2012 Air Quality Updating and Screening Assessment for *Suffolk Coastal District Council*

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

December 2012

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Executive Summary

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedances are considered likely, the local authority must then 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.

Previous rounds of review and assessment for the district have culminated in the declaration of two AQMAs. The first was declared in 2006 and encompasses several properties on the Woodbridge Junction. The second was declared in 2009 for The Dooley Inn, Ferry Lane, Felixstowe. This is a single property close to the Port of Felixstowe.

This report consists of an air quality Updating and Screening Assessment Report which covers the whole district, together with the Action Plan Progress Report for the AQMA declared at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge (Woodbridge Junction).

This Progress Report has not identified the need to proceed to a Detailed Assessment for any pollutant at this time.

Results of NO_2 monitoring undertaken in 2011 at **Stratford St. Andrew** show one site on the A12 to have concentrations above the Air Quality Objective of 40µg/m^3. The site is located on a group of five houses which open directly onto the pavement of the A12. During 2011 the monitoring was undertaken using a single diffusion tube, and so for increased accuracy in 2012 this site has been triplicated. A number of additional sites have also been put in place in the locality to provide additional monitoring information. Once the results are obtained for 2012 we will determine whether Detailed Assessment will be required.

Assessment of **biomass combustion** installations within the district has identified 2 for which additional information and investigation is still needed; Heveningham Hall in Heveningham, and West End Nurseries in Leiston. A screening assessment will be undertaken for each installation and presented in the next annual air quality report (Progress Report), due for production in April 2013.

The **Action Plan for the Woodbridge Junction AQMA** consists of 20 measures that could be undertaken at the junction to hopefully ease the congestion / reduce the overall traffic flows and therefore in turn reduce the elevated levels of nitrogen dioxide being experienced. Updates on each of the 20 measures are included in this report. A new team has been put in place at Suffolk County Council covering this area, they have taken a fresh look at the junction and come up with a number of new suggestions for some of the measures, together with further options for investigation.

The new computerised system for the traffic lights (MOVA) has been in place and working since July 2011, this appears to have reduced congestion and therefore queue lengths. Monitoring results for 2011 show a reduction in NO_2 levels at most of the sites on the junction, reducing the highest recorded level from 45/46µg/m^3 to 42µg/m^3. Care must be taken when interpreting this reduction, as differences between years are sometimes found to be due to Meteorological conditions. The results for 2012 are waited to confirm any reductions seen. Feasibility studies are underway which will use computer modelling to

predict air quality impacts from a number of other available options should MOVA on its own not be enough to reduce NO_2 concentrations at the junction to below the objectives.

The Final **Action Plan for the AQMA at Ferry Lane, Felixstowe** has recently been completed and received Defra approval. There are 13 measures recommended, 6 of which are the responsibility of Suffolk Coastal District Council, and 7 the responsibility of the Port of Felixstowe. Many of the Port of Felixstowe's actions are already underway or have been completed. The diffusion tube monitoring results indicate that levels within the AQMA have fallen to be now at, or below, the annual mean objective level of 40µg/m^3. All monitoring locations have been kept in place for 2012 and will also be retained in 2013. The results for 2012 will be reported in the first Progress Report due for this AQMA (in 2013) and will confirm any reductions seen.

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Non - Technical Summary

All Councils must assess air quality within their district on a regular basis to see whether levels set by the Government are being exceeded anywhere. If they are, there is then a set procedure to follow which ends in the declaration of an Air Quality Management Area and the production of a long term Action Plan to try and reduce these levels. An air quality report must be produced every year, but once every three years the report required is more in-depth and is known as an Updating and Screening Assessment.

Historic assessment of air quality in the district has led to 2 areas being identified which are above the levels set by the Government for the pollutant nitrogen dioxide. These are; several houses on the road junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge (Woodbridge Junction); and the Dooley Inn, Ferry Lane, Felixstowe (a single property close to the Port of Felixstowe). Both areas have been officially declared as Air Quality Management Areas, Woodbridge in 2006 and Felixstowe in 2009. We have produced the Action Plan for the Woodbridge Junction and, included in section 8 of this report, the official annual 'Action Plan Progress Report' due. We have now also produced the Action Plan for the Dooley Inn, Ferry Lane, Felixstowe and this is detailed in section 9 of this report.

The information which needs to be provided in an Updating and Screening Assessment report is set by Government guidance and consists of;

- monitoring results collected in 2011;
- information on any new sources of pollutants from:
    - road traffic and other transport sources (rail, air, shipping)
    - industry
    - commercial and domestic sources - use of solid fuel in biomass boilers and domestic houses
    - sources where emissions cannot be controlled such as quarries, landfill sites, stockyards, major construction works and waste management sites.

Monitoring results

In 2011 nitrogen dioxide was the only pollutant measured in the district. This was undertaken using 2 different techniques; automatic analyser (1 site at the Woodbridge junction) which provides an average level every 15 minutes, and diffusion tube (39 sites) which provides an average level over a month.

In 2011, levels were measured in 8 areas within the district – Felixstowe, Kesgrave, Melton, Woodbridge, Martlesham, Little Glemham, Farnham and Stratford St. Andrew. The specific locations have been chosen following assessments of air quality (past and present) which have shown they could be at risk of exceeding the Government's set level for nitrogen dioxide.

The results of monitoring show a number of locations where nitrogen dioxide is above the set level. With the exception of one site, these locations are all situated within the declared Air Quality Management Areas in Woodbridge and Felixstowe. Work is on-going at these sites to try and reduce the levels through the Action Plan produced for each area.

The other site is situated at Stratford St. Andrew on a row of 5 houses whose doors open onto the pavement of the A12. Monitoring was undertaken using a single diffusion tube at this location and, due to inaccuracies associated with diffusion tubes, the site has been monitored in 2012 using 3 diffusion tubes. Using 3 tubes has been shown to increase the

accuracy of the results and will enable us to decide whether the Government's air quality objective is being exceeded at this location and further work is needed.

Road traffic and other transport sources

There are no new sources of road traffic or other transport sources (air, rail, shipping) in the district since the 2011 air quality report.

Industry

There are 10 new or newly authorised industrial premises on the district since our last assessment. Emissions from these sites have been investigated and are not large enough to cause exceedance of any of the set levels and no further investigations are needed.

Commercial and Domestic sources

There are 2 sites with biomass boilers which burn solid fuel on the district that still require further information to be collected in order for us to carry out an assessment. These are located in Heveningham and Leiston. The results will be included in the next air quality report. There are no areas within the district with sufficient use of solid fuel in houses to cause any levels to be exceeded.

Uncontrolled emissions

There are no new industrial sites in the district with uncontrolled emissions (such as quarries, landfill sites) since our last assessment

Action Plan Progress Report for the Woodbridge Junction

The Action Plan written for the Woodbridge Junction Air Quality Management Area consists of 20 measures that could be undertaken at the junction to hopefully ease the congestion / reduce the overall traffic flows, and therefore in turn reduce the elevated levels of nitrogen dioxide being experienced. The measures can be split into 2 types; 'on the ground works' (mainly to be undertaken by Suffolk County Council (SCC) with Suffolk Coastal District Council input) and more 'softer measures' to be undertaken mainly by Suffolk Coastal District Council (SCDC).

The 'on the ground works' have started with the installation of a new computerised system (MOVA) to the traffic lights whose aim is to reduce congestion and therefore queue lengths. If this option alone is not successful in lowering nitrogen dioxide levels, there are a number of other options which could also be put in place. Four different scenarios are to be computer modelled; removing the option to turn right from the direction of Melton Hill; removing the option to continue straight on from the direction of Melton Hill; moving the car parking currently opposite the Council Offices; and removing the parking currently opposite the Council Offices. The results of the computer modelling should allow us to determine whether the air quality will be improved should any combination of these scenarios be put in place and therefore where to use our resources. Work on these feasibility studies has begun.

The new computerised system for the traffic lights (MOVA) has been in place and working since July 2011, and does appear to be reducing congestion and queue lengths. The monitoring results for 2011 show a reduction in NO_2 levels at most of the sites on the junction bringing levels closer to those set by the Government. Care must be taken when interpreting this reduction however, as some reductions can be due to weather conditions. Monitoring is continuing which will inform us whether the reductions are longer term or were unusual to 2011.

The 'softer measures' include contacting bus companies that use the junction to see whether they can use a cleaner fleet in Woodbridge, travel plans for schools and businesses and investigating improving cycling/walking links in the town and these have already begun to be actioned.

Updates for each measure can be seen in the table in section 8 of this report.

