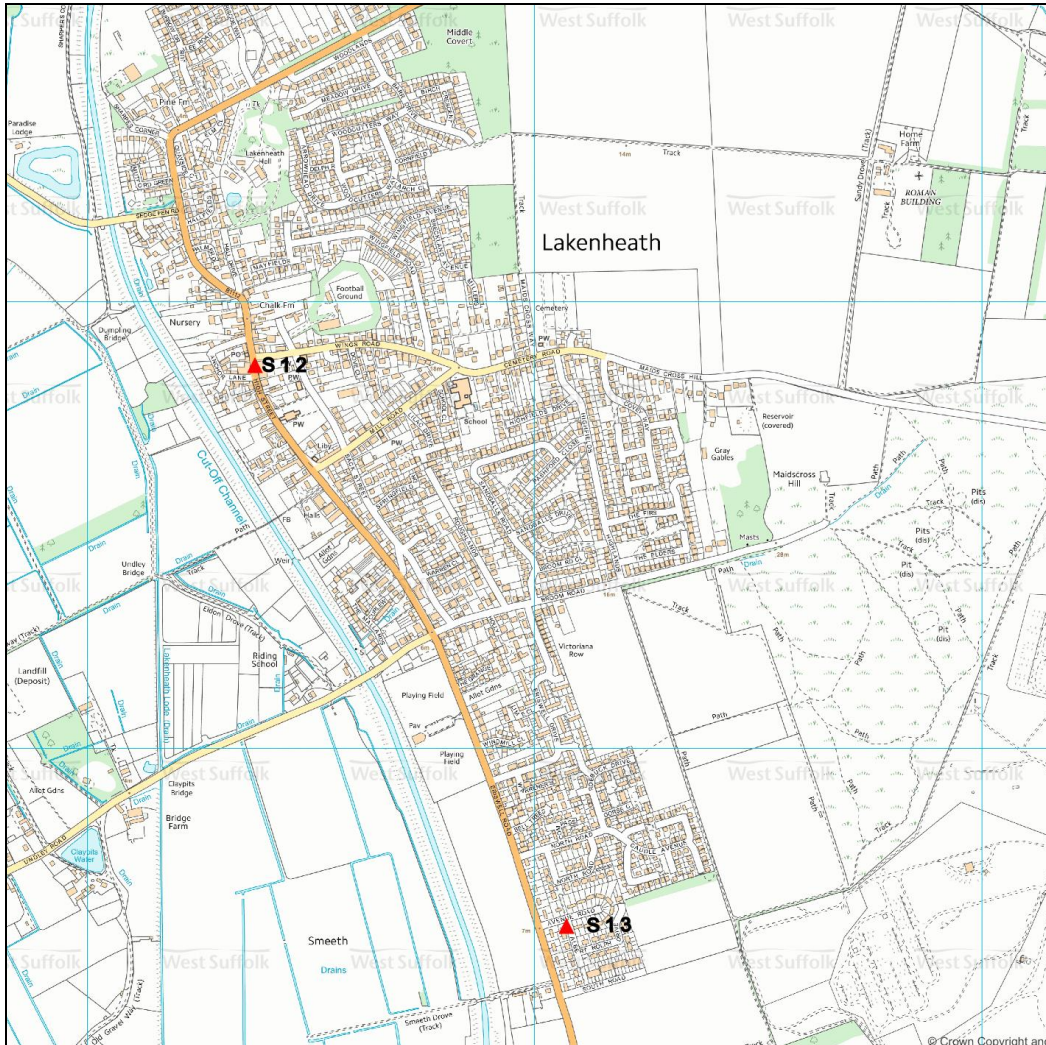


Figure D.4 – Monitoring Locations – Beck Row

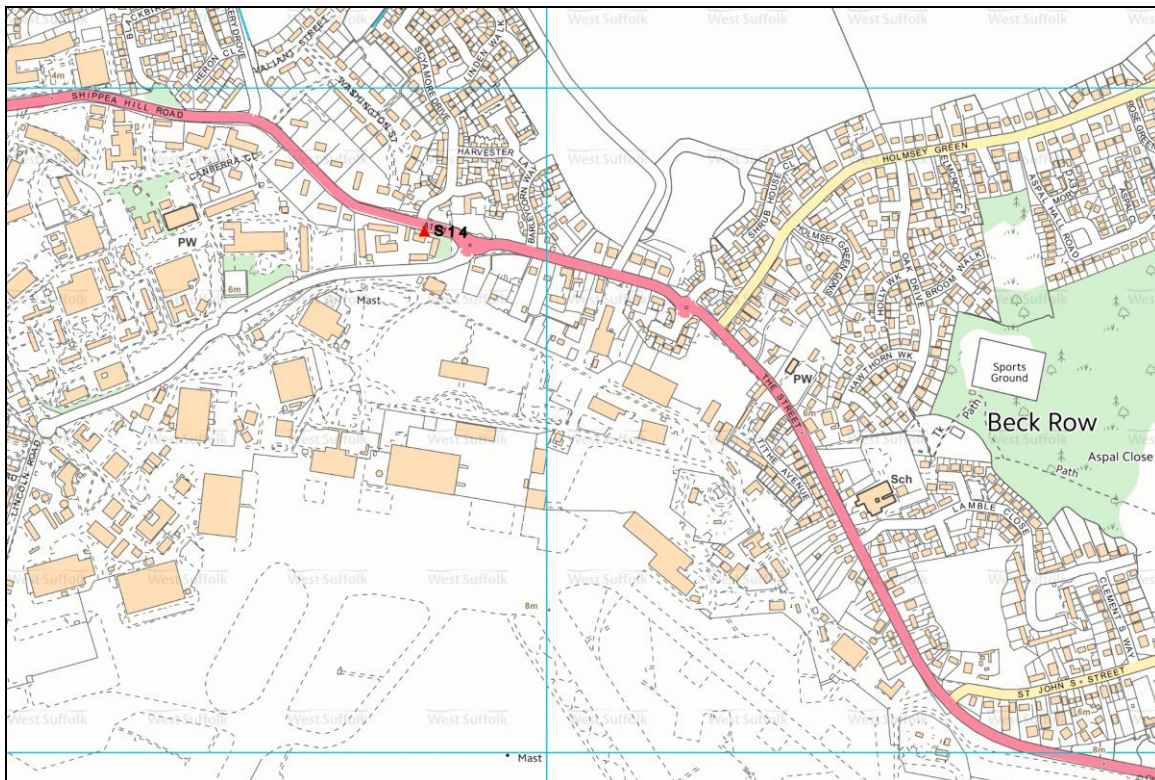


