2018 Air Quality Annual Status Report (ASR)

Suffolk Coastal District Council
Waveney District Council

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

July 2018

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Executive Summary: Air Quality in Our Area

Air Quality in Suffolk Coastal and Waveney District Councils

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].

In May 2018 an Order was made by Parliament to create the new East Suffolk Council which will encompass both Suffolk Coastal and Waveney District Councils and will come into existence on 1 April 2019. At this time both Suffolk Coastal District Council and Waveney District Council will be abolished. We have chosen to write the 2018 ASR as a joint report for both authorities but keep the data separated within the report. The 2019 ASR will be one report for East Suffolk Council.

Generally the air quality within both Suffolk Coastal and Waveney districts is good. There are no objectives exceeded within the Waveney district. There are two small localised areas where the objective set for annual mean nitrogen dioxide (NO_2) have been exceeded in the past and Air Quality Management Areas (AQMAs) are currently declared;

- Several houses on the road junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge (Woodbridge Junction)
- Four residential properties within Long Row, Main Road (A12) in Stratford St Andrew.

Each AQMA is discussed briefly overleaf, with more detail provided in Chapter 2.

The main source of emissions within the majority of both the Suffolk Coastal and Waveney districts is road traffic which means that the pollutants of concern are nitrogen dioxide (NO_2) and particulate matter. Within the town of Felixstowe in Suffolk Coastal emissions from, and associated with, the Port are also a source of these two pollutants.

Within the **Suffolk Coastal district** NO_2 is measured in the district by automatic analyser and diffusion tubes. There is an automatic analyser situated within Woodbridge, and 53 diffusion tube monitoring locations covering 11 areas; Felixstowe, the Trimleys, Kesgrave, Melton, Woodbridge, Martlesham, Little Glemham, Farnham, Stratford St. Andrew, Saxmundham and Leiston. The 2017 monitoring results show only one relevant receptor location where NO_2 is just above the annual mean objective at 41 µg/m^3, this is a new

[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

monitoring site in High Road, Trimley St. Martin. As this is our first reading using a single diffusion tube in this locality we have chosen not to declare a fast track AQMA. To improve the accuracy of our data collection in 2018 we now have a triplicate set of diffusion tubes at FLX 40, and have added 3 additional monitoring sites at other properties close by. In addition, we have added a number of monitoring locations along the Trimleys in order to assess concentrations at key sites.

NO_2 concentrations within both declared AQMAs are within the objective in 2017, Stratford St Andrew for the first time and Woodbridge for the fourth year running. There is a general trend of NO_2 reductions across the district over time however concentrations in Felixstowe, Kesgrave and Melton showed an increase in 2017 and we will be keeping a close eye on monitoring results in 2018.

Woodbridge AQMA

This AQMA was declared in 2006, further details can be seen at https://uk-air.defra.gov.uk/aqma/details?aqma_id=528 The current Action Plan includes 20 measures to reduce NO_2 concentrations from both queueing and moving traffic at this junction. Studies looking at the layout of the junction and the local weather, in particular the wind speed and direction, indicate that emissions from the junction are being 'funnelled' along Melton Hill away from the junction, and dispersed very slowly within the canyoned area of the AQMA. In light of these findings, many of the options in the original Action Plan are unlikely to have any significant impact on NO_2 levels. The Action Plan is therefore being updated and a first draft is with the Department for Environment, Food and Rural Affairs (Defra) for approval. NO_2 concentrations within the AQMA have reduced since 2014 to below the objective level and are currently 37 $\mu g/m^3$.

Stratford St Andrew AQMA

This AQMA was declared in 2014 and further details can be seen at https://uk-air.defra.gov.uk/aqma/details?aqma_id=1036. The Action Plan received Defra approval in March 2018 and consists of 2 short term, priority action measures and 6 longer term aspirational measures. The main priority measure is for the County Council to move the 30/50mph change of speed limit sign further south out of the village which was undertaken in December 2017. NO_2 concentrations have fallen below the objective for the first time in 2017 (39 $\mu g/m^3$). Monitoring is being undertaken to determine average vehicle speeds and NO_2 concentrations with the change in place. Results will be available and reported in the 2019 ASR.

Within the **Waveney district** NO_2 is measured in the district by diffusion tubes, there are 14 diffusion tube monitoring locations covering 5 areas; Lowestoft, Carlton Colville, Oulton Broad, Beccles and Bungay. The 2017 monitoring results show NO_2 concentrations at all locations to be within the annual mean objective and there is a general trend of reducing concentrations over time.

In order to fulfil our duties, Suffolk Coastal and Waveney retain a joint part-time dedicated air quality officer within Environmental Protection, with other members of the team also undertaking air quality work including responses to Planning applications. Links and contacts have been forged through the Suffolk Air Quality Group to allow partnership working with the following organisations;
Suffolk local authorities;
Suffolk County Council (Highways and Public Health);
Highways England;
Public Health England;
The Environment Agency
Steering Groups set up for the AQMAs allow close working with relevant Suffolk County Council Highways Officers and relevant local partners.

Actions to Improve Air Quality

There have been a number of actions undertaken during the last year within both districts to help reduce air quality emissions and/or provide information to aid us with our air quality plans. These are detailed in Chapter 2. Some of the actions are specific to the declared AQMAs and some are more general across the districts:

Joint actions

- The air quality pages on the East Suffolk website have been re-designed and updated. The website is now more accessible and includes new information on biomass and wood burning. This will aid to increase public awareness and knowledge surrounding air quality and provide ideas for all on personal emission reduction.
- Assessment of all relevant planning applications for air quality by the Environmental Protection Teams, together with involvement in larger applications such as Lake Lothing Third Crossing in Lowestoft, Sizewell C Power Station, Adastral Park Martlesham and Woods Meadow development in Oulton.
- Completed the bid to the Highways Agency for installation of a rapid electric vehicle charging unit for public use in Felixstowe. This is part of a larger bid for 11 of these units within Suffolk. Hope to improve the charging network within Suffolk to aid update and use of electric vehicles.
- A first draft of Travel Plan guidance for Suffolk has been produced by the County Council in conjunction with the district councils. Release of the NPPF guidance is awaited before completion.

Suffolk Coastal District Council

- The 30/50mph change of speed limit signs at Stratford St Andrew have been moved further out of the village. This should stop vehicles accelerating within the AQMA and therefore reduce NO_2 emissions.
- Provision of information to the Public and commerce on reducing emissions from solid fuel and wood burning, including Ready to Burn campaign.
- Trial to allow cycling on the promenade at Felixstowe has been completed and cycling is now allowed permanently. This will help encourage people out of their vehicles and allow associated emission reductions.

- The Port has purchased 24 ECO-Rubber Tyred Gantry cranes (RTGs) to date. 9 more are being delivered in January 2019. 32 blocks on the Port converted to electric April 2018 with 2 more to be converted July 2018. Electric conversion of 20 blocks on Landguard Terminal 2019. 38 RTGs converted to electric (eRTG) with 3 more planned for end 2018. 2 new electric quay cranes installed March 2018. 28 Internal Movement Vehicles (IMVs) replaced 2017 and 24 planned in 2018. 2 new electric staff vehicles and an electric internal tractor being trialled to determine viability. The new and upgraded equipment will reduce emissions of NO_2 and particulates from Port activities.
- The Port has implemented a campaign to reduce vehicle idling within its boundary which will help reduce port-side emissions of NO_2 and particulates.

Waveney District Council

- The Lake Lothing third crossing would reduce traffic congestion within Lowestoft and particularly around the Bascule Bridge and improve air quality at this location. The Public Consultation is complete and a number of positive responses were received. Ground investigations are underway and the submission of the complete application to the Planning Inspectorate will follow later in 2018. It is hoped that construction work will begin in 2020 with a project completion date of 2022.
- The final draft of the Local Plan has been out in the public domain for consultation which finished in May 2018. The influence of the Waveney Cycle Strategy policy document is apparent.
- Works by Network Rail, to reduce the rail crossing barrier down time in Bridge Road, Oulton Broad, are now complete and have improved the situation by relieving congestion in this area. NO_2 concentrations at nearby monitoring locations have reduced by 3 $\mu g/m^3$ in 2017.
- Urban Traffic Management Control (UTMC) system UTMC is now installed and working within Lowestoft. The Bascule Bridge control system has now been suitably modified and the final act, to connect the bridge control system to the traffic signals control system, is due to be completed shortly in Summer 2018. Once this connection is made the signals will respond to the bridge and re-direct traffic accordingly. This should make it possible to set different signal timings to optimise traffic flow, not only at busy times, but to completely change the signal priorities when the Bascule Bridge lifts thereby reducing congestions and associated emissions.
- Highways England has a second phase of proposed improvements for cyclists programmed for 2018 in Lowestoft.

Conclusions and Priorities

Suffolk Coastal District Council

In 2017 NO_2 concentrations within the Woodbridge and Stratford St. Andrew AQMAs were below the objectives, but there was 1 new site in High Road Trimley St Martin with a NO_2 concentration above the annual mean objective. Additional monitoring is being undertaken at this locality and along the Trimleys in order to assess concentrations at key sites. The readings obtained so far in 2018 are much reduced when compared with the same time frame in 2017. We will be monitoring results carefully over the year to see if this reduction continues and confirm whether declaration of an AQMA is required.

NO_2 concentrations within the Woodbridge AQMA continue to be below the AQ objective for the fourth year running. The updated Action Plan for Woodbridge is with Defra for comments and approval, and once received the Action Plan will go out for public consultation. The 1-week traffic trial was undertaken in July 2017 and we await the results from Suffolk County Council in order to make a decision regarding any future trial.

Concentrations in the Stratford St. Andrew AQMA decreased further in 2017 and were all below the annual mean NO_2 objective. The Action Plan is published and the main measure within it to move the speed limit has been undertaken. Continued monitoring in 2018 will enable us to confirm whether this has been successful.

In 2017 concentrations at sites on Main Road in Kesgrave, within Melton, and the majority of sites within Felixstowe have shown an increase in NO_2 concentrations but all sites continue to be within the objective level. The Port of Felixstowe has also noted an increase in concentrations port-side which has led them to start a campaign to reduce vehicle idling on the Port. We will be keeping a close eye on concentrations within Kesgrave, Melton and Felixstowe during 2018.

There are a number of priorities specific to **Suffolk Coastal** for the year ahead;

- Evaluation of NO_2 monitoring survey along High Road in Trimley St. Mary to determine whether detailed modelling and AQMA declaration is required.
- Undertake public consultation on the draft update for the Woodbridge Action Plan once comments are received from Defra and production of a final draft for Defra.
- Receipt and evaluation of Suffolk County Council's comments on the 1 week traffic trial undertaken in Woodbridge in 2017.
- Evaluation of NO_2 monitoring results and traffic speed survey at Stratford St. Andrew to determine effectiveness and whether any other Action Plan measures need to be developed further.

Waveney District Council

In 2017 NO_2 concentrations at all monitoring locations continue to be below the objectives with no AQMAs declared.

There are a number of priorities specific to **Waveney** for the year ahead;

- Review the air quality monitoring locations in the district for 2019.
- As funding has been agreed for a third crossing over the Lake Lothing, there will be a significant amount of work generated to ensure that the new bridge and infrastructure is not detrimental to air quality elsewhere in Lowestoft. It is expected that the impact on air quality will be positive in Central Lowestoft. Our air quality monitoring will continue in this area and we are investigating the need for any additional monitoring sites.
- Assessment of NO_2 concentrations monitored in the vicinity of the Bascule Bridge to determine the impact of the UTMC in Lowestoft town centre and its connection to the bridge controls.
- Investigate the need for any additional monitoring sites associated with the Woods Meadow development in Oulton.
- Continued promotion and encouragement of a cultural shift from the use of motor vehicles to alternative forms of transport. The Economic Development Team at Waveney will continue to seek out grant funding opportunities to finance cycling infrastructure improvements including a crossing over the Lake Lothing.

There are a number of **joint priorities for both Suffolk Coastal and Waveney** going forward:

- Continue monitoring for NO_2 across both districts as this is imperative for informing our air quality work and priorities.
- Continue to provide input for all relevant planning applications, and input into the Local Plan review with regard to air quality.
- Provision of information to the Public and commerce on reducing emissions from solid fuel and wood burning, including Ready to Burn campaign.
- Continue to raise the profile of electric vehicles and aid/promote installation of electric vehicle charge points within the districts.
- Continue to raise the profile of air quality within our organisation, with other organisations, and with the public.
- Production of a single air quality report for the new East Suffolk Council to be formed on 1st April 2019.
- Discuss and evaluate the possibility of producing an Air Quality Strategy for East Suffolk Council.
- Continue to address $PM_{2.5}$ by establishing a partnership and defining roles with the newly appointed Director of Public Health and Public Protection at Suffolk County Council. A co-ordinated and partnership approach to reducing the local $PM_{2.5}$ concentration is likely to be more effective.

Local Engagement and How to get Involved

It is really important that we hear the views and comments of our residents, as your local knowledgeable is invaluable. We undertake Public Consultations on our air quality reports at least once a year which are publicised in the local press and on our website so please keep an eye out and respond – we would love to hear from you. All Town and Parish Councils are consulted on air quality and we are working with a number of them to look at air quality concerns in their areas. We have recently updated the air quality pages on our website and these should now be easier to navigate and include lots of air quality information, both general and more specific to Suffolk Coastal and Waveney.

If you would like to be more directly involved in environmental issues you could look at joining the East Suffolk Greenprint Forum. This group provides an environmental link between public and voluntary organisations and community groups. It is a hub for community groups to share skills and experiences as well as acting to assist local environmental action in communities and organisations. It has successfully operated since 1996 and has over 200 members. The group is facilitated by Suffolk Coastal and Waveney District Councils and is steered by a number of local groups such as Suffolk Coastal and Heaths and the Environment Agency amongst others.

The main source of air pollution in both districts is traffic on our roads. We are working to meet the challenge set by the Government for NO_2, PM_{10} and $PM_{2.5}$ targets but it will also require a concerted public effort with each person doing their bit in order to try and increase active travel and reduce the use of the motor vehicle where possible. As well as reducing emissions, this will also help local residents to increase their fitness and health by choosing to walk or cycle more regularly. Cycling and walking are much cleaner, cheaper and healthier forms of travel, so there are a number of positive benefits. Waveney District has produced a Cycle Strategy and this can be accessed via the East Suffolk Website. There is also a Cycling Strategy for the whole of Suffolk produced by the County Council.

The www.greensuffolk.org/travel website gives advice on all aspects of alternative greener travel options and free support is available to assist with travel plans and personal journey plans. Information is also supplied to aid businesses, developers and schools with constructing Travel Plans to suit their needs and free support and advice is available. Businesses may be eligible for up to 50% match funding towards the cost and installation of initiatives to support healthier and greener travel in the workplace.

You can obtain advice on safe cycling routes and general supportive information from https://www.sustrans.org.uk/ncn/map, which is a charity devoted to promoting cycling as a healthier alternative form of transport.

We are working to improve the electric vehicle charging network within both districts and Suffolk - you could consider making your next car purchase an electric one and not only enjoy cheaper motoring, but also cleaner in respect of emissions to the atmosphere. Details of local electric charging points can be found at www.zap-map.com/live/ and the site also gives general information about owning electric cars.

Even if you are not thinking of going electric, every driver can do their bit to help emission reduction through the practise of Smarter driving. Information is available from the Energy Saving Trust Website via the link http://www.energysavingtrust.org.uk/travel. By driving '*smarter*' you can both save money and reduce harmful emissions to the atmosphere.

If you would like any further information on national air quality, including the latest news, air pollution forecasts, the latest measured levels and a summary, interactive monitoring, and general information about air pollution, consult the Defra website http://www.ukair.defra.gov.uk

Table of Contents

Executive Summary: Air Quality in Our Area ..... **i**

Air Quality in Suffolk Coastal and Waveney District Councils i

Actions to Improve Air Quality iii

Conclusions and Priorities v

Local Engagement and How to get Involved vii

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 Suffolk Coastal and Waveney District Councils 5

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations 27

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance **31**

3.1 Summary of Monitoring Undertaken 31

3.1.1 Automatic Monitoring Sites 31

3.1.2 Non-Automatic Monitoring Sites 31

3.2 Individual Pollutants 34

3.2.1 Nitrogen Dioxide (NO_2) 34

Appendix A: Monitoring Results **38**

Appendix B: Full Monthly Diffusion Tube Results for 2017 ..... **59**

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC **67**

Appendix D: Map(s) of Monitoring Locations and AQMAs **77**

Appendix E: Summary of Air Quality Objectives in England **106**

Appendix F: Archive of Completed Measures to Improve Air Quality **107**

Glossary of Terms **118**

References **120**

List of Tables

Table 2.1 – Declared Air Quality Management Areas 4

Table 2.2 – Progress on Measures to Improve Air Quality 11

1 Local Air Quality Management

This report provides an overview of air quality in both Suffolk Coastal and Waveney District Councils during 2017/18. 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.

In May 2018 an Order was made by Parliament to create the new East Suffolk Council which will encompass both Suffolk Coastal and Waveney District Councils and will come into existence on 1 April 2019. At this time both Suffolk Coastal District Council and Waveney District Council will be abolished. We have chosen to write the 2018 ASR as a joint report for both authorities but keep the data separated within the report. The 2019 ASR will be one report for East Suffolk Council.

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 Suffolk Coastal and Waveney District Councils 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.

Suffolk Coastal District Council

A summary of AQMAs declared by Suffolk Coastal 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=265. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Woodbridge AQMA

The current Action Plan (published in 2011) includes 20 measures to reduce NO_2 concentrations from both queueing and moving traffic at this junction. Studies show that the layout of the junction and local weather conditions are acting to 'funnel' emissions from the junction along Melton Hill away from the junction, and disperse them very slowly within the AQMA due to low wind speeds and canyon-like effect of the buildings.

NO_2 concentrations within the AQMA have reduced in the last 4 years (2014-2017) below the annual mean Air Quality Objective, and are currently holding at 37µg/m^3. There have been no corresponding alterations in traffic flows or make-up and no additional schemes undertaken to explain this reduction. At the end of 2016 Suffolk Coastal District Council moved offices from a site next to the AQMA, to a new site in Melton (1-2 miles from the AQMA). This will have effected a reduction in traffic passing through the AQMA. The old Council Offices site is yet to be redeveloped and is currently standing empty. There will be additional traffic associated with the redevelopment once it is in place. Air quality assessments provided by the applicants conclude that the predicted traffic flows from the redevelopment are lower than those experienced from the Council Offices.

In light of these findings, many of the options in the Action Plan are unlikely to have any significant impact on NO_2 levels. The Action Plan is therefore being updated by the Steering Group and a first draft has now been finalised and sent to Defra for comments. Once comments are received the document will undergo Public Consultation.

In the interim work has progressed on one of the main measures in the draft updated Action Plan – a trial to hold back the traffic from the current traffic light stop lines and out of the AQMA. This measure was a recommendation from the additional meteorological studies undertaken at the junction and could potentially have the desired impact of NO_2 emission, and therefore concentration reductions within the AQMA. The trial would need to be in

place for a minimum of 3 months to assess any air quality impacts. A 1-week trial was undertaken in Woodbridge (July 2017), to hold traffic back from the traffic lights and out of the AQMA, in order to allow Suffolk County Council to determine whether it was feasible to run for a 3-month period. We are awaiting results and feedback from Suffolk County Council for discussion by the Steering Group.

Stratford St Andrew AQMA

The final Action Plan received Defra approval in March 2018 and has now been published and can be viewed on the Council's website at; http://www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/air-quality-reports/. The Action Plan consists of 2 short term, priority action measures and 6 longer term aspirational measures.

The main priority measure, for Suffolk County Council to move the 30/50mph change of speed limit sign further south out of the village of Stratford St. Andrew, was completed in December 2017. This measure is estimated to reduce NO_2 concentrations by up to 2 µg/m^3 within the AQMA. In 2017 the highest recorded NO_2 concentration within the AQMA was within the objective for the first time at 39µg/m^3. In 2018, if the predictions associated with movement of the speed limit are realised, concentrations within the AQMA should continue to be within the Air Quality Objective. Monitoring is being undertaken to determine average vehicle speeds and NO_2 concentrations with the change in place. Results will be available and reported in the 2019 ASR.

Waveney District Council

Waveney District Council does not have any AQMAs. For reference, maps of Waveney District Council's monitoring locations are available in Appendix D.

Table 2.1 – Declared Air Quality Management Areas within Suffolk Coastal District Council

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
The Suffolk Coastal District Council Air Quality Management Area Order No. 1, 2006	03.04.06	NO2 Annual Mean	Woodbridge	An area encompassing a number of properties near the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge	NO	48	µg/m3	37	µg/m3	Air Quality Action Plan for the Woodbridge Junction	2011	http://www.eastsuffolk.gov.uk/assets/Environment/Environmental-Protection/Air-Quality/FinalAirQualityActionPlanWoodbridgeFeb2011.pdf
The Suffolk Coastal District Council Air Quality Management Area Order No. 3, 2014	18.06.14	NO2 Annual Mean	Stratford St. Andrew	The four properties situated within 1-5 Long Row, main Road (A12), in Stratford St. Andrew	NO	42	µg/m3	39	µg/m3	Air Quality Action Plan for Stratford St Andrew - Final	March 2018	http://www.eastsuffolk.gov.uk/assets/Environment/Environmental-Protection/Air-Quality/AQAP-Stratford-St.-Andrew-Final-November.pdf

☒ **Suffolk Coastal District Council confirms the information on UK-Air regarding their AQMA(s) is up to date.**

2.2 Progress and Impact of Measures to address Air Quality in Suffolk Coastal and Waveney District Councils

Suffolk Coastal District Council

Defra's appraisal of last year's ASR concluded:

The report is well structured, very detailed and comprehensive, and provides the information specified in the Guidance. The report outlines changes and improvements made by the Council to this year's ASR based upon recommendations made in the 2016 Review and Assessment cycle. These have all been implemented effectively.

1. A number of the diffusion tube sites are described as "roadside" in Table A.2 despite being some distance from the kerb of the nearest road (>15m). The Council is encouraged to review these in line with the site type classifications set out in Table 7.7 of TG16.
This has been undertaken and a number of site descriptions altered in line with Defra guidance.

2. On pages 34 and 35 of the report, the Council identify new diffusion tube monitoring sites that were set up in the past year in line with planning applications that may impact on local traffic levels and hence air quality. This is welcomed, and the Council is encouraged to continue this approach in future, whilst considering any other potential hotspots for poor air quality that may be impacted e.g. through cumulative development impacts.
Noted - this will continue.

3. The Council describe their plans and priorities for the year ahead, which includes finalising AQAPs for both the Stratford St. Andrew and Woodbridge AQMAs. The progress made, and information provided in the ASR is welcomed, and the Council is encouraged to consider the following elements within its action plans.
   a. Can appropriate quantitative indicators be identified and tracked through the implementation of measures that can inform, and add to the local air quality monitoring e.g. traffic reduction and vehicle speed monitoring?
   These comments have been taken on board and a number of quantitative indicators added in the final Action Plan for Stratford St Andrew. Quantitative indicators have also been investigated for the draft Action Plan for Woodbridge which is currently with Defra awaiting first comments.
   b. Is the current monitoring programme (number and location of monitors) adequate to ensure that the impact of planned action plan measures is realised? For example, in the measure for Woodbridge AQMA (holding back traffic before the AQMA), would additional / relocated air quality monitoring be of benefit throughout the proposed trial(s)?
   If it is determined that the longer trial will go ahead, we will be locating additional monitoring in order to determine air quality impacts in the area as suggested above.

c. Can the Council provide an overall assessment of how their planned measures will help meet the air quality objective for annual mean NO_2 on a regular basis within its existing AQMAs?
This has been discussed for Stratford St. Andrew earlier in this report. Once the Woodbridge updated Action Plan is finalised this will be reported on in the following ASR. It should be noted that NO_2 concentrations in the Woodbridge AQMA have been below the 40µg/m^3 objective level for the last 4 years and concentrations in Stratford St. Andrew were also within the objective for the first time in 2017. This is also discussed earlier in the relevant section of this report.

Suffolk Coastal District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2a. Measure numbering has been retained from the 2017 ASR. Measures have been rearranged in order of predicted effectiveness - so that the most effective is at the top of the list. Historic completed measures are archived in Appendix F.

More detail on measures related to the declared AQMAs at Woodbridge and Stratford St Andrew can be found in the respective Action Plans. Both Action Plans can be viewed on the Council's website at; http://www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/air-quality-reports/

Key completed measures are:

- STA 1 – (Measure 12 in the 2017 ASR) - Movement of 30/50mph change of speed limit signs at Stratford St Andrew. This should stop vehicles accelerating within the AQMA and therefore reduce NO_2 emissions.
- Measure 19 – Energy Management System in place at the Port of Felixstowe. The Plan enables the Port to reduce their energy usage and associated emissions.
- Measure 33 – Re-design and update the air quality pages on the East Suffolk website. The website is now more accessible with new information on biomass and wood burning. Increased public awareness and knowledge surrounding air quality and ideas for all on personal emission reduction.
- Measure 36 – Trial to allow cycling on the promenade at Felixstowe was completed and cycling is now allowed permanently. This will help encourage people out of their vehicles and allow associated emission reductions.

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

- Measure 16 - Electric vehicle trials at the Port of Felixstowe. Trialling 2 electric pool cars and an internal tractor unit to determine whether these can be used in the Port environment. If trial is successful and the Port begin to purchase electric vehicles there will be associated emission reductions
- Measure 31 – Suffolk Travel Plan guidance – expected to be finalised once the new NPPF guidance is published. Will encourage greater level of Travel Plan consistency across Suffolk to try and encourage reduction in vehicle journeys.
- Measure 38 - Campaign to reduce vehicle idling on Port of Felixstowe – emission reductions predicted (NO2, PM_{10} and $PM_{2.5}$) due to less idling from all Port users.

- Measure 40 - Installation of 11 Rapid Electric Vehicle Charging Units for Public use in Suffolk, Norfolk and Essex with a planned site in Felixstowe. Additional electric vehicle charge points on the main road network in Suffolk, Norfolk and Essex will help promote the use and purchase of electric vehicles for the future. The associated emission reductions with electric vehicle use will be small at first but in the longer term, as these types of vehicles become more mainstream, will be much greater.

Suffolk Coastal District Council's priorities for the coming year are;

- Continue monitoring for NO_2 across the district as this is imperative for informing our air quality work and priorities.
- Public Consultation on the Updated Action Plan for Woodbridge (once Defra comments are received) and production of a final draft for Defra.
- Receipt and evaluation of Suffolk County Council's comments on the 1 week traffic trial undertaken in Woodbridge in 2017.
- Evaluation of NO_2 monitoring results and traffic speed survey at Stratford St. Andrew to determine effectiveness and whether any other Action Plan measures need to be developed further.
- Evaluation of NO_2 monitoring survey along High Road in Trimley St. Mary to determine whether detailed modelling and AQMA declaration is required.
- Production of a single air quality report for the new East Suffolk Council to be formed on 1st April 2019.
- Discuss and evaluate the possibility of producing an Air Quality Strategy for East Suffolk Council.
- Continue to provide input for all relevant planning applications, and input into the Local Plan review with regard to air quality. This is essential in order to ensure future emission reductions within the district, and to reduce the likelihood of additional AQMAs being declared.
- Promotion of information for the Public and commerce on reducing emissions from solid fuel and wood burning, including Ready to Burn campaign (Measure 39)
- Continue to address $PM_{2.5}$ by establishing a partnership and defining /defining roles with the newly appointed Director of Public Health and Public Protection at Suffolk County Council. A co-ordinated and partnership approach to reducing the local $PM_{2.5}$ concentration is likely to be more effective.

The principal challenges and barriers to implementation that Suffolk Coastal District Council anticipates facing are;

- Suffolk County Council competing priorities have often made it difficult in the past to obtain movement forward with some measures, our AQMAs and associated Action Plans. This is a continuing area of challenge.
- Raising awareness of air quality is bringing with it increasing demands on resources at the District Council in order to be able to answer enquiries and provide representation in the different arenas.
- Sign up for bus retro-fitting opportunities with local bus companies – we continue to try and liaise with the largest providers in Woodbridge but interest is low. Barriers include the need to ensure each bus is operated in an AQMA for a set number of

years after the retro-fit, funding that the bus company needs to find, together with the manpower and knowledge needed in order to make a bid for funding and then take the project forward if successful.
- Improvement of cycling and walking within the district – due to the rural nature of most of the district this is a difficult task in many areas.

Progress on the following measures has been slower than expected due to:

- Production and consultation on the updated Action Plan for Woodbridge – a draft plan is currently with Defra for comments. There have been some differences of opinion regarding the wording of the Planning measure and this delayed production of the final draft for Defra.
- Difficulty in obtaining final signatures from Suffolk County Council on the draft Updated Action Plan for Woodbridge. Sign off has been given verbally and by email but the final e-signatures have proven difficult to obtain. The plan has eventually been sent to Defra without them.
- Measure 37 – 20mph zone implementation in Woodbridge. The 20mph zone must be self-enforcing and an initial study is required to outline the physical measures needed for this to happen before costings can be drawn up for the scheme. Funding for the initial study has proven difficult to obtain.
- Measure 31 – Suffolk Travel Plan guidance – the draft Travel Plan guidance is awaiting NPPF changes before it can be finalised. It is hoped that this will be during 2018 but this cannot be confirmed at this time.

Suffolk Coastal District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in both the Woodbridge and Stratford St. Andrew AQMAs.

Waveney District Council

Defra's appraisal of last year's ASR concluded:

The report is well structured, detailed, and provides the information specified in the Guidance. The comments below are designed to assist in the development of future reports.

1. The report is generally very good, addressing all of the requirements set out in the guidance.
2. It is clear and positive to see that all of the feedback given for 2016 ASR has been taken on board fully.
3. The Council may wish to consider reviewing their current monitoring strategy. The local authority should discuss whether their monitoring sites remain appropriate as all sites report concentrations far below objective levels, or whether there are any new sites to consider.
   This is noted. A number of sites at Pier Terrace and one at Belvedere Road have been removed from the 2017 monitoring. A review of all current diffusion tube locations was undertaken in May 2018 - a number of sites measuring low NO_2 concentrations have been removed and several new sites put in place as of June 2018. Sites will be

reviewed again in November 2018 to determine any additional changes required for 2019. All changes will be reported in the 2019 ASR. Attention will be given to the plans for the Lake Lothing Third Crossing to determine whether any additional monitoring sites are needed to enable us to monitor the air quality impacts.

An air quality monitoring programme has been retained, although Waveney District Council has not declared any Air Quality Management Areas and monitoring has consistently indicated that there are no areas which are exceeding national air quality objectives.

Waveney District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2b. Measure numbering has been retained from the 2017 ASR. Measures have been rearranged in order of predicted effectiveness - so that the most effective is at the top of the list. Historic completed measures are archived in Appendix F.

Key completed measures are:

- Measure 4 – Improvement works at Oulton Broad Station North. This will reduce congestion in the local area and therefore vehicular emissions – local NO_2 concentrations have shown a 3 $\mu g/m^3$ reduction in 2017 when compared with 2016.
- Measure 9 – Re-design and update the air quality pages on the East Suffolk website. The website is now more accessible with new information on biomass and wood burning. Increased public awareness and knowledge surrounding air quality and ideas for all on personal emission reduction.

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

- Measure 3 – The Waveney District Local Plan – Public consultation has been undertaken on the final draft and it should be completed and published during 2018. Incorporates air quality and includes policies to promote alternative forms of travel.
- Measure 6 - The Waveney District Council Cycling Strategy was published and agreed in Cabinet in 2016. This document identifies areas where the cycle network can be improved and will further promote cycling as a healthy and green mode of transport. The final draft of this will be placed in the public domain in 2018.
- Measure 8 – Suffolk Travel Plan guidance – expected to be finalised once the new NPPF guidance is published. Will encourage greater level of Travel Plan consistency across Suffolk to try and encourage reduction in vehicle journeys.
- Measure 17 – Improvements to the cycling infrastructure in Lowestoft – Works to Gunton Avenue and Sussex Road. Increase in cycling will displace vehicles from the roads.
- Measure 19 – Connection of the Bascule Bridge control system to the newly installed Urban Traffic Management Control System within Lowestoft. Once this connection is made the traffic signals will respond to the bridge and re-direct traffic accordingly. This will reduce congestion and therefore vehicular emissions within the Bascule Bridge area.

Waveney District Council's priorities for the coming year are;

- Continue monitoring for NO_2 across the district as this is imperative for informing our air quality work and priorities.
- Review the air quality monitoring locations in the district for 2019. Attention will be given to the plans for the Lake Lothing Third Crossing to determine whether any additional monitoring sites are needed to monitor the air quality impacts.
- Investigate the need for any additional monitoring sites associated with the Woods Meadow development in Oulton. This is a mixed use development with outline planning consent for approximately 800 houses, neighbourhood shopping centre, community hall, primary school, play areas and a country park. Phase I was given consent in 2014 for 246 houses and the primary school which is built and will open in September 2018. The development includes a new spine road to allow access. Traffic from this site could add to congestion in and around the bridge crossing in Oulton (Bridge Road / Saltwater Way) but there does not seem to be any evidence that it has to date.
- Assess significant new development planning applications for air quality impacts (Measure 20). This is essential in order to ensure future emission reductions within the district, and to reduce the likelihood of AQMAs being declared.
- Production of a single air quality report for the new East Suffolk Council to be formed on 1st April 2019.
- Discuss and evaluate the possibility of producing an Air Quality Strategy for East Suffolk Council.
- Promotion of information for the Public and commerce on reducing emissions from solid fuel and wood burning, including Ready to Burn campaign (Measure 21)
- Continue to address $PM_{2.5}$ by establishing a partnership and defining /defining roles with the newly appointed Director of Public Health and Public Protection at Suffolk County Council. A co-ordinated and partnership approach to reducing the local $PM_{2.5}$ concentration is likely to be more effective.

The principal challenges and barriers to implementation that Waveney District Council anticipates facing are that of funding. The cycling infrastructure needs improvement in Lowestoft, including connectivity across Lake Lothing, and this is a key factor to reduce traffic congestion by reducing the reliance on cars - but funding is problematic. Raising awareness of air quality is also bringing with it increasing demands on resources in order to be able to answer enquiries and provide representation in the different arenas.