Action Plan for the Dooley Inn, Ferry Lane, Felixstowe

This Air Quality Management Area (AQMA) was declared in 2009. The Draft Action Plan was consulted upon in 2011/12 and the Final Action Plan was completed earlier this year. This has recently received approval from Defra. The Plan consists of 13 measures to try and reduce nitrogen dioxide levels in the area. Six measures are the responsibility of Suffolk Coastal District Council and seven are the responsibility of the Port of Felixstowe. Many of the Port of Felixstowe's actions are already underway or have been completed.

The diffusion tube monitoring results indicate that levels within the AQMA have fallen to be now at, or below, the Government's objective. All monitoring locations have been kept in place for 2012 and will also be retained in 2013. The results for 2012 will be reported in the first Progress Report due for this AQMA (in 2013).

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1 Introduction

1.1 Description of Local Authority Area

Suffolk Coastal is a diverse district incorporating thirty miles of coast, expansive areas of countryside, much of which still forms a working landscape, five market towns including Woodbridge, the resort and port of Felixstowe as well as many villages. The district supports over 4,000 businesses, including large employers like the Port of Felixstowe, BT and Sizewell Power Station, as well as a high proportion of small and medium sized businesses that are vital to the local economy. Tourism is also a major driver for the local economy. Much of the district is within the Haven Gateway that is identified for significant growth.

The main source of emissions, within the majority of the district, is road traffic. Within the town of Felixstowe, emissions from and associated with the Port of Felixstowe are a large source of pollutants. While the quality of our air is generally very good and well within the limits set by Government for the protection of human health, there are now two areas within the district where levels of pollution give rise for concern. As such, two Air Quality Management Areas (AQMAs) have been declared in the District, one in Woodbridge (road traffic related) and the other in Felixstowe (associated with emissions from and associated with the Port of Felixstowe).

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

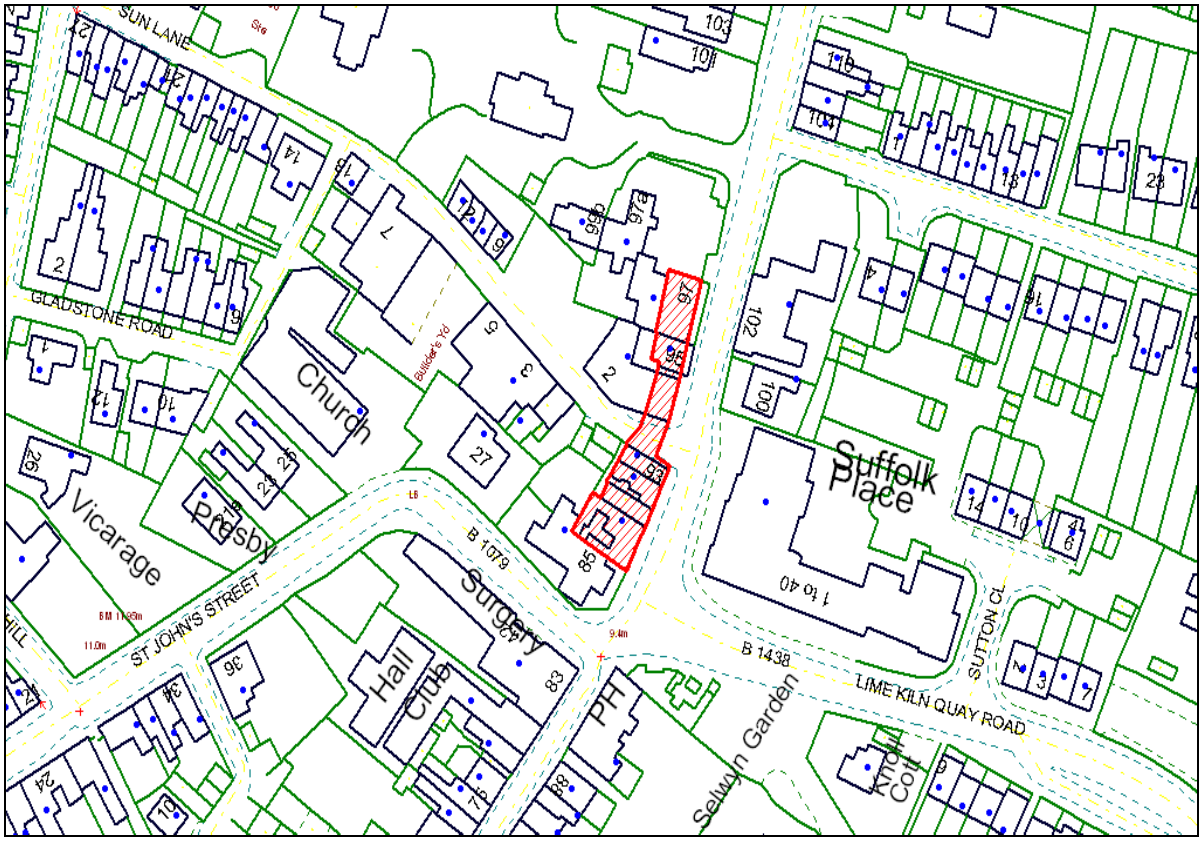
1.4 Summary of Previous Review and Assessments

Suffolk Coastal has completed four rounds of review and assessment and this report begins the fifth round. The findings of the review and assessment reports completed to date are summarised in Tables 1.4a – 1.4d and key findings are outlined below:

The first round of review and assessment was completed in 2001. No AQMAs were declared as part of the first round.

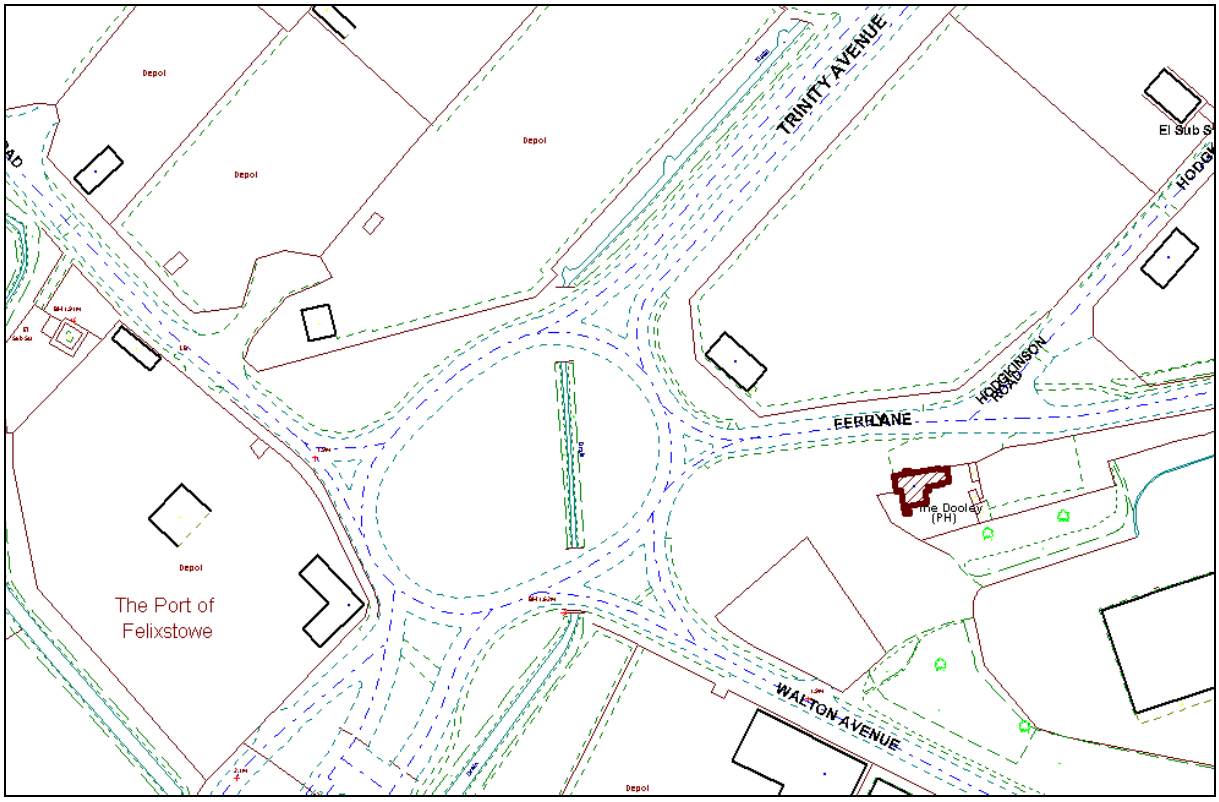
The second round of review and assessment was completed in 2005. This round concluded that there was a potential risk of the air quality objectives for nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}) and sulphur dioxide (SO_2) being exceeded within the Suffolk Coastal district. Following completion of a Detailed Assessment; no AQMA was required on the A!214 at the junction of Bell Lane in Kesgrave; however an **AQMA was declared for exceedence of the annual mean NO_2 objective concentration at Lime Kiln Quay Road/The Thoroughfare/St John's Street junction, Woodbridge in March 2006.** Boundary of the AQMA can be seen in Figure 1.4a below.