Figure D.5 – Monitoring Locations - Mildenhall

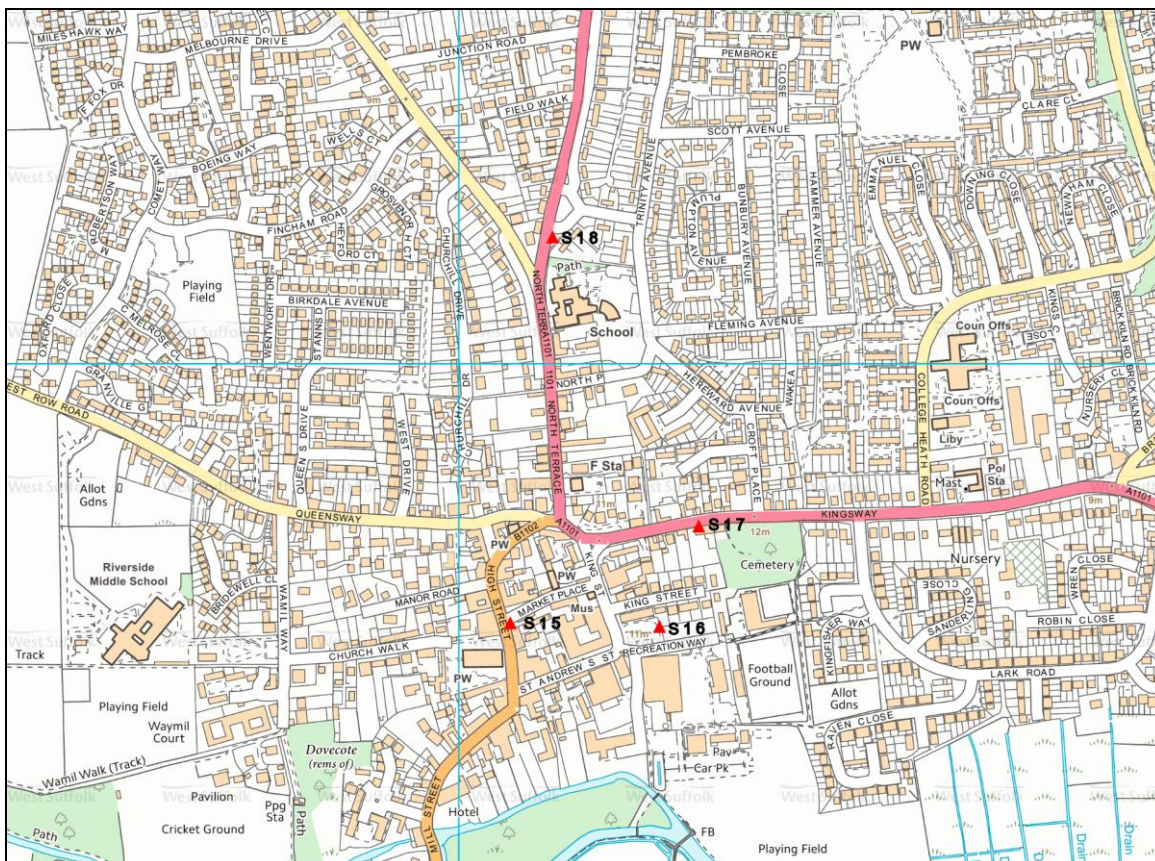


Figure D.6 – Monitoring Locations – Red Lodge