Progress on the following measures has been slower than expected due to:

- Measure 2 – separate cycle and pedestrian crossing of Lake Lothing. Funding sources are problematic.
- Measure 8 – Suffolk Travel Plan guidance – the draft Travel Plan guidance is awaiting NPPF changes before it can be finalised. It is hoped that this will be during 2018 but this cannot be confirmed.

Table 2.2a – Progress on Measures to Improve Air Quality in Suffolk Coastal District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Woodbridge Action Plan -Measures to be taken forward in Updated Plan											
WBG 3	Extension of restrictions to Thoroughfare (8am-6pm)	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Suffolk County Council, Woodbridge Town Council. Funding unknown possible bid for Community Infrastructure Levy (CIL) money in future	2013 - 2014	2014 - 2015 originally, now unknown but possibly 2018 for Town Council to enforce Thoroughfare restrictions	Reduction in peak queue lengths on Melton Hill	Recent air quality modelling shows max reduction of 0.1µg/m3 in AQMA.	Feasibility study undertaken. Negligible impact on AQMA NO2 conc. so no further work will be undertaken by SCDC on this measure. Woodbridge Town Council wish to change the Traffic Regulation Order (TRO) for the Thoroughfare with stricter enforcement. 3 options currently being consulted on, one of which includes extension of restrictions. Measure to remain in updated Action Plan as 'aspirational' for Woodbridge Town Council but re-word.	Originally 2014 - 2015 Now possibly 2019 for Town Council to enforce restrictions	Town Council wish to alter and enforce the TRO but unable to do so until decriminalisation act in force in 2019. See Measure 4 below for further detail. Police provided ticket enforcement for 1 day and number of restricted vehicles entering from 10am-4pm reduced from 160 to 110.
WBG 17	Integration with Planning System	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SCDC Environmental Health and Planning Local Authority Funded	2010/2011	2011	Produce Supplementary Planning Document for Suffolk and consult. SPD produced and Consulted on.	1%	Supplementary Planning Document produced. Superseded by EPUK & IAQM guidance on Planning & Development Control. Woodbridge Steering Group joined by members of Planning. Environmental Health and Development Control are working together to ensure Air Quality is considered during both the planning application process, and during policy development. Updated Action Plan will retain a measure for assessment of planning applications	2012/2013 Completed SPD	Ensure air quality reports are produced for planning applications when they require one. Unsure how we can measure emission reductions due to this unless application is closely associated with AQMA. Assess as and when relevant application(s) received. Air quality is on the Community Infrastructure Levy (CIL) "shopping list" for any relevant projects to be bid for.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
WBG 15c	Travel Plan for the District Council Offices	Promoting Travel Alternatives	Workplace Travel Planning	Lead and funded SCDC Environmental Health	n/a	2009	Travel Plan adopted. Key actions completed.	2% for 15a, b & c combined	2016 new Travel Plan adopted for new Council Offices in Melton. Offices moved Nov 2016. Original site to be used for housing. Traffic survey of Council Offices undertaken to determine impact on AQMA. Travel survey indicates that fewer staff now driving through AQMA - only 15 staff who responded said they travel through the AQMA.	Completed. Reporting on success of Travel Plan will be taken into new Updated Action Plan.	Need to determine impacts from the new use of the original Council Offices site.
WBG 2	Install right hand turning lane at lights on Thoroughfare / Melton Hill arm of junction	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Suffolk County Council. Funding not secured but likely LTP.	2011-2012	Unknown	Reduction in peak queue lengths	0.05	Preliminary design prepared - will move carriageway closer to Suffolk Place residential home - may increase emissions here therefore has not been progressed to date. Measure to be retained in updated Action Plan as 'aspirational'	Not progressed to date	This measure was investigated and there appeared not to be enough room at the junction. SCC has advised that this should be left in the Action Plan as it could be looked at again in more detail if there are no other alternatives.
WBG 16	Promotion of cycling and walking in Woodbridge	Promoting Travel Alternatives	Promotion of cycling	Suffolk County Council - funding unknown	2010	On-going	None currently	0.01	Cycling and walking reviewed by County Council. New footpath on Pytches Road and 30mph lit sign to calm traffic and aid walking to school. 5 new cycle racks behind Café Nero and 3 on Market Hill. Sandy Lane cycle scheme implemented. SCC to investigate drawing up a list of possible schemes - no further progress. Funding could be sought from CIL. SCC have produced a new Cycle Map for Woodbridge. Measure will be kept in updated Action Plan as 'aspirational'	On-going	Cycle racks and Sandy Lane cycle scheme can only have a positive impact to increase the number of people cycling and reduce the number of vehicles on the road. If we have a list of potential schemes any funding which can be accessed (via Planning system or other) can then be used.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
WBG 15b	School Travel Plans	Promoting Travel Alternatives	School Travel Plans	Suffolk County Council originally. Now lead and funded SCDC Environmental Health	n/a	2010	Contact schools to remind them about Travel Plan. Contact Woodbridge School re adopting a Travel Plan. Woodbridge School contacted and discussions held.	2% for 15a, b & c combined	All schools in Woodbridge historically adopted a Travel Plan. Exception is Woodbridge School who have been encouraged to produce one in future – they do provide significant information about sustainable travel to the school for all pupils. New footpath on Pytches Road and 30mph 'reduce your speed sign' for Woodbridge CPS users. School Travel Plans may no longer be in use at some of the schools so SCC advised postcode plots of students could be undertaken to identify any schools which may put significant traffic through AQMA. These can then be targeted. Postcode plots have not been possible to obtain from SCC to date so will need to re-assess a way forward.	Re-word measure in updated Action Plan. Investigate whether any schools have a significant impact on the AQMA junction and work with those to look at reducing car usage.	Will have a positive effect to reduce cars using junction, but no real way to measure whether emission reduction target will be reached. Look to target specific schools who potentially have significant pupil vehicular traffic through the AQMA for further work. This is proving difficult to determine for Data Protection reasons.
WBG 8	Bus operators to use cleanest fleet in Woodbridge – contact them to request.	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	SCDC	2010	2010	Number of Euro IV buses operating in Woodbridge.	2%	List of bus operators compiled. 3 largest providers contacted. All buses maintained regularly. Cleanest fleet are used in main towns of Ipswich and Norwich. None willing to alter fleet as only very small service operating in Woodbridge. Measure to be removed from updated Action Plan and replace with investigating Clean Bus Technology Grant bid.	Re-word measure in updated Action Plan.	Investigating a Clean Bus Technology Grant bid - whether larger providers would be interested in being part of a bid.
WBG 18	Raise air quality awareness	Public Information	Via the Internet	SCDC Environmental Health Local Authority Funded	n/a	on-going	Website promotion of air quality and reports. Web pages updated and promoted 2018.	n/a	Articles published in local magazines and papers. SCDC website air quality pages redesigned and updated in 2017 (Measure 33). Updated Action Plan to retain this measure.	On-going	No emission reduction targets possible for this measure although it can only have a positive effect.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Stratford St Andrew Action Plan Measures											
STA 1 (was measure 12 in ASR 2017)	Move the location of the southern 30mph speed limit sign southwards	Traffic Management	Reduction of speed limits	Suffolk County Council (SCC) lead and funded	2016	2017	Reduction in NO2 concentrations in AQMA. Reduction in vehicle speed within AQMA.	Reduction in concentration by up to 2 µg/m3	Speed limit panel agreed experimental TRO to move sign for up to 18 months. Speed limit moved. Traffic speed survey commissioned at same locations pre move.	Completed December 2017	Air quality monitoring will now determine the effectiveness of this measure to reduce NO2 concentrations
STA 2	Assessment of planning applications for impact on air quality	Policy Guidance and Development Control	Air Quality Planning	Suffolk Coastal District Council (SCDC) Environmental Health. Local authority funded	Ongoing	Ongoing	No new housing introduced into area of exceedence (AQMA) unless mitigation measures are in place to offset impacts.	No significant increases in concentrations due to new developments	Officers in Environmental Protection work with Planning to ensure that each application is appropriately assessed for air quality.	On-going. 2021 review of Action Plan.	The assessment process takes account of national guidance (including EPUK) and local procedures
STA 3	Measure 1 together with a southbound permanent vehicle activated sign	Traffic Management	Reduction of speed limits	SCC lead and funded. Source funding not currently identified	2018	unknown	Reduction in NO2 concentrations in AQMA. Reduction in vehicle speed within AQMA.	Reduction in concentration to below the objective	Follow on from measure 1 if it was not successful. Discussions between SCDC and SCC.	unknown	Would need a site assessment. Would require capital funding (min £8,000) and revenue funding. Not yet approved.
STA 4	Measure 1 together with a northbound permanent vehicle activated sign	Traffic Management	Reduction of speed limits	SCC lead and funded. Source funding not currently identified	2018	unknown	Reduction in NO2 concentrations in AQMA. Reduction in vehicle speed within AQMA	Reduction in concentration to below the objective	Ideally this camera would be installed alongside measure 3 to smooth all traffic flow close to the AQMA. Discussions between SCDC and SCC.	unknown	Would need a site assessment. Would require capital funding (min £8,000) and revenue funding. Not yet approved.
STA 5	Southbound speed camera just prior to cottages	Traffic Management	Reduction of speed limits	SCC lead and funded. Source funding not currently identified	Dependent on measure 1, 3 and 4	12 months from agreeing scheme	Reduction in NO2 concentrations in AQMA. Reduction in vehicle speed within AQMA.	Reduction in concentration to below the objective	Follow on from measure 1 if it was not successful and measures 3 and/or 4 were not undertaken. Some discussions between SCDC and SCC	unknown	Would need a site assessment to confirm adequate location and radar sightline. Need support from Suffolk Roadsafe Board and police. Would require capital funding of £40,000

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											and ongoing revenue funding. Not yet approved.
STA 6	Average speed camera system throughout Stratford St Andrew and Farnham	Traffic Management	Reduction of speed limits	SCC lead and funded. Source funding not currently identified - funding unlikely to be affordable	Dependent on measure 1, 3, 4 and 5	18 months from agreeing scheme	Reduction in NO2 concentrations in AQMA	Reduction in concentration to below the objective	Consideration of option only. Aspirational measure due to high costs.	unknown	Would need a site assessment to confirm adequate location and radar sightline. Need support from Suffolk Roadsafe Board and police.Would require high capital funding of £250,000 and high revenue. Not yet approved.
STA 7	Possible A12 Stratford St Andrew bypass	Traffic Management	Strategic highway improvements	SCC lead with collaboration from SCDC. £1 million funding from Central Government to develop full business case. Department for Transport Funding sought for majority of project. Developer funding hoped for from EDF Energy (Sizewell C), some funding from SCC and SCDC in form of CIL	unknown	unknown	Reduction in NO2 concentrations in AQMA. Reduction in traffic flows within AQMA	Reduction in concentration to below the objective	The Council is promoting a 4 village bypass (Farnham, Stratford St. Andrew, Little Glemham and Marlesfod) as part of the Suffolk Energy Gateway (SEGway). Strategic Outline Business Case submitted to Department for Transport in December 2017 to try and secure Government funding. Likely to hear from DfT in Autumn 2018.	unknown	DfT funding, in addition to funding from EDF Energy in lieu of mitigation for Sizewell C, is essential for this to happen. Sizewell C Stage 2 Consultation proposals include the option of a 2 village bypass for Farnham and Stratford St Andrew.
STA 8	Mitigation of emissions from Sizewell construction traffic	Policy Guidance and Development Control	Low Emissions Strategy/Other Policy	SCDC Planning and Environmental Health	2020	Beyond 2020	Number of low emission vehicles in fleet. Reduction in traffic flows	No significant increase of concentrations	Preliminary discussions on likely impacts with EDF Energy at pre-application stage. EDF Energy are currently working on proposals for a Stage 3	Long term (post 2025)	Initial modelling predicts increases in vehicles (particularly HGVs) associated with construction traffic along

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	through planning process						within AQMA		Consultation but no dates have been confirmed.		A12 accessing Sizewell. Peak construction year of 2024 could have increases 375 HGVs and >1000 total vehicle movements per day. Modelling of the potential impact on AQMA has been conducted. Sizewell C Stage 2 Consultation proposals include the option of a 2 village bypass for Farnham and Stratford St Andrew.
General measures within the District											
9	Evaluate and implement efficient power technologies (e.g. hybrid-electric) for cargo handling equipment (rubber tyre gantry (RTG) cranes) in the Port of Felixstowe.	Promoting low emission plant	Other measure for low emissions fuels for stationary and mobile sources	Lead and funded Port of Felixstowe	On-going	On-going	Number of RTG Cranes using improved efficiency power source. 24 ECO-RTGs in place, 38 electric RTGs in place.	n/a	The Port has purchased 24 ECO-RTGs to date. 9 more are being delivered in January 2019. 32 blocks on the Port converted to electric in April 2018 with 2 more to be converted July 2018. Electric conversion of 20 blocks on Landguard Terminal 2019. In 2014 first 4 diesel/electric RTGs were converted to electric (eRTG). Infrastructure now in place for additional eRTGs. Total of 38 eRTGs in place at April 2018 with a total of 41 planned for end 2018. Plan to increase to 54 eRTGs (out of a total of 85) by 2020. In March 2018 installed 2 new electric quay cranes.	On-going. Plan to convert 54 RTGs over the coming years up to 2020	To mitigate the increase in electricity demand the Port has been progressing energy efficiency projects and renewable energy generation (Solar PV) and are now able to generate 0.5MW of energy from solar power. Quay crane lighting upgrade project underway to fit LED, 5 cranes fitted and 7 more to be completed - will reduce energy usage of Port. Once all 54 RTGs are switched over from diesel to electric a 30% reduction in diesel use at the Port is targeted.
10	Adopt NOX abatement technologies on Internal Movement Vehicales	Promoting Low Emission Transport	Company Vehicle Procurement – Prioritising uptake of low emission	Lead and funded Port of Felixstowe	2010	On-going replacement plan	Emissions monitoring of NO2 and SO2 at the Port. Number of IMVs replaced.	n/a	83 IMVs replaced between 2011 and end of 2016. Further 28 replaced in 2017. 24 due for replacement 2018. Totalling 135 of the 260 units in use on the Port. 2 x new internal tractors	On-going	Replacement IMVs comply with Euro IIIa emission standards instead of Euro I. The recently purchased 27 IMVs are fitted with start/stop engine

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	(IMVs) in the Port.		vehicles				Emissions monitoring continues to be undertaken - reduction in NO2 and SO2 over time with slight increase in 2017. 135 IMVs replaced.		for roll-on roll-off operations coming in 2018. All new IMVs utilise Adblue as part of exhaust gas recirculation technology and currently comply to Euro IIIa emissions standards. The most recent IMVs purchased (2016-2018) are fitted with start/stop technology. IMVs are replaced on a 15 year cycle.		technology and the latest emission compliant Volvo engines. Expected to deliver a 10% reduction in emissions compared with a conventional tractor unit
11	Increased use of rail transport for movement of goods at the Port of Felxlistowe	Freight and Delivery Management	Other	Lead and funded Port of Felixstowe	2017	2019	Number of daily freight services. Percentage rail modal share. 33 daily freight services and 28% rail modal share in 2017.	unknown	There are currently 33 daily freight services from the Port - the maximum that the network can handle. Port continues to maximise length of each rail service.	2019/2020	No further increase in number of services anticipated until Branch Line capacity works are undertaken in 2019.
38	Campaign to reduce vehicle Idling on Port of Felixstowe	Other	Other	Port of Felixstowe lead and funded	2017	2017	Reduction in NO2 and SO2 levels port side.	Unknown	Campaign started end of 2017 port wide and also to third party site users, contractors and tenants. Measure in response to slight increase in NO2 and SO2 concentrations recorded in 2017 port-side.	2018	NO2 and SO2 concentrations port side increased slightly in 2017 which is against the general trend of reductions over time. Idling campaign put in place to further reduce port side emissions.
16	Electric vehicle trials at the Port of Felixstowe	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Lead and funded Port of Felixstowe	2017	2018	Number of miles undertaken by electric vehicles	n/a	2 new Nissan Leaf electric vehicles on Port in May 2018 and a trialling a Terberg all-electric Internal Tractor in June 2018 as part of feasibility study for suitability of EV in Port environment.	2018/19	The trial will inform the Port whether electric vehicle use is a way forward for them.
19	Energy Management System (EnMS) in place at The Port of Felixstowe.	Policy Guidance and Development Control	Other policy	Lead and funded Port of Felixstowe	On-going	On-going	No direct indicator. Continued certification to ISO 5001	n/a	Energy Management system implemented (EnMS) successfully in 2013 certified to ISO 5001. The EnMS is regularly reviewed and forms the backbone of the Environmental Management System. In 2017, the port's 5 year	Completed	Port's five year carbon reduction plan is an annual reduction of approximately 4000 tonnes CO2. Plan reviewed annually and now part of EnMS. Plan will be

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	Certified to ISO 50001								energy plan will be reviewed for the next 5 year period. The port passed its last 3 year energy accreditation period in September 2016. 8 Solar PV panel installations on roof surfaces at the Port help to mitigate additional energy needs from electrified RTGs. 473,581 kWh generated 2016.		evaluated and re-drawn for a further 5 year period in 2019.
27	Assessment of planning applications for impact on air quality	Policy Guidance and Development Control	Air Quality Planning	SCDC Environmental Health and Planning Local Authority Funded	Ongoing	Ongoing	Number of Planning applications considered. In 2017 - 846 Planning applications processed by Environmental Protection team, assessed for air quality impacts and responses sent to Planning where relevant.	Unknown	Officers in Environmental Protection work with Planning to ensure that each relevant application is appropriately assessed for air quality.	On-going	The assessment process takes account of national guidance (including EPUK) and local procedures
29	Air quality included in the SCDC Local Plan - Site Specific Allocations and Felixstowe Area Action Plan	Policy Guidance and Development	Air Quality Planning and Policy Guidance	SCDC Environmental Health and Planning Local Authority Funded	2016	2017	Air quality considered in relevant planning applications. In 2017 - 846 Planning applications processed by Environmental Protection team, assessed for air quality impacts and responses sent	Unknown	Previous Site Specific Allocation document completed with air quality recommendations included. Local Plan Review now started, Local plan policies have been drafted, Parish Councils have been consulted on first draft and they are looking at all sites put forward for development. Air quality is a key objective within the Sustainability appraisal framework against which all policies and site allocations will be assessed.	Completed Local Plan Review started. First draft due 2018 to be adopted 2019	To ensure that developments are appropriate and the air quality impacts are adequately assessed.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
							to Planning where relevant.				
30	Promotion of travel alternatives in the Local Plan	Promoting Travel alternatives	Promotion of walking and cycling	SCDC Environmental Health and Planning Local Authority Funded	n/a	n/a	Inclusion in the Local Plan	Unknown	Local Plan adopted in 2013. Local Plan review has begun with first draft due 2018 to be adopted 2019. Policies promoting sustainable transport initiatives will be included.	Completed. Local Plan Review started first draft due 2018 to be adopted 2019	
31	Suffolk Travel Plan Guidance	Policy Guidance and Development Control	Other policy	SCC lead and funded. Input from Suffolk authorities	2017	2018	Travel Plan guidance produced for Suffolk	Unknown	Draft Travel Plan awaiting NPPF changes before finalising for consultation. Guidance to encourage greater level of Travel Plan consistency across Suffolk for Developers and Local Authorities. SCC has hosted 2 workshops for Planners across Suffolk to raise profile of Travel Planning.	2018 /19	There has now been input from air quality specialists in Suffolk. Local Authorities will need to sign up to guidance once produced.
39	Provision of information to the Public and commerce on reducing emissions from solid fuel and wood burning, including Ready to Burn campaign	Public Information	Via the Internet	Suffolk Coastal DC lead and funded	2017	2018/19	Information available on East Suffolk website - completed. Information disseminated to the Public and commercial sectors - information sent to 300 businesses, all Parish Councils, available at business drop-in events.	Unknown	Council website page on biomass and wood burning added and publicised. Article in Greenprint Forum newsletter. Information being sent out to any burning complaints. Information sent to 300 businesses in Suffolk, all Parish Councils, highlighted to all air quality Consultees during ASR 2017 Consultation, leaflets provided at Business drop-in events.	On-going	Investigating promotion of Ready to Burn scheme to local wood suppliers as there in no-one locally.
34	Greener travel information available on	Promoting Travel Alternatives	Personalised Travel Planning	Lead and funded Suffolk County Council	N/A	Implemented	Number of visitors to the website. 2017 - 5,860	Unknown	SCC website updated for greener travel and travel planning.	On-going	

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	the SCC website						visits to Local Links website and 1,134 to Travel Planning site. Increase in visitors from 2016.				
25	Promotion of travel alternatives for staff at SCDC	Promoting Travel Alternatives	Promotion of cycling and walking	Lead and funded SCDC	N/A	N/A	Council promotes cycling and walking as a positive alternative form of travel for its staff. Tax free bike 'Cycle 2 Work scheme' available for staff to sign up to in May and June 2018.	Unknown	Staff have been encouraged to use cycles for a number of years. Cycle to work scheme started in 2013 - 28 bicycles purchased. Business mileage rate for cycling in place. Emergency Ride Home scheme in place. Travel Survey in 2017 indicates increased number of staff who cycle to work. Tax free bike 'Cycle 2 Work scheme' available for staff to sign up to in May and June 2018. 4 pool bikes provided for use and promoted.	On-going	New Riduna Park building has following facilities: Covered and secure cycle parking/racks for 40 bikes, shower/changing/ drying facilities and lockers. East Suffolk staff and member mileage claimed has reduced from 827,840 miles in 2015/16 to 755,183 in 2016/17 and again to 718,107 in 2017/18
26	Fleet emissions improvements for freight haulage companies based in Felixstowe	Vehicle Fleet Efficiency	Other	Lead and funded SCDC Environmental Health	2017	2018	Number of haulage firms engaged in the process	Unknown	Haulage firm Maritime head office is in Felixstowe. 1,000 HGVs operating across the UK from 23 depots, 90% are Euro V and VI. Program of vehicle replacement every 3 years. Contact haulage companies around the Port to ascertain fleet make up and any emission reduction programs in place. Investigate promotion of emission improvements (driver training, fleet replacement). List of companies drawn up with contact details. Intern to start this project Summer 2018.	2018/19	Until we begin contacting haulage companies we cannot know what is currently in place and what level of engagement there will be.
40	Installation of 11 Rapid Electric	Promoting low emission transport	Procuring alternative Refuelling	Babergh and Mid Suffolk DC lead for all	2016/17	2018	Installation of new charge point	Unknown	A tender is in the process of being written for installation of 11 electric vehicle charge points	2018	Note when quotes are returned it may be that some sites are deemed by

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	Vehicle Charging Units for Public use in Suffolk, Norfolk and Essex – planned site within Felixstowe		infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging.	points on behalf of all relevant local authorities. Highways England funded. Suffolk Coastal involvement with the tender					within Suffolk, Norfolk and Essex. The tender would bid for funding from Highways England. 1 charge point in Felixstowe is included within the tender.		Highways England as too expensive to continue with.
36	Trial to allow cycling on the promenade at Felixstowe	Transport Planning and Infrastructure	Cycle network	SCDC Senior Management Team Projects Officer and Environmental Health Local Authority Funded	2016	2016	Trial implemented and cycling allowed to continue on promenade after 1 year trial	Unknown	Trial in place and 1 year completed October 2017. Recommendation to remove cycling ban agreed at full Cabinet November 2017. Ban removed.	2017 Completed	Competing public uses of promenade - safety of pedestrians - no safety issues reported during 12 month trial
33	Redesign and update the air quality pages on the East Suffolk website	Public information	Via the internet	SCDC and WDC joint lead. Local Authority Funded	2016	2017	Updated web pages. Web pages updated 2018 - completed.	Unknown	New website now in place. Information updated and more accessible, new sections on biomass and wood burning, and monitoring data added.	2018 Completed	
22	Suffolk Car share	Alternatives to private vehicle use	Car and lift sharing schemes	Lead and funded Suffolk County Council, SCDC promoting	-	Implemented	Annual increase in users of the site. Increase between May 2017 and March 2018 is 2,643 to 2,768 = 125 new users.	Unknown	Number site users has increased from 1,599 in 2010 to 2,768 In March 2018. Increase between May 2017 and March 2018 is 2,643 to 2,768 = 125 new users.	On-going	Free web based contact database. Site users are across whole of Suffolk
35	SCC adoption of national award scheme for School Travel Plans	Promoting Travel alternatives	School Travel Plans	SCC lead and funded	2017	2017	Adoption of scheme - completed. Number of schools signed up to scheme - none to date	Unknown	Modeshift STARS scheme adopted by SCC. Free to use national award scheme for schools who have demonstrated excellence in supporting cycling, walking, and other forms of sustainable travel. Helps schools to write and monitor their travel	On-going	No schools in Suffolk Coastal are registered on the website as yet

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									plans.		
37	20 mph speed limit in Woodbridge	Traffic Management	Reduction of speed limits	Woodbridge Town Council and SCDC Funding unknown at this stage	2016	2017/18	Reduction in measured average speed along routes	Marginal benefit in terms of emission reductions due to through traffic reduction	Proposal taken by Woodbridge Town Council to the SCC Speed Limit Panel. Panel has agreed the proposal for 20mph zones/limits on the central B1438 and historic core roads in Woodbridge. This will include the AQMA. Proposal confirming physical measures required to make the 20mph zone on B1438 self-enforcing required. Funding being sought to take this forward. Once a scheme is in known with costings can look for funding avenues - one possibility is CIL.	Unknown at this point	Costings of physical works unknown. Potential success of any funding bid unknown. Need to ensure that proposals do not create any air quality concerns at locations along the route.

Table 2.3b – Progress on Measures to Improve Air Quality in Waveney District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Proposed third vehicular crossing of Lake Lothing	Transport Planning and Infrastructure	Other	Suffolk County Council lead and funded	Since 2010	Construction to start 2020	New crossing which could result in a large reduction of traffic congestion in Oulton Broad and the Lowestoft Town Centre	Still to be determined	Funding secured, now in planning phase	2022	Lengthy timescale. Approximate costs in excess of £80million
19	Installation of Urban Traffic Management Control System (UTMC) within Lowestoft with connection to the Bascule Bridge lifts	Traffic Management	UTC, Congestion management, traffic reduction	Suffolk County Council Highways England Highways England began the project and Suffolk County Council has taken it over.	unknown	2017/18	Reduced congestion in Lowestoft Town Centre	Unknown	UTMC now installed and working within Lowestoft. Control system installed for the Bascule Bridge but not yet connected to UTMC – this is due to happen Summer 2018.	Summer 2018	
2	Separate cycle and pedestrian crossing Lake Lothing	Promoting Travel Alternatives	Promotion of cycling	Lead and funded Waveney District Council	2014	unknown	More people encouraged to use cycling as a means of transport	Reduced vehicle emissions	Implementation on-going	Funding being sought	Important link to the cycle network. Funding for related infrastructure is problematic.
4	Improvement works at Oulton Broad Station North	Traffic Management	UTC, Congestion management, traffic reduction	Lead and funded Network Rail		Late 2016	Reduce the down time' of the level crossing barriers and improve journey times for people using Bridge Road Oulton Broad	Reduction in traffic congestion and associated emissions	Works complete. Nitrogen Dioxide concentration levels show a reduction in 2017 at the Golden Court monitoring position in Bridge Road (DT4) from 25µg/m3 in 2016 to 22 µg/m3 in 2017.	2017	

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
20	Assessment of planning applications for impact on air quality	Policy Guidance and Development Control	Air Quality Planning	SCDC Environmental Health and Planning Local Authority Funded	Ongoing	Ongoing	Number of Planning applications considered. In 2017 - 389 Planning applications processed by Environmental Protection team, assessed for air quality impacts and responses sent to Planning where relevant.	Unknown	Officers in Environmental Protection work with Planning to ensure that each relevant application is appropriately assessed for air quality.	On-going	The assessment process takes account of national guidance (including EPUK) and local procedures
3	The Waveney District Council Local Plan	Policy Guidance and Development Control	Other policy	Lead and funded Waveney District Council Planning Department	2016	2018	Policies to promote alternative forms of travel	Reduced vehicle emissions	Public consultation undertaken on the final draft	2018	Large and ambitious development plans in the Waveney District/ requires careful management.
8	Suffolk Travel Plan guidance	Policy Guidance and Development Control	Other	Suffolk County Council lead and funded. Input from the Suffolk authorities	2017	2018	Travel Plan guidance produced for Suffolk. Awaiting publication of new NPPF guidance before finalising the draft.	Unknown	Draft Travel Plan awaiting NPPF changes before finalising for consultation. Guidance to encourage greater level of Travel Plan consistency across Suffolk for Developers and Local Authorities. SCC has hosted 2 workshops in Suffolk for Planners to raise profile of Travel Planning.	2018/19	There has now been input from air quality specialists in Suffolk. Local authorities will need to sign up to guidance once produced.
21	Provision of information to the Public and commerce on reducing emissions from solid fuel and	Public Information	Via the Internet	Suffolk Coastal DC lead and funded	2017	2018/19	Information available on East Suffolk website - completed. Information disseminated to the Public and commercial	Unknown	Council website page on biomass and wood burning added and publisiced. Article in Greenprint Forum newsletter. Information being sent out to any burning complaints. Information sent to 300 businesses in Suffolk, all Parish Councils, leaflets provided at Business drop-in events.	On-going	Investigating promotion of Ready to Burn scheme to local wood suppliers as there in no-one locally.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	wood burning, including Ready to Burn campaign						sectors - information sent to 300 businesses, all Parish Councils, ~~availeblb~~availab le at business drop-in events.				
17	Improvement works to the cycling infrastructure in Lowestoft	Transport Planning and Infrastructure	Cycle network	Lead and funded Suffolk County Council	2016	2016 First phase	More people encouraged to use cycling as a means of transport. SCC provided Bikeability lessons to 456 school children in 2017/18.	Unknown	£1 million spent to date. Speed limit on Yarmouth Road reduced to 30mph between Leisure way and Corton Long Lane. Vehicle activated speed limit sign north of Gunton Avenue and renewed lines and signs along A47. Propose to undertake future works to Gunton Avenue and Sussex Road to improve cycle network.	2018/19 for second phase of improvement s	
6	The Waveney District Council Cycling Strategy	Promoting Travel Alternatives	Promotion of cycling	Lead and funded Waveney District Council	2015	2016	Strategy adopted - completed	Unknown	The strategy was formally adopted in 2016 and the final draft will be published in 2018. Has identified barriers and gaps in the cycling infrastructure. SCC provides free cycle maps for Lowestoft, Beccles and Halesworth. SCC has delivered 38 Bikeability courses within Waveney DC in 2017/18 training 456 children to Level 1 or 2 standard.	Cycling Strategy adopted 2016. Final drfat in Public domain 2018 On-going	Infrastructure gaps identified but funding opportunities are problematic.
7	Greener travel information available on the Suffolk County Council website	Promoting Travel Alternatives	Personalised Travel Planning	Lead and funded Suffolk County Council	N/A	Implemented	Number of visitors to the website. 2017 - 5,860 visits to Local Links website and 1,134 to Travel Planning site. Increase in visitors from	Unknown	SCC website updated for greener travel and travel planning.	On-going	

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
							2016.				
11	Promotion of travel alternatives for the East Suffolk Councils staff	Promoting Travel Alternatives	Workplace Travel Planning	Lead and funded Waveney and Suffolk Coastal District Councils	2015	2015	Reduction in vehicle journeys. East Suffolk staff and member mileage claimed reduced from 827,840 miles in 2015/16 to 755,183 in 2016/17 and again to 718,107 in 2017/18	Unknown	Council promotes cycling as a positive form of travel for its staff as part of its well - being programme.	On-going	Pool cycles have been provided for the staff to use.
9	Redesign and update the air quality pages on the East Suffolk website	Public Information	Via the Internet	Lead and funded Waveney and Suffolk Coastal DC.	2016	2017	Updated web pages - completed	Unknown	New website now in place. Information updated and more accessible, new sections on biomass and wood burning and monitoring data added.	2018 Completed	
13	Suffolk Car Share	Alternatives to private vehicle use	Car & lift sharing schemes	Lead and funded Suffolk County Council, East Suffolk authorities promoting		Implemented	Annual increase in users of the site. Increase between May 2017 and March 2018 is 2,643 to 2,768 = 125 new users.	Unknown	Number of site users has increased from 1,599 in 2010 to 2,768 in March 2018.	Ongoing	Free web based contact database.
21	SCC adoption of national award scheme for School Travel Plans	Promoting Travel alternatives	School Travel Plans	SCC lead and funded	2017	2017	Adoption of scheme - completed. Number of schools signed up to scheme - none to date	Unknown	Modeshift STARS scheme adopted by SCC. Free to use national award scheme for schools who have demonstrated excellence in supporting cycling, walking, and other forms of sustainable travel. Helps schools to write and monitor their travel plans.	On-going	No schools in Waveney are registered on the website as yet

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.

Suffolk Coastal and Waveney District Councils are taking the following measures to address $PM_{2.5}$:

- The Suffolk Air Quality Group, of which both authorities are members, has engaged Suffolk County Council (SCC) Public Health and Protection in order to move forward together with regard to $PM_{2.5}$. The Public Health and Protection team have used the Defra/Public Health England Air Quality Toolkit for Directors of Public Health to develop a self-assessment framework for understanding the Suffolk air quality situation. This will highlight where there are Management gaps and potentially areas to prioritise. The team are also working on the Joint Strategic Needs Assessment. Questionnaires have been sent out to relevant stakeholders for completion. Early results have indicated the need for strategic leadership on air quality across Suffolk. Suffolk has a newly appointed Director of Public Health and Public Protection at Suffolk County Council, contact has been made by the Group to discuss future working together. A co-ordinated and partnership approach to reducing the local $PM_{2.5}$ concentration is likely to be more effective.

- There are a number of measures specific to both District Councils which will reduce $PM_{2.5}$ emissions both locally to the Council Offices and more widely across the district:
  Promotion of travel alternatives for staff (SCDC measure 25 and WDC measure 11).
  The updated dedicated air quality page on the East Suffolk Website provides information and encouragement to members of the public who are interested in 'doing their bit' in improving air quality and sign posts people to other links (SCDC measure 33 and WDC measure 9).
  Provision of information to the Public and commerce on reducing emissions from solid fuel and wood burning (SCDC measure 39 and WDC measure 21).