Figure 1.4a Map showing the boundary of the AQMA declared at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge.



The third round of review and assessment consisted of an Updating and Screening Assessment, a Detailed Assessment, a Progress Report and a Further Assessment Report for the AQMA declared at the Woodbridge Junction. The 2006 Updating and Screening Assessment identified a potential risk of exceedence of the air quality objectives for NO_2, PM_{10} and SO_2 resulting from emissions from activities on and associated with the Port of Felixstowe. The Further Assessment for the Woodbridge Junction AQMA confirmed the boundary extent was correct, advised that a NOx reduction of 16.4% was necessary to eliminate exceedance and that the key was to reduce queuing and heavy duty vehicles. Following completion of a Detailed Assessment for Adastral Close and Ferry Lane in Felixstowe an **AQMA was declared in 2009 for exceedence of the annual mean NO_2 objective concentration in the vicinity of the Dooley Inn Public House on Ferry Lane, Felixstowe**. Boundary of the AQMA can be seen in Figure 1.4b below.

Figure 1.4b Map showing the boundary of the AQMA declared at The Dooley Inn, Ferry Lane, Felixstowe.



The fourth round of review and assessment consisted of an Updating and Screening Assessment, Progress Reports, and a Further Assessment and Draft Air Quality Action Plan for the Ferry Lane, Felixstowe AQMA. The Further Assessment report confirmed the findings of the 2008 Detailed Assessment, with exceedence of the NO_2 annual average objective predicted at the Dooley Inn PH. A modelling assessment completed as part of the Further Assessment concluded that the existing AQMA boundary is appropriate. Source apportionment found main NOx contribution is from container handling and vehicle activities in the Port together with emissions from Heavy Duty Vehicles on roads outside the Port boundary. The Draft Action Plan for the AQMA has undergone a full Public Consultation and

the final document has now been completed and received Defra approval - see Section 9 for further detail. The final Action Plan can be viewed at:

http://www.suffolkcoastal.gov.uk/assets/Documents/District/Air-quality/FelixstoweFerryLaneAQAPSeptember2012.pdf

No new areas of concern identified in the Progress Reports.

Table 1.4a Main findings from the first round of air quality review and assessment

Report and reference	Main outcomes
Report on the First Stage review and assessment of air quality in Suffolk Coastal (SCDC, 1999)	Negligible risk of exceedence of the air quality objectives for benzene and 1,3-butadiene, no further action needs to be taken. The risk of exceedence of the air quality objectives for lead, carbon monoxide (CO), NO_2, PM_{10} and SO_2 is such that a second stage review and assessment will need to be undertaken to determine the risk more precisely.
Report on the Second Stage review and assessment of air quality in the Suffolk Coastal District (SCDC, 2000)	Negligible risk of exceedence of the air quality objectives for lead and CO and further review and assessment is not necessary at this time. Significant risk of exceedence of the air quality objectives for NO_2, PM_{10} and SO_2 at relevant locations and further review and assessment is necessary.
Report on the Third Stage review and assessment of air quality in the Suffolk Coastal District (SCDC, 2001)	Negligible risk of exceedence of the air quality objectives and further assessment not necessary at this time for: NO_2 from traffic using the A14 trunk road and traffic using High Road West, Felixstowe. PM_{10} from: traffic using the A1152 (specifically the crossroads of the A1152 and B1438 at Melton); traffic using High Road West, Felixstowe; traffic using the Lime Kiln Quay Road/The Thoroughfare/St John's Street junction, Woodbridge; and the combined emission 'footprint' of White Mountain Roadstone Limited, A12 traffic, Foxhall Four Quarry and Foxhall Landfill Site. Insufficient information to date and therefore further review and assessment required for: SO_2 and PM_{10} emissions from shipping at the Port of Felixstowe. PM_{10} emissions from the combined emission 'footprint' of Roadworks (1952) Limited and Sinks Pit Quarry. Risk of NO_2 air quality objectives being exceeded and further review and assessment required for: Emissions from traffic using the A1152 (specifically the crossroads of the A1152 and B1438 at Melton) Emissions from traffic using Lime Kiln Quay Road/The Thoroughfare/St John's Street junction, Woodbridge.
Air quality review and assessment Stage 3 (AEA Technology, 2001)	Unlikely risk of exceedence of the air quality objectives for NO_2 at the Melton and Woodbridge road junctions and an AQMA is not required.

Table 1.4b Main findings from the second round of air quality review and assessment

Report and reference	Main outcomes
Report on the Updating and Screening Assessment of air quality in the Suffolk Coastal District (SCDC, 2003)	Unlikely risk of exceedence of the air quality objectives for CO, benzene and 1,3-butadiene. No further assessment necessary. Potential risk of exceedence of the air quality objectives for lead, NO_2, PM_{10} and SO_2 at receptor locations. Further investigation is necessary.
Report on the Detailed Assessment and Continued Updating and Screening Assessment of air quality in the Suffolk Coastal District (SCDC, 2004)	Unlikely risk of exceedence of the air quality objectives for lead and no further assessment is necessary. Unlikely risk of exceedance of the air quality objectives for NO_2 on the A1214 at the Bell Lane junction in Kesgrave confirmed by Detailed Assessment – no AQMA required. Potential risk of exceedence of the air quality objectives for NO_2, PM_{10} and SO_2 at receptor locations. Further investigation is necessary for: Emissions of NO_2 from traffic using the junction of Lime Kiln Quay Road/The Thoroughfare St John's Street junction, Woodbridge. Emissions of NO_2, PM_{10} and SO_2 from activities on and associated with the Port of Felixstowe, incorporating assessment of emissions generated by the Bathside Bay and FSR planning applications if they are granted permission.
Progress Report: Air Quality in the Suffolk Coastal District (SCDC, 2005)	Outlines the findings of detailed modelling undertaken as part of the FSR planning application: No risk of exceedence of the air quality objective for PM_{10} at receptors from emissions resulting from activities on and associated with the Port of Felixstowe. No further review and assessment necessary. Exceedence of the air quality objective for annual average NO_2 in 2005 at receptor locations situated in The Downs (close to the Port of Felixstowe Road) and Spriteshall Lane (close to Dock Spur roundabout). *NO_2 diffusion tube monitoring undertaken in 2004 does not correspond with the above modelling results. Seven new diffusion tube sites established at the start of 2005 to obtain further information for receptor locations close to the Port of Felixstowe and along the A14.* Exceedence of the air quality objective for annual average NO_2 predicted for the end of 2005 at the Dooley Inn, Ferry Lane. Two new NO_2 diffusion tube sites established on the building. At the end of 2005, SCDC to determine if declaration of an AQMA is necessary for receptor locations near to the Port of Felixstowe and/or along the A14 based on 12 months of monitoring information from the new NO_2 diffusion tube sites in Felixstowe and the Trimleys. The findings to be reported in the next updating and screening assessment.
Detailed Assessment of the Woodbridge Junction (AEA Technology, 2005)	**Declaration of an AQMA for the annual average objective for NO_2 is required for Lime Kiln Quay Road/The Thoroughfare/St John's Street junction, Woodbridge.**

Declaration of AQMA at the Woodbridge Junction (SCDC, 2006)	**AQMA declared for Lime Kiln Quay Road/The Thoroughfare/St John's Street junction, Woodbridge in March 2006.** Copy of AQMA boundary included in Map 1.4a and AQMA Order attached in Appendix A.