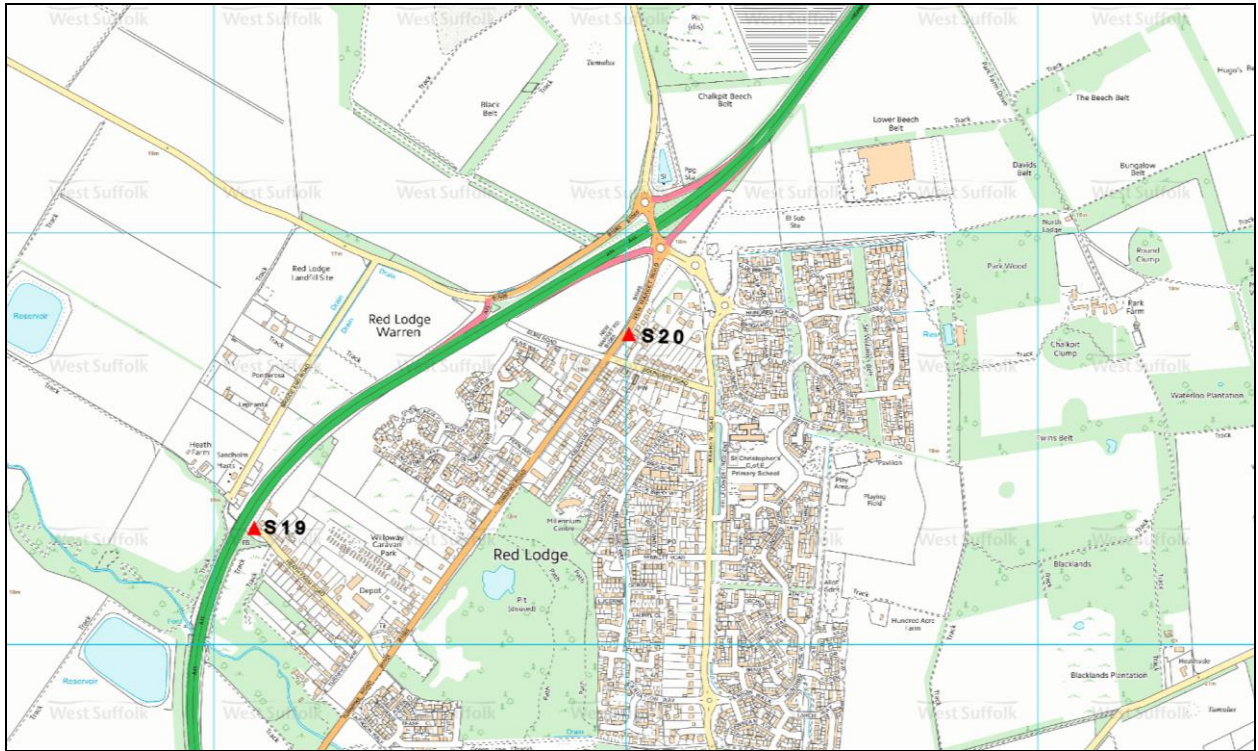


Figure D.7 – Monitoring Locations - Kentford

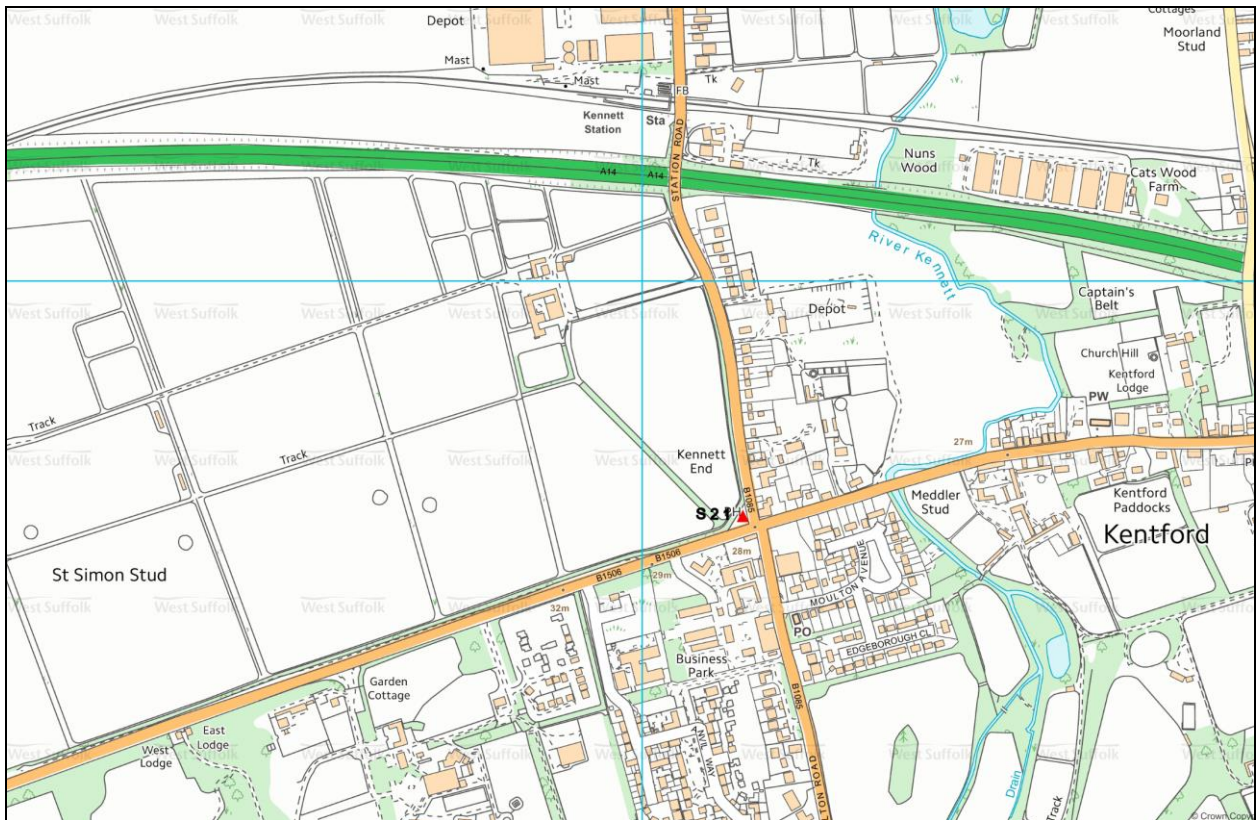