- Suffolk Coastal and Waveney District Councils, working in partnership with Suffolk County Council and other potential partners, are committed to promoting alternative forms of transport and modes of travel such as cycling, walking, car sharing and public transport with the aim of reducing the reliance on private cars. Both the Waveney DC and Suffolk CC Cycling Strategies recognise the need for continued promotion of cycling and for greater improvements to the cycling infrastructure. Suffolk County Council has spent £1 million to date on cycle improvements within Lowestoft and additional future works are planned (WDC measure 17). The East Suffolk Business Plan encourages greater leisure, activity and health opportunities in East Suffolk, including cycle-friendly district policies and initiatives. The Waveney

District Council Cycle Strategy has considered infrastructure issues and put forward potential improvements to the cycle network with the aim of encouraging more people to cycle and remove existing barriers. The document also provides supporting information about issues such as the design of development projects that should be taken into account when planning proposals are being prepared and determined. The document can be found by following the below link; (http://www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/get-involved/) (SCDC measure 36 and WDC measure 6). The measures listed in table 2.2 should impact positively in reducing emissions by promoting a change in travel culture and providing advice, support and the necessary infrastructure to encourage the use of other means of transport rather than the car. The promotion of active travel in the form of cycling and walking within the District has wider benefits and has strong links to the Public Health Outcomes Framework in terms of improving the health and wellbeing of the population, as well as improving the local air quality.

- Reductions in $PM_{2.5}$ emissions are also targeted by the following measures related to Planning:
  Assessment of planning applications for impact on air quality (SCDC measure 27 and WDC measure 20).
  Air quality is included in the SCDC Local Plan Site Allocations Document and Felixstowe Area Action Plan (SCDC measure 29).
  The Local Plan promotes travel alternatives for the district which aims to reduce emissions from motor vehicle use (SCDC measure 30 and WDC measure 3). This is being embedded further in the SCDC Local Plan review which has recently begun. WDC Environmental Protection Team has fed into the draft local plan options consultation seeking to control fugitive emissions of $PM_{2.5}$ from construction and demolition sites at the planning stage of developments by ensuring that developers use best practice and ensure that adequate air quality assessment is also a provided when required.

- Suffolk County Council has a number of measures that aim to increase the number of people walking, cycling and using greener travel methods within the district, with the aim of reducing the reliance on private cars. This has strong links with the Public Health Outcomes Framework in terms of improving the health and wellbeing of the population as well as improving local air quality through reduced congestion and vehicle emissions:
  Suffolk car and lift sharing scheme (SCDC measure 22 and WDC measure 13).
  Production of Travel Plan guidance for Suffolk to encourage a greater level of consistency across Suffolk, will be important if used in Planning process (SCDC measure 31 and WDC measure 8).
  Provision of Greener Travel Information (SCDC measure 34 and WDC measure 7).
  Adoption of a national award scheme to assist schools with Travel Plans (SCDC measure 35 and WDC measure 21).

- Suffolk County Council has indicated, with regard to electric vehicle charging in the UK, that Motor Fuels Group and Chargemaster will be rolling out 400 rapid EV chargers across their PFS network. In addition, Highways England is looking to install 11 rapid chargers in 'blackspots' on their strategic network in Suffolk including a site

within Felixstowe in SCDC (measure 40). The electric vehicle charging network in Suffolk needs further development if we are to increase the number of plug in vehicles in use on Suffolk's roads.

Suffolk Coastal District Council is also taking the following measures to address $PM_{2.5}$:

- Action Plan measures to be taken forward into the updated Action Plan for the Woodbridge AQMA will aid reduction of $PM_{2.5}$ emissions, in addition to NO_2, within Woodbridge and farther afield:
  Future traffic restrictions and improved enforcement to the Thoroughfare will aid to reduce congestion at this junction by freeing up the left filter lane at the lights (measures WBG 2 and 3).
  Bus operators to use cleanest fleet in Woodbridge (measure WBG 8).
  School Travel - identify schools that contribute to emissions at the junction and work with them to reduce car usage (measure WBG 15b).
  Travel Plan for the District Council offices (measure WBG 15c).
  Promotion of walking and cycling in Woodbridge (measure WBG 16).
  Better integration of air quality in the Planning system (measure WBG 17).
  Raising air quality awareness through better website, press releases, publicity (measure WBG 18).

- Action Plan measures within the Action Plan for the Stratford St. Andrew AQMA will aid reduction of $PM_{2.5}$ emissions, in addition to NO_2, within Stratford St. Andrew and farther afield:
  Assessment of planning applications for impact on air quality (measure STA 2).
  Possible A12 Stratford St. Andrew bypass would smooth the traffic flow thereby reducing $PM_{2.5}$ emissions (measure STA 7).
  Mitigation of emissions from Sizewell C construction traffic through use of low emission Heavy Goods Vehicles (measure STA 8).

- Emission reduction measures being undertaken by the Port of Felixstowe will aid to reduce emissions of $PM_{2.5}$. The following actions will give reductions within the vicinity of the Port and also along the main access routes both locally and further afield (A14 trunk road):
  Efficient power technologies fitted to Rubber-Tyred Gantry cranes (RTGs) – ECO-RTGs and electric RTGs replacement program in place (measure 9).
  Abatement technologies fitted to Internal Movement Vehicles and replacement program in place (measure 10).
  Increased use of rail transport, will decrease emissions related to use of HGVs on the road network (measure 11).
  Electric vehicle trial at the Port for staff pool cars and an Internal Tractor – if successful, electric vehicles may increase in use and associated emission reductions will be realised (measure 16).
  Energy Management System will reduce PM emissions from within the Port boundary (measure 19).
  Campaign in place to reduce vehicle idling on the Port of Felixstowe, emission reductions will be realised with reduced vehicle idling (measure 38).

Waveney District Council is also taking the following measures to address $PM_{2.5}$:

- Planning consent is underway for a proposed third vehicular crossing of Lake Lothing in Lowestoft. This would significantly reduce congestion and therefore PM emissions within Lowestoft (measure 1). In association with this planning application the District Council is looking to fund a separate cycle and pedestrian crossing which would improve network links in Lowestoft and help to encourage walking and cycling in the town (measure 2).
- Works by Network Rail to reduce the down time of the level crossing barriers in Bridge Road, Oulton Broad have been undertaken. This has reduced congestion and therefore associated vehicle emissions. (measure 4).
- The Highways Agency, and now Suffolk County Council, has joined all the Lowestoft traffic signals onto one Urban Traffic Management Control (UTMC) system. This will optimise traffic flow at busy times and allow signal priorities to change when the Bascule Bridge lifts. The bridge control system has now been suitably modified and the final act, to connect the bridge control system to the traffic signals control system, is due to be completed shortly June/July 2018. Reduction in congestion will bring with it reduction in emissions of NO_2 and PM (measure 19).

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.

Suffolk Coastal District Council undertook automatic (continuous) monitoring at 1 site in Woodbridge during 2017. Table A.1 in Appendix A shows the details of the site.

Waveney District Council did not undertake any automatic (continuous) monitoring during 2017.

National monitoring results are available at https://uk-air.defra.gov.uk/networks/find-sites

A map showing the location of the monitoring site in Woodbridge is provided in Appendix D. Further details on how the monitor is calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Suffolk Coastal District Council undertook non-automatic (passive) monitoring of NO_2 at 53 sites during 2017.

Table A.2 in Appendix A shows the details of the sites. Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. "annualisation" and/or distance correction), are included in Appendix C.

There were 7 new NO_2 monitoring locations added in 2017, as follows:

- 1 new site in High Road, Trimley St. Martin (FLX 40) – see Map 7 in Appendix D. The monitoring site is at a location where vehicles are stopping to use a local shop near to a number of residential properties with facades very close to the kerb. In addition, High Road will experience an increase in future traffic due to a number of approved residential developments in this area. This site will determine current levels and be kept in place for the foreseeable future.
- 2 new sites at Anzani House in Felixstowe (FLX 41 and 42) – see Map 8 in Appendix D. This site is a large vacant office block with Permitted Development rights for change of use to residential. This site is very close to the A14 trunk road together with a number of warehouses and container handling facilities near to the Port of Felixstowe. Monitoring will establish current NO_2 concentrations at the site to

determine any potential exceedances of the Air Quality Objectives should the residential development go ahead.

- 3 new sites in Kesgrave (KSG 10, 11 and 12) – see Maps 10 and 11 in Appendix D. These sites were located at the request of Kesgrave Town Council in order to confirm NO_2 levels at Dobbs Lane, Bell Lane and Main Road (A1214) near to the junction with Bell Lane. KSG 11 and 12 were part-funded by Kesgrave Town Council.
- 1 new site on the A12 in Little Glemham (LGM 2) which replaces LGM 1 – see Map 15 in Appendix D. LGM 1 has shown very low concentrations of NO_2 for a number of years (14µg/m^3 in 2016) and has been relocated to another domestic property in the village close to the A12 trunk road in order to determine concentrations in this area.

There were 3 NO_2 monitoring locations removed at the end of 2016, as follows;

- 1 site on the A12 in Little Glemham (LGM 1) which has been replaced by LGM 2 as explained above – see Map 15 in Appendix D.
- 1 site at The Dooley Inn Public House within the revoked AQMA in Felixstowe (FLX 32) – see Map 1 in Appendix D. This site was located at the rear of the property on a drainpipe/guttering which was removed during work to the building. There were no suitable alternatives and monitoring sites FLX 26 and FLX 27 remain on this building. The highest recording site is FLX 26 (34µg/m^3 in 2016).
- 1 site in Martlesham (MRT 3) – see Map 14 in Appendix D. This site was located at the request of, and part-funded by, Martlesham Parish Council in order to confirm NO_2 levels at the rear of Lancaster Drive due to traffic emissions from the A12. This site was in place for 2016 and removed at the end of the year as NO_2 levels were confirmed to be low (17µg/m^3 in 2106).

There have been 16 new sites added to, and 10 sites removed from the NO_2 monitoring network in 2018. All sites will be reported on in the 2019 Annual Status Report. The sites are as follows:

- 2 sites removed from Adastral Close in Felixstowe (FLX 29 and FLX 31) due to low NO_2 levels for several years (20-27 µg/m^3) with 1 site remaining in this locality (FLX 14) as a future indicator of concentrations – see Map 3 in Appendix D.
- 4 sites removed from Dock Gate 2 roundabout / Ferry Lane in Felixstowe. These sites were put in place to determine concentration gradients along Ferry Lane to inform the Action Plan for the AQMA before it was revoked. They are not representative of relevant exposure as the only exposure at this location is the Dooley Inn Public House (the revoked AQMA). Monitoring continues at the Dooley Inn – see Map 1 in Appendix D.
- 2 sites removed from Kesgrave (KSG 11 and 12). These sites were in place for 2017 and removed at the end of the year as NO_2 levels were confirmed to be low (16-17µg/m^3) – see Maps 10 and 11 in Appendix D.
- 2 sites removed from Woodbridge (WBG 22 and 23) due to low NO_2 readings for several years (maximum 25 µg/m^3) – see Map 12 in Appendix D.
- 11 new sites added in Trimley St. Martin, Trimley St. Mary and Walton along the High Road / High Street. Following elevated NO_2 concentrations of 41µg/m^3 recorded at FLX 40 on High Road Trimley St Mary in 2017 this site has been triplicated and additional monitoring sites have been added at other properties close by. In addition, a number of new monitoring locations have been located along the Trimleys and Walton in order to assess concentrations at key sites.

- 3 new sites added at the Melton crossroads in order to confirm concentrations at key points in this locality due to increasing traffic from the Peninsula.
- 1 new site in Eyke sited to confirm concentrations following concerns raised regarding increased traffic passing through the village due to developments at the Bentwaters site.

Waveney District Council undertook non-automatic (passive) monitoring of NO_2 at 14 sites during 2017.

Table A.2 in Appendix A shows the details of the sites. Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. "annualisation" and/or distance correction), are included in Appendix C.

There were 5 NO_2 monitoring locations removed at the end of 2016, as follows;

- 3 triplicate sites located at Pier Terrace (PT1, PT2 and PT3) – see Maps 20 and 21 in Appendix D. These sites had been located to ascertain NO_2 concentrations at Pier Terrace near the Bascule Bridge in Lowestoft for 12-month period following concerns over poor air quality caused by heavy traffic congestion. The monitoring program confirmed that there were no exceedances of the Air Quality Objectives, one site (PT4) did indicate concentrations in the region of 36µg/m^3 and this site has been retained.
- 1 single site located at Pier Terrace in Lowestoft (DT12) near the Bascule Bridge - see Map 20 in Appendix D. This site was removed as NO_2 levels were confirmed to be low (max 27µg/m^3).
- 1 single site located at Belvedere Road near the Bascule Bridge in Lowestoft (DT10) – see Map 20 in Appendix D. This site was not located at or near a relevant receptor and so was removed. DT9 is also located at Belvedere Road and has remained in order to provide an indicator site for future changes associated with the Lake Lothing Third Crossing.

There have been 3 new sites added, 3 sites removed and 1 site relocated in the NO_2 monitoring network in June 2018. All sites will be reported on in the 2019 Annual Status Report. The sites are as follows:

- 3 sites removed – single sites located at Yarmouth Road in Lowestoft (DT6), Mill Road in Lowestoft (DT7), and Castleton Avenue in Carlton Colville (DT1). NO_2 concentrations at all 3 sites have been low for a number of years (14 µg/m^3, 20µg/m^3 and 14 µg/m^3 in 2017 respectively).
- 1 new site added at the junction of Beccles Road, Cotmer Road and Bridge Road in Oulton Broad (near Flying Dutchman PH). This junction often experiences queueing traffic due to the nearby railway crossing and general traffic in the Oulton Broad area. The site is at a residential property located on the junction close to the kerbside.
- 2 new sites added at Ingate in Beccles. This area experiences queueing traffic due to the nearby railway crossing to the East and a traffic lit junction to the West. The sites are on the facades of residential properties located close to the kerbside.

- 1 relocated site at Ingate in Beccles (DT14). Relocated from a lamppost to the façade of a property close to the above mentioned traffic lit junction which experiences queueing traffic and is close to the kerbside.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.4 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

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

Table A.6 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.

Suffolk Coastal District Council

The results from the continuous analyser, located at a relevant receptor within the Woodbridge AQMA, shows no change between 2016 and 2017 with the annual mean NO_2 concentration holding at 37µg/m^3. This is within the objective (40µg/m^3) for the fourth year running. The 1-hour objective is set at 200µg/m^3 not to be exceeded more than 18 times per year - during 2017 there was 1 exceedances of 200µg/m^3 recorded. The 1-hour NO_2 Air Quality Objective has not been exceeded.

The results from diffusion tube monitoring show that there are 4 sites across the district with annual mean concentrations at or above the objective level of 40µg/m^3 in 2017;

- Three sites in Felixstowe (FLX 33, 34 and 37) – these sites are not located at or near to relevant receptors - they are in place to determine concentration gradients along Ferry Lane and there is therefore no need to consider them further.
- The fourth site is a new site added in 2017 located on the façade of a residential property in High Road, Trimley St. Martin (FLX 40) which shows a concentration of 41µg/m^3. As this is our first reading using a single diffusion tube in this locality we have chosen not to declare a fast track AQMA. To improve the accuracy of our data collection in 2018 we now have a triplicate set of diffusion tubes at FLX 40, and have added 3 additional monitoring sites at other properties close by. In addition, we have added a number of monitoring locations along the Trimleys in order to assess concentrations at key sites. The readings obtained so far in 2018 at FLX 40 (January to April) are much reduced when compared with the same time frame in 2017, this may be due to very high readings seen across the whole district in early 2017 due to unusual weather conditions (fog and very still conditions) or to some more local

influence. We will be monitoring results carefully over the year to see if this reduction continues.

There are 3 diffusion tube sites which are classed as 'borderline' (any site above 36µg/m^3 and therefore close to, but not above, the objective level of 40µg/m^3);

- A site within the revoked AQMA at The Dooley Inn Public House, Ferry Lane, Felixstowe (FLX 26) measuring 37 µg/m^3. This site has been decreasing since 2010 but has shown an increase from 34 µg/m^3 in 2016. Monitoring is continuing.
- A site within the Woodbridge AQMA (WBG 1) measuring 37 µg/m^3. This site has shown no change from 2016.
- A site within the Stratford St. Andrew AQMA (STA 8) measuring 39 µg/m^3. This site shows a decrease from 43µg/m^3 in 2016.

There are no instances of the annual mean exceeding 60µg/m^3 in 2017 in the Suffolk Coastal district and therefore the risk of exceeding the 1-hour objective at any locations is very low.

Trend graphs showing annual mean NO_2 concentrations at all diffusion tube sites within the Suffolk Coastal district with 5 or more years of data are presented in Appendix A, Figure A.1 to A.4.

Monitoring has been carried out within the district since 2000 and the majority of sites show a reduction in concentrations over time to 2017. Sites in Woodbridge and Stratford St. Andrew in general have shown a decrease in concentrations from 2016 to 2017. The site in Martlesham has shown no change between 2016 and 2017. Sites in Felixstowe, Kesgrave and Melton, in general have shown an increase in concentrations from 2016 to 2017. We do not have any explanations for these differences and will be keeping a close eye on concentrations during 2018.

Sites in Felixstowe (Figure A.1) show marked reductions since 2011. An AQMA was declared near to the Port of Felixstowe in 2009 and an Action Plan put in place. The Port of Felixstowe has undertaken significant emission reduction projects and emissions from and associated with their site have decreased. This has been borne out in the reducing NO_2 concentrations in this locality. Due to the reduction in NO_2 concentrations below the annual mean Air Quality Objective the AQMA was revoked in 2016. In 2017 the majority of sites within Felixstowe have shown an increase in NO_2 concentrations, including the suburban site (FLX 21) but all sites continue to be within the objective level. We do not have any explanation for this increase and will be keeping a close eye on concentrations during 2018. The Port of Felixstowe undertake their own monitoring port-side and have also noted an increase in concentrations which has led them to start a campaign to reduce vehicle idling on the Port – see Measure 38 in table 2.2.

All sites in Woodbridge (Figure A.2) show reductions over time from 2000 to 2017 with all sites, including those within the AQMA, below the annual mean objective since 2014. There was a slight increase at all sites in 2016, which was also seen at the background site (WBG 3). In 2017 the background site is static but concentrations at the majority of other sites near to and within the AQMA have fallen.

Sites in Kesgrave and Melton (Figure A.3) have fluctuated since monitoring began in 2002/03 with the most recent trend from 2011/12 to 2016 being a decline in measured concentrations. Measurements in 2017 however show an increase at both locations and we will be keeping a close eye on concentrations during 2018.

Monitoring began in Martlesham in 2010 and NO_2 concentrations decreased until 2012. Since that time concentrations have risen slightly but stabilised from 2014-2017 and continue to be well below the annual mean Air Quality Objective.

Monitoring sites along the A12 trunk road in the villages of Little Glemham, Farnham and Stratford St. Andrew (Figure A.4) show slightly fluctuating annual mean NO_2 concentrations between 2011 and 2017 with an overall reduction in concentrations over this period, albeit only slight at some locations. Monitoring sites located within the AQMA declared at Stratford St. Andrew (STA 1 and 8) show a continued reduction in concentrations between 2016 and 2017 with both sites now below the objective level - STA 8 reducing from 43 $\mu g/m^3$ to 39 $\mu g/m^3$ and STA 1 from 38 $\mu g/m^3$ to 35 $\mu g/m^3$.

Waveney District Council

The results from diffusion tube monitoring show that there are no measured exceedances of the air quality objectives within the Waveney District.

There is 1 diffusion tube site which is classed as 'borderline' (any site above 36$\mu g/m^3$ and therefore close to, but not above, the objective level of 40$\mu g/m^3$);

- A triplicate site in Pier Terrace (PT4) near the Lowestoft Bascule Bridge. Concentrations at this site, at 36 $\mu g/m^3$ have not changed from 2016 and monitoring is continuing.

There are no instances of the annual mean exceeding 60$\mu g/m^3$ in 2017 in the Waveney district and therefore the risk of exceeding the 1-hour objective at any location is very low.

Trend graphs showing annual mean NO_2 concentrations at all diffusion tube sites within the Waveney district with 5 or more years of data is presented in Appendix A, Figures A.5 and A.6.

Monitoring results are available for the district from 2005 onwards and the majority of sites show a reduction in concentrations over time to 2017. Concentrations at all sites have been within the annual mean air quality objective since 2011 and a number of sites have shown fluctuations between 2012 and 2017.

Sites in Lowestoft show a decrease over time with the exception of Belvedere Road which has risen in recent years to 34 $\mu g/m^3$. This site does not have any relevant public exposure nearby and is in place as historically it was collocated with a continuous analyser. The site has been retained in order to provide trend data for this area in Lowestoft as it is close to the Bascule Bridge and will be an important indicator location in future years when the Lake Lothing Third Crossing is constructed. Other sites in the locality of Belvedere Road are not

showing any increase. In addition to Belvedere Road, the site at Mill Road in Lowestoft also shows an increase in concentrations between 2016 and 2017 but is very low at 24 µg/m^3. All other sites on the district show either a decrease or have remained static between 2016 and 2017.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites - Suffolk Coastal District Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
WBG	Woodbridge	Roadside	627596	249261	NO2	YES	Chemiluminescent	0	1	2.6

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 - Suffolk Coastal District Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
FLX 12	Hamilton Road Felixstowe	Roadside	630363	234890	NO2	NO	0	5	NO	2.3
FLX 14	1 Adastral Close Felixstowe	Other	628604	232847	NO2	NO	0	5.8	NO	2
FLX 17	Spriteshall Lane Trimley St Mary	Suburban	628817	236323	NO2	NO	0	31	NO	2
FLX 20	Glemsford Close Felixstowe	Suburban	628669	233979	NO2	NO	10	54	NO	2
FLX 21	Kings Fleet Road Felixstowe	Suburban	629253	234431	NO2	NO	n/a	1.5	NO	2.3
FLX 22	Levington Road Felixstowe	Industrial	629172	233446	NO2	NO	0	9	NO	1.8
FLX 23	Heathgate Piece Trimley St Mary	Suburban	628542	236592	NO2	NO	0	25	NO	2
FLX 24	Brandon Road Felixstowe	Suburban	628358	234634	NO2	NO	0	32	NO	2.5
FLX 26 a,b,c	Dooley Inn front Felixstowe	Other	627959	234246	NO2	NO	0	13	NO	3.4
FLX 27 a,b,c	Dooley Inn side Felixstowe	Other	627960	234238	NO2	NO	0	23	NO	2.8
FLX 29	18 Adastral Close Felixstowe	Other	628712	232892	NO2	NO	0	12	NO	2
FLX 31	44 Adastral Close Felixstowe	Other	628640	232795	NO2	NO	0	13	NO	2
FLX 32	Dooley Inn rear Felixstowe	Other	627971	234242	NO2	NO	0	18	NO	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
FLX 33	Dock gate 2 roundabout Felixstowe	Roadside	627884	234238	NO2	NO	n/a	5	NO	1.8
FLX 34	Ferry Lane midway Felixstowe	Roadside	627934	234257	NO2	NO	n/a	3	NO	1.9
FLX 35	Dooley Inn car park Felixstowe	Roadside	627959	234258	NO2	NO	10	3	NO	1.8
FLX 36	Hodgkinson Road Felixstowe	Roadside	627989	234279	NO2	NO	n/a	3	NO	1.9
FLX 37	Hodgkinson Road / Ferry Lane Felixstowe	Roadside	628012	234272	NO2	NO	n/a	3.5	NO	1.7
FLX 38	Ferry Lane just past Hodgkinson Road Felixstowe	Roadside	628130	234280	NO2	NO	n/a	1.5	NO	1.7
FLX 39	424 High Road Trimley St Mary	Roadside	628760	236071	NO2	NO	0	11	NO	1.6
FLX 40	216 High Road Trimley St Martin	Roadside	627618	237092	NO2	NO	0	1.8	NO	1.9
FLX 41	Anzani House front Felixstowe	Roadside	628138	234696	NO2	NO	0	36	NO	1.7
FLX 42	Anzani house side Felixstowe	Roadside	628160	234725	NO2	NO	0	35	NO	1.7
MEL 5	6 The Street Melton	Roadside	628145	250417	NO2	NO	0.5	3.6	NO	1.9
MEL 7	28 The Street Melton	Kerbside	628177	250478	NO2	NO	0	0.3	NO	1.7
KSG 9	118 Main Road, Kesgrave	Roadside	621680	245796	NO2	NO	n/a	2.6	NO	1.9

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
KSG 10	The Bell Inn, Main Road, Kesgrave	Roadside	621815	245785	NO2	NO	0	2.7	NO	1.6
KSG 11	Bell Lane / Quebec Drive, Kesgrave	Roadside	621705	245682	NO2	NO	11	5.8	NO	2
KSG 12	Dobbs Lane, Kesgrave	Roadside	623488	246019	NO2	NO	6.2	3.5	NO	1.7
WBG 1 a,b,c	93 Thoroughfare, Woodbridge	Roadside	627596	249261	NO2	YES	0	1.3	YES	2.4
WBG 3	Kingston Farm Road, Woodbridge	Suburban	626997	248488	NO2	NO	n/a	1	NO	1.9
WBG 5	Corner of Suffolk Place, Woodbridge	Roadside	627604	249243	NO2	NO	0	2.5	NO	2.3
WBG 6	87 Thoroughfare, Woodbridge	Roadside	627593	249255	NO2	YES	0	2	NO	2.2
WBG 8	95 Thoroughfare Woodbridge	Roadside	627601	249283	NO2	YES	0	3	NO	2.4
WBG 10	Signpost St John's Street, Woodbridge	Roadside	627570	249240	NO2	NO	0.5	2	NO	2.1
WBG 12	8 Lime Kiln Quay Road, Woodbridge	Roadside	627664	249203	NO2	NO	0.5	5	NO	1.8
WBG 13	Traffic lights 85 Thoroughfare, Woodbridge	Roadside	627585	249239	NO2	NO	2.5	2.5	NO	1.9
WBG 15	Guttering of 87 Thoroughfare Woodbridge	Roadside	627590	249249	NO2	YES	0	2	NO	2.5
WBG 17	North end Suffolk Place, Woodbridge	Roadside	627614	249271	NO2	NO	0	7	NO	1.9

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
WBG 18	106/108 Thoroughfare, Woodbridge	Roadside	627627	249339	NO2	NO	0	1.5	NO	2.2
WBG 20	97 Thoroughfare, Woodbridge	Roadside	627604	249295	NO2	YES	0	1.5	NO	1.5
WBG 22	Suffolk Place facing Lime Kiln Quay Road, Woodbridge	Roadside	627633	249233	NO2	NO	0	8	NO	2.2
WBG 23	50 St John's Street, Woodbridge	Roadside	627562	249235	NO2	NO	1	1	NO	2.1
MRT 1a,b	Horseman Court, Eagle Way, Martlesham	Suburban	624633	245447	NO2	NO	0	21	NO	1.7
MRT 2	59 Manor Road, Martlesham	Suburban	624499	245777	NO2	NO	0	65	NO	1.6
MRT 3	32 Lancaster Drive, Martlesham	Suburban	624777	244643	NO2	NO	8	28	NO	1.6
LGM 1	Pear Tree House, Main Road, Little Glemham	Roadside	634203	258820	NO2	NO	0	19	NO	1.5
LGM 2	Carlton Lodge, Main Road, Little Glemham	Roadside	634051	258315	NO2	NO	0	6.3	NO	1.7
FAR 1	Turret House, The Street, Farnham	Roadside	636273	260134	NO2	NO	0	3	NO	1.8
FAR 2 a,b,c	Post Office Stores, The Street, Farnham	Roadside	636274	260120	NO2	NO	0	2	NO	1.9
STA 1 a,b,c	1 Long Row, Stratford St Andrew	Roadside	635753	260002	NO2	YES	0	2	NO	1.6
STA 2	Opposite Long Row, Stratford St Andrew	Roadside	635732	259995	NO2	NO	n/a	1.7	NO	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
STA 4	Street sign on the bend, Main Road, Stratford St Andrew	Roadside	635878	260117	NO2	NO	n/a	3.8	NO	1.8
STA 6	Jacobs Cottage, Main Road, Stratford St Andrew	Roadside	635794	260042	NO2	NO	0	7	NO	1.3
STA 7	30mph sign, Long Row, Stratford St Andrew	Roadside	635736	259984	NO2	NO	n/a	1.9	NO	1.7
STA 8 a,b,c	5 Long Row, Stratford St Andrew	Roadside	635743	259992	NO2	YES	0	2	NO	1.6
SAX 1	Church Street, Saxmundham	Roadside	638683	263014	NO2	NO	0	1	NO	1.8
LEI 1	Cross Street, Leiston	Roadside	644528	262463	NO2	NO	0.4	2.5	NO	2.2
LEI 2	Sizewell Road, Leiston	Roadside	644557	262464	NO2	NO	0.5	1.4	NO	2.2
LEI 3	Station Road, Leiston	Roadside	644325	262634	NO2	NO	0	2.3	NO	1.9

Notes:

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

(2) N/A if not applicable.

Table A.3 – Details of Non-Automatic Monitoring Sites - Waveney District Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
DT1	Castleton Avenue, Carlton Colville	Roadside	650608	290476	NO_2	NO	17	1.9	NO	3
DT2	Fir Lane, Lowestoft	Kerbside	653220	293794	NO_2	NO	6	0.5	NO	2.9
DT3	Dutchmans Court, Oulton Broad	Roadside	651885	292105	NO_2	NO	5	2.4	NO	2.4
DT4	Golden Court, Oulton Broad	Roadside	652242	292955	NO_2	NO	4	2	NO	2.4
DT5	Saltwater Way, Oulton Broad	Roadside	652498	292751	NO_2	NO	6	3	NO	2.4
DT6	Yarmouth Road, Lowestoft	Kerbside	653049	295534	NO_2	NO	8.8	0.5	NO	2.4
DT7	Mill Road, Lowestoft	Roadside	654470	292395	NO_2	NO	6.8	1.2	NO	2.4
DT8	St Margarets Church, Lowestoft	Urban Background	654305	293914	NO_2	NO	N/A	N/A	NO	2.4
DT9	Belvedere Road 1, Lowestoft	Roadside	654651	292619	NO_2	NO	N/A	1	NO	2
DT10	Belvedere Road 2, Lowestoft	Roadside	654651	292619	NO_2	NO	N/A	1	NO	2
DT11	Pier Terrace 1, Lowestoft	Roadside	654658	292598	NO_2	NO	7	3	NO	2.4
DT12	Pier Terrace 2, Lowestoft	Roadside	654658	292598	NO_2	NO	0	11	NO	2.4
DT13	Trinity Street, Bungay	Roadside	633661	289813	NO_2	NO	0	1	NO	2.2
DT14	Ingate 1, Beccles	Roadside	642614	289906	NO_2	NO	0	1	NO	2.4
DT15	Ingate 2, Beccles	Roadside	642614	289906	NO_2	NO	4	2	NO	2.4

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
PT1	Pier Terrace, Lowestoft	Roadside	654788	292824	NO_2	NO	0.5	3	NO	2.2
PT2	Pier Terrace, Lowestoft	Roadside	654781	292814	NO_2	NO	0.2	4	NO	2.2
PT3	Pier Terrace, Lowestoft	Roadside	654703	292636	NO_2	NO	0.5	2.5	NO	2.2
PT4	Pier Terrace, Lowestoft	Roadside	654685	292621	NO_2	NO	0	4	NO	2.2

Notes:

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

(2) N/A if not applicable.