Table 1.4c Main findings from the third round of air quality review and assessment

Report and reference	Main outcomes
Report on the Updating and Screening Assessment of air quality in the Suffolk Coastal District (SCDC, 2006)	Unlikely risk of exceedence of the air quality objectives for CO, benzene, 1,3-butadiene and lead, no further assessment necessary. Potential risk of exceedence of the air quality objectives for NO_2, PM_{10} and SO_2 at receptor locations resulting from emissions from activities on and associated with the Port of Felixstowe. A Detailed Assessment is required to investigate these emissions.
Further Assessment Report for Woodbridge Junction AQMA (AEA Technology, 2007)	Confirmed AQMA boundary is correct. Reduction of NOx by 16.4% necessary to eliminate exceedances. Source apportionment concludes that queuing and Heavy Duty Vehicle reductions will be key to improve air quality.
Air quality review and assessment: Detailed Assessment for Adastral Close and Ferry Lane, Felixstowe (SCDC, 2008a)	AQMA declaration for SO_2 not required. AQMA declaration for PM_{10} not required. Exceedence of the annual average objective for NO_2 at the Dooley Inn, Ferry Lane, Felixstowe (modelling indicated that this the only relevant receptor location at which the objective was not met). Risk of exceedence of the annual average objective for NO_2 at fifteen properties at the west end of Adastral Close in 2010 and beyond following the FSR. Source apportionment studies indicated that container handling operations by rubber tyred gantry (RTG) crane and internal movement vehicles (IMVs) will potentially make the greatest contribution to oxides of nitrogen (NO_X) concentrations in 2010 both at Adastral Close and the Dooley Inn, Ferry Lane. Declaration of an AQMA for the annual average objective for NO_2 is required for the Dooley Inn, Ferry Lane, Felixstowe.
Progress Report: air quality in the Suffolk Coastal District (SCDC, 2008b)	Work on production of the draft Action Plan for the Lime Kiln Quay Road/Thoroughfare/St John's Street junction, Woodbridge is continuing. Public consultation will be undertaken following Defra's approval of the completed draft. Public Consultation on the findings of the 2008 Detailed Assessment (SCDC, 2008a) for Ferry Lane, Felixstowe is to be undertaken following approval of the report by Defra. No new areas of concern identified.
Declaration of AQMA at Ferry Lane, Felixstowe (SCDC, 2009)	**AQMA declared for the Dooley Inn PH, Ferry Lane, Felixstowe in March 2009.** Copy of AQMA boundary included in Map 1.4b and AQMA Order attached in Appendix B.

Table 1.4d Main findings from the fourth round of air quality review and assessment

Report and reference	Main outcomes
Report on the Updating and Screening Assessment of air quality in the Suffolk Coastal District (SCDC, 2009)	No new areas of concern identified within the district, no Detailed Assessment required. Work continuing to obtain information on biomass combustion plant within the district. Work ongoing on Woodbridge AQMA Action Plan and Further Assessment for AQMA declared at Ferry Lane, Felixstowe.
Draft Air Quality Action Plan for Woodbridge Junction (AEA Technology, 2009)	Draft Action Plan produced for full Public Consultation. Action Plan considered 79 options to improve air quality and recommends 20 of these for implementation.
Progress Report: air quality in the Suffolk Coastal District (SCDC, 2010)	No new areas of concern identified within the district, no Detailed Assessment required. Work continuing to obtain information on biomass combustion plant within the district. Work ongoing on Woodbridge AQMA Final Action Plan and Further Assessment for AQMA declared at Ferry Lane, Felixstowe.
Further Assessment Report for Ferry Lane, Felixstowe AQMA (TRL, 2010)	Confirmed the findings of the 2008 Detailed Assessment, with exceedence of the NO_2 annual average objective predicted at the Dooley Inn public house. No further concern regarding Adastral Close properties – monitoring is ongoing there. A modelling assessment concluded that the existing AQMA boundary is appropriate. Source apportionment found main contribution from container handling and vehicle activities in the Port together with emissions from Heavy Duty Vehicles on roads outside the Port boundary.
Final Air Quality Action Plan for Woodbridge Junction (AEA Technology, 2011)	Includes results of Public Consultation which initiated changes to 5 of the 20 measures. Implementation Plan included for all 20 measures adopted.
Progress Report: air quality in the Suffolk Coastal District (SCDC, 2011)	No new areas of concern identified within the district, no Detailed Assessment required. Assessment still required for 4 pieces of biomass combustion plant within the district. Air Quality Action Plan Progress Report included for the AQMA declared at the Woodbridge Junction.
Draft Air Quality Action Plan for Ferry Lane, Felixstowe (TRL, 2011)	Draft Action Plan produced for full Public Consultation. Action Plan considered 26 options to improve air quality and recommends 13 of these for implementation.
Final Air Quality Action Plan for Ferry Lane, Felixstowe (TRL, 2012)	Includes results of Public Consultation which has not initiated any changes to the 13 measures for implementation.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

In 2011 an automatic analyser measuring oxides of nitrogen continued to be situated at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge (Woodbridge Junction) within the declared Air Quality Management Area.

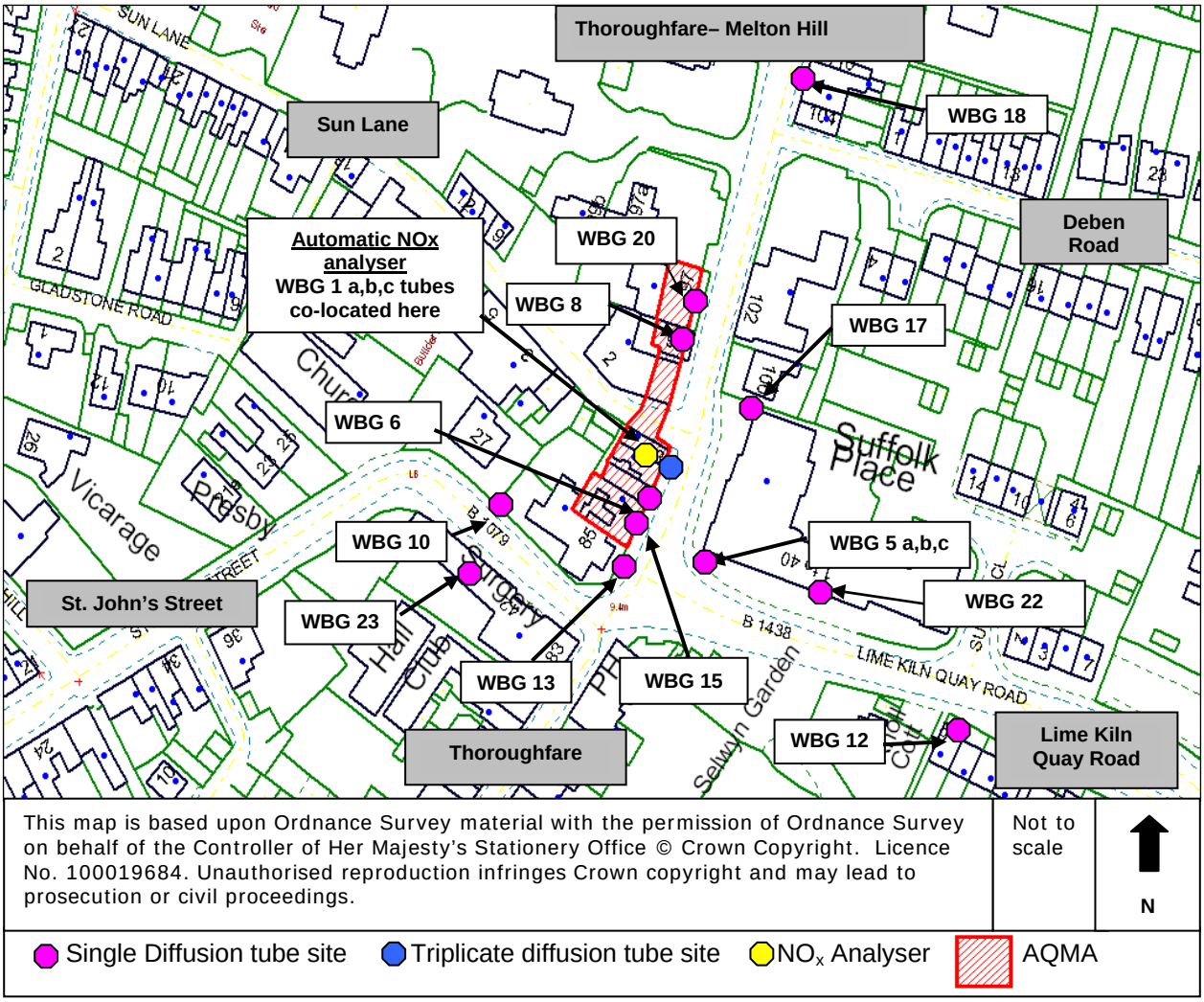
Further detail regarding the site is provided in Table 2.1 below. The location of the analyser is shown on the map in Figure 2.1 on the following pages. Details of Quality Assurance/ Quality Control carried out for the analyser is provided in Appendix C.

In previous years a second automatic analyser measuring oxides of nitrogen was also situated within the Air Quality Management Area declared at The Dooley Inn, Ferry Lane, Felixstowe. At the end of 2010 there were significant layout changes carried out at The Dooley Inn by the new owner and a plan of on-going alterations for the external areas. This meant that the air quality monitoring equipment would need to be moved. Options for re-siting the analyser in a suitable location were minimal and also subject to possible further layout changes in 2011/2012. It was therefore decided that the analyser would be removed from the Dooley Inn at the end of 2010. Additional diffusion tube locations were sited on and around the property to provide additional data starting in 2011.