Figure D.8 – Monitoring Locations – Newmarket Town Centre

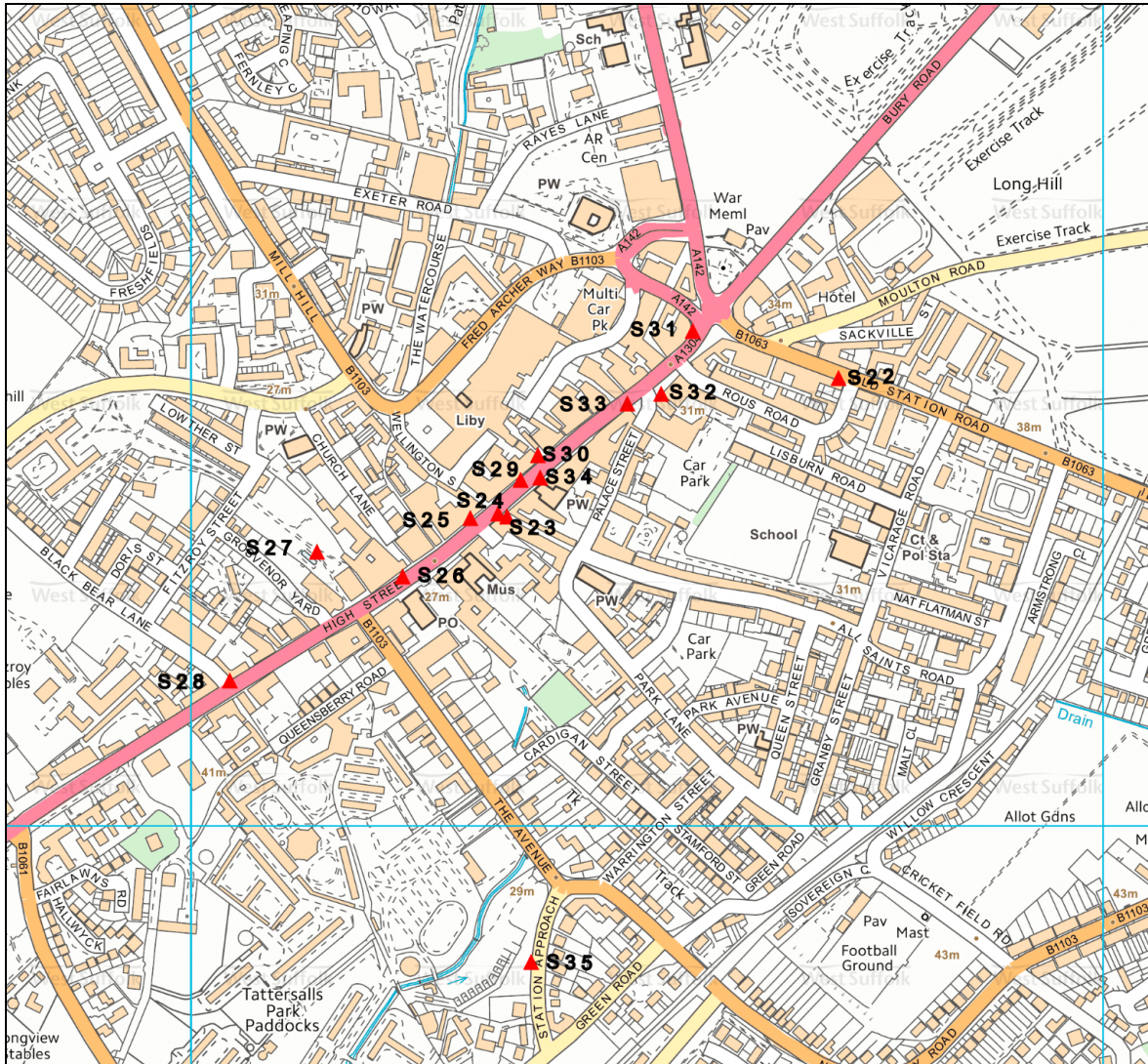
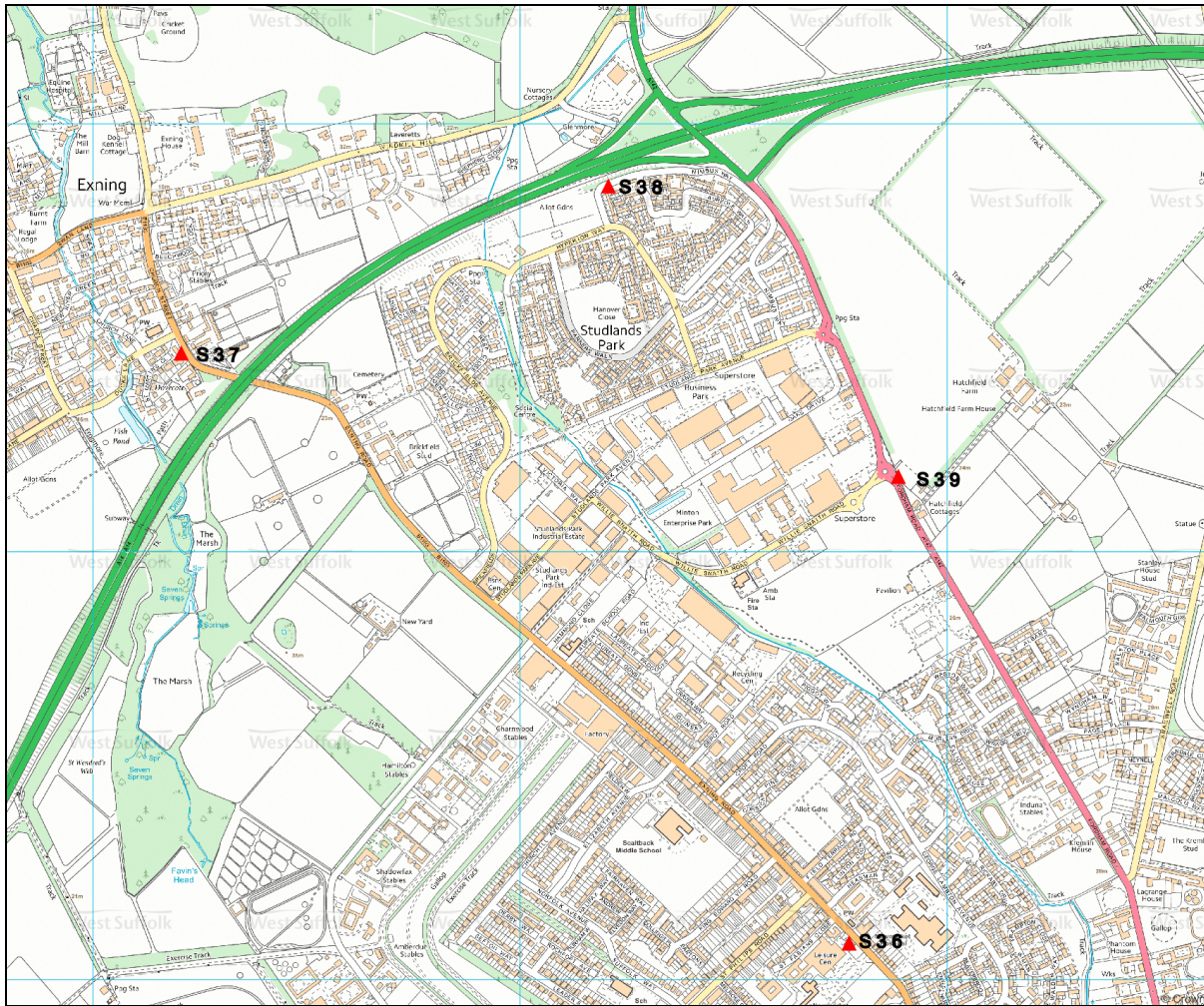