Table A.4 – Annual Mean NO_2 Monitoring Results – Suffolk Coastal District Council

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2013	2014	2015	2016	2017
WBG	Roadside	Automatic	99.1	99.1	**42**	39	35	37	37
FLX 12	Roadside	Diffusion Tube	100	100	28	25	26	24	26
FLX 14	Industrial	Diffusion Tube	100	100	25	22	23	23	25
FLX 17	Roadside	Diffusion Tube	100	100	25	23	22	22	21
FLX 20	Industrial	Diffusion Tube	100	100	22	22	22	21	31
FLX 21	Suburban	Diffusion Tube	100	100	22	19	21	20	22
FLX 22	Industrial	Diffusion Tube	100	100	22	20	21	20	22
FLX 23	Roadside	Diffusion Tube	100	100	28	27	26	26	22
FLX 24	Roadside	Diffusion Tube	100	100	28	27	26	25	26
FLX 26	Roadside	Diffusion Tube	100	100	37	36	37	34	37
FLX 27	Roadside	Diffusion Tube	100	100	32	32	31	30	33
FLX 29	Industrial	Diffusion Tube	100	100	22	20	22	21	25
FLX 31	Industrial	Diffusion Tube	100	100	25	23	26	23	27
FLX 32	Roadside	Diffusion Tube	100	100	32	29	32	33	**removed**
FLX 33	Roadside	Diffusion Tube	100	100	**58**	**55**	**54**	**53**	**54**
FLX 34	Roadside	Diffusion Tube	100	100	**42**	**45**	**42**	**40**	**41**
FLX 35	Roadside	Diffusion Tube	100	100	33	34	32	31	24
FLX 36	Roadside	Diffusion Tube	n/a	n/a	36	36	**removed**		
FLX 37	Roadside	Diffusion Tube	100	100	**41**	**42**	**41**	**40**	**43**
FLX 38	Roadside	Diffusion Tube	n/a	n/a	32	33	**removed**		
FLX 39	Roadside	Diffusion Tube	100	100	21	28	23	22	23

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
FLX 40	Roadside	Diffusion Tube	100	100					**41**
FLX 41	Roadside	Diffusion Tube	90	75					31
FLX 42	Roadside	Diffusion Tube	100	83					30
MEL 5	Roadside	Diffusion Tube	100	100	28	27	27	25	26
MEL 7	Kerbside	Diffusion Tube	100	100			25	25	26
KSG 9	Roadside	Diffusion Tube	100	100	28	29	28	28	32
KSG 10	Roadside	Diffusion Tube	91.6	91.7					35
KSG 11	Roadside	Diffusion Tube	100	100					20
KSG 12	Roadside	Diffusion Tube	100	100					17
WBG 1	Roadside	Diffusion Tube	100	100	**41**	39	36	37	37
WBG 3	Suburban	Diffusion Tube	100	100	14	13	12	14	14
WBG 5	Roadside	Diffusion Tube	100	100	26	22	20	23	21
WBG 6	Roadside	Diffusion Tube	100	100	38	35	33	34	34
WBG 8	Roadside	Diffusion Tube	100	100	30	33	31	35	34
WBG 10	Roadside	Diffusion Tube	91.6	91.7	30	28	25	25	25
WBG 12	Roadside	Diffusion Tube	100	100	23	21	20	22	22
WBG 13	Roadside	Diffusion Tube	100	100	31	28	26	28	28
WBG 15	Roadside	Diffusion Tube	100	100	**41**	37	33	35	35
WBG 17	Roadside	Diffusion Tube	100	100	27	25	23	25	23
WBG 18	Roadside	Diffusion Tube	100	100	35	34	27	32	29
WBG 20	Roadside	Diffusion Tube	100	100	31	32	30	32	34
WBG 22	Roadside	Diffusion Tube	100	100	22	20	16	20	18
WBG 23	Roadside	Diffusion Tube	100	100	23	24	22	23	24
MRT 1	Roadside	Diffusion Tube	100	100	21	22	24	24	24

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
MRT 2	Roadside	Diffusion Tube	n/a	n/a		16	**removed**		
MRT 3	Roadside	Diffusion Tube	83.3	83.3				17	**removed**
LGM 1	Roadside	Diffusion Tube	n/a	n/a	15	14	13	14	**removed**
LGM 2	Roadside	Diffusion Tube	91.6	91.7	29	27	24	25	19
FAR 1	Roadside	Diffusion Tube	100	100	29	27	24	25	24
FAR 2	Roadside	Diffusion Tube	100	100	31	29	30	29	28
STA 1	Roadside	Diffusion Tube	100	100	**41**	**42**	**42**	38	35
STA 2	Roadside	Diffusion Tube	100	100	27	25	28	25	26
STA 4	Roadside	Diffusion Tube	n/a	n/a	17	15	**removed**		
STA 6	Roadside	Diffusion Tube	100	100	24	23	24	23	22
STA 7	Roadside	Diffusion Tube	100	100	34	30	34	34	31
STA 8	Roadside	Diffusion Tube	100	100			**44**	**43**	39
SAX 1	Roadside	Diffusion Tube	100	100		27	29	32	30
LEI 1	Roadside	Diffusion Tube	100	50				23	21
LEI 2	Roadside	Diffusion Tube	100	50				18	26
LEI 3	Roadside	Diffusion Tube	100	100				20	21

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

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

Notes:

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

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

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

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

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

Table A.5 – Annual Mean NO_2 Monitoring Results – Waveney District Council

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
DT1	Roadside	Diffusion Tube	n/a	100	16.2	15.2	14.8	15.2	19.2
DT2	Kerbside	Diffusion Tube	n/a	100	19.5	19.4	17.5	18.1	20.4
DT3	Roadside	Diffusion Tube	n/a	100	21.7	22.8	19.2	21.9	23.7
DT4	Roadside	Diffusion Tube	n/a	100	29.4	27.7	23.1	24.5	23.6
DT5	Roadside	Diffusion Tube	n/a	100	25.6	21.8	23.4	24.1	25.6
DT6	Kerbside	Diffusion Tube	n/a	100	17.8	18.2	14.6	14.5	17.9
DT7	Roadside	Diffusion Tube	n/a	100	19.6	18.7	17.6	18.1	24.4
DT8	Urban Background	Diffusion Tube	n/a	100	16.5	16.5	12.3	15	14.7
DT9	Roadside	Diffusion Tube	n/a	75	24	29.3	31.1	28.5	33.8
DT10	Roadside	Diffusion Tube	n/a	n/a	25.7	31.2	29.5	29.3	**removed**
DT11	Roadside	Diffusion Tube	n/a	n/a	35.3	29.9	24.8	27.2	29.8
DT12	Roadside	Diffusion Tube	n/a	91.7	26	25.2	24.7	27	**removed**
DT13	Roadside	Diffusion Tube	n/a	100	31.4	29.5	27.8	28.9	26.4
DT14	Roadside	Diffusion Tube	n/a	100	32.3	31.6	28.4	27.2	27.6
DT15	Roadside	Diffusion Tube	n/a	100	33.2	23.9	23.5	25.3	28.1
PT1	Roadside	Diffusion Tube	n/a	n/a				28.2	**removed**
PT2	Roadside	Diffusion Tube	n/a	n/a				26.6	**removed**
PT3	Roadside	Diffusion Tube	n/a	n/a				31.9	**removed**
PT4	Roadside	Diffusion Tube	n/a	100				35.8	36.3

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

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

Notes:

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

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

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

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

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

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

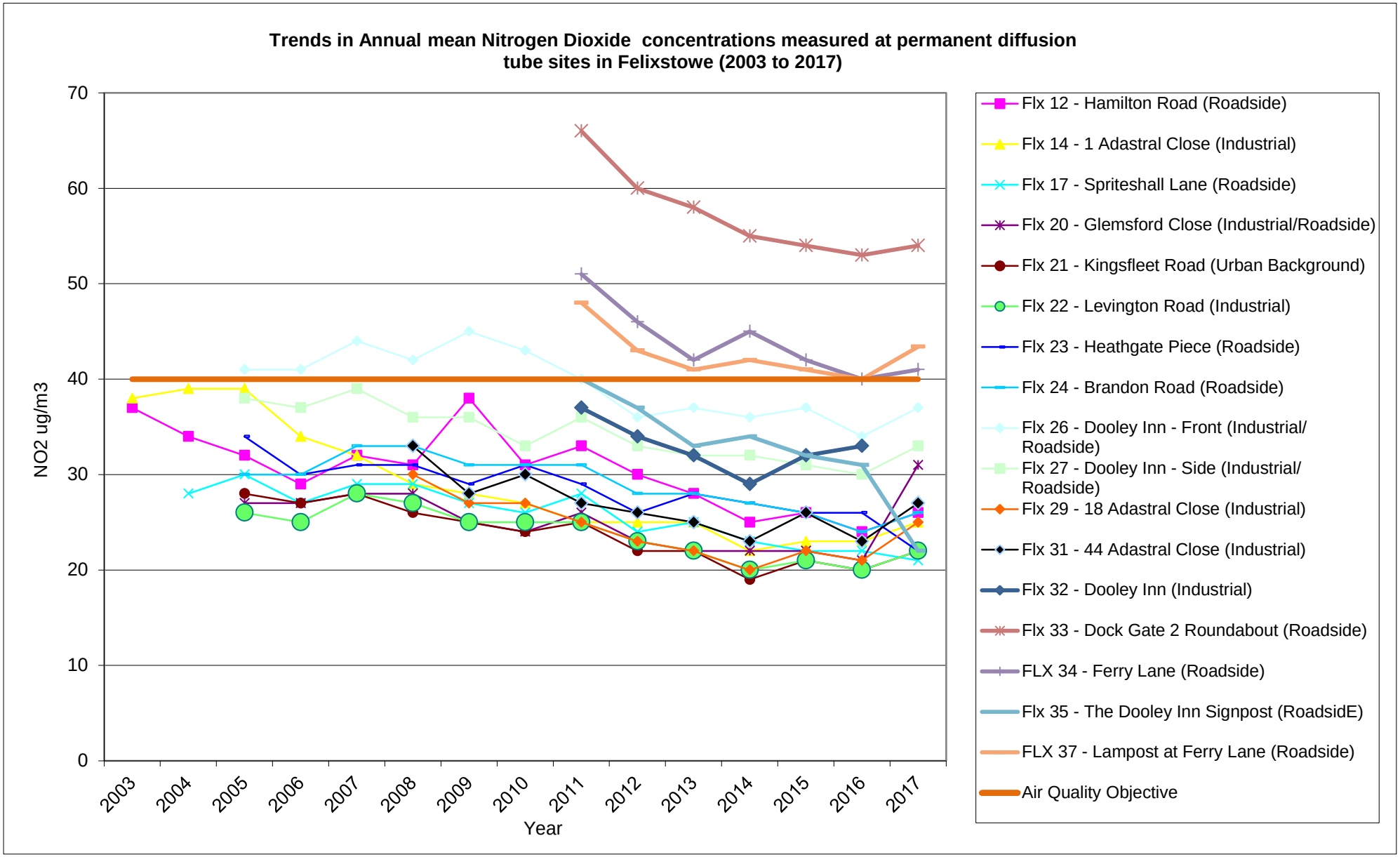


Figure A.2 – Trends in Annual Mean NO_2 Concentrations in Woodbridge

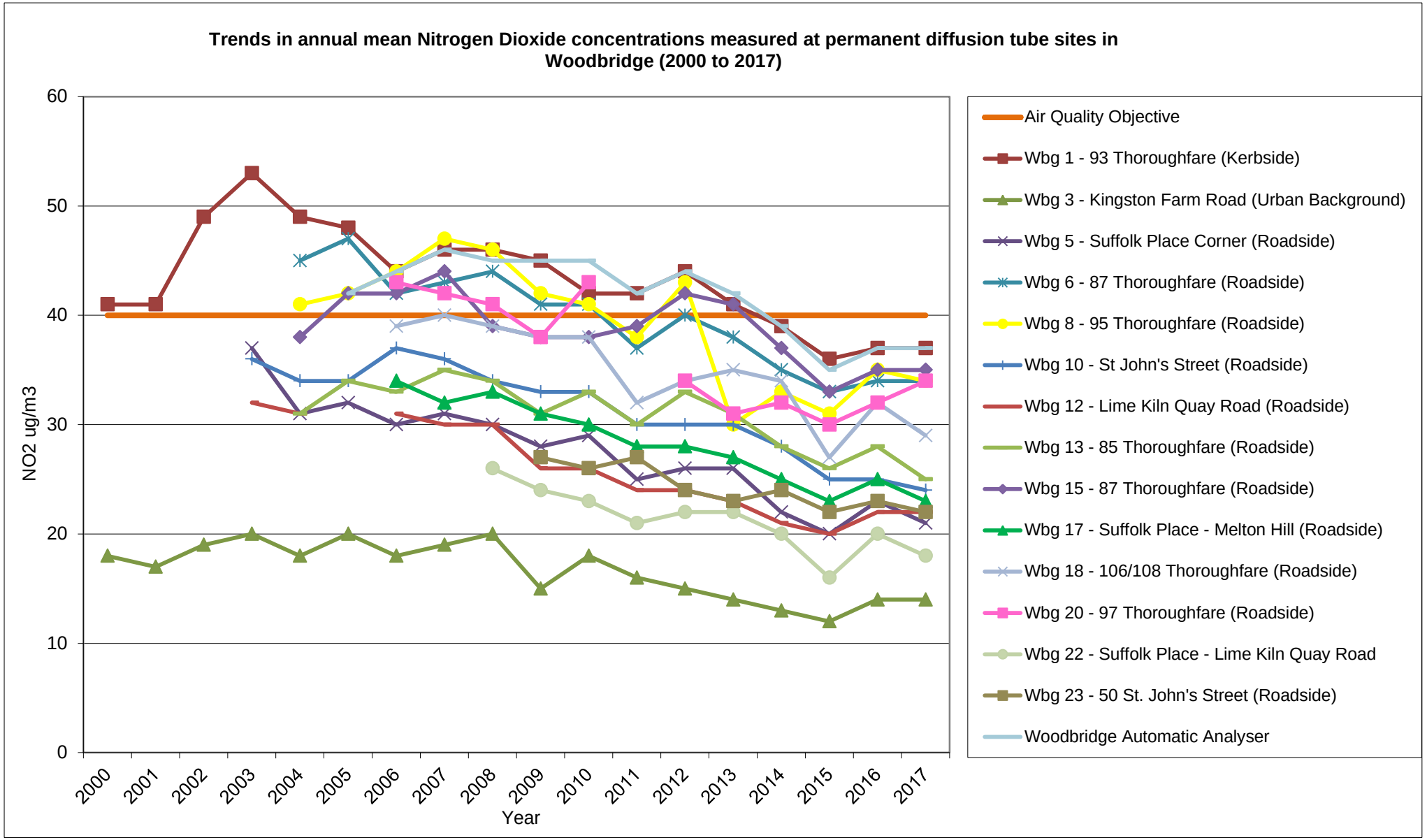


Figure A.3 – Trends in Annual Mean NO_2 Concentrations in Martlesham, Melton and Kesgrave

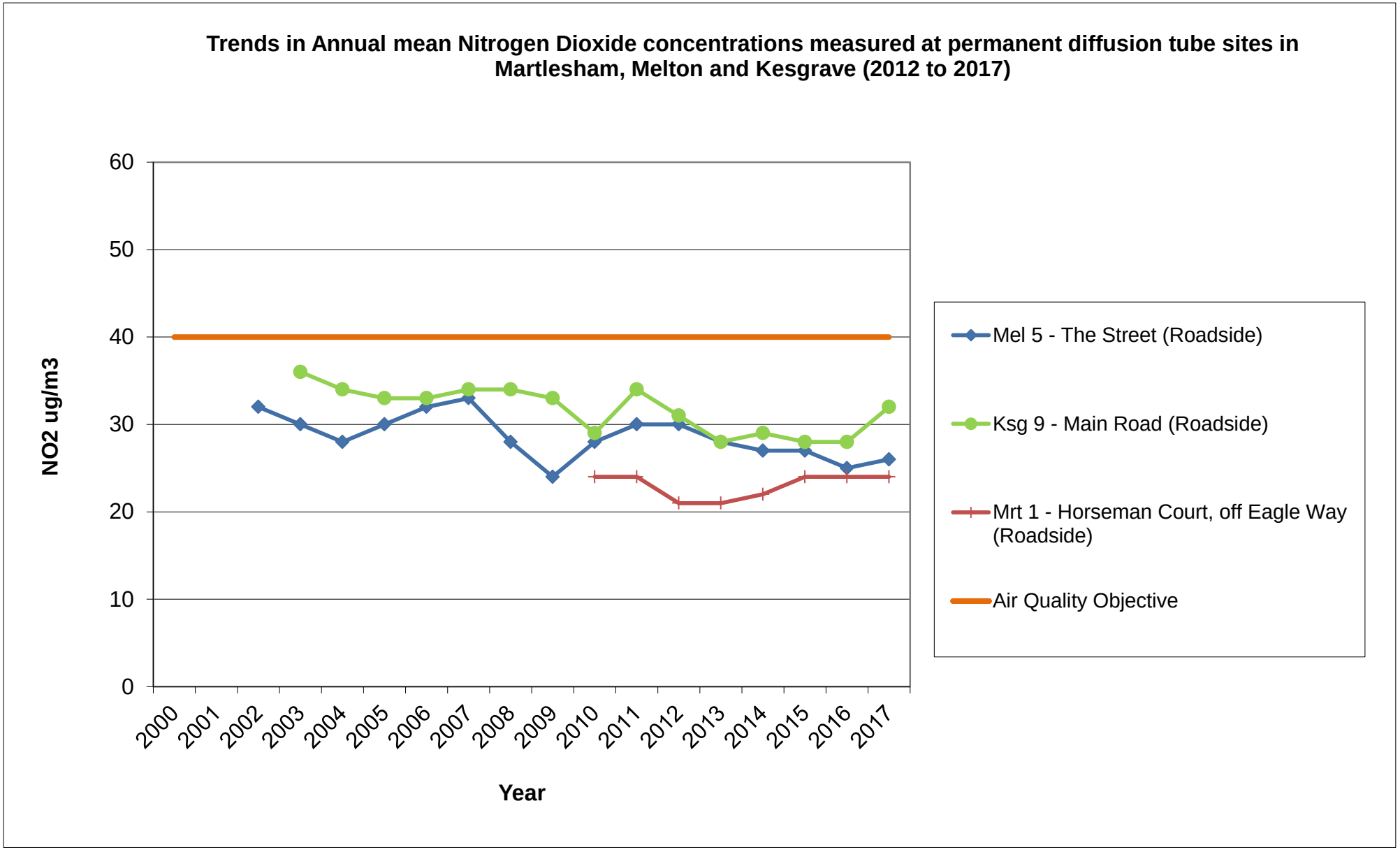


Figure A.4 – Trends in Annual Mean NO_2 Concentrations in Little Glemham, Farnham and Stratford St. Andrew

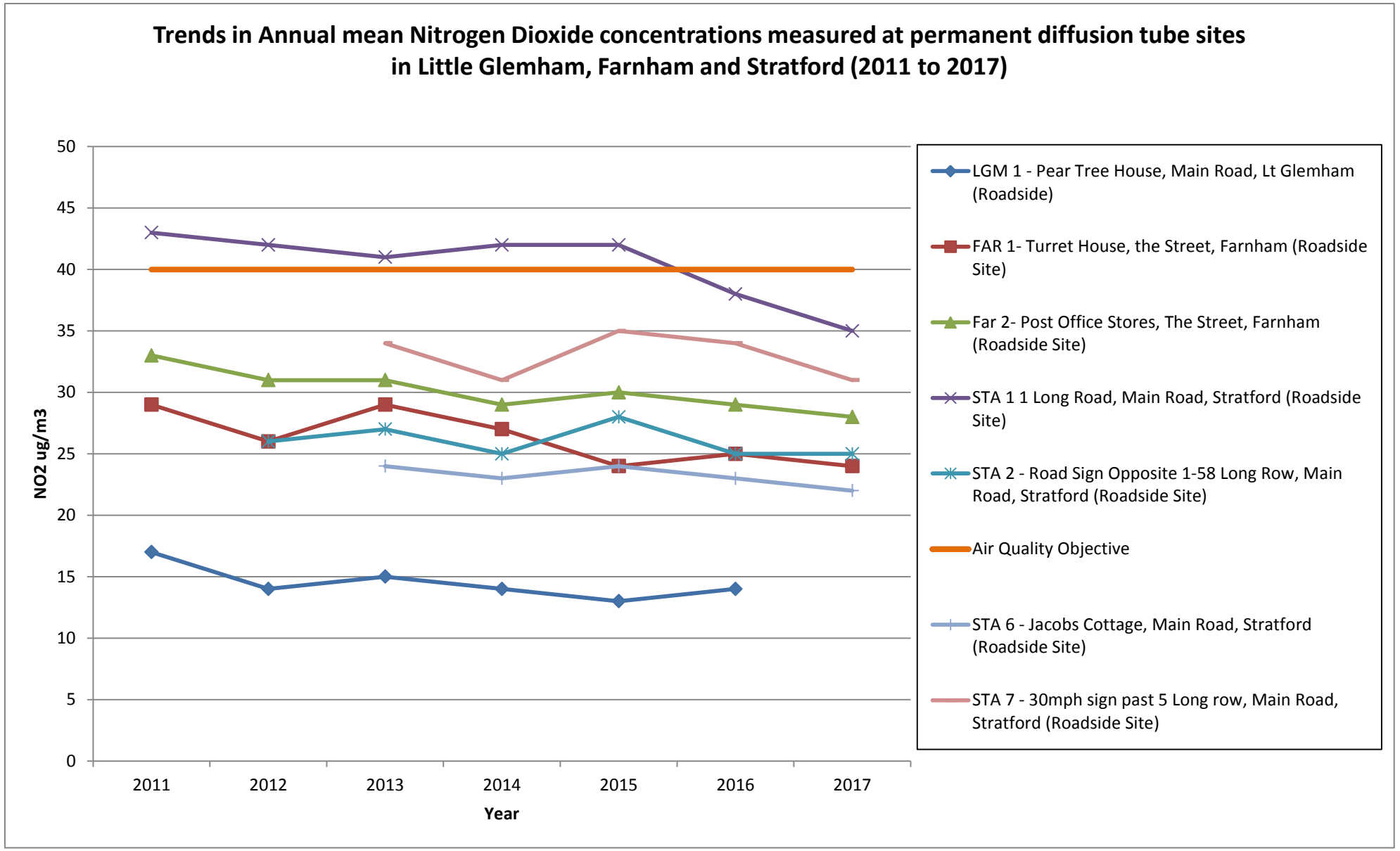


Figure A.5 – Trends in Annual Mean NO_2 Concentrations in Lowestoft

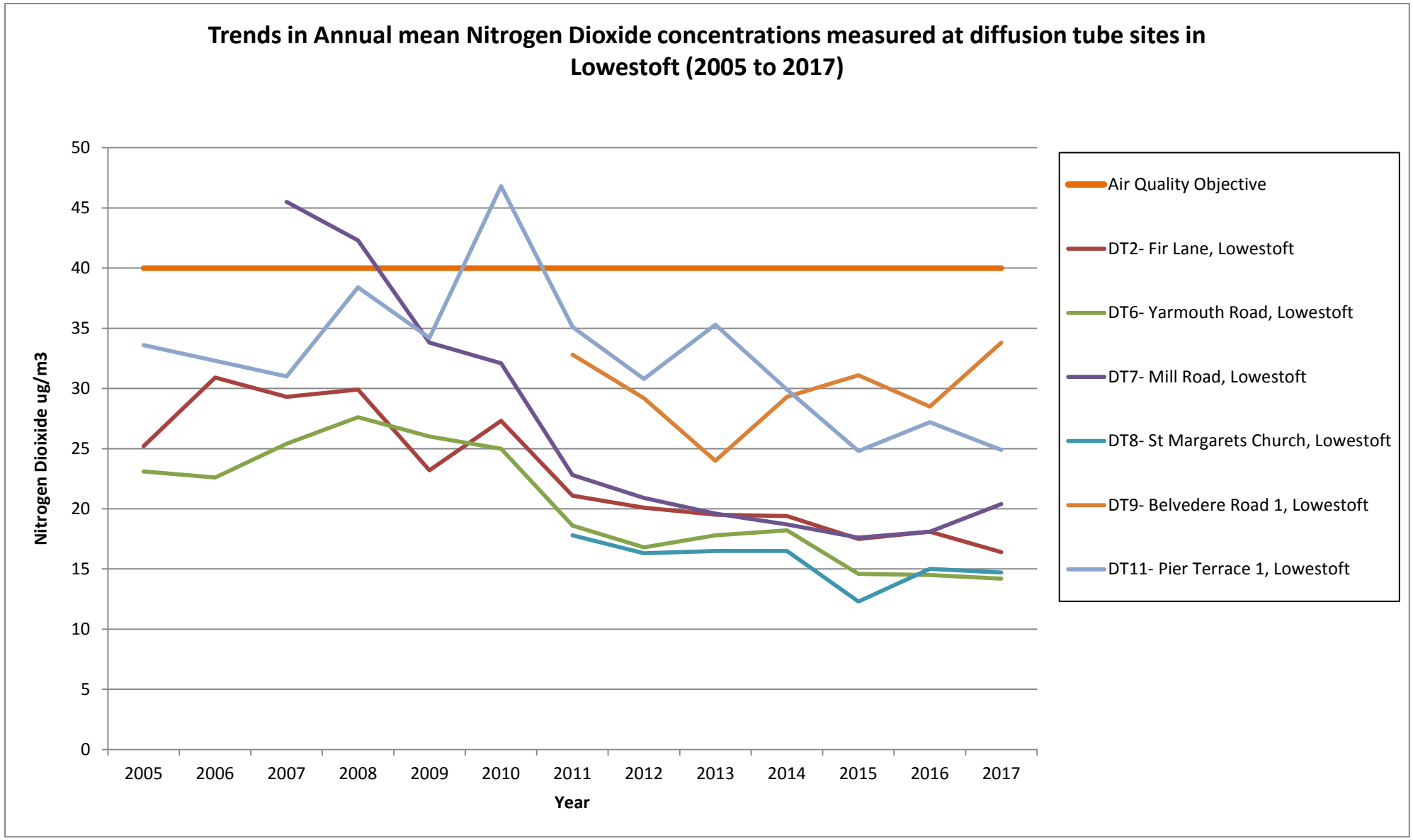


Figure A.6 – Trends in Annual Mean NO_2 Concentrations in Carlton Colville, Oulton Broad, Beccles and Bungay

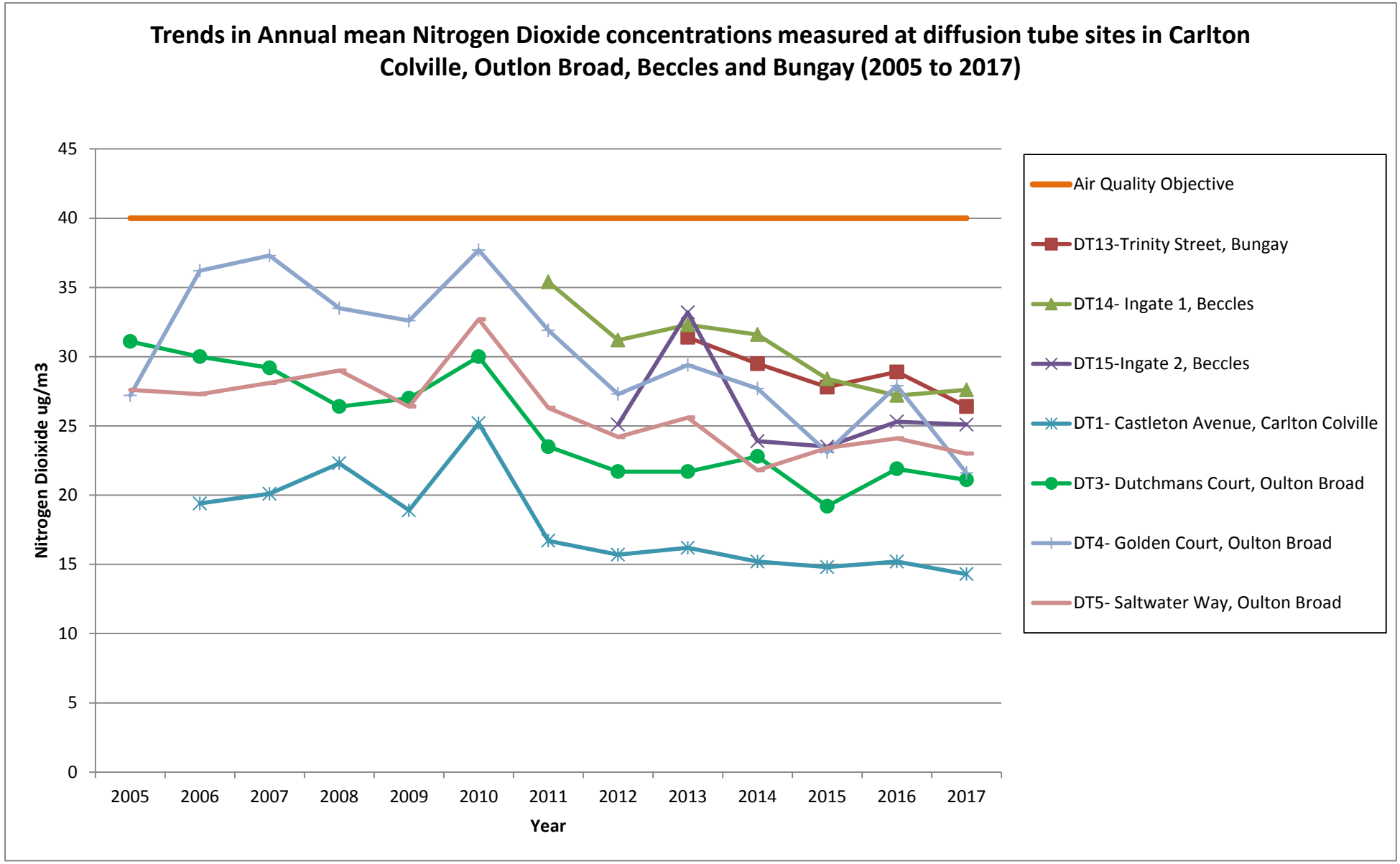


Table A.6 – 1-Hour Mean NO_2 Monitoring Results – Suffolk Coastal District Council

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2013	2014	2015	2016	2017
WBG	Roadside	Automatic	99.6	99.6	**0**	0	5	0	**1**

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.

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results – 2017 – Suffolk Coastal District Council

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.81 for Woodbridge and 0.77 for all others) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
FLX 12	46.3		29.4	26.5	26.5	29.7	26.0	31.6	30.6	39.7	42.2	39.3	33.4	25.7	
FLX 14	40.4	33.8	36.7	33.2	24.2	29.3	21.9	25.6	30.4	37.3	52.1	31.3	33.0	25.4	
FLX 17	34.9	32.2	29.1	22.4	28.7	27.8	21.5	21.1	24.7	24.8	30	26.6	27.0	20.8	
FLX 20	39	53.2	46.1	33.7	27.3	37.9	30.3	31.4	35.5	43	46.8	63	40.6	31.3	
FLX 21	39.9	42.4	33	20.3	20.7	23.2	17	24	14.3	35.8	38.3	31.7	28.4	21.9	
FLX 22	40.4	32.8	32.6	23.3	20.9	23.4	19.6	23.7	26.7	29.6	38.8	33.3	28.8	22.1	
FLX 23	42.6	32.7	28.1	27.4	17.4	26.1	25.9	29.3	27.25	28.4	28.5	23.3	28.1	21.6	
FLX 24	45.3	29.1	33.5	30.4	27.3	41	24.4	27.6	30	39.1	31.4	40.2	33.3	25.6	
FLX 26a	54	57.8	50.5	43.8	41.3	46.8	38.4	46	41.1	51.4	54.5	47.9	see below	see below	
FLX 26b	60	58.9	58.3	45.7	43.5	46.5	34.1	49.6	49.7	50.9	54	46.7	see below	see below	
FLX 26c	59.7	51.8	55.7	45.9	44.9	41.5	41.6	43.1	47.6	47.8	55.9	40.8	see below	see below	
FLX 26 a,b,c - mean	57.9	56.2	54.8	45.1	43.2	44.9	38.0	46.2	46.1	50.0	54.8	45.1	48.5	37.4	

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.81 for Woodbridge and 0.77 for all others) and Annualised [1]	Distance Corrected to Nearest Exposure ([2])
FLX 27a	49.8	40.6	38.9	36	34.6	39.9	35.2	34	40.4	44.4	50.9	43.8	see below	see below	
FLX 27b	50	40.6	42	36.2	36.5	41.6	30.8	36.4	39.4	53.8	53.8	58.1	see below	see below	
FLX 27c	52.5	50.2	44.9	37	33.2	38.6	34.6	39.8	42.2	52.9	58.7	52.4	see below	see below	
FLX 27 a,b,c-mean	50.8	43.8	41.9	36.4	34.8	40.0	33.5	36.7	40.7	50.4	54.5	51.4	42.9	33.0	
FLX 29	41	32.2	31.3	28	21.1	28.3	21.9	28.9	29.9	37.1	43.1	41.5	32.0	24.7	
FLX 31	44.8	37.3	39.4	35.1	24.7	31.7	26.4	28.6	32	36.2	47.6	41.7	35.5	27.3	
FLX 33	66.8	76.4	71.9	57.9	63.1	72.2	64	66.4	71.3	79.2	81	71.9	70.2	**54.0**	
FLX 34	71.1	61	58.6	52	51	41.4	41.7	47	50.5	52.3	58.8	57.1	53.5	**41.2**	
FLX 35	43.1	39.5	34.4	26.3	29.7	28.3	24.2	25.3	25.5	31.4	32.6	31	30.9	23.8	21.8
FLX 37	64.8	63.8	59.7	47.3	44.4	54.2	43.8	52.7	52.6	70.1	69.9	52.6	56.3	43.4	
FLX 39	42.1	32.5	34.3	23.5	30.6	27	24.7	26.5	26.6	31.2	32.7	28	30.0	23.1	
FLX 40	67.8	60.4	54.5	44	42.5	51.4	37.6	53.2	52.2	57.9	59.1	59.3	53.3	**41.1**	
FLX 41				32.4	31.4	35.5	29.4	32.3	29.9	40.2	39.3	35.3	34.0	31.2	
FLX 42			39.5	27.4	30.8	31	26.4	33.6	31	39.5	35.3	35.6	33.0	29.5	
MEL 5	40.4	37.9	39.7	32.9	29.5	29	25.3	30.5	32.7	40.2	35.8	37.2	34.3	26.4	25.8
MEL 7	53	35.6	39.5	27	28.6	28.8	24.5	28.4	28.6	33.3	38.5	33.9	33.3	25.6	

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.81 for Woodbridge and 0.77 for all others) and Annualised [1]	Distance Corrected to Nearest Exposure ([2])
KSG 9	54.6	53.7	41.2	32.4	31.9	40.2	33.1	41.2	35.1	50.5	32	47.9	41.2	31.7	
KSG 10	59.8	48.8	42.5	44.5	40.5	41.2	no data	44	46.5	31.5	51.3	42.9	44.9	34.5	
KSG 11	38.7	33.4	27.5	25	17.2	40.6	13.1	18.9	26.7	23.3	27.8	24.5	26.4	20.3	17.4
KSG 12	33.4	26.1	38.1	19	17.3	15.9	12.7	15.9	19.2	22	27	24.8	22.6	17.4	15.6
WBG 1a	59.6	52.2	41.9	45.2	42.4	43.7	32.6	40.6	42.8	44.9	63.1	40.1	see below	see below	
WBG 1b	57.2	53	42.4	46.7	39.2	40.9	32.6	40.3	40.1	44.1	63.6	40.3	see below	see below	
WBG 1c	60.4	51.6	45.9	44.8	40.5	37.7	35.5	37.7	35.6	44.5	62.1	43.5	see below	see below	
WBG 1 a,b,c - mean	59.1	52.3	43.4	45.6	40.7	40.8	33.6	39.5	39.5	44.5	62.9	41.3	45.3	36.7	
WBG 3	26.8	23.6	18.5	11.7	13.3	11	9.9	12.9	13.6	18.7	23.1	19.7	16.9	13.7	
WBG 5	38.1	33.1	26.1	20.7	25.9	20.6	18.8	21.3	22.5	25.6	31.7	26	25.9	21.0	
WBG 6	55	46.9	39.7	40.5	38.7	32.8	30.2	38.7	36.7	37.9	60.2	42.6	41.7	33.7	
WBG 8	55.4	40.5	39.7	39.2	39.8	36.6	31.3	39.5	41.1	44.9	57.8	42.9	42.4	34.3	
WBG 10	46.4	31.5	34	24.5	29.8	27.5	24	28.1	27.9	27.3	39.2		30.9	25.1	24.4
WBG 12	34.5	27.7	29.2	24.3	21.4	22.8	22.1	23.1	25.8	30.6	41.4	29.5	27.7	22.4	22.1
WBG 13	51.6	37.5	38	33	31.8	26.9	24.8	30.8	28.6	33.6	44.7	34.6	34.7	28.1	25.2
WBG 15	51.4	48.8	44.1	42.3	38.6	36.2	29.7	35.4	40.9	39.3	60.1	44.5	42.6	34.5	