Table 2.1 Details of Automatic Monitoring Site

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road	Does this location represent worst-case exposure?
Woodbridge Junction	Kerbside	X 62759	Y 24926	Nitrogen dioxide (NO_2)	ozone chemi.-luminescence	Yes	Yes (0.1m)	1m	Yes

Figure 2.1 Location of the Automatic NOx analyser, AQMA, and NO_2 diffusion tubes sited at the Woodbridge Junction



2.1.2 Non-Automatic Monitoring Sites

During 2011 there were 11 new monitoring sites added within the district and 1 site removed, bringing the total number of sites to 39. All sites measure concentrations of NO_2 using passive diffusion tubes which are exposed on a monthly basis. Further details regarding each monitoring site are provided in Table 2.2 below.

The diffusion tube site removed from the monitoring program at the end of 2010 was at the request of the property owner and was located at 97 Thoroughfare, Woodbridge (Woodbridge 20) within the declared AQMA. There were no appropriate alternatives for re-siting this diffusion tube, see map in Figure 2.1.

The 11 new monitoring sites were located as follows;

- **Felixstowe 32** (triplicate site) – Industrial/Road traffic site, guttering to rear of The Dooley Inn PH, Ferry Lane, Felixstowe
- **Felixstowe 33** – Roadside site, kerbside lamppost sited on Dock Gate 2 roundabout, Ferry Lane, Felixstowe
- **Felixstowe 34** – Industrial/Road traffic site, lamppost sited midway between Dock gate 2 roundabout and The Dooley Inn PH, Ferry Lane, Felixstowe
- **Felixstowe 35** – Industrial/Road traffic site, pub signpost on footpath at front of The Dooley Inn PH, Ferry Lane, Felixstowe
- **Felixstowe 36** – Industrial/Road traffic site, street sign in Hodgkinson Road, Felixstowe
- **Felixstowe 37** – Industrial/Road traffic site, lamppost sited on corner of Ferry Lane and Hodgkinson Road, Felixstowe
- **Felixstowe 38** – Industrial/Road traffic site, lamppost in Ferry Lane past The Dooley Inn and Hodgkinson Road, Felixstowe
- **Little Glemham 1** (triplicate site) – Roadside site, Pear Tree House, Main Road, Little Glemham
- **Farnham 1** (triplicate site) – Roadside site, Turret House, The Street, Farnham
- **Farnham 2** (triplicate site) – Roadside site, Post Office Stores, The Street, Little Glemham
- **Stratford St. Andrew 1** – Roadside site, 1 Long Row, main Road, Stratford St. Andrew

The **Felixstowe sites** were located to provide additional information regarding localised emission sources affecting the AQMA declared at the Dooley Inn. These emissions are mainly from Heavy Duty Vehicles using Ferry Lane and Hodkinson Road close to the Dooley Inn. The sites will also provide additional monitoring data following the removal of the continuous analyser from the Dooley Inn due to lack of an appropriate location.

The monitoring sites at **Little Glemham, Farnham and Stratford St. Andrew** were all sited to provide monitoring data along this stretch of the A12 trunk road in order to inform the planning application process for the Sizewell C power station.

Diffusion tubes can over or under read and the annual average obtained needs to be corrected to take account of laboratory bias thus improving accuracy. This can be done either by using a combined 'national' bias adjustment factor for the laboratory, or calculated from a co-location study with a continuous analyser carried out locally by the authority. For this reason diffusion tubes are co-located in triplicate alongside the automatic monitoring sites in Woodbridge and Felixstowe so that a local bias adjustment factor can be obtained for these locations.

Information regarding the analytical laboratory, Quality Assurance/ Quality Control and bias adjustment factors are provided in Appendix C. Maps showing the diffusion tube sites are provided in Appendix D.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Felixstowe 12 (FLX 12a,b, c)	Roadside	(6)3036 (2)3489	NO_2	No	Yes	5m	Yes
Felixstowe 14 (FLX 14)	Industrial	(6)2860 (2)3284	NO_2	No	Yes	n/a	No
Felixstowe 17 (FLX 17)	Roadside	(6)2881 (2)3632	NO_2	No	Yes	31m	Yes
Felixstowe 20 (FLX 20)	Industrial / Road traffic	(6)2867 (2)3398	NO_2	No	Yes	54m	Yes
Felixstowe 21 (FLX 21)	Urban background	(6)2925 (2)3443	NO_2	No	No 9m	n/a	n/a
Felixstowe 22 (FLX 22)	Industrial	(6)2917 (2)3344	NO_2	No	Yes	n/a	Yes
Felixstowe 23 (FLX 23a,b)	Roadside	(6)2854 (2)3659	NO_2	No	Yes	25m	Yes
Felixstowe 24 (FLX 24)	Roadside	(6)2834 (2)3462	NO_2	No	Yes	32m	Yes
Felixstowe 26 (FLX 26a,b,c)	Industrial / Road traffic	(6)2796 (2)3423	NO_2	Yes	Yes	75m from roundabout	Yes
Felixstowe 27 (FLX 27a,b,c)	Industrial / Road traffic	(6)2795 (2)3424	NO_2	Yes	Yes	75m from roundabout	No
Felixstowe 29 (FLX 29)	Industrial	(6)2871 (2)3289	NO_2	No	Yes	n/a	No
Felixstowe 31 (FLX 31a,b,c)	Industrial	(6)2863 (2)3279	NO_2	No	Yes	n/a	Yes
Felixstowe 32 (FLX 32a,b,c)	Industrial / Road traffic	(6)2883 (2)3287	NO_2	Yes	Yes	75m from roundabout	No
Felixstowe 33 (FLX 33)	Roadside	(6) 2788 (2)3423	NO_2	No	No 70m	5m from roundabout	n/a
Felixstowe 34 (FLX 34)	Industrial / Road traffic	(6)2791 (2)3425	NO_2	No	No 50m	25m from roundabout	n/a
Felixstowe 35 (FLX 35)	Industrial / Road traffic	(6)2796 (2)3425	NO_2	Yes	No 2m	77m from roundabout	No
Felixstowe 36 (FLX 36)	Industrial / Road traffic	(6)2798 (2)3427	NO_2	No	No 28m	110m from roundabout	n/a
Felixstowe 37 (FLX 37)	Industrial / Road traffic	(6)2802 (2)3427	NO_2	No	No 58m	133m from roundabout	n/a
Felixstowe 38 (FLX 38)	Industrial / Road traffic	(6)2815 (2)3428	NO_2	No	No 145m	220m from roundabout	n/a
Kesgrave 9 (KSG 9)	Roadside	(6)2180 (2)4579	NO_2	No	Yes	2.6m	Yes
Melton 5 (MEL 5a,b)	Roadside	(6)2814 (2)5041	NO_2	No	Yes	4m	Yes

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Woodbridge 1 (WBG 1a,b,c)	Kerbside	(6)2759 (2)4926	NO_2	Yes	Yes	1m	Yes
Woodbridge 3 (WBG 3)	Urban background	(6)2699 (2)4848	NO_2	No	No 9m	n/a	n/a
Woodbridge 5 (WBG 5a,b,c)	Roadside	(6)2760 (2)4924	NO_2	No	Yes	2.5m	Yes
Woodbridge 6 (WBG 6)	Roadside	(6)2759 (2)4925	NO_2	Yes	Yes	2m	Yes
Woodbridge 8 (WBG 8)	Roadside	(6)2759 (2)4928	NO_2	Yes	Yes	3m	Yes
Woodbridge 10 (WBG 10)	Roadside	(6)2756 (2)4924	NO_2	No	No 1m	2m	Yes
Woodbridge 12 (WBG 12)	Roadside	(6)2766 (2)4920	NO_2	No	Yes	5m	Yes
Woodbridge 13 (WBG 13)	Roadside	(6)2758 (2)4924	NO_2	No	No 5m	2.5m	Yes
Woodbridge 15 (WBG 15)	Roadside	(6)2758 (2)4924	NO_2	Yes	Yes	2m	Yes
Woodbridge 17 (WBG 17)	Roadside	(6)2761 (2)4926	NO_2	No	Yes	7m	Yes
Woodbridge 18 (WBG 18)	Roadside	(6)2762 (2)4933	NO_2	Yes	Yes	1.5m	Yes
Woodbridge 22 (WBG 22)	Roadside	(6)2763 (2)4923	NO_2	No	Yes	8m	Yes
Woodbridge 23 (WBG 23)	Kerbside	(6) 2755 (2) 4923	NO_2	No	No 1m	1m	Yes
Martlesham 1 (MRT 1a,b,c)	Roadside	(6)2463 (2)4544	NO_2	No	Yes	21m	Yes
Little Glemham 1 (LGM 1a,b,c)	Roadside	(6)3420 (2)2588	NO_2	No	Yes	19m	Yes
Farnham 1 (FAR 1a,b,c)	Roadside	(6)3627 (2)6013	NO_2	No	Yes	3m	Yes
Farnham 2 (FAR 2a,b,c)	Roadside	(6)3627 (2)6011	NO_2	No	Yes	2m	Yes
Stratford St. Andrew 1 (STA 1)	Roadside	(6)3574 (2)5999	NO_2	No	Yes	2m	Yes

2.2 Comparison of Monitoring Results with Air Quality Objectives

Within the Suffolk Coastal district in 2011 monitoring was undertaken for nitrogen dioxide using both an automatic analyser and diffusion tubes. No other pollutants were monitored.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

A summary of the results of automatic monitoring of NO_2 at the Woodbridge Junction can be seen in tables 2.3 and 2.4. Table 2.3 presents results comparable with the annual mean objective of 40µg/m^3, and Table 2.4 presents results comparable with the 1-hour mean objective of 200µg/m^3. In addition to the most recent monitoring, results for 2007, 2008, 2009 and 2010 have also been included in the tables for comparison purposes. Detailed summary tables and graphs of the 2011 monitoring results are presented in Appendix E.