Figure D.9 – Monitoring Locations – North Newmarket and Exning



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

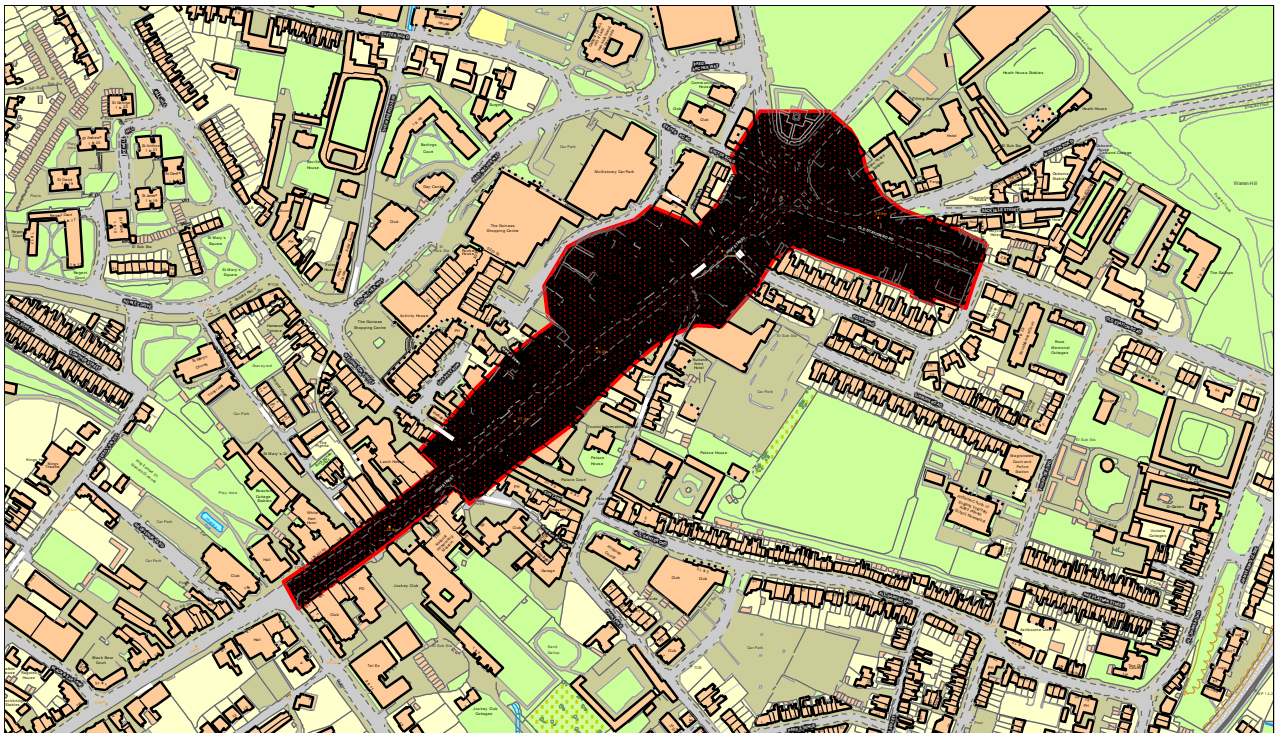
Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur 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/m³).

Appendix F: Detailed Assessment of Newmarket AQMA

F.1 Background

A Detailed Assessment (DA) of Newmarket town centre was undertaken by TRL Ltd in 2008 and the findings reported to the Department of Environment, Food and Rural Affairs (Defra). The DA and a revised DA both concluded that the annual mean air quality objective for NO₂ would be exceeded at locations along Newmarket High Street and Old Station Road. The AQMA Order is dated 6th April 2009 and describes the designated area as “An area incorporating the High Street (from the White Hart Hotel), in Newmarket, to the Clock Tower gyratory and Old Station Road up to the junction with Rous Road.” The extent of the declared AQMA is shown below.



PM₁₀ was considered as part of the Detailed Assessment, but was not considered to be at risk of exceeding the relevant objectives and no further consideration was made in respect to PM₁₀.

The hourly objective for NO₂ was not considered likely to be exceeded and no further assessment was considered necessary in the Detailed or Further Assessments undertaken by TRL Ltd. However, we have considered the hourly objective briefly in the below detailed assessment as High Street could be considered a relevant location for the hourly objective.

Further monitoring points (diffusion tubes) were established along Newmarket High Street and a Further Assessment undertaken, again by TRL Ltd, in 2011. The Further Assessment confirmed the results of the Detailed Assessment and concluded

that the AQMA should remain. The Further Assessment modelled a number of properties that potentially exceeded the annual mean objective and listed these properties as follows:

- High Street - 33 (Rutland arms hotel), 35, 37, 69, 75, 77, 79, 81, 83, 89-95
- Old Station Road - 24-26, 28, 30, 32, 34, 36, 38, 7, 9, 11, 13, 15, 17

The diffusion tube monitoring has continued at eleven locations within the AQMA since at least November 2010, with ten locations on High Street and one location on Old Station Road.