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.81 for Woodbridge and 0.77 for all others) and Annualised [1]	Distance Corrected to Nearest Exposure ([2])
WBG 17	36	33.8	30.1	24.3	31.4	26.1	22.1	25.2	25.2	29.7	35.7	27.3	28.9	23.4	
WBG 18	54.7	40.2	38.7	30.2	38.3	27.9	28.8	29.6	34.4	33.7	39.3	32.1	35.7	28.9	
WBG 20	54.1	47.5	38.5	37.7	32.6	35.9	33.8	34.5	39.5	44	66.3	39.2	42.0	34.0	
WBG 22	30.2	29.8	23.1	19.5	22.3	9.8	16.5	18.1	18.7	27.3	29.6	23.9	22.4	18.1	
WBG 23	44.4	38.9	28.7	20.8	24.5	23.1	21.2	24.4	27.2	32.9	36.8	31	29.5	23.9	22.1
MRT 1a	33.4	35.7	33.9	29.3	28.9	31.8	25.6	29.1	27.1	32.6	32	31.4	see below	see below	
MRT 1b	39.6	38	32.8	25.8	28.4	29.8	26	31.5	29.6	34.2	32.5	30.6	see below	see below	
MRT 1a,b,-Mean	36.5	36.85	33.35	27.55	28.65	30.8	25.8	30.3	28.35	33.4	32.25	31	31.2	24.0	
LGM 2		29.7	27.2	21.4	21.6	21.5	19.7	20.1	25.1	26.6	27.8	25.4	24.2	18.6	
FAR 1	39	34	30.4	28.9	31.1	27.6	25.6	28.6	28.2	29.4	34.9	31.3	30.8	23.7	
FAR 2a	43.4	41.3	36.7	31.5	34.1	29.8	34.2	38.4	35.6	36.1	36.8	35.4	see below	see below	
FAR 2b	45.7	41.4	35.1	32.5	34.8	31.3	30.6	35.4	34.8	36	41.2	35.2	see below	see below	
FAR 2c	30.4	46.4	36.7	31.1	36	35.2	32.9	37.5	36.3	33.5	39.6	34.4	see below	see below	
FAR 2a,b,c-mean	39.8	43.0	36.2	31.7	35.0	32.1	32.6	37.1	35.6	35.2	39.2	35.0	36.0	27.7	

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.81 for Woodbridge and 0.77 for all others) and Annualised [1]	Distance Corrected to Nearest Exposure ([2])
STA 1a	46.7	35.8	52	43	45.8	41.8	43.2	51.8	44.6	49.3	42.5	37.7	see below	see below	
STA 1b	56	50.2	44.7	43.1	45.2	41.4	40.8	51	48.1	48.2	45.5	39.6	see below	see below	
STA 1c	49.2	54.1	49.2	44.2	49.5	44.6	40.6	44.1	47.8	47.3	44.2	38.9	see below	see below	
STA 1a,b,c-mean	50.6	46.7	48.6	43.4	46.8	42.6	41.5	49.0	46.8	48.3	44.1	38.7	45.6	35.1	
STA 2	32.9	42.1	35.8	22.8	27.7	30.4	33.5	38	35.8	31.4	34	32.9	33.1	25.5	
STA 6	36.9	34	26.5	24.6	27.4	25.4	22.5	28.5	27.8	28.2	28	26	28.0	21.5	
STA 7	40.6	37.6	40.9	33.3	43.7	43.8	35.8	44.9	39.8	40.6	42.1	34.7	39.8	30.7	
STA 8a	62.8	57.4	46.4	41.7	52.4	49.7	39.1	53.6	47.2	49.1	41.4	39	see below	see below	
STA 8b	57.1	57.7	55.7	42.1	57.8	48.4	48.3	54.9	48.2	51	47.5	37.9	see below	see below	
STA 8c	54.2	54.1	56.9	46.9	63.3	52	48.6	55.8	50.7	53.5	49.7	43.2	see below	see below	
STA 8a,b,c-mean	58.0	56.4	53.0	43.6	57.8	50.0	45.3	54.8	48.7	51.2	46.2	40.0	50.4	38.8	
SAX 1	52.4	41.6	42.2	40.1	37.5	33.3	27.5	35.4	37.5	37	45.5	36.5	38.9	29.9	
LEI 1	41.7	32.2	30.1	24	24.2	22.3	19.8	21.8	23.3	26.8	33.2	26.8	27.2	20.9	20.4
LEI 2	55.1	34.6	38.2	29.4	26.4	30.5	25.8	32.7	28.8	33.5	34.2	32	33.4	25.7	24.5
LEI 3	38.6	30.6	32.7	24.8	27.6	24.8	22.6	25	28.2	26.4	28.2	21.8	27.6	21.3	

☒ **Local bias adjustment factor used (for Woodbridge sites)**

☒ **National bias adjustment factor used (for all other locations)**

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

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

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

Table B.2 – NO_2 Monthly Diffusion Tube Results – 2017 – Waveney District Council

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.77) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT1	45.0	28.6	27.2	22.5	20.6	19.8	17.1	23.4	21.0	24.9	26.6	23.2	25.0	19.2	14.3
DT2	37.5	30.3	28.1	27.3	23.5	22.0	15.9	23.0	23.0	22.5	36.6	27.7	26.5	20.4	16.4
DT3	47.2	22.9	33.3	29.9	32.9	26.6	24.4	31.9	31.1	25.6	36.1	27	30.7	23.7	21.1
DT4	37.4	31.9	29.5	22.8	28.4	26.1	19.9	26.9	28.5	34	41.3	40.5	30.6	23.6	21.6
DT5	53.6	42	26.6	29.8	28.9	28.7	26.2	32.8	30.3	31.4	39	29.1	33.2	25.6	23.0
DT6	37.6	29.5	25.4	20.9	27.4	16.5	16.3	21.2	18.2	19.2	24.1	22	23.2	17.9	14.2
DT7	25.8	44.6	33.9	28.7	39.2	29.4	21.3	33.9	31.5	33.3	31.9	26	31.6	24.4	20.4
DT8	27.1	24.5	29.1	15.3	18.6	15.4	9.1	14.7	12.8	17.2	24.5	20.3	19.1	14.7	
DT9	48.5	42.6	48.6	36	36	34.8	31.7				62.5	54.7	43.9	33.8	
DT11		42.8	43.5	43.8	39.1	35.5	26.6	41.2	31	35.4	52.7	33.8	38.7	29.8	24.9
DT13	41.4	38.1	34.6	37.8	34.6	29.6	26.1	30.8	32.8	31.9	47.6	26.1	34.3	26.4	
DT14	48.1	38.9	40.9	33.8	37.4	29.2	30.1	31.1	35.4	32.4	39.1	33.5	35.8	27.6	
DT15	50.4	29.9	34	32.2	30.3	30.5	23.5	30.1	35.2	41.3	61	39.5	36.5	28.1	25.1
PT4a	54.8	48.3	57.8	54.8	50.5	36.4	36.3	43	40.1	41.2	60.4	52.2	n/a	n/a	
PT4b	52	49.4	56.7	54.6	51.6	41.3	34	41.7	39.6	32.5	58.8	51.9	n/a	n/a	
PT4c	51.5	53.1	46.6	57.6	49	38	36.4	43.2	38.9	40.1	44.9	56.7	n/a	n/a	
PT4 mean	52.8	50.3	53.7	55.7	50.4	38.6	35.6	42.6	39.5	37.9	54.7	53.6	47.1	36.3	

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

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

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

Air Quality Monitoring Data QA/QC

QA/QC of automatic monitoring

NO_2 concentrations were monitored by ozone chemiluminescence in Woodbridge within the Suffolk Coastal district. Quality assurance of the data from the continuous monitoring station was carried out by Ricardo-AEA following the same procedures used for sites within the Government's Automatic Urban and Rural Network. Calibrations were undertaken every 2-3 weeks by a Council Officer, the procedures adopted for the calibrations were modelled on those developed by AEA Energy & Environment for use in the national monitoring networks. The calibrations were undertaken using certified calibration gas provided by BOC with traceability to National Metrology Standards obtained via regular UKAS Quality Control Audits carried out by Ricardo-AEA. The audits provide a range of information that is utilised within the data management process for the data sets.

Audit tests are undertaken once a year by Ricardo-AEA. They include accredited audit zero and span calibrations, linearity, NO_x converter efficiency, flow and leak checks as well as checks of the instruments sampling system. Data presented in this report have been fully ratified by Ricardo-AEA.

The data set was screened, scaled and validated using all available routine site calibrations, audit results and service engineer records. This was an ongoing process with checks made daily to ensure high data capture is achieved. A final process of data ratification ensures that the data provide the most accurate record of the pollution concentrations across the measurement period. The data management process adopted is that evolved and implemented by Ricardo-AEA within the data management programme of the AURN UK national monitoring network. This process is expected to deliver data sets that meet the EU Data Quality Objective of a measurement uncertainty of better than 15%.

QA/QC of diffusion tube monitoring

Diffusive samplers, or diffusion tubes, (as described in paragraphs 7.178 - 7.198 of the Technical Guidance LAQM.TG(16)) are widely used for indicative monitoring of ambient nitrogen dioxide (NO_2) in the context of Review and Assessment. Diffusion tubes are particularly useful:

- when simple, indicative techniques will suffice;
- to give an indication of longer-term average NO_2 concentrations;
- for indicative comparison with the Air Quality Strategy Objectives based on the annual mean;
- for highlighting areas of high NO_2 concentration; and
- where installation of an automatic analyser is not feasible

They are useful for identifying areas of high NO_2 concentration, particularly when dealing with sources such as traffic emissions, which do not change much from day to day.

Diffusion tubes are used by both Suffolk Coastal and Waveney District Councils. Diffusion tubes were deployed, and the data analysed, as set out in the Technical Guidance LAQM.TG(16) paragraphs 7.178-7.198, and in accordance with the "NO_2 Diffusion Tubes for LAQM:Guidance Note for Local Authorities". At the end of the monitoring period any erroneous data was deleted and the annual average then calculated for each site. For any sites with data capture less than 75% (9 months) the results were then annualised. As diffusion tubes tend to under or over read this can result in low accuracy and it is necessary to bias correct the results based upon local or national collocation studies with chemiluminescent analysers. Bias correction was undertaken after annualisation of the data. Following this, any required distance correction calculations were undertaken. Further details of all stages are outlined in the following text.

Analytical laboratory

The analytical laboratory used for supply and analysis of NO_2 diffusion tubes for both Suffolk Coastal and Waveney District Councils is Environmental Scientifics Group (ESG) based in Didcot. The monitoring is undertaken using Palmes passive diffusion tubes exposed on a monthly basis. The tubes are prepared by spiking acetone:triethanloamine (TEA) (50:50) onto the grids prior to the tubes being assembled. The tubes are then desorbed with distilled water and the extract analysed using a segmented flow auto-analyser with ultraviolet detection. The laboratory is formally accredited under the United Kingdom Accreditation Scheme (UKAS).

The samples were analysed in accordance with ESG standard operating procedure ANU/SOP/1015 issue 1, which meets the guidelines set out in Defra's 'Diffusion Tubes For Ambient NO_2 Monitoring practical Guidance'.

The results were initially calculated assuming an ambient temperature of 11^{o}C, and the reported values adjusted to 20^{o}C to allow for direct comparison with EU limits.

The diffusion tubes are stored and installed in accordance with the "NO_2 Diffusion Tubes for LAQM:Guidance Note for Local Authorities"

ESG participates in the Defra promoted independent analytical proficiency testing (PT) scheme AIR-PT to check analytical performance. This is operated by LGC Standards and supported by the Health and Safety Laboratory. AIR-PT started in 2014 and combines two long running proficiency testing schemes: LGC Standards STACKS PT scheme and HSL Workplace Analysis Scheme for Proficiency (WASP) PT scheme. For NO_2 diffusion tubes, the test sample types used are called AIR NO2 and these are distributed to participating laboratories on a quarterly basis.

With consent from participating laboratories, LGC Standards provides a summary of the proficiency testing data to the LAQM Helpdesk updated on a quarterly basis following completion of each AIR-PT round. This information is hosted on their webpages at http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

ESG Scientifics, at Didcot achieved the highest score of **'Satisfactory'** during 2017.

Annualisation of diffusion tube data

Short-term to Long-term Data adjustment

Some diffusion tube sites did not achieve full data capture. For sites with fewer than 9 months of data, and for some other sites of concern within Suffolk Coastal District Council, the mean of the 2017 data has been "annualised" using the procedure set out in LAQM.TG(16) Box 7.9. The method is as follows:

- Identify 2-4 nearby, long term, continuous monitoring sites, ideally those forming part of the national network. These should be background sites (Urban background, Suburban or Rural) to avoid any very local effects that may occur at Urban Centre, Roadside or Kerbside sites, and should wherever possible lie within a radius of about 50 miles. The three sites used here are Wicken Fen (Rural Background, St. Osyth (Rural Background) and Norwich Lakenfields (Urban background). These sites are part of the UK Automatic Urban and Rural Network (AURN) and are the closest sites to us with sufficient data capture for the year in question. Data for Wicken Fen and Norwich Lakenfields is provisional from 1/10/17 onwards and data for St. Osyth is provisional from 1/7/17 onwards.
- Obtain the unadjusted (not corrected for bias) annual mean (Am) for the calendar year for these sites. As this calculation is to estimate the annual mean for a diffusion tube site, the diffusion tube calendar year for 2017 was based on the diffusion tube exposure periods rather than 1st Jan – 31st Dec 2017.
- Work out the period mean (Pm) for the period of interest with diffusion tube results at each of the comparison sites separately.
- Calculate the ratio of the annual mean to the period mean (Am:Pm) for each period at each location.
- Calculate the average of these ratios (R_a). This is the adjustment factor.
- Multiply the measured period mean (M) for the short term monitoring location by the adjustment factor (R_a) to give the estimate of the annual mean for 2017.
- Calculations are set out in the table overleaf.

  FLX 41: the (unadjusted) measured period mean (M) was 34.0 µg/m^3: 34.0 µg/m^3 (M) x 1.19 (R_a) = **40.5 µg/m^3 (annualised mean)**
  FLX 42: the (unadjusted) measured period mean (M) was 33.0 µg/m^3: 33.0 µg/m^3 (M) x 1.16 (R_a) = **38.3 µg/m^3 (annualised mean)**

- The annualised means will then be bias adjusted as for all other sites.

Site	Missing months	Annual mean NO_2, Wicken Fen µg m^{-3} (Am	Annual mean NO_2, St Osyth µg m^{-3} (Am)	Annual mean NO_2, Norwich Lakenfields µg m^{-3} (Am)	Period mean NO_2, Wicken Fen µg m^{-3} (Pm)	Period mean NO_2, St Osyth µg m^{-3} (Pm)	Period mean NO_2, Norwich Lakenfields µg m^{-3} (Pm)	Ratio Annual: Period mean Wicken Fen (Am:Pm	Ratio Annual: Period mean St Osyth (Am:Pm)	Ratio Annual: Period mean Norwich Lakenfields (Am:Pm)	Average Am:Pm of all sites (R_a)
FLX 41	Jan, Feb, Mar	8.87	15.16	13.33	7.19	13.00	11.35	1.23	1.17	1.17	**1.19**
FLX 42	Jan, Feb	8.87	15.16	13.33	7.39	13.42	11.67	1.20	1.13	1.14	**1.16**

N.B Annual mean for all sites runs 05/01/17 to 04/01/18.

Period mean dates:

Site	Month	On/Off dates
FLX 41	Apr-Dec	30/03/17 - 04/01/18
FLX 42	Mar-Dec	02/03/17 - 04/01/18

NO_2 Diffusion Tube Bias Adjustment

Diffusion tubes are useful low-cost method for indicative monitoring of ambient nitrogen dioxide (NO_2) concentrations. However, diffusion tubes are affected by several sources of interference which can cause substantial under or overestimation (often referred to as "bias") compared to the chemiluminescent analyser (defined within Europe as the reference method).

Any such "bias" is a problem where diffusion tube results are to be compared with air quality objectives. As a result, local authorities are required to quantify the "bias" of their diffusion tube measurements and apply an appropriate bias adjustment factor to the annual mean if required.

Local Authorities can either:

1. Carry out their own co-location study (in which the accuracy of the diffusion tubes is quantified by exposure alongside an automatic chemiluminescence analyser), and use the results to calculate a bias adjustment factor.

2. Use a combined bias adjustment factor, based on the result of many co-location studies (using the same laboratory and tube preparation method).

National Bias Adjustment Factor

Combined “national” bias adjustment factors for UK diffusion tube laboratories, based upon Local Authority co-location studies throughout the UK, are provided on behalf of Defra and the Devolved Administrations. A database of these bias adjustment factors is available at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html. **The national bias adjustment factor** given for ESG Didcot in 2017 in the 03/18 edition of ‘National Spreadsheet of Bias Adjustment Factors’ **was 0.77 using results from 27 different studies**. A copy of the output from the spreadsheet can be viewed overleaf. The 06/18 edition of ‘National Spreadsheet of Bias Adjustment Factors’ has since been released which confirms the bias adjustment factor as 0.77 using results from 29 different studies.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/18

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2018
LAQM Helpdesk Website

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[3] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, 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 (To add your own calculation, choose [Edit] from the pop-up list)	Year[5] (To add your own calculation, choose [Edit])	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
ESG Didcot	50% TEA in acetone	2017	R	Suffolk Coastal DC	12	45	37	21.7%	G	**0.82**
ESG Didcot	50% TEA in acetone	2017	R	Dumfries and Galloway Council	12	36	29	23.3%	G	**0.81**
ESG Didcot	50% TEA in acetone	2017	KS	Marylebone Road Intercomparison	12	106	79	34.3%	G	**0.74**
ESG Didcot	50% TEA in acetone	2017	R	Vale of White Horse District Council	11	31	25	26.0%	G	**0.79**
ESG Didcot	50% TEA in acetone	2017	UB	Cardiff City Council	10	29	21	35.1%	G	**0.74**
ESG Didcot	50% TEA in acetone	2017	R	Cambridge City Council	12	45	33	37.7%	G	**0.73**
ESG Didcot	50% TEA in acetone	2017	R	Wrexham County Borough Council	12	20	17	14.5%	G	**0.87**
ESG Didcot	50% TEA in acetone	2017	UI	North Lincolnshire Council	12	22	16	40.7%	G	**0.71**
ESG Didcot	50% TEA in acetone	2017	KS	Caerphilly CBC	12	37	32	15.8%	G	**0.86**
ESG Didcot	50% TEA in acetone	2017	R	Caerphilly CBC	11	44	29	51.2%	G	**0.66**
ESG Didcot	50% TEA in acetone	2017	UB	City of York Council	12	23	15	53.4%	G	**0.65**
ESG Didcot	50% TEA in acetone	2017	R	City of York Council	10	37	28	30.8%	G	**0.76**
ESG Didcot	50% TEA in acetone	2017	R	City of York Council	11	32	23	41.0%	G	**0.71**
ESG Didcot	50% TEA in acetone	2017	R	City of York Council	12	40	25	58.6%	G	**0.63**
ESG Didcot	50% TEA in acetone	2017	R	Hambleton District Council	10	21	20	4.0%	G	**0.96**
ESG Didcot	50% TEA in acetone	2017	R	Horsham District Council	11	35	29	18.1%	G	**0.85**
ESG Didcot	50% TEA in acetone	2017	R	Horsham District Council	12	31	26	21.3%	G	**0.82**
ESG Didcot	50% TEA in acetone	2017	R	Horsham District Council	11	33	23	41.1%	G	**0.71**
ESG Didcot	50% TEA in acetone	2017	UC	Leeds City Council 1	12	41	32	28.5%	G	**0.78**
ESG Didcot	50% TEA in acetone	2017	R	Leeds City Council 10	11	48	38	25.1%	S	**0.80**
ESG Didcot	50% TEA in acetone	2017	R	Leeds City Council 2	12	47	35	34.4%	S	**0.74**
ESG Didcot	50% TEA in acetone	2017	R	Leeds City Council 4	11	56	43	29.1%	S	**0.77**
ESG Didcot	50% TEA in acetone	2017	R	Leeds City Council 7	11	36	27	33.8%	S	**0.72**
ESG Didcot	50% TEA in acetone	2017	R	Slough Borough Council	12	45	35	26.4%	G	**0.79**
ESG Didcot	50% TEA in acetone	2017	UB	Slough Borough Council	12	32	25	28.6%	G	**0.78**
ESG Didcot	50% TEA in acetone	2017	UB	Slough Borough Council	11	39	33	19.2%	G	**0.84**
ESG Didcot	50% TEA in acetone	2017	R	Tunbridge Wells	12	56	40	38.2%	G	**0.72**
ESG Didcot	50% TEA in acetone	2017		**Overall Factor[3] (27 studies)**				Use		**0.77**

NO_2 Diffusion Tube Bias Adjustment - Local Co-location Study within Suffolk Coastal District Council

There is a kerbside chemiluminescent analyser recording NO_2 concentrations derived from road traffic emissions at the junction of Lime Kiln Quay Road, Thoroughfare, and St. John's Street in Woodbridge within Suffolk Coastal District Council. The site is approximately 1 metre from the kerb and 14 metres from the traffic lights at the junction. This area of the junction is very narrow and enclosed by tall buildings, creating a canyon effect.

The bias adjustment factor was calculated using the Precision and Accuracy Spreadsheet available for download from http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html The output from the spreadsheet can be seen overleaf.

Precision is calculated based on diffusion tube data only. Diffusion tube precision can be described as the ability of a measurement to be consistently reproduced, i.e. how similar the results of duplicate or triplicate tubes are to each other. Unlike bias, poor precision cannot be adjusted for. It can only be improved by careful handling of the tubes in both the laboratory and the field.

For the purposes of Local Air Quality Management, tube precision is separated into two categories, "Good" or "Poor", as follows: tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have "poor" precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

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	06/01/2017	01/02/2017	59.6	57.2	60.4	59	1.7	3	4.1
2	01/02/2017	02/03/2017	52.2	53.0	51.6	52	0.7	1	1.7
3	02/03/2017	30/03/2017	41.9	42.4	45.9	43	2.2	5	5.4
4	30/03/2017	27/04/2017	45.2	46.7	44.8	46	1.0	2	2.5
5	27/04/2017	01/06/2017	42.4	39.2	40.5	41	1.6	4	4.0
6	01/06/2017	28/06/2017	43.7	40.9	37.7	41	3.0	7	7.5
7	28/06/2017	03/08/2017	32.6	32.6	35.5	34	1.7	5	4.2
8	03/08/2017	31/08/2017	40.6	40.3	37.7	40	1.6	4	4.0
9	31/08/2017	28/09/2017	42.8	40.1	35.6	40	3.6	9	9.0
10	28/09/2017	02/11/2017	44.9	44.1	44.5	45	0.4	1	1.0
11	02/11/2017	06/12/2017	63.1	63.6	62.1	63	0.8	1	1.9
12	06/12/2017	04/01/2018	40.1	40.3	43.5	41	1.9	5	4.7
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
49.16	100.00	Good	Good
39.22	99.86	Good	Good
37.89	100.15	Good	Good
34.87	100.15	Good	Good
36.48	98.34	Good	Good
35.68	98.92	Good	Good
25.97	98.73	Good	Good
29.28	99.85	Good	Good
29.06	96.58	Good	Good
33.42	99.88	Good	Good
52.50	100.00	Good	Good
35.28	99.57	Good	Good
Overall survey -->		Good precision	Good Overall

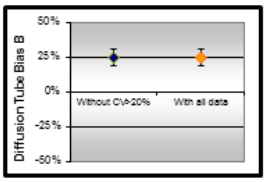
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Woodbridge 1

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 0.81 (0.77 - 0.85)
Bias B 24% (18% - 30%)
Diffusion Tubes Mean: 45 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 37 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 37 (35 - 38) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.81 (0.77 - 0.85)
Bias B 24% (18% - 30%)
Diffusion Tubes Mean: 45 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 37 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 37 (35 - 38) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

The precision results for the co-location study show 12 out of 12 periods with a CV smaller than 20% and the average CV of all monitoring periods (at 4%) is less than 10%. **The precision is therefore classed as "Good".**

Local authorities are advised to use the outputs from the blue box on the spreadsheet, in which diffusion tubes for which there is poor precision are automatically disregarded.

The results from our co-location study are as follows:

Bias calculated using 12 periods of data
Triplicate diffusion tube mean (2017) = 45µg/m^3 with a mean precision (expressed as the coefficient of variation - CV) of 4.
Automatic analyser annual mean (2017) = 37µg/m^3 with 99% data capture.
Adjusted tubes mean = 37 (35-38) µg/m^3
Bias adjustment factor (2017) = 0.81 based on 12 months data.

Discussion of Choice of Factor to Use

Historically, the local bias adjustment factor obtained from the Woodbridge co-location study has been used to adjust annual mean NO_2 concentrations from diffusion tube sites within Woodbridge in the Suffolk Coastal district only. This location is unusual, being a street canyon: it is considered representative of the other diffusion tube monitoring sites within Woodbridge, but not of diffusion tube locations elsewhere within the district. **The 2017 bias adjustment factor of 0.81 obtained at Woodbridge has been applied to the other sites within Woodbridge only.**

All diffusion tube monitoring sites elsewhere on both the Suffolk Coastal and Waveney districts have been adjusted for bias using the combined or "national" bias adjustment factor of 0.77 from the March 2018 version of the National Diffusion Tube Bias Adjustment Factor Spreadsheet. These sites consist of tubes exposed over a range of settings which differ from the co-location site and it would not be relevant to use the local bias adjustment factor from Woodbridge for these sites.

Distance correction calculations

Monitoring sites are usually located in the areas of concern to represent the worst-case public exposure, but it is not always possible to measure concentrations at the desired location for practical reasons and in some cases the relevant public exposure is located a short distance away.

A calculator has been produced by Defra which estimates the annual mean NO_2 concentration at one distance from a road, using measurements made at a different distance from the same road. The calculator can be found at https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html

This calculator has been used to predict concentrations at the nearest point of relevant public exposure for the following diffusion tube monitoring sites;

Suffolk Coastal District Council:
FLX 35 - signpost at front of The Dooley Inn PH, Felixstowe
MEL 5 - 6 The Street, Melton
KSG 11 – Bell Lane (rear of 4 Quebec Drive), Kesgrave
KSG 12 – 1a Dobbs Lane, Kesgrave
WBG 10 - signpost in St. John's Street next to 85 Thoroughfare, Woodbridge
WBG 12 - 8 Lime Kiln Quay Road (tube on front fence), Woodbridge
WBG 13 - traffic lights at front of 85 Thoroughfare, Woodbridge
WBG 23 - Lamppost 50 St. John's Street, Woodbridge
LEI 1 – signpost on corner of Cross Street and High Street, Leiston
LEI 2 – lamppost on corner of Station Road and Valley Road, Leiston

Waveney District Council:
DT1 - Castleton Avenue, Carlton Colville
DT2 - Fir Lane, Lowestoft
DT3 - Dutchman's Court, Oulton Broad
DT4 - Golden Court, Oulton Broad
DT5 - Saltwater Way, Oulton Broad
DT6 - Yarmouth Road, Lowestoft
DT 7 - Mill Road, Lowestoft
DT11 - Pier Terrace 1, Lowestoft
DT15 - Ingate, Beccles 2

The distance correction calculator requires background concentrations to be input for each location. Background concentrations were derived from the Defra Background maps which can be found at https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html.

Input and output figures for the distance correction calculator are shown in the table below;

Input figures and results for relevant sites using the Defra Fall Off With Distance from Roads Calculator (v4.2)

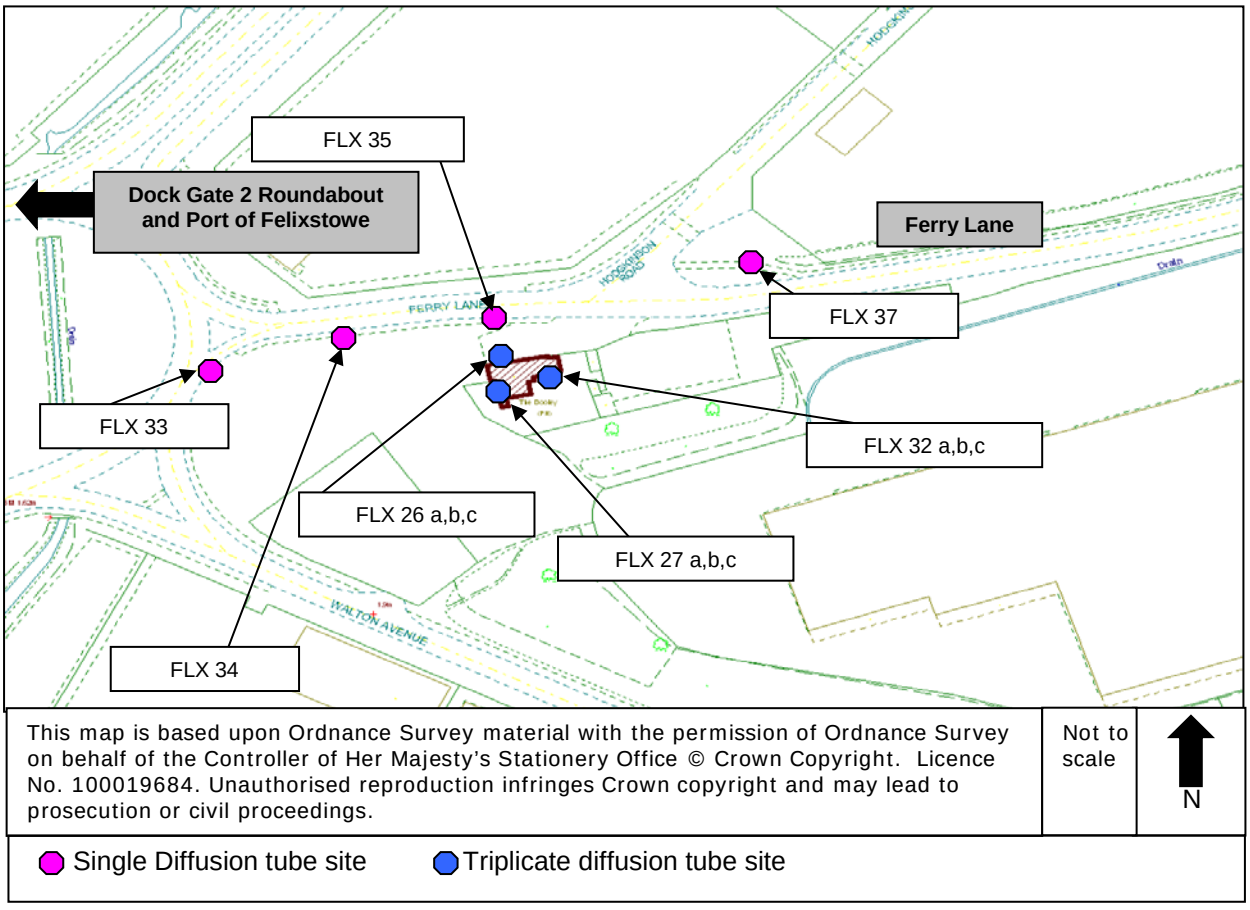
Site	Distance from kerb to monitoring site (m)	Distance from monitoring site to receptor (m)	Grid square for obtaining background map concentrations	Backgound concentration 2017 (µg/m^3)	2017 data (µg/m^3)	
					Uncorrected for distance	Corrected using the Defra distance correction calculator
Suffolk Coastal District Council sites						
FLX 35	3	10	627 234	18.5	23.8	21.8
MEL 5	3.6	0.5	628 250	9.8	26.4	25.8
KSG 11	5.8	11	621 245	11.6	20.3	17.4
KSG 12	3.5	6.2	623 246	10.9	17.4	15.6
WBG 10	2	0.5	627 249	10.9	25.1	24.4
WBG 12	5	0.5	627 249	10.9	22.4	22.1
WBG 13	2.5	2.5	627 249	10.9	28.1	25.2
WBG 23	1	1	627 249	10.9	23.9	22.1
LEI 1	2.5	0.4	644 262	8.1	20.9	20.4
LEI 2	1.4	0.5	644 262	8.1	25.7	24.5
Waveney District Council sites						
DT1	1.9	17	650 290	9.5	19.2	14.3
DT2	0.5	6	653 293	11.2	20.4	16.4
DT3	2.4	5	651 292	10.5	23.7	21.1
DT4	2	4	652 292	11.3	23.6	21.6
DT5	3	6	652 292	11.3	25.6	23.0
DT6	0.5	8.8	653 295	10.8	17.9	14.2
DT7	1.2	6.8	654 292	13.4	24.4	20.4
DT11	3	7	654 292	13.4	29.8	24.9
DT15	2	4	642 289	10.9	28.1	25.1

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

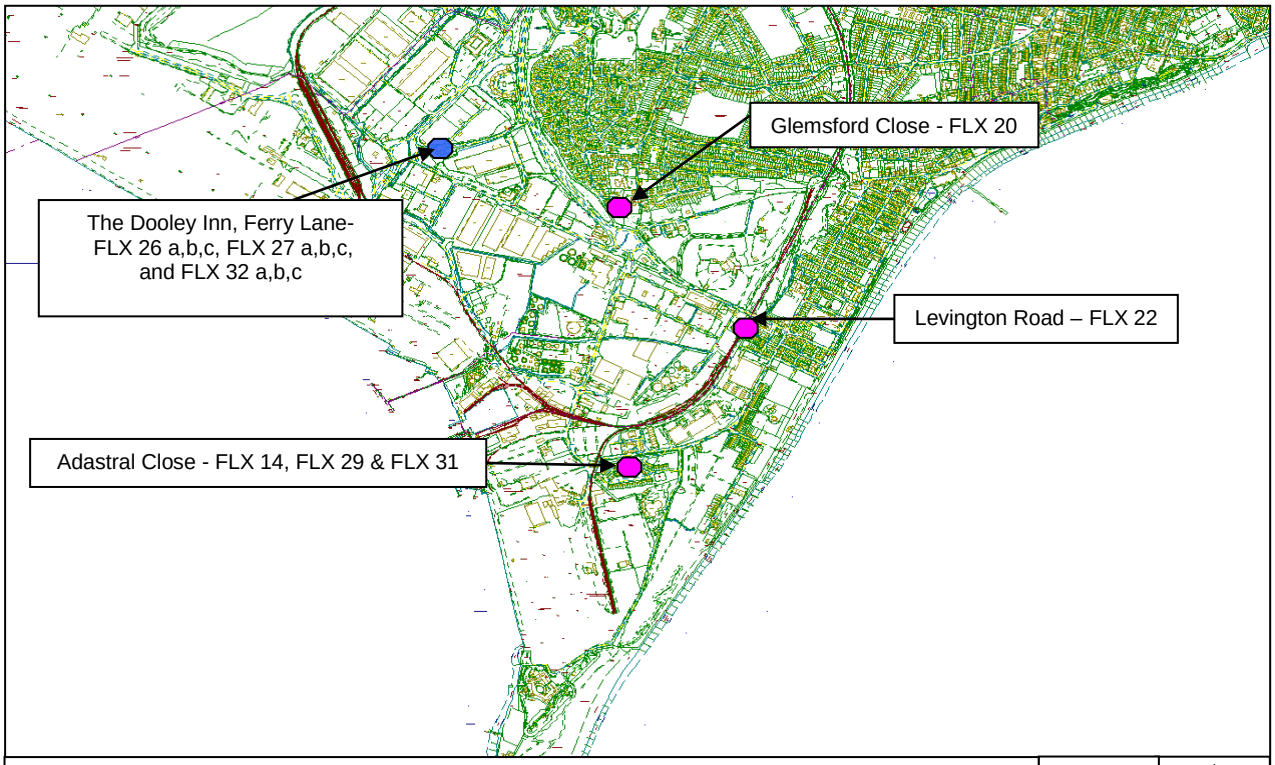
Suffolk Coastal District Council:

Felixstowe and The Trimleys Maps

Map 1: Map of diffusion tube locations around the Dooley Inn, Ferry Lane Felixstowe (hatched in red is the location of the revoked AQMA at Ferry Lane)



Map 2 Map showing location of a number of diffusion tubes at The Dooley Inn, Ferry Lane and Adastral Close, together with sites at Levington Road and Glemsford Close in Felixstowe



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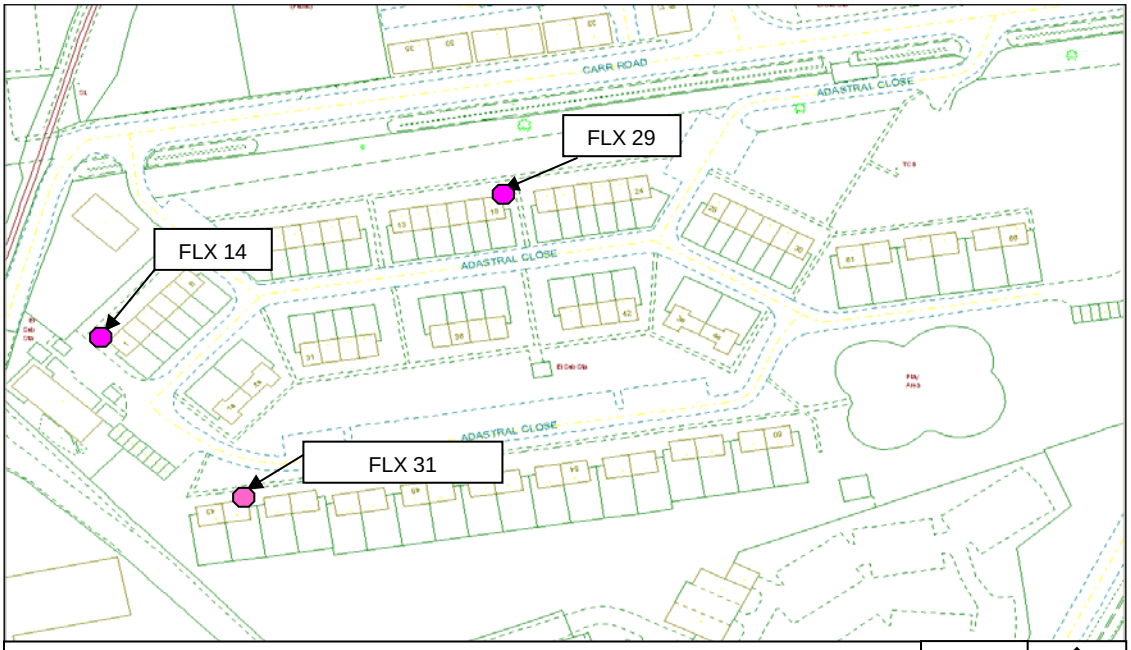
Not to scale

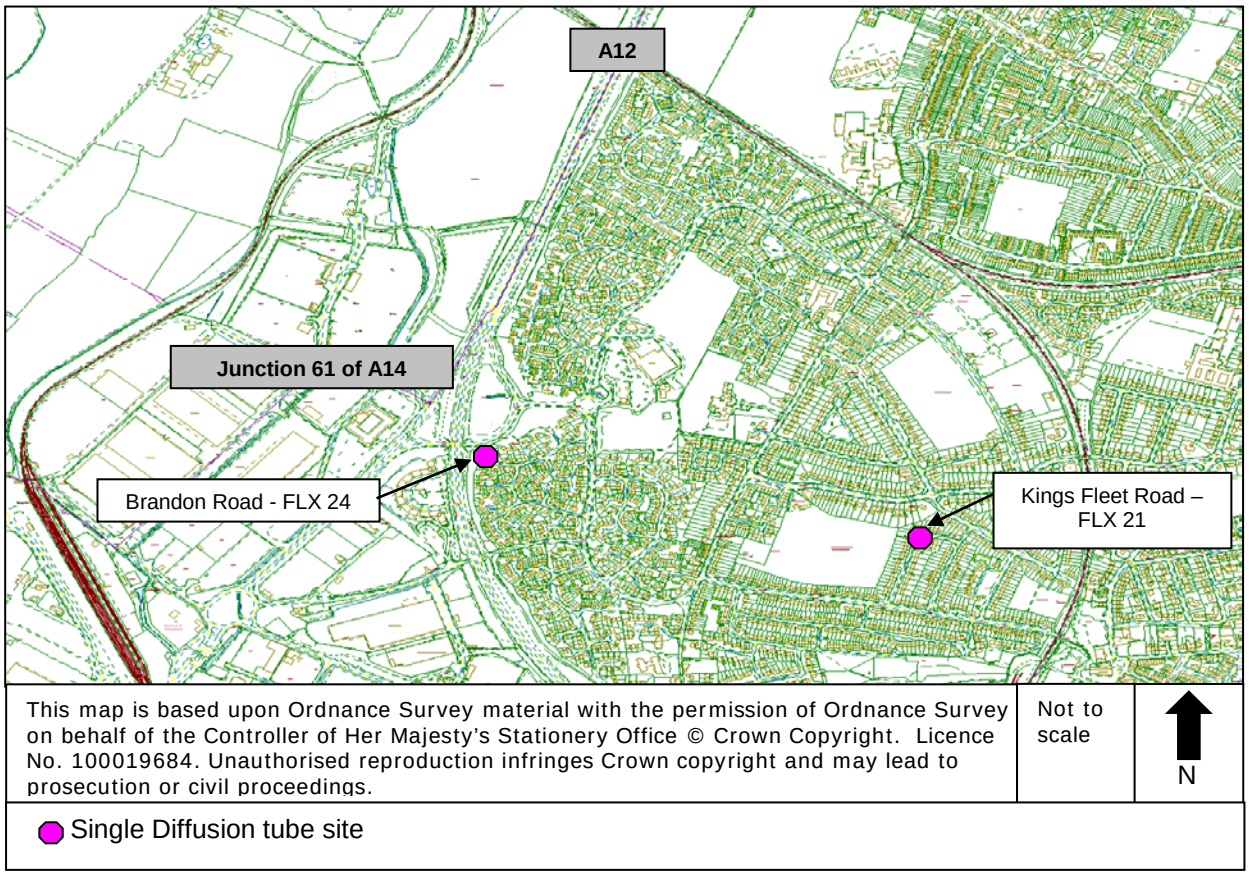
N

Single Diffusion tube site Triplicate diffusion tube site

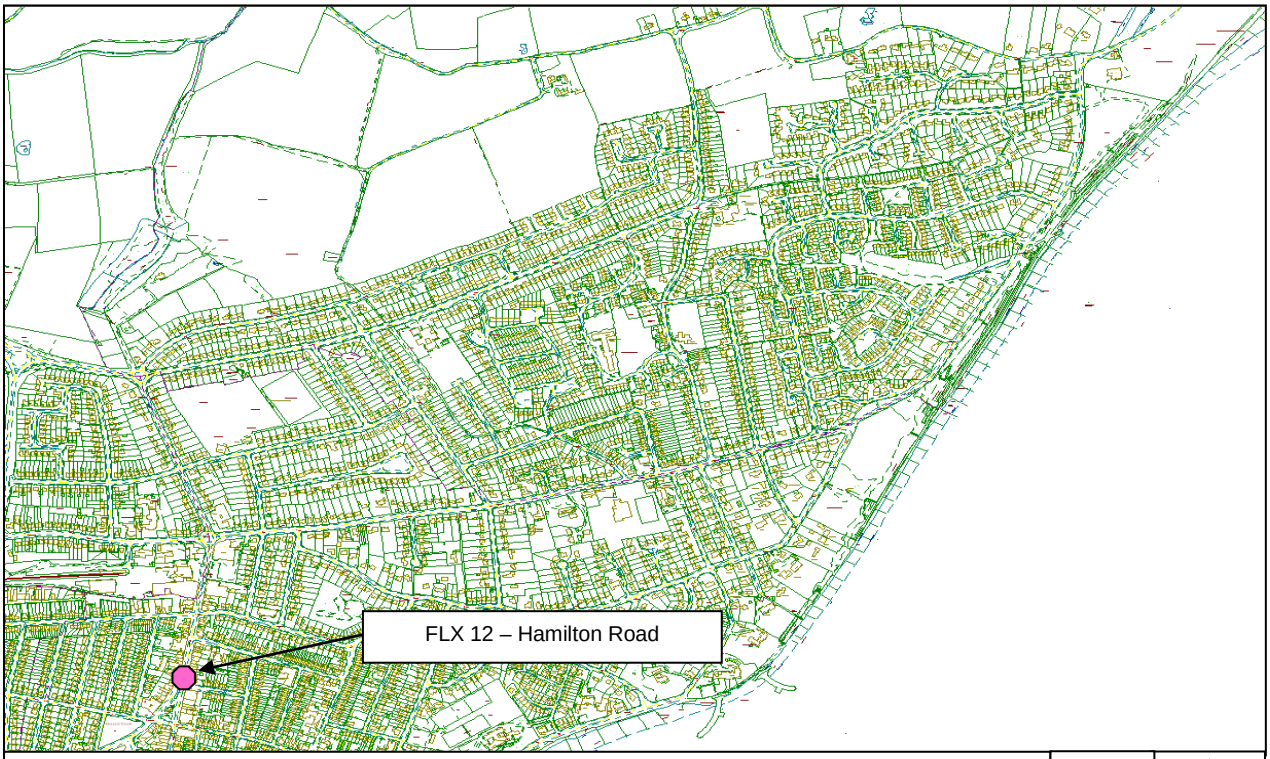
Map 3 Detailed map of diffusion tube locations at Adastral Close, Felixstowe



Map 4 Map of diffusion tube locations at Kingsfleet Road and Brandon Road, Felixstowe



Map 5 Map of diffusion tube location at Hamilton Road, Felixstowe

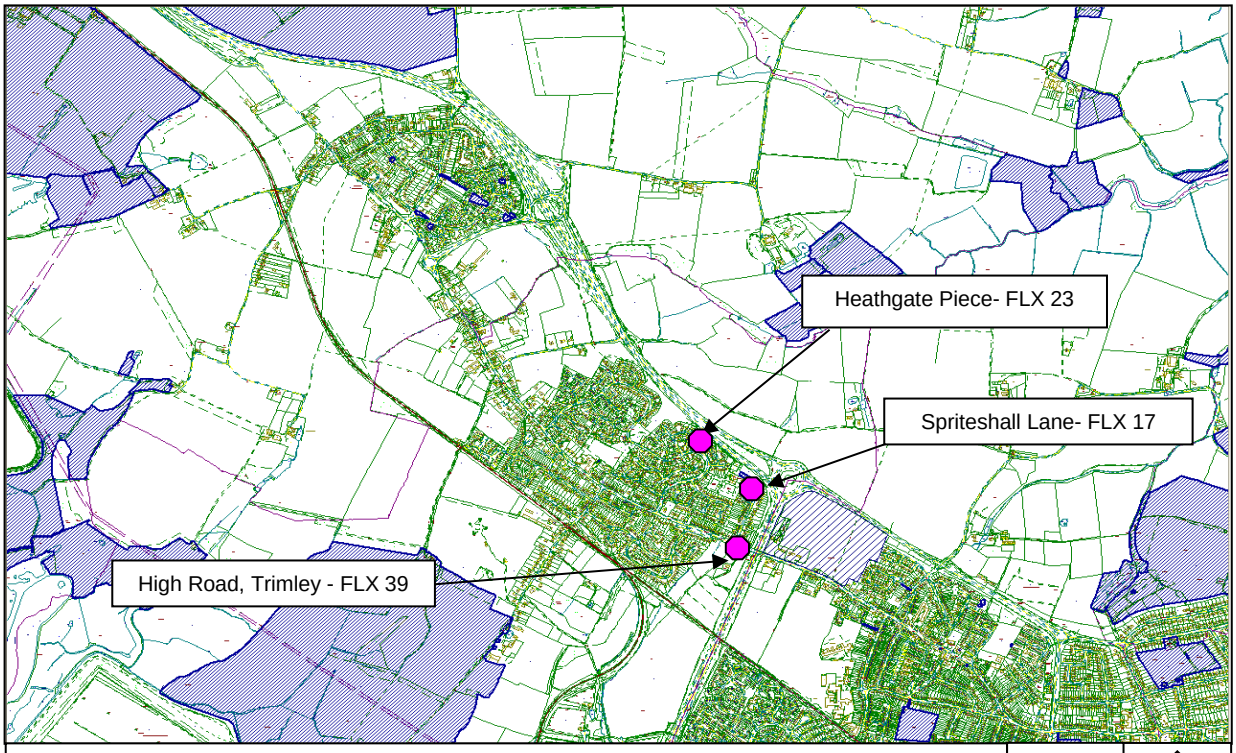


Not to scale

N

Single Diffusion tube site

Map 6 Map of diffusion tube locations at Heathgate Piece, Spriteshall Lane and High Road, Trimley St. Mary

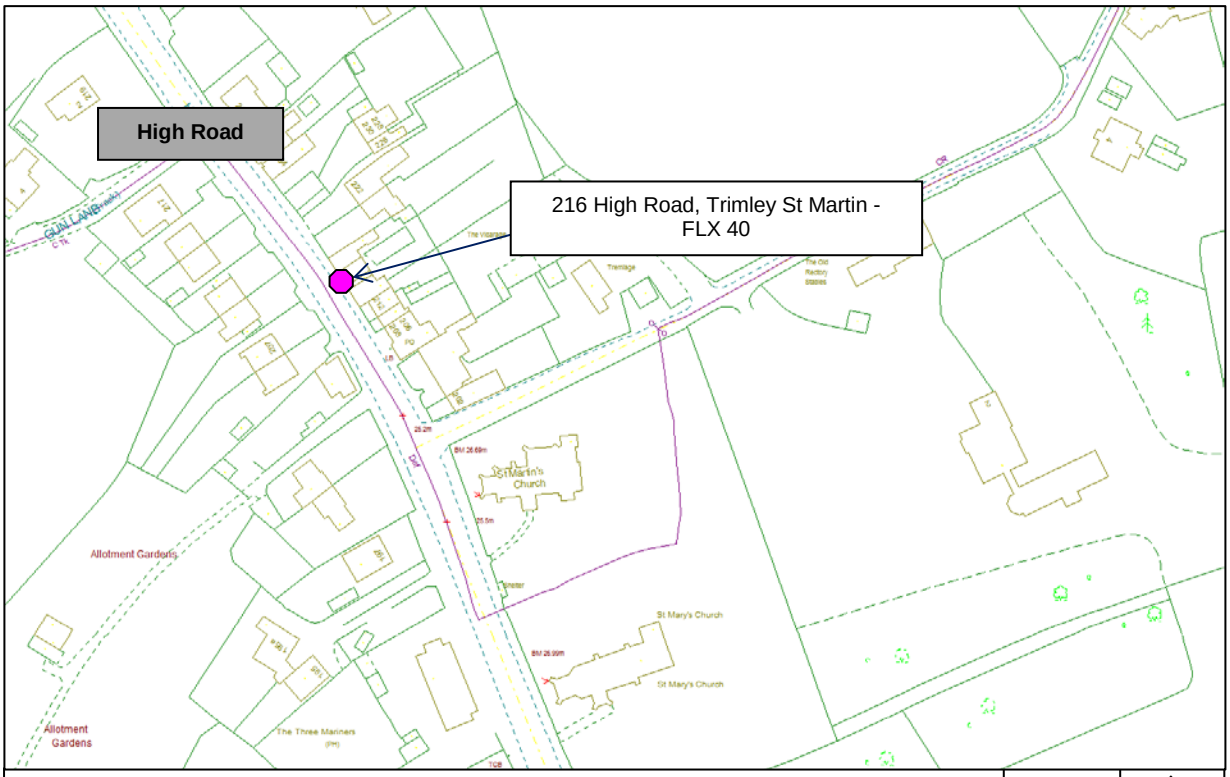


Not to scale

N

Single diffusion tube site

Map 7 Map of diffusion tube location at High Road, Trimley St. Martin



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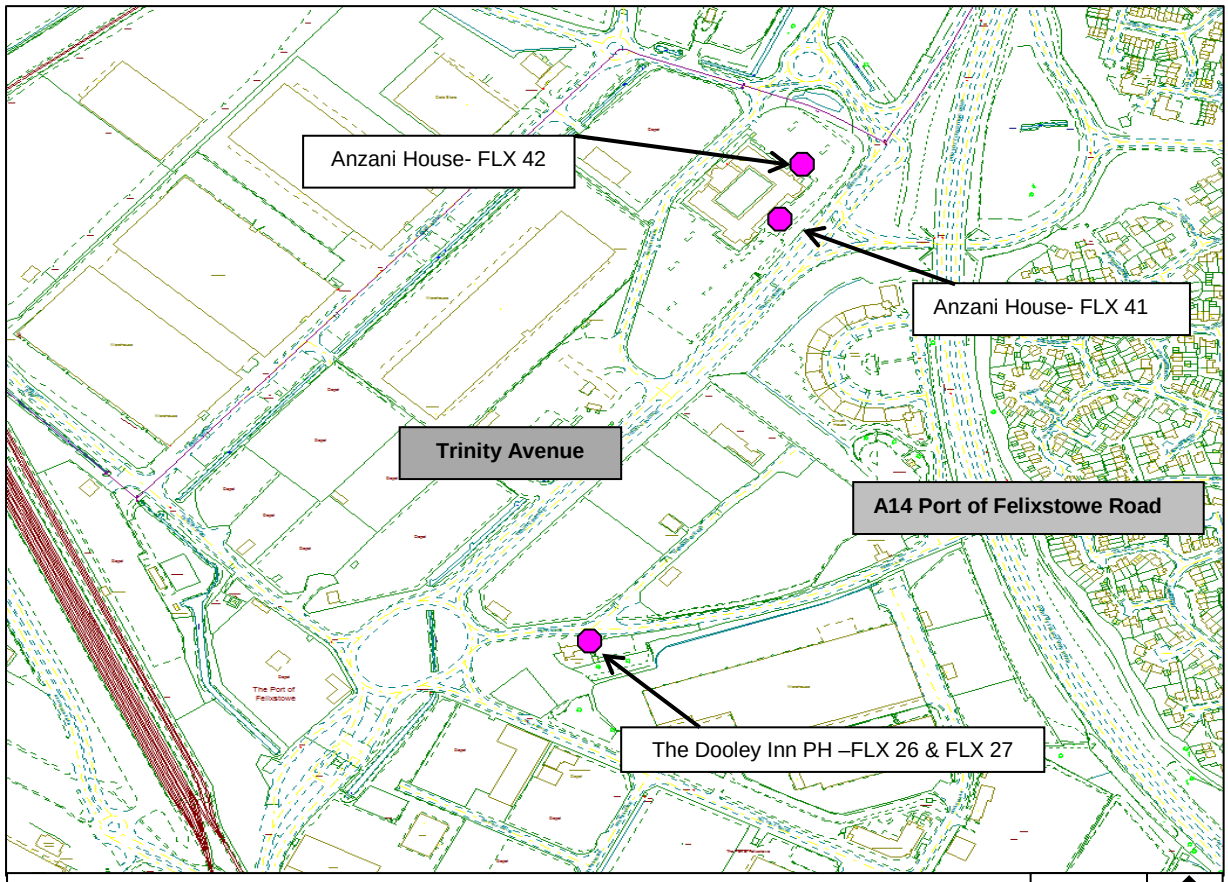
Not to scale

N

Single diffusion tube site

Map 8 Map of diffusion tube locations at Anazani House, Anzani Avenue and The Dooley Inn Ferry Lane, Felixstowe



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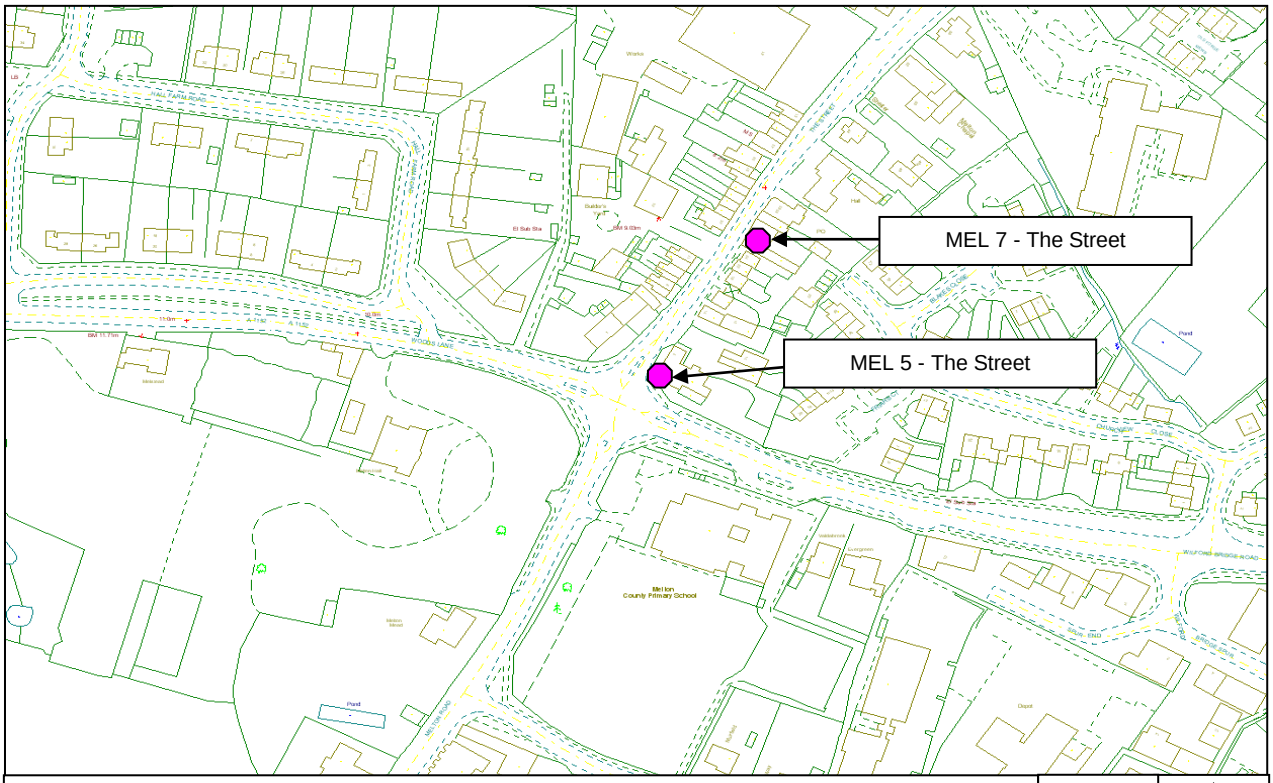
Not to scale

N

Single diffusion tube site

Melton Map

Map 9 Map showing location of the diffusion tubes at The Street



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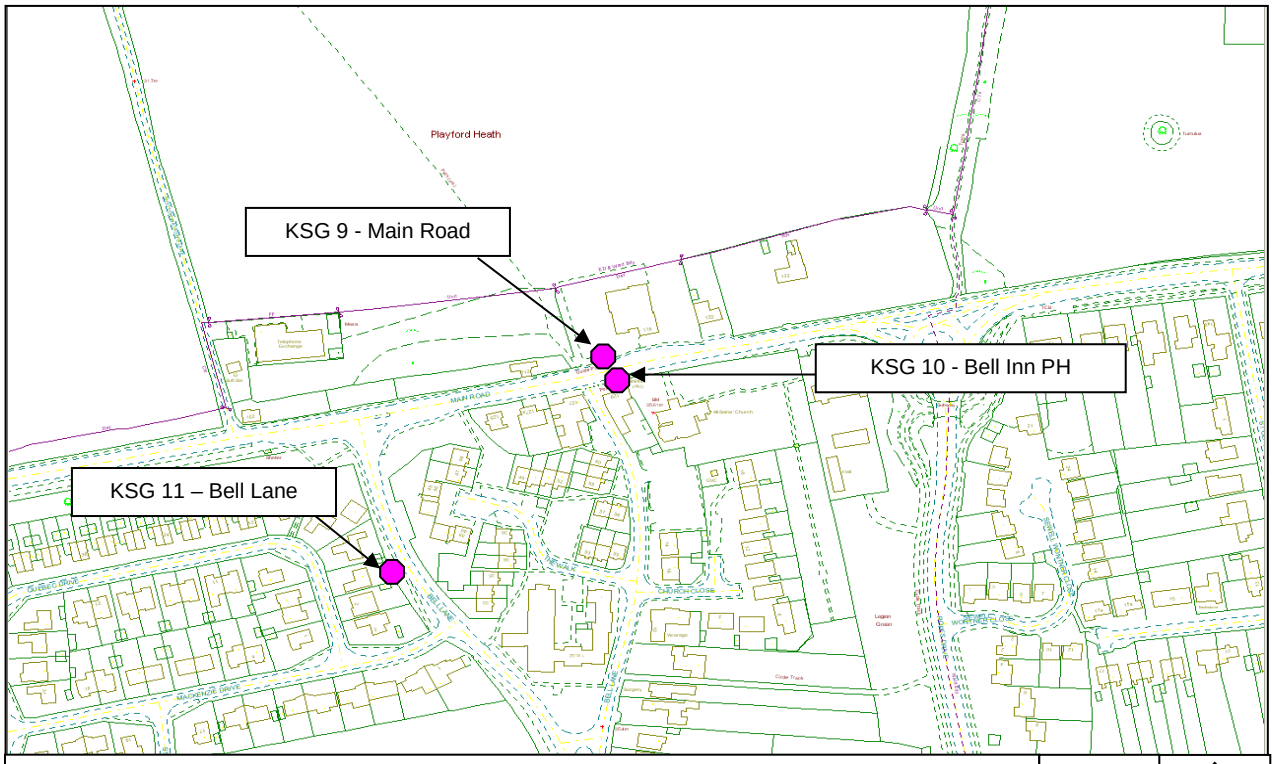
Not to scale

N

Single Diffusion tube site

Kesgrave Maps

Map 10 Map showing location of diffusion tubes at Main Road and Bell Lane

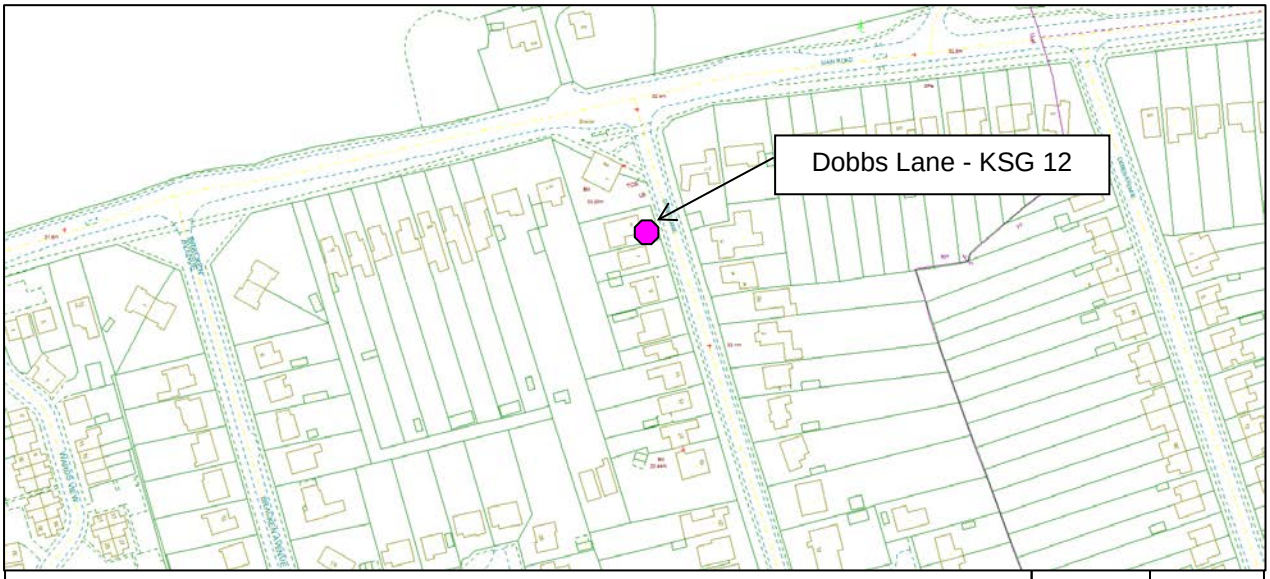


Not to scale

N

Single Diffusion tube site

Map 11 Map showing location of diffusion tube at Dobbs Lane, Kesgrave



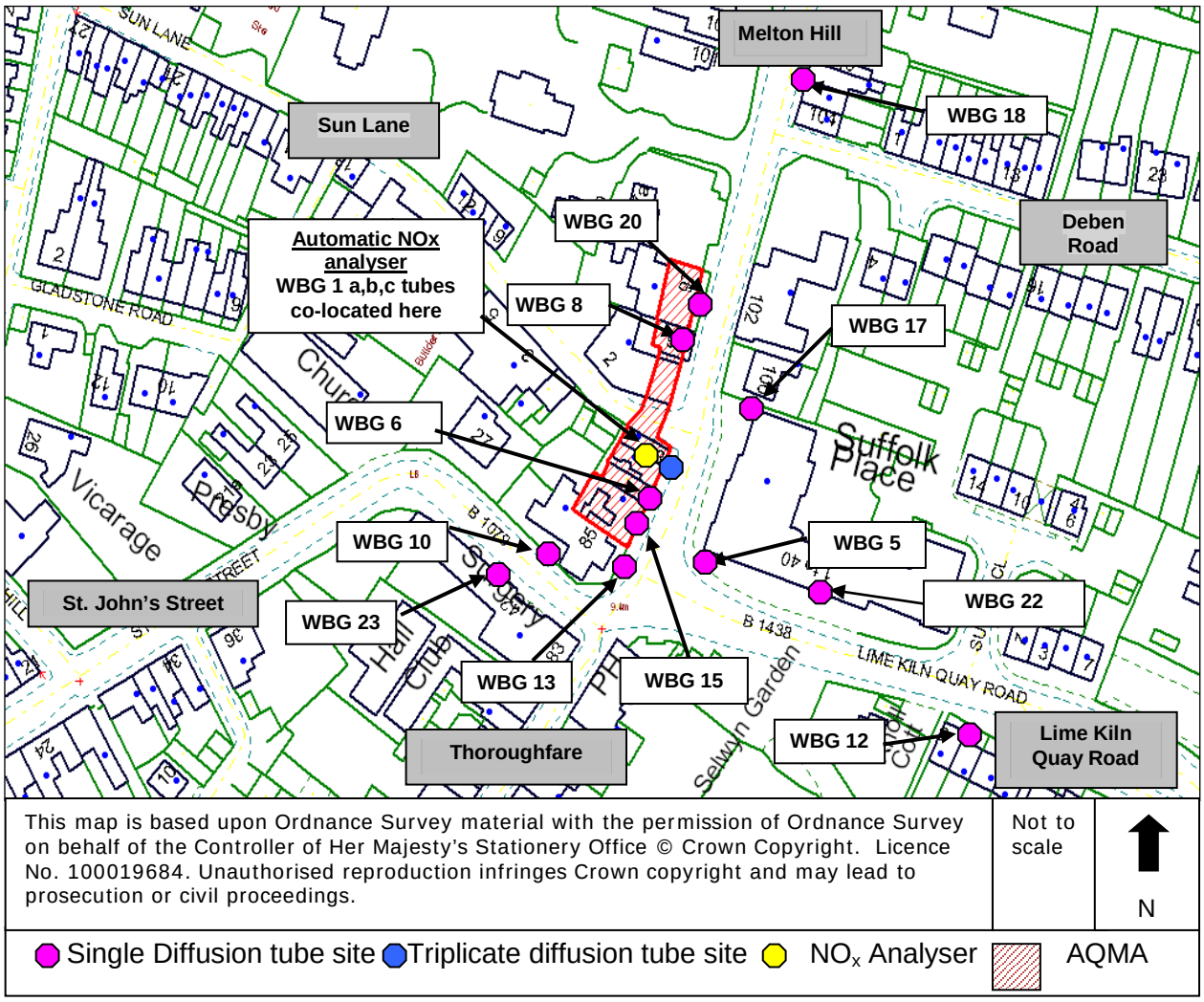
Not to scale

N

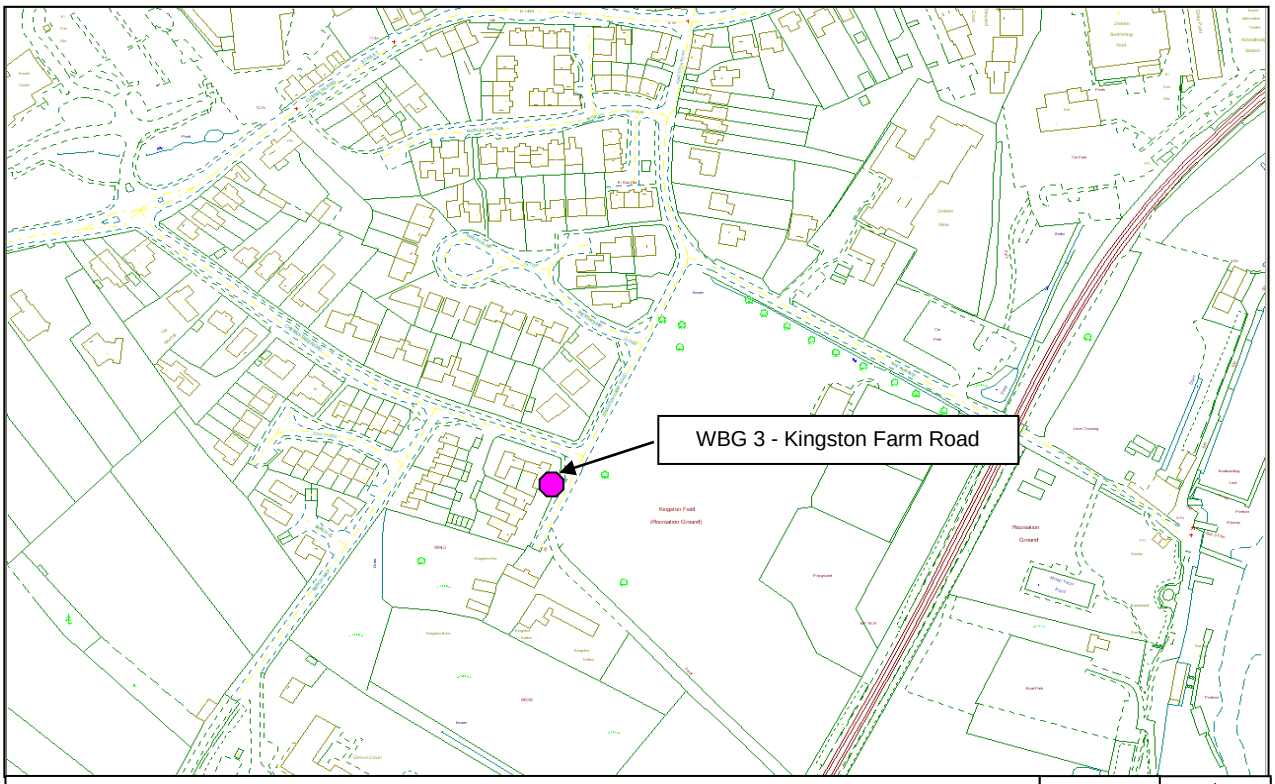
Single Diffusion tube site

Woodbridge Maps

Map 12 Map showing diffusion tube locations in and around the declared AQMA at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge



Map 13 **Map showing diffusion tube location at Kingston Farm Road, Woodbridge**



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Not to scale

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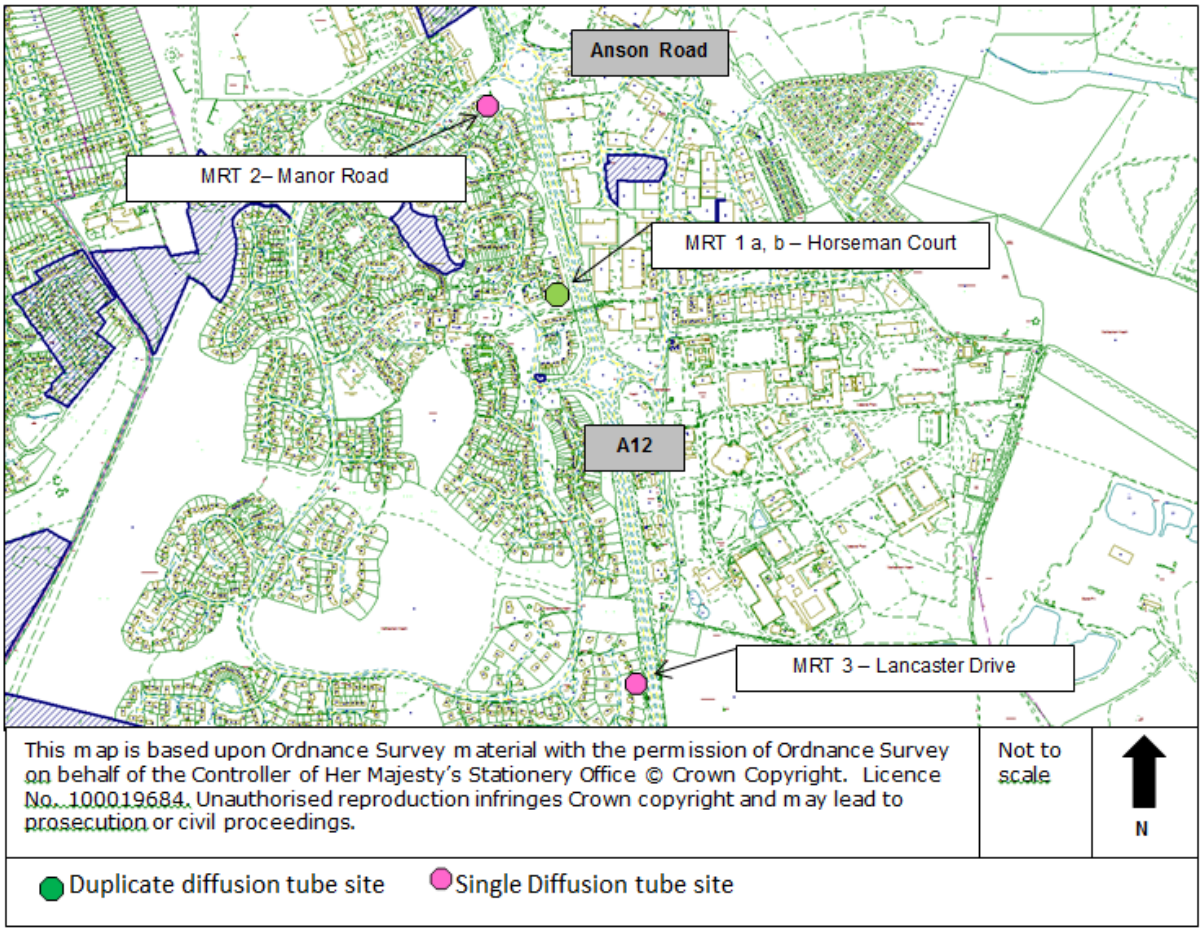
Single Diffusion tube site

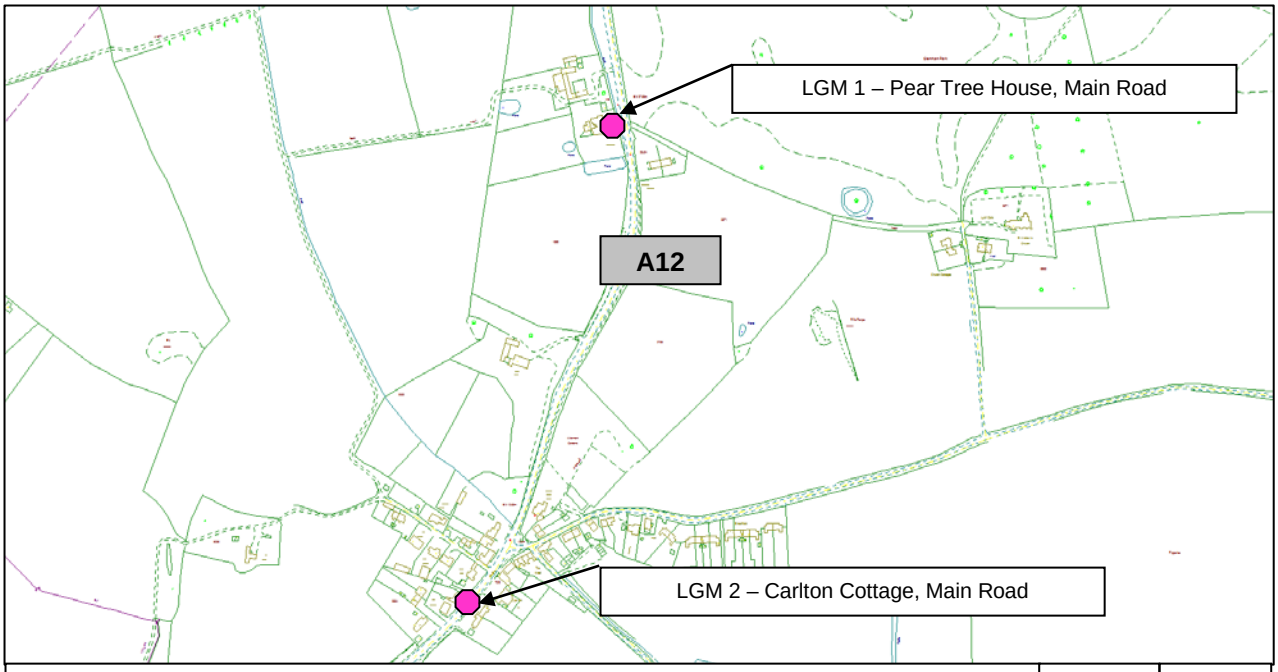
Martlesham Map

Map 14 Map of diffusion tube locations at Horseman Court, Manor Road and Lancaster Drive, Martlesham



Little Glemham Map

Map 15 Map of diffusion tube locations at Main Road, Little Glemham



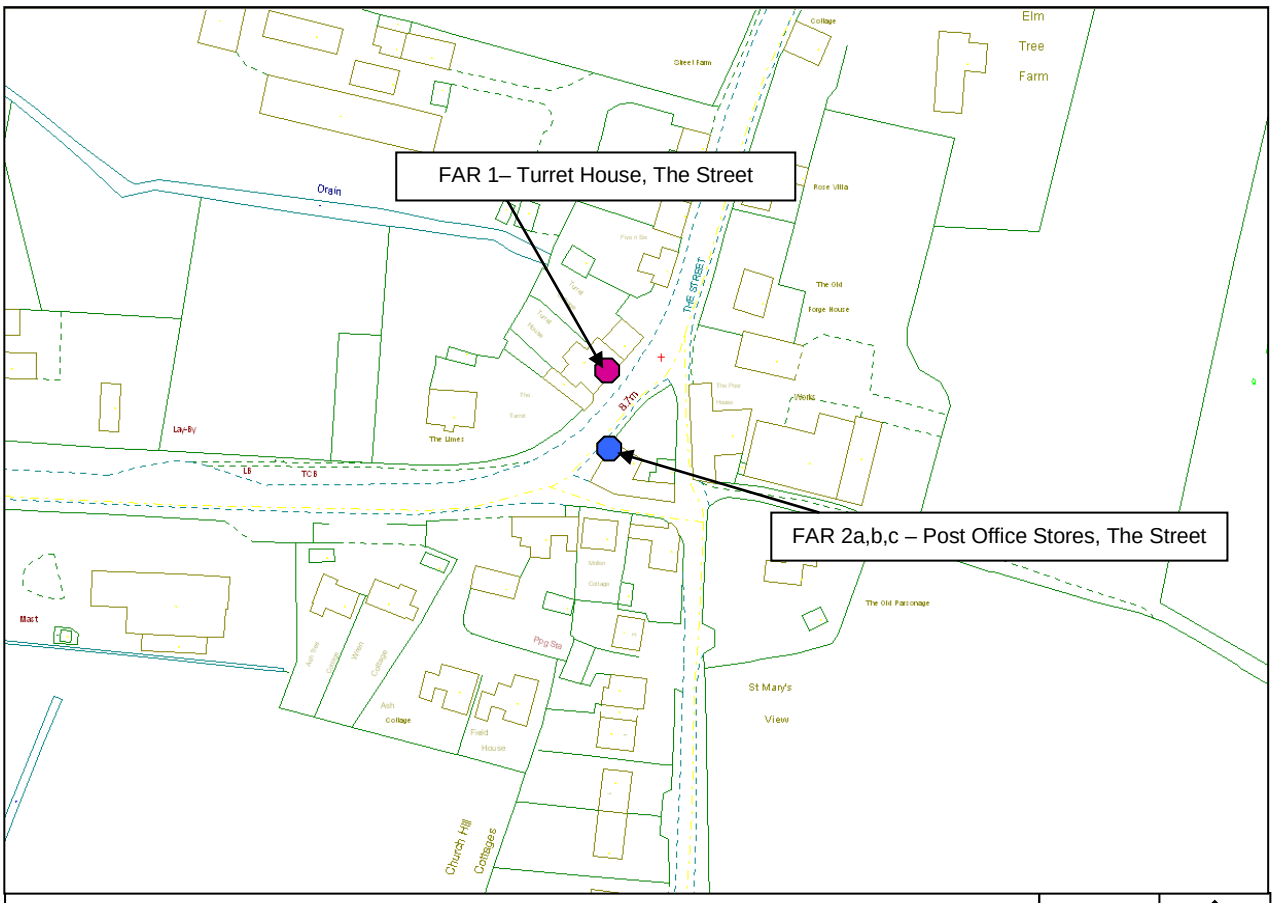
Not to scale

N

Single Diffusion tube site

Farnham Map

Map 16 Map showing diffusion tube locations at The Street, Farnham



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Not to scale

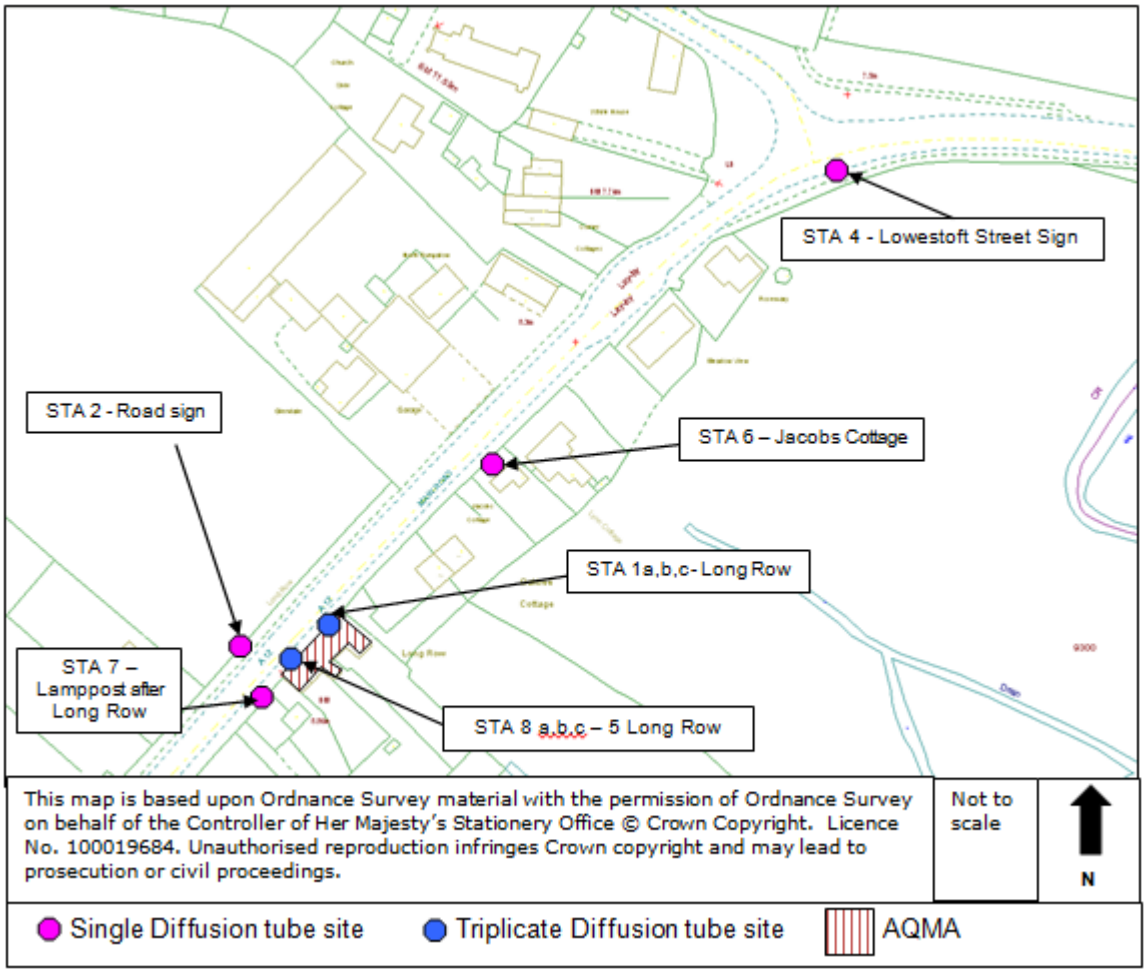
N

Triplicate Diffusion tube site

Single diffusion tube site

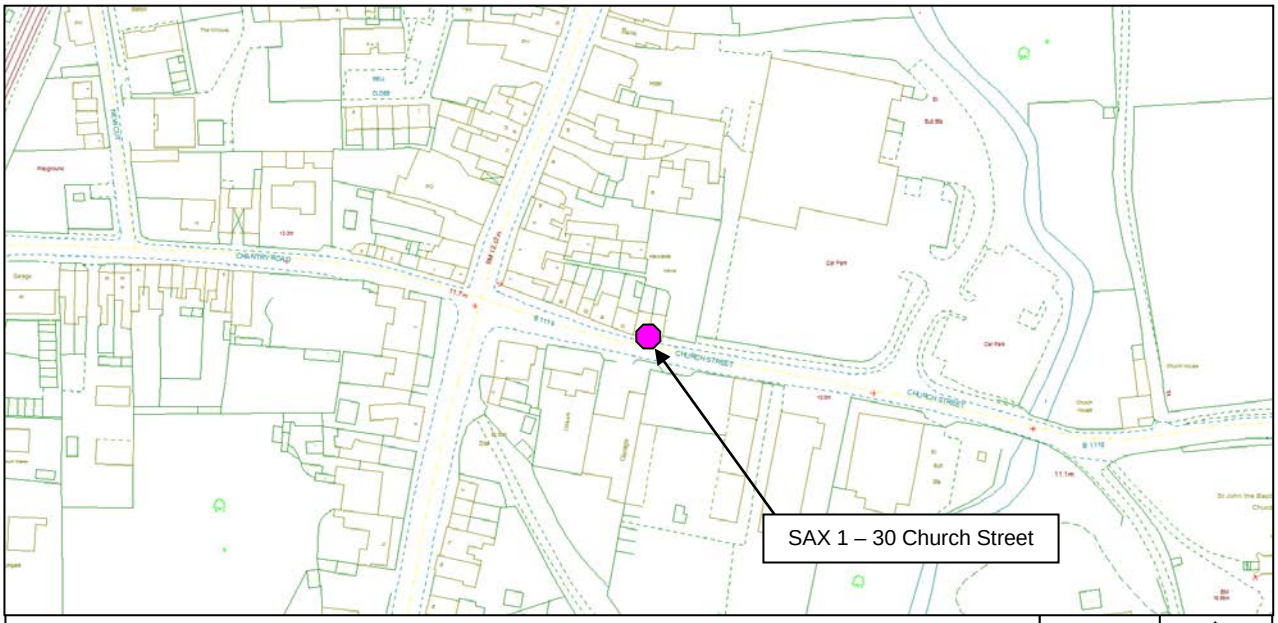
Stratford St Andrew Map

Map 17 Map showing diffusion tube locations and the AQMA at Main Road and Long Row, Stratford St Andrew



Saxmundham Map

Map 18 Map showing diffusion tube location Church Street, Saxmundham



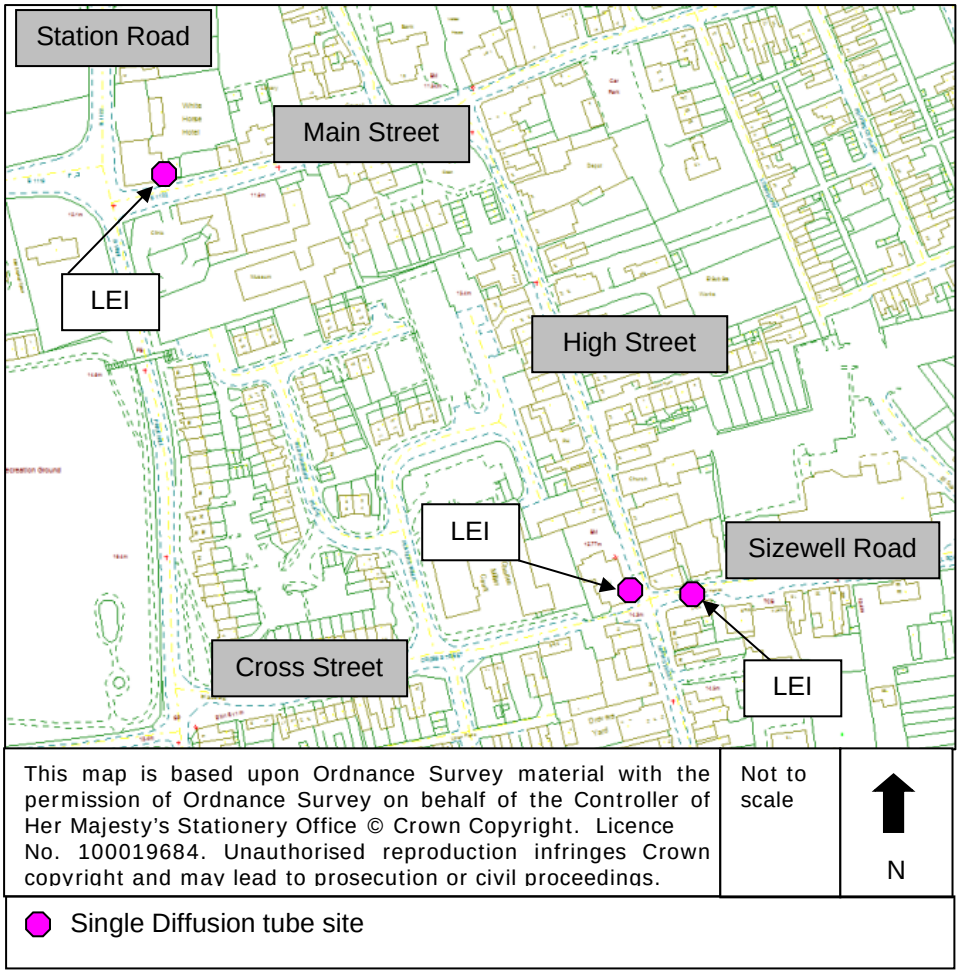
Not to scale

N

Single Diffusion tube site

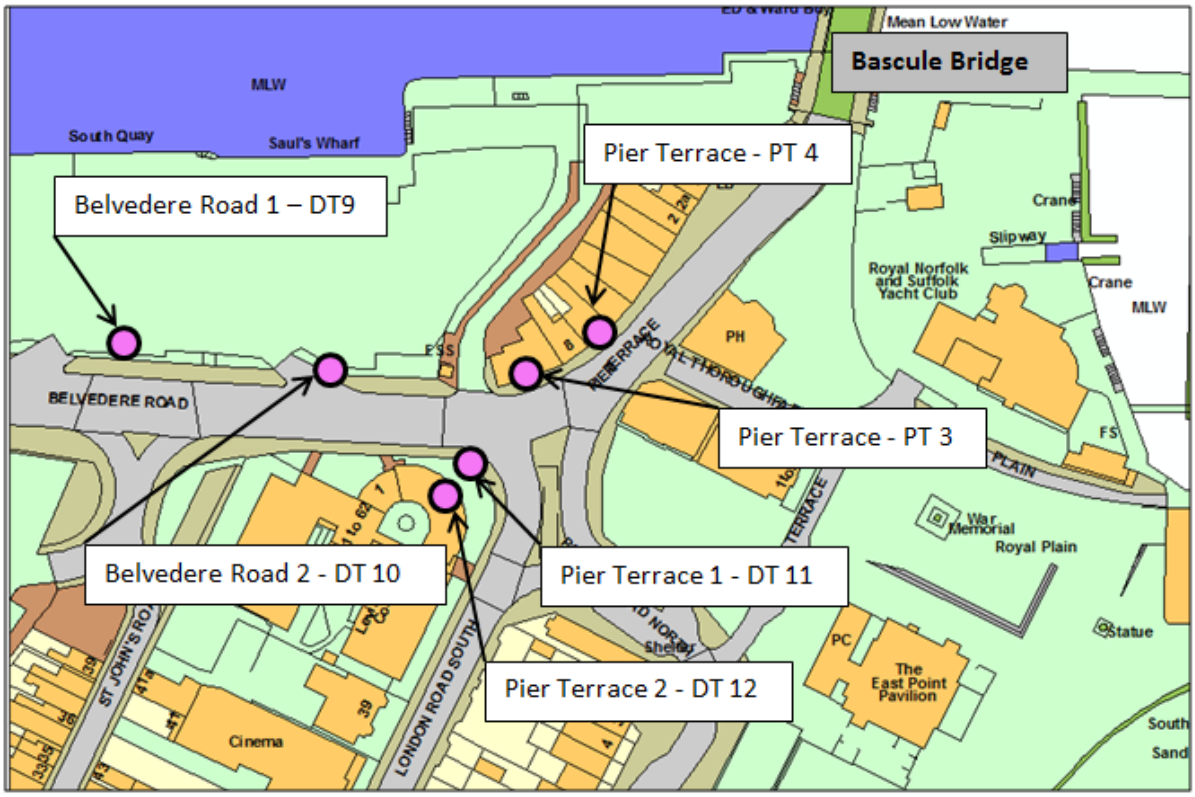
Leiston Map

Map 19 **Map showing diffusion tube locations in Cross Street, Sizewell Road and Station Road, Leiston**

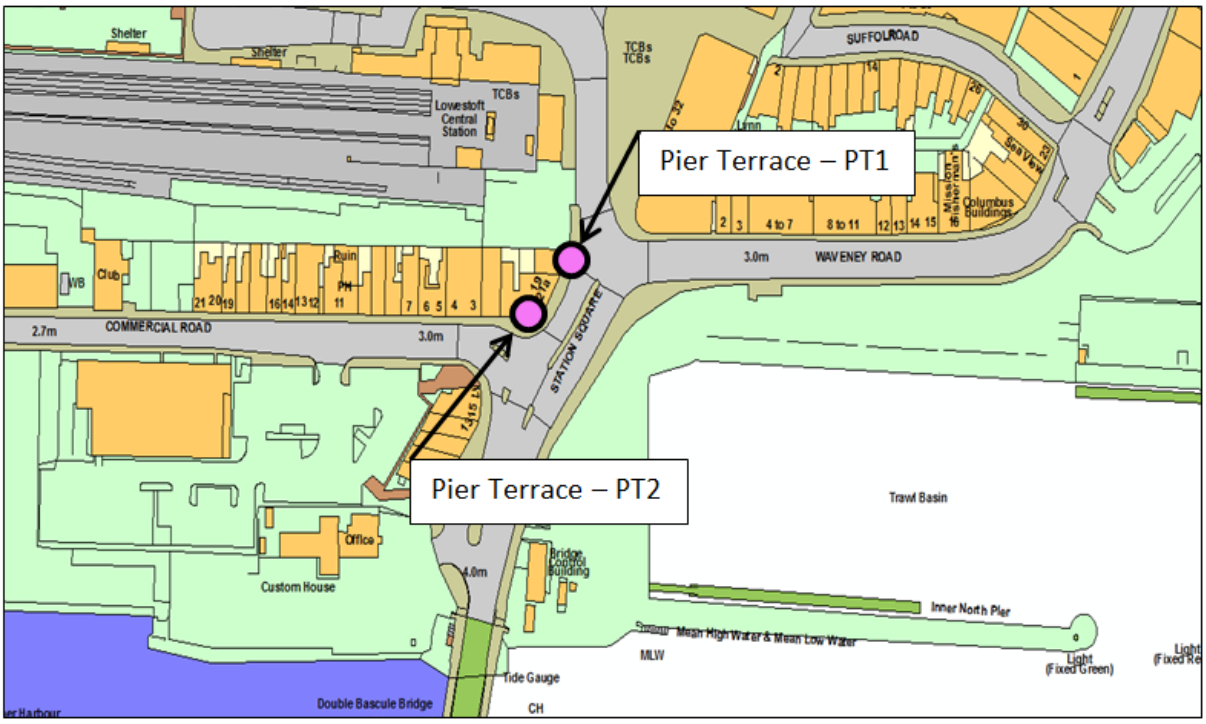


Lowestoft Maps

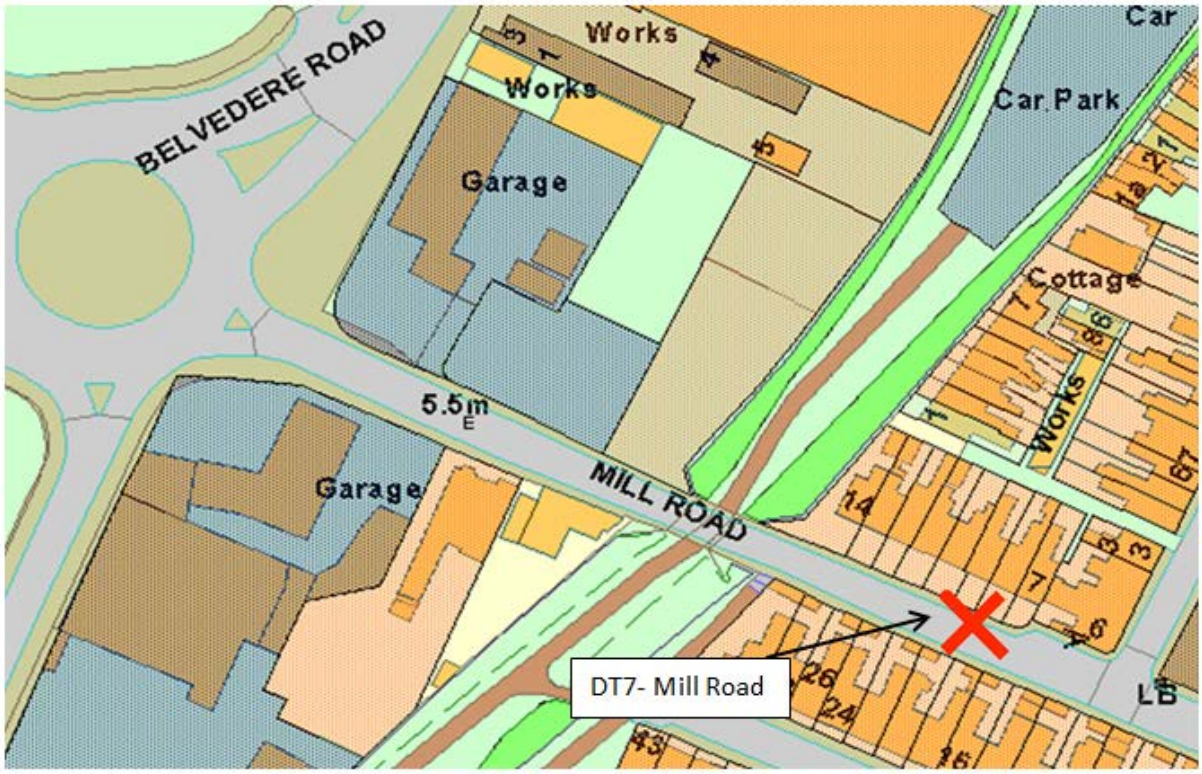
Map 20 **Map showing diffusion tube locations in Belvedere Road and Pier Terrace (South of Bascule Bridge), Lowestoft**



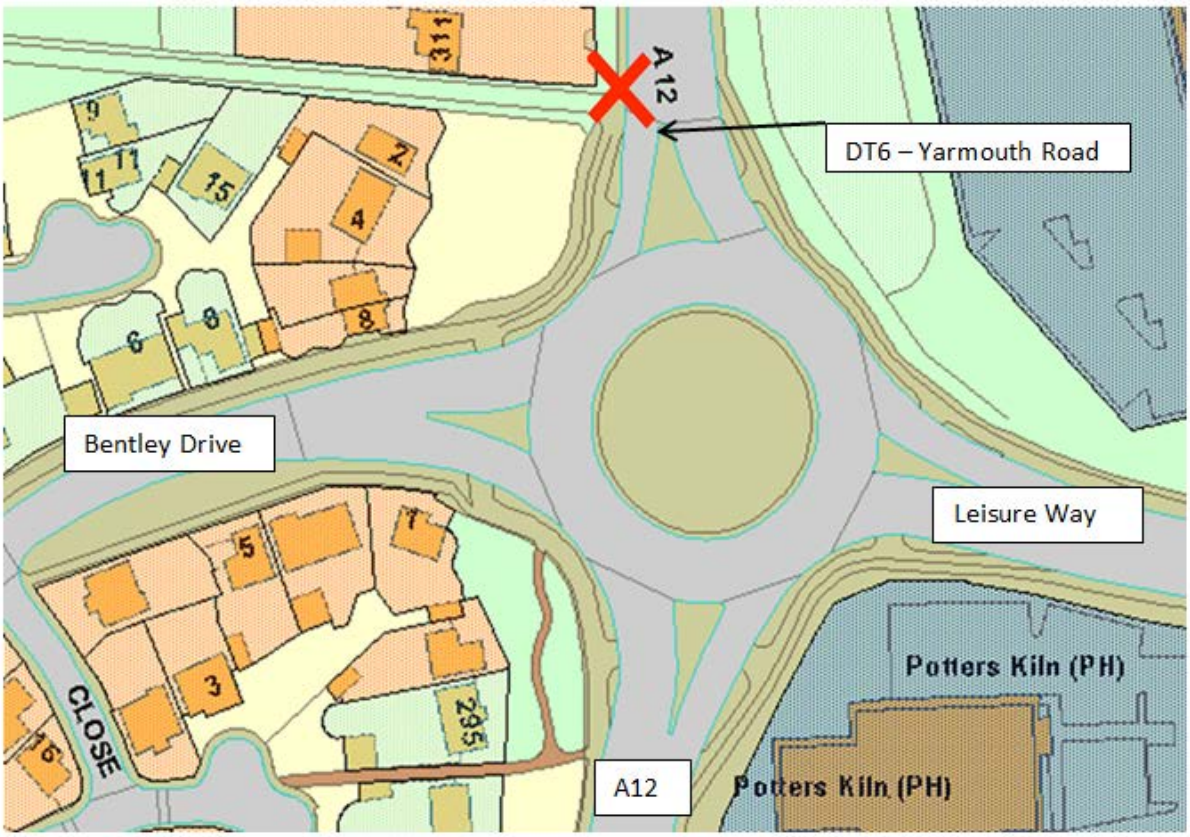
Map 21 **Map showing diffusion tube locations in Pier Terrace (North of Bascule Bridge), Lowestoft**