The automatic analyser at Woodbridge is sited within a declared Air Quality Management Area (AQMA) and shows the annual mean concentration to still be above the air quality objective (Table 2.3).

Over the monitoring period the annual mean concentration remained stable between 2007 and 2010 at 45-46 µg/m^3 but has now dropped in 2011 to 42 µg/m^3. The Air Quality Action Plan has been formally in place since the start of 2011, and during the second half of 2011 one of the main measures (installation of a traffic queue detection system to the traffic lights at the junction) was implemented. This could be one explanation for the reduction in levels seen. More detailed discussion regarding the reduction in NO_2 levels seen at the junction and the Action Plan implementation can be seen in Section 8 of this report.

The 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times per year) was not exceeded in Woodbridge in 2011 (see Table 2.4). A small number of exceedances were seen for the years 2007-2009 but in the last two years the objective has not been exceeded at all.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Annual Mean Concentration μg/m^3				
					2007[c]	2008 [c]	2009 [c]	2010 [c]	2011 [c]
Woodbridge Junction	Kerbside	Y	n/a	93%	**46**	**45**	**45**	**45**	**42**

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2007[c]	2008 [c]	2009 [c]	2010 [c]	2011 [c]
Woodbridge Junction	Kerbside	Y	n/a	93%	2	2	1	0	0

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

A summary of the results of diffusion tube monitoring for NO_2 at sites within the district can be seen in Table 2.6 overleaf. Detailed tables showing the monthly monitoring results for all sites in 2011 are presented in Appendix F. In addition to the most recent monitoring, results for 2009 and 2010 have also been included in the tables for comparison purposes if required.

The annual mean NO_2 concentrations shown in Table 2.6 have had a bias adjustment factor applied. The choice of bias adjustment factor is explained in Appendix C and the bias adjustment factor used at each site is presented in Appendix F.

Some diffusion tube sites failed to achieve full data capture, mainly due to stolen tubes. Where there was less than 90% data capture for the year (because two or more diffusion tube results were missing or invalid), the mean of the 2011 data has been "annualised" using the procedure set out in LAQM.TG(09) to produce the best estimate of the annual mean. 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 to avoid any very local effects that may occur, and should wherever possible lie within a radius of about 50 miles. The two sites used here are St. Osyth (Rural) and Wicken Fen (Rural). Both sites are part of the UK Automatic Urban and Rural Network (AURN).
- 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 2010 was based on the diffusion tube exposure periods rather than 1st Jan – 31st Dec 2010.
- Work out the period mean (Pm) for the period of interest at each of the comparison sites.
- Calculate the ratio of the annual mean to the period mean (Am:Pm) for each location, see table 2.5 below.
- 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 2011.
  WBG 6: the (unadjusted) measured period mean (M) was 47.3 µg/m^3:
  47.3 µg/m^3 (M) x 0.94 (R_a) = **44.5 µg/m^3 (annualised mean)**
  WBG 13: the (unadjusted) measured period mean (M) was 39.4 µg/m^3:
  39.4 µg/m^3 (M) x 1.01 (R_a) = **39.8 µg/m^3 (annualised mean)**
- This annualised mean will then be bias adjusted as for all other sites.

Table 2.5 Annualisation of diffusion tube data from sites with more than one missing month

Site	Missing months	Annual mean NO_2, St Osyth µg m^{-3} (Am)	Annual mean NO_2, Wicken Fen µg m^{-3} (Am)	Period mean NO_2, St Osyth µg m^{-3} (Pm)	Period mean NO_2, Wicken Fen µg m^{-3} (Pm)	Ratio Annual: Period mean St Osyth (Am:Pm)	Ratio Annual: Period mean Wicken Fen (Am:Pm)	Average Am:Pm of both sites (R_a)
WBG 6	Jun & Jul	14.78	11.39	15.80	11.97	0.94	0.95	0.94
WBG 13	Feb, Mar & Jun	14.78	11.39	14.91	11.03	0.99	1.03	1.01

Table 2.6 Results of Nitrogen Dioxide Diffusion Tube Monitoring in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)[b]	Data with less than 9 months has been annualised (Y/N)[c]	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor for 2011 = 0.84) (μg/m^3)		
								2009	2010	2011
FLX 12a,b,c	Ford Bros., Hamilton Rd	Roadside	No	Triplicate	100%	n/a	N	38	31	33
FLX 14	1 Adastral Close	Industrial	No	~	100%	n/a	N	28	27	25
FLX 17	38 Spriteshall Lane, Trimley	Roadside	No	~	100%	n/a	N	27	26	28
FLX 20	73 Glemsford Close	Industrial / Roadside	No	~	100%	n/a	N	25	24	26
FLX 21	4 Kingsfleet Road	Urban background	No	~	100%	n/a	N	25	24	25
FLX 22	13 Levington Road	Industrial	No	~	100%	n/a	N	25	25	25
FLX 23	23 Heathgate Piece, Trimley	Roadside	No	~	100%	n/a	N	29	31	29
FLX 24	22 Brandon Road	Roadside	No	~	100%	n/a	N	31	31	31
FLX 26a,b,c	The Dooley Inn, Ferry Lane	Industrial / Roadside	Yes	Triplicate	100%	n/a	N	**45**	**43**	40
FLX 27a,b,c	The Dooley Inn, Ferry Lane	Industrial / Roadside	Yes	Triplicate	91%	n/a	N	38	33	36
FLX 29	18 Adastral Close	Industrial	No	~	91%	n/a	N	27	27	25
FLX 31a,b,c	44 Adastral Close	Industrial	No	Triplicate	100%	n/a	N	28	30	27
FLX 32a,b,c	Guttering to rear of Dooley Inn PH, Ferry Lane	Industrial	Yes	Triplicate	100%	n/a	N	~	~	37
FLX 33	Dock Gate 2 Roundabout Not a relevant receptor	Roadside	No	~	100%	n/a	N	**~**	**~**	**66**
FLX 34	Ferry Lane, Midway between roundabout and Dooley Inn PH. Not a relevant receptor	Industrial / Roadside	No	~	100%	n/a	N	**~**	**~**	**51**
FLX 35	Dooley Inn signpost at front, Ferry Lane. Not a relavant receptor	Industrial / Roadside	Yes	~	100%	n/a	N	**~**	**~**	**48**
FLX 36	Street Sign in Hodgkinson Road. Not a relevant receptor	Industrial / Roadside	No	~	100%	n/a	N	**~**	**~**	**41**
FLX 37	Lampost at Ferry Lane on corner of Hodgkinson Rd. Not a relevant receptor	Industrial / Roadside	No	~	100%	n/a	N	**~**	**~**	**48**
FLX 38	Lampost on Ferry Lane, past Hodgkinson Rd. Not a relevant receptor	Industrial / Roadside	No	~	100%	n/a	N	~	~	39