F.2 Detailed Assessment of Diffusion Tube Monitoring

F.2.1 High Street

The majority of diffusion tubes are located along High Street although only four of these locations are located on the façade of properties. The other six locations are not representative of annual mean receptors, being distant from the façade of occupied properties. Therefore, as a starting point, we have used the Defra Nitrogen Dioxide fall off with distance calculator to estimate the annual mean nitrogen Dioxide concentration at the façade of the closest property.

We have undertaken an estimation of the annual mean NO₂ value at the façade of the properties from every year from 2010 to 2015. We have also included monitoring results taken at the façade of properties for completeness.

The Defra calculator requires a background value to undertake the estimation. There is a background location in Newmarket in the Memorial Gardens whilst Defra also produce background maps; these are compared in the Table F.1.

Table F.1 – Comparison between Local measured and Defra estimated background NO₂ values

Year	Newmarket Background NO ₂ (µg/m ³)	Defra Background estimated NO ₂ for grid square 564500 263500 (µg/m ³)
2010	17.7	17.3
2011	17.0	15.3
2012	17.1	15.0
2013	17.0	14.6
2014	14.3	14.2
2015	14.0	13.9

From the above it can be seen that the Newmarket background reading is consistently slightly higher than the Defra background estimate, however, there is very good correlation for a number of the years (2010, 2014 and 2015). The Defra calculator gives a more conservative result (i.e. higher value at the façade) where the

background value is higher; therefore we have taken a conservative approach and used the Newmarket background reading in our calculations.

The Defra calculator also requires a measurement of the distance from the kerb to the diffusion tube and the distance from the kerb to the receptor (façade). There are a number of parking bays along Newmarket High Street, meaning the physical kerb is not adjacent to the edge of the carriageway of flowing traffic. Where this occurs, the values input in to the Defra Calculator are from the edge of the carriageway of flowing traffic. This also allows for a more conservative result (i.e. higher value at the façade).

We have rejected results with less than 75% data collection.

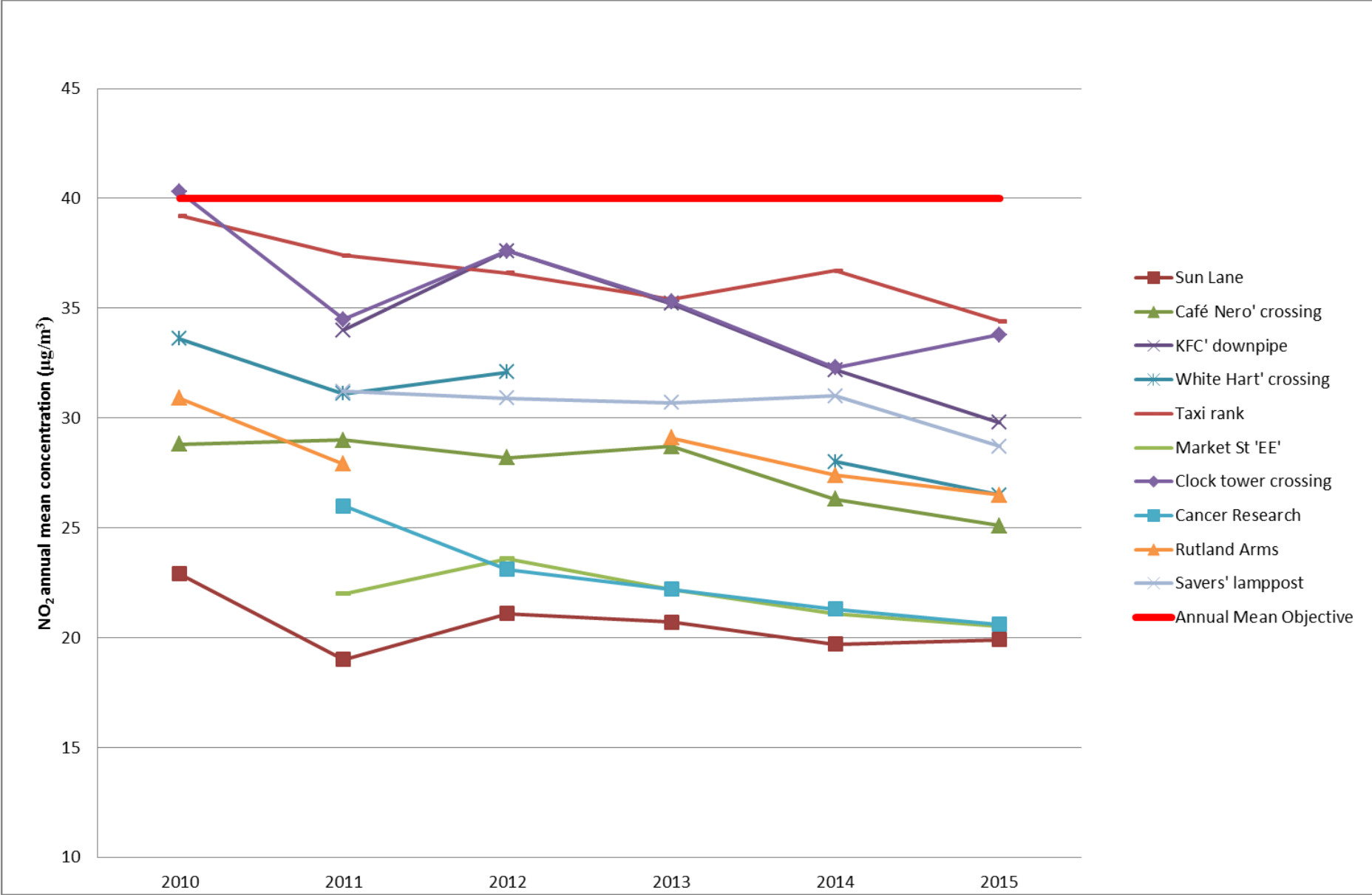
Table F.2 presents the distance adjusted values from 2010 to 2015, whilst Figure F.1 presents the same information in graphical form.