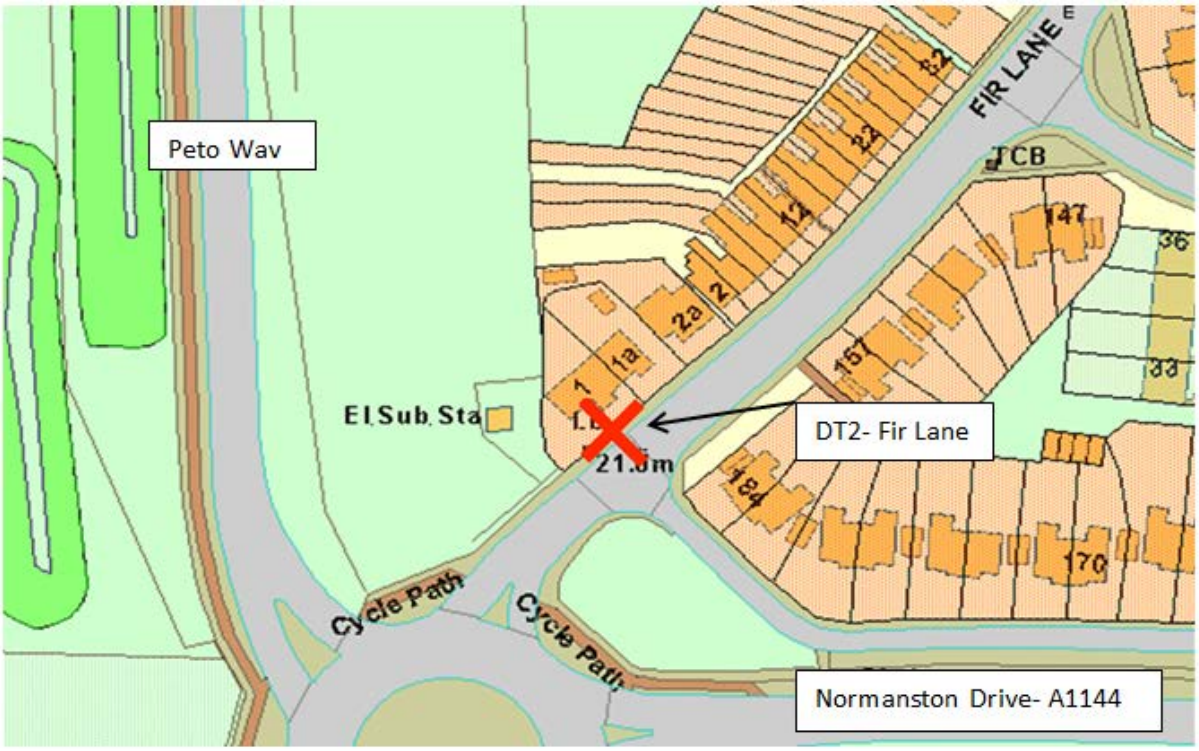
Map 22 Map showing diffusion tube location in Mill Road, Lowestoft



Map 23 **Map showing diffusion tube location in Yarmouth Road, Lowestoft (DT6)**

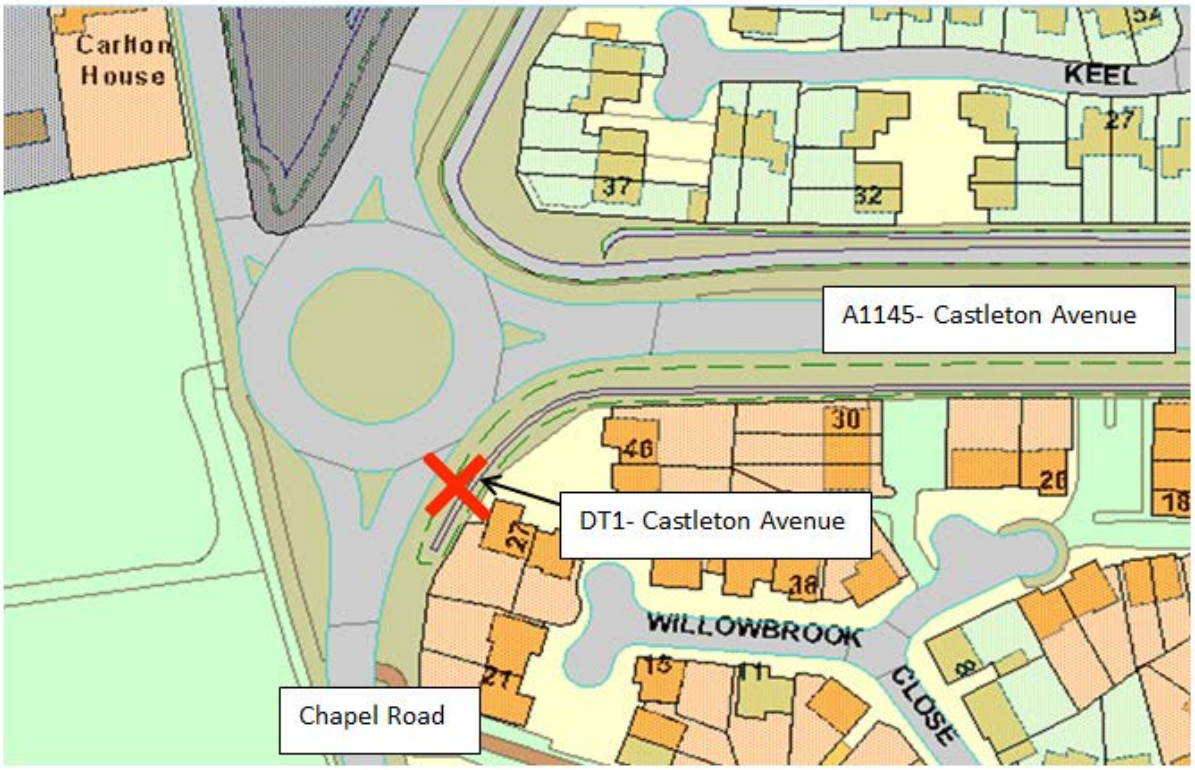


Map 24 Map showing diffusion tube location in Fir Lane, Lowestoft (DT2)



Map 25 Map showing diffusion tube location in St. Margaret's Church, St. Margaret's Road, Lowestoft (DT8)

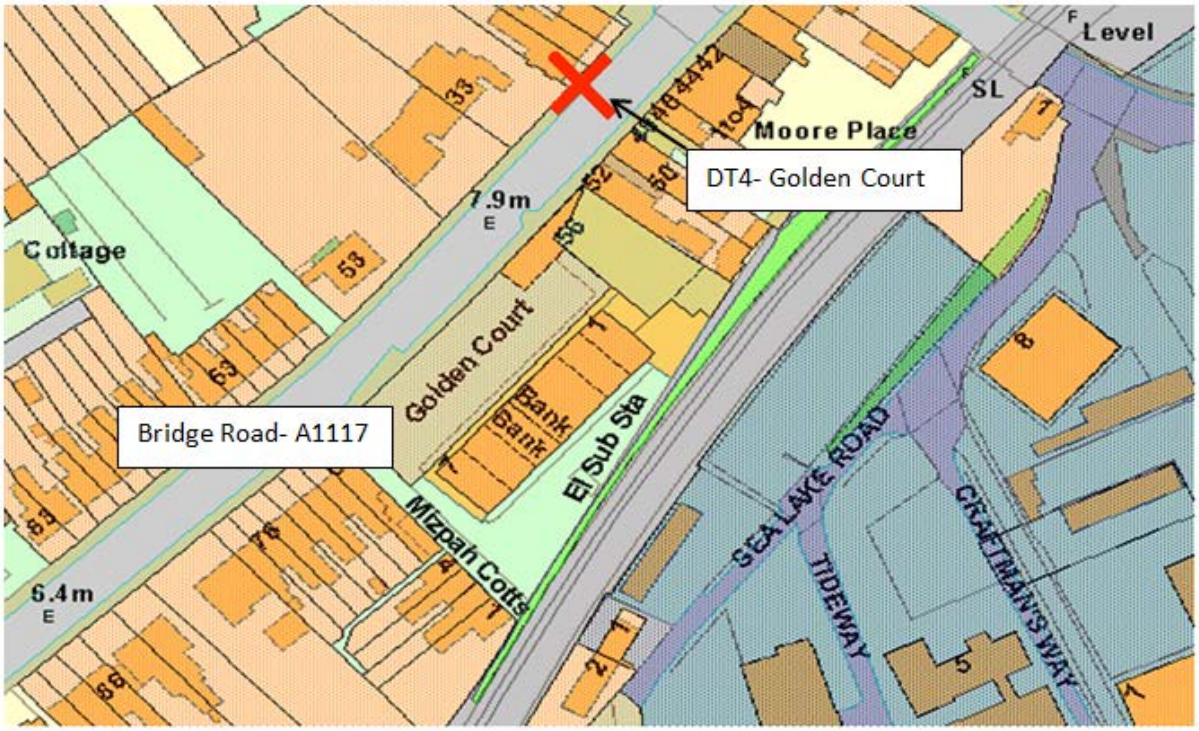
Map 26 Map showing diffusion tube location in Carlton Colville



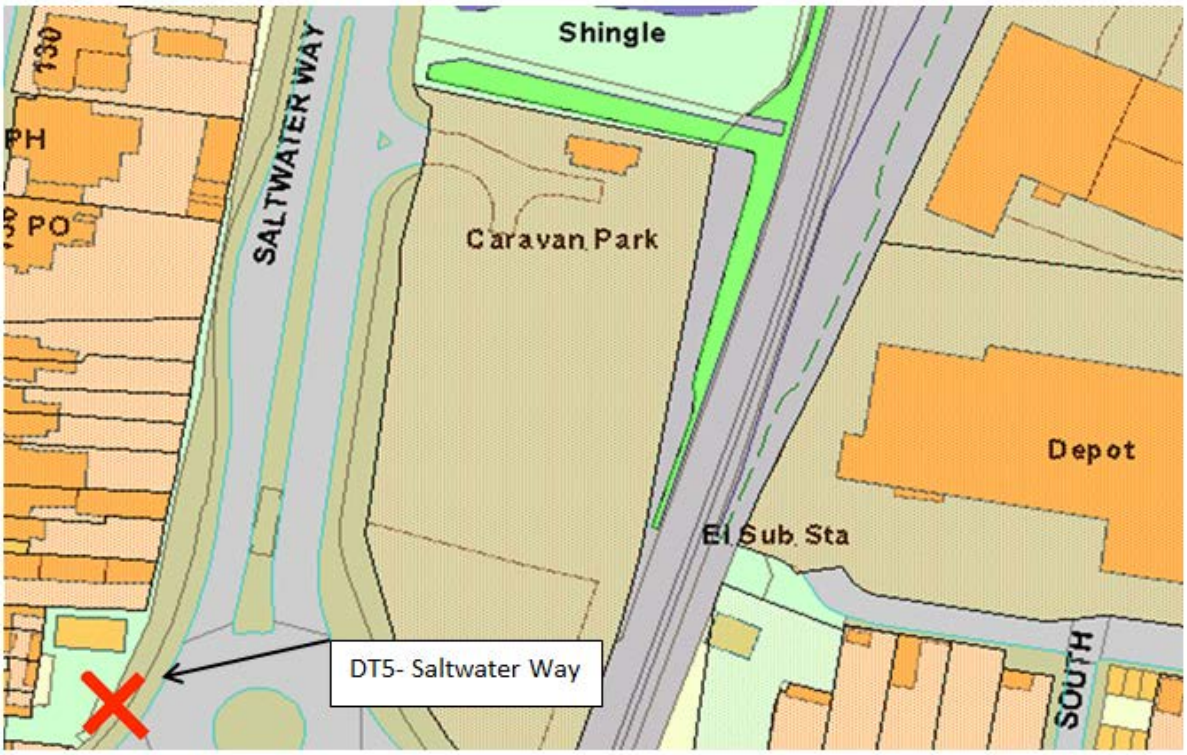
Oulton Broad

Map 27 Map showing diffusion tube location at Flying Dutchman, Oulton Broad

Map 28 Map showing diffusion tube location Golden Court, Oulton Broad

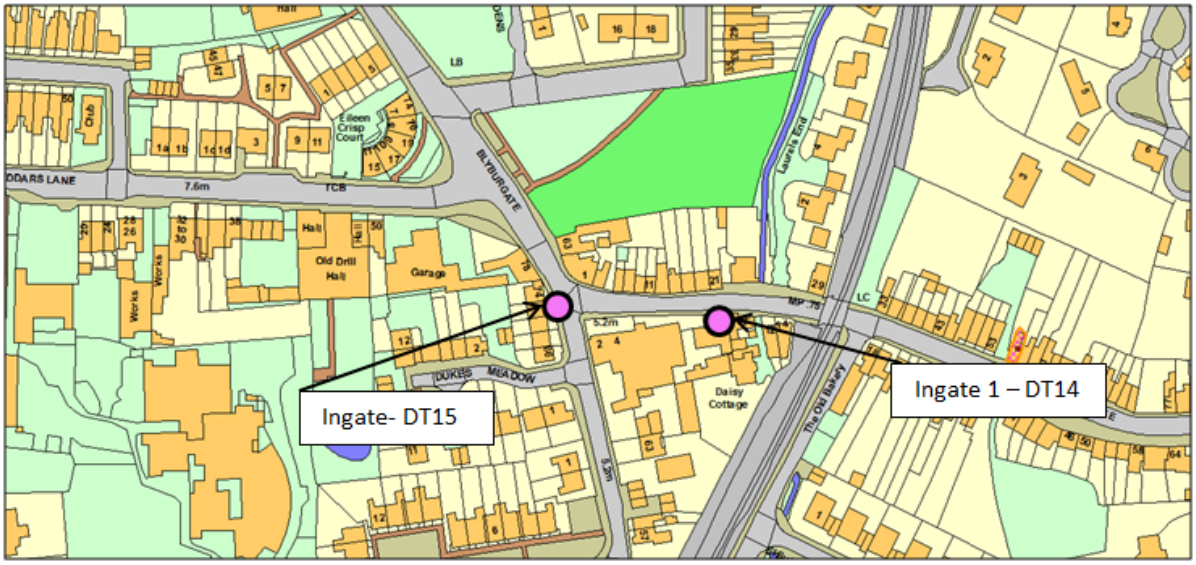


Map 29 **Map showing diffusion tube location Saltwater Way, Oulton Broad**



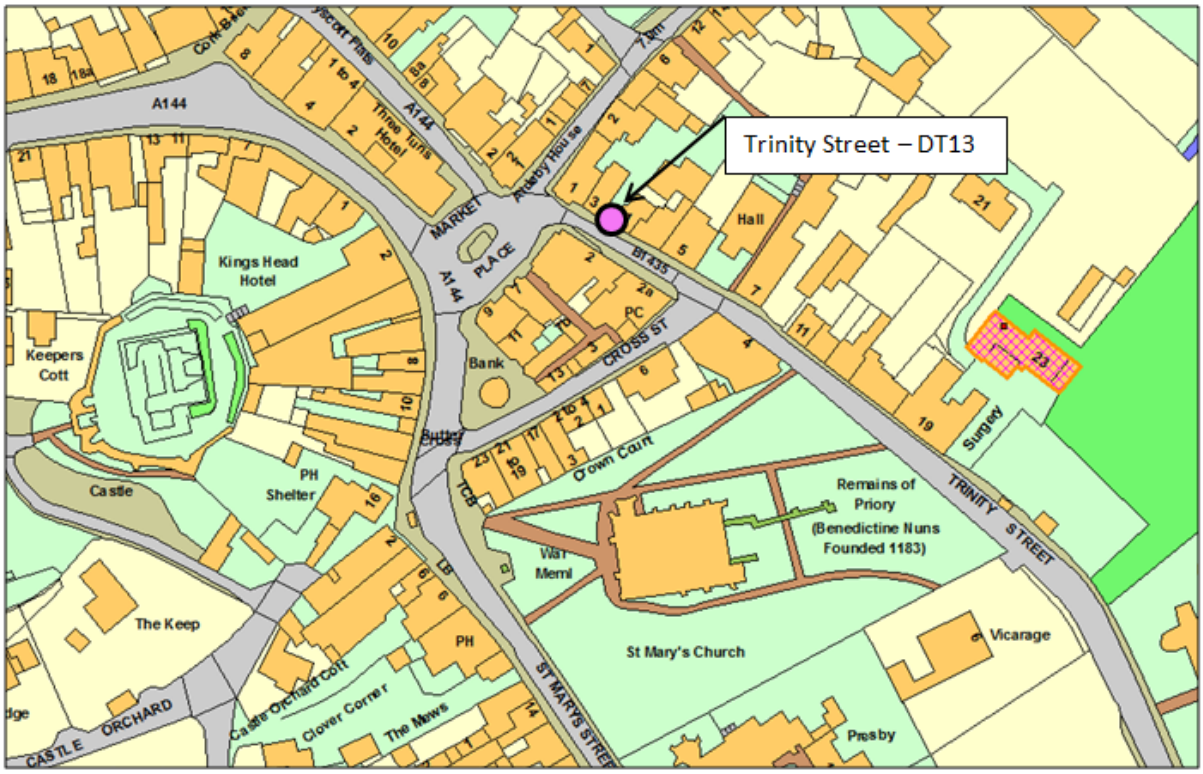
Beccles

Map 30 **Map showing diffusion tube location in Beccles**



Bungay

Map 31 Map showing diffusion tube location in Bungay



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

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

Appendix F: Archive of Completed Measures to Improve Air Quality

Suffolk Coastal District Council:

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Woodbridge Action Plan – completed measures and those to be removed from the Updated Action Plan going forward											
WBG 1	Install queue detectors (MOVA) on traffic signals to reduce queuing at the junction	Traffic Management	UTC, Congestion management, traffic reduction	Suffolk County Council	2009	2011	Reduction in peak queue lengths	10%	Queue length survey 2009. MOVA functional June 2011. Post MOVA queue length survey 2013. Monitoring results 2010 – 2014 show NO2 concentrations have fluctuated at the junction so MOVA has not caused a sustained reduction. No significant changes in traffic flow or % HDV reductions.	**Completed.**	Post MOVA queue survey shows average queue lengths have increased on all arms of the junction but that the extremes of queues have been reduced
WBG 4	Remove ability to turn right from direction of Melton Hill	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy	Suffolk County Council	2013 - 2014	2014 - 2015	Reduction in peak queue lengths on Melton Hill	Recent air quality modelling shows max reduction of 0.1µg/m3 in AQMA.	Recent feasibility study concluded negligible impact on AQMA NO2 concentrations.	To be removed from Action Plan and as such will not be reported in future documents	Feasibility study shows reduction of only 0.1µg/m3 in AQMA = negligible. Shows increase in conc. on Lime Kiln Quay Road of 0.5µg/m3

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
			lane								
WBG 5	Relocate the on street parking currently in Melton Hill to opposite side of road	Traffic Management	Other	Suffolk County Council	2012 - 2103	2013	Reduction in peak queue lengths of traffic heading away from junction along Melton Hill	Originally estimated at 5%. Recent air quality modelling shows negative impact on AQMA	Recent feasibility study showed negative impact on AQMA NO_2 conc.	To be removed from Action Plan and as such will not be reported in future documents	Feasibility study shows an increase in NO2 concentrations within the AQMA of 0.5µg/m3.
WBG 6	Remove the on street parking currently in Melton Hill	Traffic Management	Other	Suffolk County Council	2012 - 2103	2014	Reduction in peak queue lengths of traffic heading away from junction along Melton Hill	Originally estimated at 5%. Recent air quality modelling shows max reduction of 0.1µg/m3 in AQMA	Recent feasibility study showed negative impact on AQMA NO2 conc.	To be removed from Action Plan and as such will not be reported in future documents	Feasibility study shows reduction of only 0.1µg/m3 in AQMA = negligible.
WBG 7	Investigate Satellite Navigation (SatNav) system routes around town	Freight and Delivery Management	Other	SCDC	2010	2010	SatNav providers contacted. Peak queue lengths reduced.	1%	Most popular SatNav systems tested, Discussed with SCC who deal with SatNav providers. There are no real options or incentives for providers to alter their systems.	**Completed.**	System testing showed some routes are via the junction but majority sent via the bypass. SCC has tried to liaise with SatNav companies in general but we do not have the buy-in locally to influence them
WBG 9	Demand Responsive Transport	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Suffolk County Council	2009	2009	Increased bus patronage	2%	Scheme in place for the peninsula area (Hollesley, Bawdsey etc) as of 2009. Scheme doing well - will be retained until at least 2016. DRT has been revamped (June 2016) to help reduce vehicle emissions further.	**Completed**.	DRT is to be revamped - minibuses likely to be at least euro IV rated. Specifying in the contract that a smaller vehicle should be used if the passenger numbers are lower. Where possible the passengers to be linked to an existing bus service to reduce mileage.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
WBG 10	Simplified Ticket Scheme	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Suffolk County Council	2013	2014	None available	1%	Working group set up 2009. The Endeavour Card went live in October 2013 for 16-19 year olds.First buses rolling out 'M tickets'. Discussions for the future regarding contactless payments.	**Completed.**	Business case submitted to roll out adult's smart card – has not been successful. On-line top up facility has not been successful. No real way to measure whether emission reduction target will be reached.
WBG 11	Improve accessibility to bus timetable	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Suffolk County Council	2009	2009	None	1%	Website launched. New leaflets delivered. New style of timetable developed – more accessible and 'stick' style timetables -easier to read. Real time information rolled out in 2014/15 available for some services on smart phone apps.	**Completed.**	No real way to measure whether emission reduction target has been reached.
WBG 12	Turban Centre new bus station/ interchange	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Suffolk County Council	2010/ 2011	2012	Opening of new bus shelter.	2%	Design not agreed in time for budget cuts. Funding withdrawn. Bus shelters upgraded December 2012.	**Completed.**	May be some positive influence on bus patronage due to new bus shelters. Not possible to predict what reduction in emissions this may give.
WBG 13	Procurement of bus contracts to include fleet upgrade	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Suffolk County Council	2009	2009	Quality assessment process In place. Buses to be Euro III standard	2%	Quality assessment process 2009. New Quality Scoring System Jan 2013. First buses - major refurbishment- can carry more people and new style should encourage people onto buses. Average	**Completed.**	New low emission vehicles added to SCC's fleet are compliant for the London Low Emission Zone and the London 2012 Olympics. However, impacts on AQMA likely to be very small.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									fleet age for First buses reduced June 2016, replaced many older buses. All vehicles now fitted with 'Drive Green' system for driver behaviour.		
WBG 14	Car sharing scheme	Promoting Travel Alternatives	Workplace Travel Planning	SCDC	n/a	2010 and on-going	Increase in registered users of scheme.	2%	No. site users increased from 1,599 in 2010 to 2,556 in 2016. SCDC website updated. Articles published. Steering Group decision to remove from updated Action Plan	**Completed.**	Increased number of users can only have a positive effect.
WBG 15a	Business Travel Plans	Promoting Travel Alternatives	Workplace Travel Planning	Suffolk County Council, SCDC	n/a	2010 - 2011	Businesses contacted. Number of Travel Plans adopted by businesses	2% for 15a, b & c combined	List of businesses in Woodbridge with > 20 employees sent to SCC . SCC funding has now been cut - no longer be possible. Unlikely to be progressed due to lack of funding. Commercial Travel Plans to be requested through the Planning System where possible.	To be removed from Action Plan and as such will not be reported in future documents	Not really any large businesses within Woodbridge except SCDC. Potential to adopt Travel Plans much smaller and any impact from them within Woodbridge also minimal.
WBG 19	Monitor air quality	Public Information	Via the Internet	SCDC	n/a	on-going	Continue monitoring	n/a	Monitoring on-going. This is not really an Action Plan measure as such.	To be removed from Action Plan - will not be reported in future documents	Monitoring is main way to inform us whether Measures are being successful.
WBG 20	Undertake identified feasibility studies	Other	Other	SCDC, Suffolk County Council	n/a	2013	Feasibility studies for measures 3, 4, 5, 6 and 21 undertaken	n/a	Feasibility studies for measures 3, 4, 5, 6 and 21 completed. Recommends siting weather station for 3	To be removed from Action Plan and as such will not be reported in	Feasibility study indicates that Measure 5 will have a negative impact within the AQMA, Measures 3,4,

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									months to monitor wind speed and direction, and to also trial holding back the traffic from the lights (and the AQMA) on both Melton Hill and Lime Kiln Quay Rd. Weather station investigations completed 2015/16. Traffic trial to be undertaken 2017 and in updated Action Plan.	future documents	6 and 21 will have negligible impact within the AQMA. None of the measures will therefore be put forward for completion.
General measures within the District											
13	Travel Plan for new Council Offices at Riduna Park	Promoting Travel Alternatives	Travel plans	SCDC Environmental Health Local Authority Funded	2016	On-going	Reduction in % pf employees driving to work alone. Reduction in staff business mileage	Unknown	Final Travel Plan in place end 2016. Car sharing scheme promoted. Tele and video conferencing facilities installed. Flexible working and working from home encouraged. Discount on public transport (rail and bus) for Staff. Pool bikes available. Preliminary results from 2017 Travel Survey shows Driving to work alone has reduced from 92% in 2016 to 85% in 2017. Business mileage reduced from 456,898 in 2015/16 to 407, 513 miles in 2016/17. Travel Survey indicates number of staff	**2016 Completed**	Aim of the plan is to reduce commuting by single occupancy car journey by 10% by 2017, reduce car use for business mileage, and reduce impact from site on Woodbridge AQMA and within Melton. Travel Driving and Subsistence Policy includes business mileage rate for cycling and also passengers in vehicles. Travel decision making with preference for no travel or video-conferencing included. **Travel Plan in place and on-going – archive this measure**

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									commuting to work via Woodbridge AQMA has now reduced by 38. Actual figure will be higher as not all staff completed the survey.		
14	MOVA traffic signal technology installed at junctions within the district	Traffic Management	UTC, Congestion management traffic reduction	SCC lead and funded	n/a	on-going	MOVA installed	n/a	MOVA system installed to maximise the flow of trafic through junctions. Installed in the last few years at Melton crossroads, Beach Station/Langer Road Felixstowe, Garrison Rd/High Rd West Felixstowe and Church St/High St Saxmundham. Installastions in 2016/17 at Bell Lane/Main Rd Kesgrave and Beech Rd/Woodbridge Rd Rushmere St Andrew.	**2016/2017 Completed**	No new installations planned. Any new ones will be included as individual measures in future ASR's. **Archive this measure**
15	Provision of Electric Vehicle charge points and Electric pool vehicle at Riduna Park (new Council Offices)	Promoting Low Emission Transport	Other	Lead and funded SCDC	2016	2017	Number of miles undertaken by electric vehicles	Unknown	Charging infrastructure in place. Electric pool car in use from January 2017 - 8003 miles travelled during 2017.	**2017 Completed**	Charging infrastructure provided for 2 vehicles and 1 electric pool car provided. **Archive this measure.**

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
17	HGV signage at Woodbridge junction	Traffic Management	Other	Lead and funded Suffolk County Council	2017	2017	Reduction in HGVs using St. John's Street	Unknown	New signs erected at Woodbridge Junction at Sun Lane as you come from Melton - no right turn for lorries/HGVs (left only). Same from direction of Lime Kiln – no straight on. Signs in place 2017.	**2017 Completed**	Reduction in vehicles queuing to turn right will free up left hand filter lane more often and reduce time that vehicles queue in /near AQMA. **Archive this measure**
18	Environmental Management System (EMS) in place at the Port of Felixstowe. Accredited to ISO 14001.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Lead and funded Port of Felixstowe	On-going	On-going	No direct indicator. Continued certification to ISO 14001	n/a	EMS Implemented and certified to Port Environmental Review System in 2006. EMS certified to ISO14001:2008 in 2011. Port are transitioning to the latest version - ISO14001:2015 to be completed August 2018. Delivered training on EMS and individual responsibilities to Port staff and all new staff undertake environmental training and induction.	**Completed**	Incudes employee and tenant education in best practice covering emissions reduction. In place and work on-going. No new aspects planned. **Archive this measure**
20	East Home working policy	Promoting Travel Alternatives	Encourage/ Facilitate home -working	SCDC and WDC Local Authority Funded	On-going	On-going	Home working policy produced	Unknown	Policy in place. Technology in place to allow more people to work from home. Home working actively encouraged.	**Completed**	Policy in place and the Councils continue to explore new technology options to allow staff to work from home. **Archive this measure**
21	Reducing the emissions of the East Suffolk	Policy Guidance and Development	Sustainable Procurement guidance	SCDC & WDC Local Authority Funded	2016	2017	New document to be produced with the additional	Unknown	Work now complete and Policy in place. Includes Objectives to support growth of active travel methods	**2017 Completed**	Work on-going. **Archive this measure**

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	Councils during service delivery via the East Suffolk Environmental Policy	Control					focus placed on reducing NO2 and PM2.5 emissions. Air quality impacts considered when services or equipment including vehicles are purchased		and for sustainable procurement by the District Council in order to reduce environmental impact of contractors. All refuse collection vehicles (supplied by Norse) are Euro 5, Euro 5 EEV or Euro 6		
23	Suffolk Walking Strategy	Promoting Travel Alternatives	Promotion of walking	Lead and funded Suffolk County Council	-	On-going	Number of people walking - Department for Transport statistics	Unknown	DfT statistics - % population walking once a week in Suffolk Coastal was 72.4% in 2015/16 - 4.4% above the national average.	**In place - Completed**	This figure has decreased by 11.9% from 2014/15 and national average has decreased by 12.6%. **No new promotion or schemes planned so archive this measure.**
24	Suffolk Cycling Strategy	Promoting Travel Alternatives	Promotion of cycling	Lead and funded Suffolk County Council	-	On-going	Number of people cycling - Department for Transport statistics	Unknown	Cycle towns review completed. New cycle map for Woodbridge produced. Free cycle maps also available for Felixstowe and Felixstowe to Ipswich. DfT statistics - % population cycling once a week in Suffolk Coastal was 19.4% in 2015/16 - 3.1% above national average.	**In place - Completed**	This figure has increased by 9.6% from 2014/15and national average has increased by 2.4%. **No new promotion or schemes planned so archive this measure.**
28	Construction Dust mitigation condition recommended for	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SCDC Environmental Health and Planning Local Authority Funded	2016	2016	Number of dust complaints received associated with	Unknown	It is recommended to the planning Department for all relevant planning applications that a Construction Dust	**Completed 2016**	Aim to increase awareness of construction dust issues for smaller developments. Larger developments will have

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	relevant Planning Consents						development sites		Condition is included in the consent. 5 complaints were received regarding construction sites between 1/6/16 and 28/6/17 - each site has been / is being dealt with under statutory nuisance provisions.		more awareness of this issue – Conditions will help to focus their mitigation. **Measure now routinely placed on planning applications so archive this measure.**
32	Electric Vehicle charge point provision request placed on relevant Planning Consents	Promoting Low Emission Transport	Other	SCDC Environmental Health and Planning Local Authority funded	2016	2016/17	Number of applicants installing electric vehicle charging points.	Unknown	Electric Vehicle charge point provision request placed on all new residential planning applications.	**Completed 2017**	Aim is to encourage developers to consider mitigation for emission increases. **Measure now routinely placed on planning applications so archive this measure.**

Waveney District Council:

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	Reducing the pollutant emissions of the East Suffolk Councils during service delivery via the Joint Envirnmental Policy	Policy Guidance and Development Control	Sustainable Procurement guidance	SCDC & WDC Local Authority Funded	2016	2017	New document to be produced with the additional focus placed on reducing NO2 and PM2.5 emissions. Air quality impacts considered when services or equipment including vehicles are purchased	Unknown	Work now complete and Policy in place. Includes Objectives to support growth of active travel methods and for sustainable procurement by the District Council in order to reduce environmental impact of contractors. All refuse collection vehicles (supplied by Norse) are Euro 5, Euro 5 EEV or Euro 6	**2017 Completed**	Work on-going. **Archive this measure**
10	East Suffolk Home working policy	Promoting Travel Alternatives	Encourage/ Facilitate home -working	SCDC and WDC Local Authority Funded	On-going	On-going	Home working policy produced	Unknown	Policy in place. Technology in place to allow more people to work from home. Home working actively encouraged.	**Completed**	Policy in place and the Councils continue to explore new technology options to allow staff to work from home. **Archive this measure**
12	Provision of EV charging points at the Riverside (Council Offices)	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Waveney District Council	2012	2015	Four EV points installed	Reduce emissions	Ongoing	**On-going**	Electric vehicle are still too expensive to purchase. **Archive this measure**
14	Travel Planning advice and support	Promoting Travel Alternatives	Workplace Travel Planning	Suffolk County Council		Implemented	Take up by the public, business and schools	Reduction in vehicle journeys	Ongoing	**On-going**	This measure is also covered by Measure 7 (Greener travel information available on the SCC website) **Archive this measure**

15 & 16 (went in twice by mistake in 2017)	Suffolk Walking Strategy	Promoting Travel Alternatives	Promotion of walking	Lead and funded Suffolk County Council	-	On-going	Number of people walking - Department for Transport statistics	Unknown	DfT statistics - % population walking once a week in Waveney was 69.5% in 2015/16 – 1.5% above the national average.	**In place - Completed**	This figure has decreased by 10.5% from 2014/15 and national average has decreased by 12.6% **No new promotion or schemes planned so archive this measure.**
18	Active travel events at key locations (Lowestoft MyGo)	Promoting Travel Alternatives	Promotion of cycling	Suffolk County Council	On-going	On-going	Promote and encourage active travel	Reduction in vehicle journeys	On-going	**On-going**	

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
CIL	Community Infrastructure Levy
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EMS	Environmental Management System
EnMS	Energy Management System
EPUK	Environmental Protection UK
ERTG	Electric Rubber Tyre Gantry Crane
EU	European Union
FDMS	Filter Dynamics Measurement System
HGV	Heavy Goods Vehicle
IMV	Internal Movement Vehicle
LAQM	Local Air Quality Management
LTP	Local Transport Plan
MOVA	Microprocessor Optimised Vehicle Actuation
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
RTG	Rubber Tyre Gantry Cranes
SCC	Suffolk County Council
SCDC	Suffolk Coastal District Council
SO_2	Sulphur Dioxide
SPD	Supplementary Planning Document
TRO	Traffic Regulation Order
WDC	Waveney District Council

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