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)[b]	Data with less than 9 months has been annualised (Y/N)[c]	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor for 2011 = 0.84) (μg/m^3)		
								2009	2010	2011
KSG 9	118 Main Road	Roadside	No	~	100%	n/a	N	**33**	**29**	34
MEL 5	6 The Street	Roadside	No	~	100%	n/a	N	**24**	**28**	31
WBG 1a,b,c	93 Thoroughfare	Kerbside	Yes	Triplicate + colocated	100%	n/a	N	**45**	**42**	**42**
WBG 3	8 Kingston Farm Road	Urban background	No	~	100%	n/a	N	**15**	**18**	16
WBG 5	Suffolk Place, Lime Kiln Quay Rd	Roadside	No	~	100%	n/a	N	**28**	**29**	25
WBG 6	87 Thoroughfare	Roadside	Yes	~	83%	Y	N	**41**	**41**	37
WBG 8	95 Thoroughfare	Roadside	Yes	~	100%	n/a	N	**42**	**41**	38
WBG 10	St John's Street signpost	Roadside	No	~	91%	n/a	N	**34**	**34**	31
WBG 12	8 Lime Kiln Quay Road	Roadside	No	~	100%	n/a	N	**26**	**26**	24
WBG 13	85 Thoroughfare	Roadside	No	~	75%	Y	N	**34**	**36**	33
WBG 15	87 Thoroughfare	Roadside	Yes	~	100%	n/a	N	**38**	**38**	39
WBG 17	Suffolk Place, Lime Kiln QuayRd	Roadside	No	~	100%	n/a	N	**31**	**30**	28
WBG 18	106/108 Thoroughfare	Roadside	Yes	~	91%	n/a	N	**38**	**38**	32
WBG 22	Suffolk Place, Lime Kiln QuayRd	Roadside	No	~	100%	n/a	N	**24**	**23**	21
WBG 23	Lamppost at 50 St. John's Street	Kerbside	No	~	100%	n/a	N	**29**	**27**	28
MRT 1a,b,c	Horseman Court, Eagle Way	Roadside	No	Triplicate	100%	n/a	N	**29**	**24**	24
LGM 1a,b,c	Drainpipe on Pear Tree House, Main Road, Little Glemham	Roadside	No	Triplicate	100%	n/a	N	~	~	17
FAR 1a,b,c	Turret House, The Street, Farnham	Roadside	No	Triplicate	100%	n/a	N	~	~	29
FAR 2a,b,c	Post Office Stores, The Street, Farnham,	Roadside	No	Triplicate	100%	n/a	N	~	~	33
STA 1	1 Long Row, Main Road, Stratford St. Andrew	Roadside	No	~	100%	n/a	N	**~**	**~**	**43**

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] Means have been "annualised" as in Box 3.2 of TG(09), if there is more than 1 months worth of missing diffusion tube data

After annualisation (where applicable) and bias adjustment, seven sites had annual mean NO_2 concentrations above the Objective of 40µg/m^3 in 2011, these were:

- FLX 26 - The Dooley Inn, Ferry Road, Felixstowe, within the declared AQMA.
- FLX 33 - lamppost at Dock Gate 2 Roundabout - not a relevant receptor.
- FLX 34 – lamppost in Ferry Lane, midway between roundabout and Dooley Inn PH - not a relevant receptor.
- FLX 35 - The Dooley Inn Signpost at front of building, Ferry Lane – not a relevant receptor.
- FLX 36 - Street Sign in Hodgkinson Road - not a relevant receptor.
- FLX 37 - lamppost in Ferry Lane on corner of Hodgkinson Road - not a relevant receptor.
- WBG 1 - 93 Thoroughfare, Woodbridge - co-located with the Woodbridge automatic monitoring site and within the declared AQMA.
- STA 1 – 1 Long Row, Main Road, Stratford St. Andrew.

Felixstowe 26 is within the declared AQMA at The Dooley Inn and the NO_2 concentration is at, but not above, the annual mean objective level of 40µg/m^3. The other sites within the AQMA (Felixstowe 27 and 32) are within the objective. The five other sites at Felixstowe which are above the objective level are not situated at relevant receptors. These sites were located to help ascertain NO_2 levels around the declared AQMA at the Dooley Inn PH, and whether the local road network (Ferry Lane and Hodgkinson Road) is producing more emissions than originally estimated. Further discussions regarding the Felixstowe AQMA and the 2011 monitoring results can be seen in Section 9 of this report.

The Woodbridge site (WBG 1) is within the declared AQMA, all other sites within the AQMA are now below the annual mean objective level of 40µg/m^3. The Air Quality Action Plan has been formally in place since the start of 2011, and during the second half of 2011 one of the main measures (Measure 1 - installation of a traffic queue detection system to the traffic lights at the junction) was implemented. This could be one explanation for the reduction in levels seen. More detailed discussion regarding the reduction in NO_2 levels seen at the junction and the Action Plan implementation can be seen in Section 8 of this report.

The site at Stratford St. Andrew (STA 1) is located on the drainpipe of a group of five houses which open directly onto the pavement of the A12. There is approximately 1 metre between the building façade and the kerb. Monitoring is being undertaken at several sites along the A12 as part of the pre-planning application scoping exercise for Sizewell C. This location is the only site with NO_2 concentrations above the annual mean objective. During 2011 this site was monitored using a single diffusion tube, and so for increased accuracy in 2012 this site has been triplicated. A number of additional sites have also been put in place in the locality to provide additional monitoring information. Once the results are obtained for 2012 we will determine whether Detailed Assessment will be required.

Diffusion tube data for 2009 and 2010 has also been included in table 2.6 for comparison purposes, in particular for the declared AQMA s at Felixstowe and Woodbridge where we have experienced a reduction in NO_2 concentrations at some sites. There does not appear to be a trend across the district of reduced levels in 2011 which indicates that the reductions are not likely to be the result of meteorological conditions. There are 2 urban background sites (FLX 21 and WBG 3) within the district which act as a type of 'control' site in that they are not near to any busy roads or other pollution sources which could influence the levels recorded. FLX 21 has stayed fairly stable over the last three years at 24-25µg/m^3. WBG 3 increased from 15 to 18µg/m^3 between 2009 and 2010 and has now decreased back to 16µg/m^3 in 2011, again staying fairly stable.

2.2.2 Summary of Compliance with AQS Objectives

Suffolk Coastal District Council has examined the results from monitoring in the district. Concentrations outside of the declared AQMAs are below the objectives at relevant locations, with the exception of one site at Stratford St. Andrew.

Triplicate diffusion tube monitoring has been put in place at Stratford St. Andrew for 2012 and the results of sampling will advise whether we need to proceed to a Detailed Assessment for this site. The results will be presented in the next air quality report due for the district in 2013.

3 Road Traffic Sources

LAQM.TG (09) advises that attention needs to be given to nitrogen dioxide (NO_2) in all cases and PM_{10} in some cases. No other pollutants need to be considered for road traffic. It is only necessary to consider locations which have not been assessed during the earlier rounds, where there has been a significant increase in traffic flow, a new development or new exposure.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Pollutant concentrations are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion. In these situations there is the possibility that the objectives for nitrogen dioxide (NO_2) could be exceeded.

The technical guidance LAQM.TG (09) advises that a Detailed Assessment will be required for any streets where:

- The Annual Average Daily Traffic Flow is around 5,000 vehicles per day or more
- The street is congested – it has slow moving traffic that is frequently stopping and starting due to pedestrian crossings, parked vehicles etc throughout much of the day (not just during rush hours). The average speed is likely to be less than 25 kph (15mph).
- The street is narrow – it will have residential properties within 2 m of the kerb, and buildings both sides of the road (the buildings on the other side of the road can be further from the road than 2 m).

The technical guidance LAQM.TG (09) advises that this assessment does not need to consider locations within existing Air Quality Management Areas (AQMAs) declared for NO_2. A section of the Thoroughfare (Melton Hill) at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge was declared as an AQMA in 2006. This area in Woodbridge would fall within this category but as it is already declared as an AQMA it does not require any further assessment in this section of the report.

Using local knowledge of Council Officers and traffic count information provided by Suffolk County Council (see Appendix ?) it has been determined that there are no new/newly identified streets which would fall into these categories.

Suffolk Coastal District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Defra have examined the results from previous Review and Assessment, which have shown that there will be some locations where members of the public may regularly spend one hour or more, e.g. streets with many shops or outside cafes/bars. At these locations the 1-hour objective for NO_2 will apply.

The technical guidance LAQM.TG(09) advises that if these types of location were specifically included during previous rounds of review and assessment and if there is no new/newly identified locations that fall into this category, then there is no need to proceed further.

In the previous rounds of review and assessment these types of location were fully investigated, and no further investigation will be necessary.

Suffolk Coastal District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Defra have found from previous rounds of review and assessment that there will be some street locations where traffic flows are not necessarily high (less than 20,000 vehicles per day) but there is an unusually high proportion of buses and/or heavy goods vehicles (greater than 20%) and relevant exposure within 10 metres which could lead to exceedance of both the nitrogen dioxide (NO_2) and particulate matter (PM_{10}) objectives.

The technical guidance LAQM.TG (09) advises that if these types of location were specifically included during previous rounds of review and assessment then there is no need to proceed further.

In previous rounds of review and assessment these types of location were fully investigated. There is only one road with a proportion of heavy duty vehicles (HDVs) greater than 20% and totalling more than 2,500 vehicles per day within the Suffolk Coastal district, which is the A14 trunk road from the Haven Exchange roundabout at the Port of Felixstowe to the Ipswich Borough boundary. Emissions from traffic using the A14 trunk road do not come within the scope of this section of the report, however, as there are no relevant receptor locations within 10 metres of the road. No further investigation will be necessary.