Table F.2 – Values of NO₂ at façade for diffusion tube monitoring sites along Newmarket High Street

Site details	Distance of kerb from façade / diffusion tube used in calculator ⁽¹⁾	NO ₂ Concentrations (µg/m ³) (unadjusted values provided in brackets)					
		2010	2011	2012	2013	2014	2015
Cancer Research	N/A	-	26.0	23.1	22.2	21.0	20.6
Rutland Arms	3.7 / 0.5	30.9 (38.2)	27.9 (33.9)	-	29.1 (35.8)	27.4 (34.6)	26.5 (33.4)
Savers Lamppost	8.0 / 2.5	-	31.2 (37.0)	30.9 (36.4)	30.7 (36.2)	31.0 (37.7)	28.7 (34.6)
Sun Lane	N/A	22.9	19	21.1	20.7	19.7	19.9
Café Nero Crossing	5.5 / 0.5	28.8 (37.1)	29.0 (38.0)	28.2 (36.4)	28.7 (37.4)	26.3 (35.2)	25.1 (33.4)
White Hart Crossing	5.9 / 0.5	33.6 (46.0)	31.1 (42.0)	32.1 (43.7)	-	28.0 (38.6)	26.5 (36.1)
KFC Downpipe	N/A	-	34	-	35.2	32.2	29.8
Taxi Rank	6.0 / 2.5	39.2 (45.1)	37.4 (43.0)	36.6 (42.0)	35.4 (40.5)	36.7 (42.9)	34.4 (40.0)
Market Street 'EE'	N/A	-	22.0	23.6	22.2	21.1	20.5
Clock Tower Crossing	2.8 / 2.5	40.3 (40.9)	34.5 (35.0)	37.6 (38.2)	35.3 (35.8)	32.3 (32.8)	33.8 (34.4)

(1) N/A where diffusion tube located on façade of property

Figure F.1 – Values of NO₂ at façade for diffusion tube monitoring sites along Newmarket High Street



Defra Technical Guidance 2016 states that “*it can be considered that exceedances of the NO₂ 1-hour objective may occur at roadside sites if the annual mean is above 60µg/m³*”. From the above table it is clear that monitoring values at all sites along Newmarket High Street for the last six years are significantly below the annual mean value of 60µg/m³. Therefore we do not consider there to be a risk of exceedance of the hourly objective and this is not considered any further.

When considering the annual mean objective at the façade of properties, we have considered the north and south of High Street separately:

The monitoring diffusion tubes along the south of High Street (Cancer Research; Rutland Arms; Savers Lamppost; Sun Lane and Café Nero Crossing) show a maximum estimated value at the façade of any of the properties of 31.2µg/m³, with the majority of façade readings or estimations being below 30.0µg/m³. This is significantly below the objective value of 40µg/m³ and indicates that the likelihood of there being any exceedance at the façade of a property along the southern edge of Newmarket High Street is very low.

The monitoring diffusion tubes along the north of High Street (White Hart Crossing; KFC Downpipe; Taxi Rank; Market Street ‘EE’ and Clock Tower Crossing) show generally slightly higher façade values than those on the south of High Street, however, only one value (Clock tower crossing in 2010) is estimated above the annual mean objective at the façade of a property. It should be noted that two of the locations; KFC downpipe and Taxi Rank, are adjacent to a bus stop and a taxi rank respectively and are unlikely to be representative of High Street as a whole. The exceedance recorded at the clock tower crossing in 2010 should be treated with caution as this result was based on 75% data capture only and the following years results have been shown to be well below the annual mean objective. Furthermore, the recorded values are all located below a height of 2.5m, whilst the only relevant receptors would be at greater than 3.0m height (all ground floors are occupied by commercial units, whilst residential units are restricted to sporadic first floor and higher flats only), meaning the values given above are greater than the likely value at a relevant location.

The above also shows a general slight downward trend over the last six years. It is therefore concluded that the likelihood of there being any exceedance of the annual mean objective for NO₂ at the façade of a first floor residential dwelling along the northern edge of Newmarket High Street is very low.

Given the above, it is concluded that it is very unlikely that an exceedance of the annual mean objective for Nitrogen Dioxide will occur along Newmarket High Street in the foreseeable future, with the highest value at the façade of a property in 2015 being 34.4µg/m³ (which was at a location not considered to have any residential properties adjacent).

It is recommended that the AQMA along Newmarket High Street is removed (either through revoking the AQMA or amending the AQMA to consist of Old Station Road only).

F.2.1 Old Station Road

Only a single monitoring location has been located along Old Station Road and therefore limited data exists to fully assess the necessity of the AQMA. Furthermore, this monitoring location has had reasonably poor recovery on a number of years and shown relatively inconsistent results. The single monitoring location is also at the very far edge of the AQMA, furthest from the Clock Tower Roundabout, and therefore is unlikely to be representative of the worst case scenario.

Table F.3 – Data from the monitoring point on Old Station Road

Year	Data Collection (%)	Annual Mean NO ₂ (µg/m ³)
2010	100	31.2
2011	83	37.0
2012	75	34.4
2013	50	28.2
2014	67	33.1
2015	100	32.1

We do not consider it possible to extrapolate the High Street results to Old Station Road due to the difference in traffic volumes and flow and the difference in pavement width and the proximity of the properties to the road (Old Station Road was modelled as a canyon in the 2011 Further Assessment).

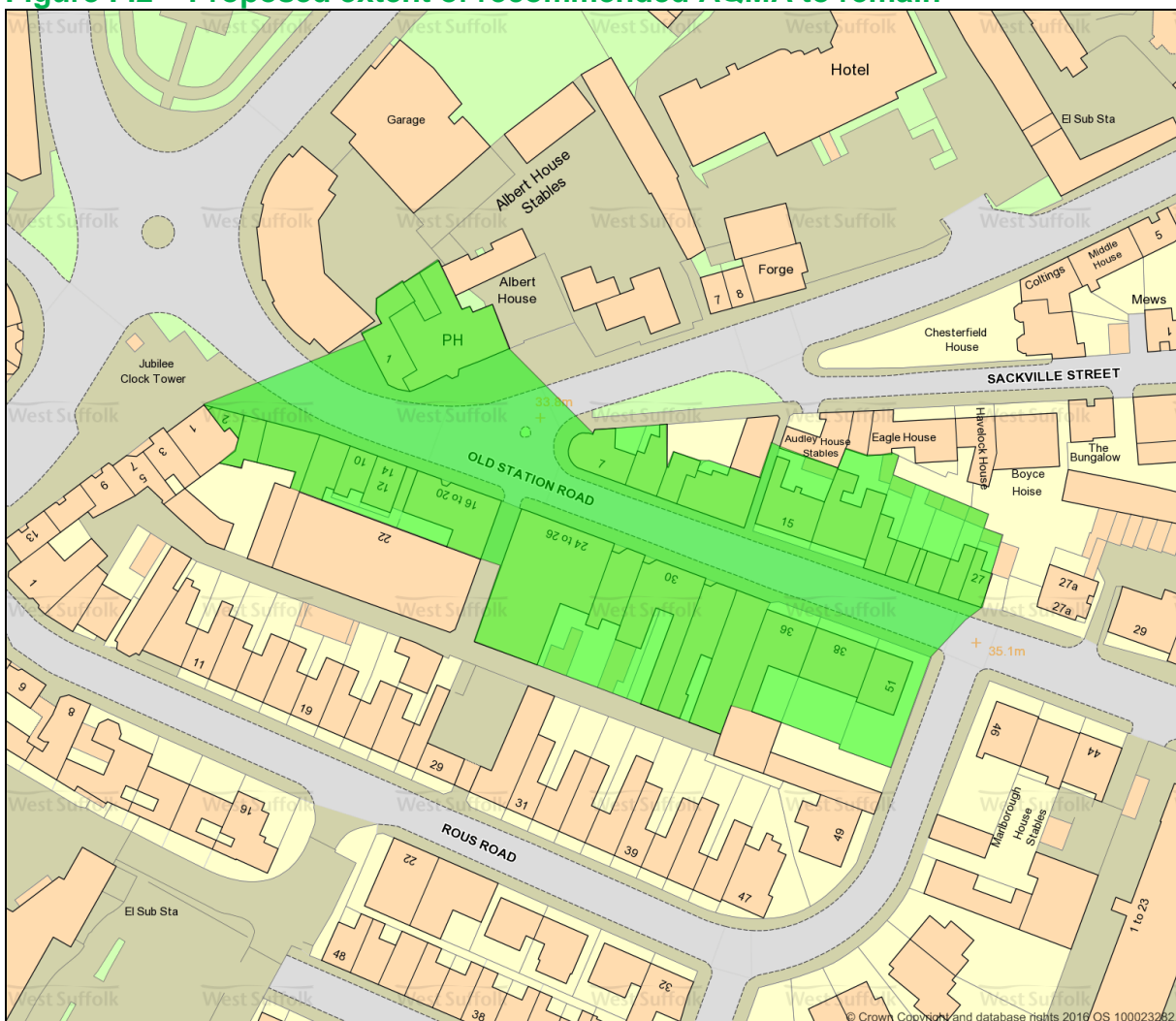
Therefore, it is not possible to come to any firm conclusion regarding the extent or validity of the AQMA along Old Station Road, Newmarket, until further data is collected.

F.3 Recommendations

It is recommended that the following actions are taken:

- The extent of the AQMA is amended to include Old Station Road only, a proposed plan is provided below. The Defra Technical Guidance states “*that authorities will need to consider measurements carried out over several years or more*” when considering the revocation of an AQMA, and therefore it is unlikely that sufficient data will be available for Old Station Road until the end of 2018. With a decision on revocation made in the 2019 ASR. Given the minimum three year timescale, it was not considered appropriate to delay the revocation of the High Street section of the AQMA.

Figure F.2 – Proposed extent of recommended AQMA to remain



- Further monitoring locations be installed along Old Station Road (two additional diffusion tubes already added from January 2016 and additional tubes will be added in January 2017 if required).
- A number of the monitoring locations along Newmarket High Street should be discontinued:

Forest Heath District Council

- Cancer Research – tube located on façade, but at area of very wide pavement and results consistently below $30\mu\text{g}/\text{m}^3$, but not far enough from sources to be considered a background location.
 - Sun Lane – tube located on façade, but down a pedestrianised side street and results consistently below $25\mu\text{g}/\text{m}^3$, but not far enough from sources to be considered a background location.
 - Market Street 'EE' - tube located on façade, but down a pedestrianised side street and results consistently below $25\mu\text{g}/\text{m}^3$, but not far enough from sources to be considered a background location.
- A number of the remaining diffusion tubes should be moved to relevant receptor locations, (i.e. property façades where it is confirmed that there are residential flats above):
 - Savers Lamppost
 - Café Nero Crossing
 - Taxi Rank

The above will be recommended for implementation following confirmation of agreement from Defra following submission of this Annual Status Report.

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
FHDC	Forest Heath District Council
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