Suffolk Coastal District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

This assessment needs to consider both NO_2 and PM_{10}. Concentrations of both pollutants are usually higher closer to junctions, due to the combined impact of traffic emissions from two roads and the higher emissions due to stop-start driving. Any junctions with a traffic flow

greater than 10,000 vehicles per day and relevant exposure within 10m of the kerb should be investigated.

The technical guidance LAQM.TG (09) update advises that if road junctions were specifically included during previous rounds then there is no need to proceed further.

In the previous rounds of review and assessment these types of location were fully investigated. A Detailed Assessment has been undertaken for two of the road junctions investigated:

- **The junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street in Woodbridge.** A Detailed Assessment was undertaken for NO_2 and PM_{10} at this junction in 2002. It concluded that it was unlikely (with a probability between 5% and 20%) that an exceedance of the annual mean NO_2 objective would occur. For PM_{10} it concluded that it was very unlikely (with a probability less than 5%) that an exceedance of the 24-hour PM_{10} objective would occur. It was therefore not necessary to declare an Air Quality Management Area for this junction.
  Following elevated NO_2 diffusion tube readings at the junction, a second Detailed Assessment was undertaken for NO_2 in 2005. It concluded that the annual mean objective for NO_2 was likely to be exceeded at two receptor locations and an Air Quality Management Area (AQMA) was declared and came into force in April 2006. An Action Plan was finalised in 2011 and work is continuing on the implementation of this plan. Further detailed information is provided in Section 8 of this report.

- **The junction of the A1152 and the B1438 in Melton (the Melton crossroads).** A Detailed Assessment was undertaken for NO_2 and PM_{10} at this junction in 2002. It concluded that it was unlikely (with a probability between 5% and 20%) that an exceedance of the annual mean NO_2 objective would occur. For PM_{10} it concluded that it was very unlikely (with a probability less than 5%) that an exceedance of the 24-hour PM_{10} objective would occur. It was therefore not necessary to declare an Air Quality Management Area for this junction. Since the modelling was undertaken in 2002, concentrations of NO_2 have continued to be monitored at two locations on the junction. The results of the diffusion tube monitoring have been detailed in each of the air quality reports produced since this time and the results for the last three years are presented in Table 2.6 in section 2 earlier in this report. The results show that concentrations of NO_2 have increased since 2009 from 24 to 31µg/m^3 but continue to be well below the NO_2 objective level of 40 µg/m^3. This monitoring site will be left in place in order to monitor future trends.

Suffolk Coastal District Council confirms that there are no new/newly identified busy junctions.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Suffolk Coastal District Council confirms that there are no new/proposed roads within the district that we are aware of at this time.

3.6 Roads with Significantly Changed Traffic Flows

The technical guidance LAQM.TG(09) update advises that any roads with traffic flows greater than 10,000 vehicles per day which have experienced a 'large' increase in traffic flow, taken to be 25% or more, since the previous round of review and assessment should be considered in this Updating and Screening Assessment. This assessment needs to consider both NO_2 and PM_{10}.

The most recent available traffic flow data (for 2011) was obtained from Suffolk County Council Environment and Transport Department. The traffic data obtained is presented in Appendix G. For roads with a flow greater than 10,000 vehicles per day the percentage traffic increase between 2008 (data set used in the previous updating and screening assessment) and 2011 was calculated. Where data was not available for the years 2008 and 2011 data was used from the nearest year to each date.

There are no roads with traffic flows greater than 10,000 vehicles per day which have experienced a traffic increase of 25% or more since the previous review and assessment. No further investigation is required.

Suffolk Coastal District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The technical guidance LAQM.TG (09) advises that concentrations of NO_2 may be elevated in the vicinity of bus/coach stations where there are large numbers of vehicle movements per day. This only applies to bus/coach stations that are not enclosed, have a flow of buses/coaches greater than 2,500 movements per day, and that have relevant exposure within 10 metres of the bus/coach station.

Using local knowledge of the district, there are no bus/coach stations within the Suffolk Coastal district with a flow of buses/coaches greater than 2,500 movements per day.

Suffolk Coastal District Council confirms that there are no relevant bus/coach stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Suffolk Coastal District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

The technical guidance LAQM.TG (09) advises that stationary locomotives, both diesel and coal-fired, can give rise to high levels of sulphur dioxide (SO_2) close to the point of emission. Recent evidence suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high nitrogen dioxide (NO_2) concentrations close to the track. LAQM.TG (09) advises that these two issues should be assessed separately.

4.2.1 Stationary Trains

The technical guidance LAQM.TG(09) advises that further investigation of SO_2 concentrations is needed if there are any areas where diesel or steam locomotives are regularly stationary (3 or more times per day) for periods of 15 minutes or more, and where there is the potential for regular outdoor exposure of members of the public within 15 metres.

In the previous rounds of review and assessment these types of location were fully investigated, and at all of the sites the objectives were not likely to be exceeded. The details regarding each location have been checked with Network Rail who confirmed that no changes have occurred since the last assessment. There are no areas we are aware of where there is any new relevant exposure. No further investigation is therefore required for stationary trains.

Suffolk Coastal District Council confirms there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m that are likely to cause an exceedance of the air quality objectives. No further investigation is required.

4.2.2 Moving Trains

There is evidence that nitrogen dioxide (NO_2) concentrations are elevated alongside rail lines with a large number of diesel locomotive movements – the emissions can be equivalent to those from a busy road. Rail lines only need be considered where the background annual mean NO_2 concentration is above 25µg/m^3. A list of local authorities where the criteria might

be met is provided on the Review and Assessment Helpdesk website. This list only includes information on passenger trains. Within the Suffolk Coastal district there is freight train movement to and from the Port of Felixstowe on the Ipswich to Felixstowe line which must be considered.

As rail lines only need to be considered where the background annual mean NO_2 concentration is above 25µg/m^3, (and this information is readily available from the national background maps at www.airquality.co.uk/archive/laqm/tools.php), we have investigated this aspect first.

The background NO_2 concentration maps used in the 2009 assessment have been updated and replaced. The new maps were used to confirm that along the Ipswich to Felixstowe rail line within the Suffolk Coastal district NO_2 levels are below 25µg/m^3 at all relevant locations, with the highest background being 23.9µg/m^3. No further assessment is therefore required of NO_2 emissions from moving trains.

Suffolk Coastal District Council confirms that there are no locations with a large number of movements of diesel locomotives, a background NO_2 concentration above 25µg/m^3, and potential long-term relevant exposure within 30m.

4.2.3 The Felixstowe Branch Line and Ipswich Yard Improvement Order 2009

In connection with the grant of planning permission for the Felixstowe South Reconfiguration at the Port of Felixstowe, Felixstowe Dock and Railway Company entered into a deed under section 106 of the 1990 Act with Suffolk County Council and Suffolk Coastal District Council. The deed contains an obligation to undertake improvement works to the rail infrastructure. In order to undertake these works, the Felixstowe Branch Line and Ipswich Yard Improvement Order 2009 was made. This authorises the Felixstowe Dock and Railway Company, amongst other things, to dual a section of the Felixstowe Branch Railway Line.

A section of the branch line some 7 km in length eastwards from a point near Potter's Hole, east of the village of Nacton, to the western end of the existing two-track section through Trimley Station would be dualled by laying a second track to the south of the existing track. The doubling of this section of the line would increase its theoretical capacity from 25 to 38 freight trains per day in each direction, whilst retaining the passenger service between Ipswich and Felixstowe Town. The potential increase in the number of trains using the line would not alter the assessment made above regarding moving trains and will significantly reduce the number of occasions when trains are held at signals along the branch line, thereby also not effecting the results of the assessment made regarding stationary trains.

Work has not yet begun to dual the railway line, but it is still the intention of the Felixstowe Dock and Railway Company to undertake this work in the future.

4.3 Ports (Shipping)

The technical guidance LAQM.TG (09) advises that the assessment for shipping needs to consider sulphur dioxide (SO_2) only. Large ships generally burn oils with high sulphur content in their main engines (bunker oils). If there are sufficient movements in a port they can give rise to sufficient number of 15-minute periods above 266 to exceed the 15-minute objective. Auxiliary engines used while berthed (hotelling) usually use a lower sulphur fuel, and are unlikely to be significant. If the shipping is using fuel with a sulphur content of less

than 1% then it will not be necessary to take the assessment further. An authority will only need to proceed to Detailed Assessment where:

- there are 5,000 – 15,000 ship movements per year and relevant exposure within 250m of the emissions sources or
- There are more than 15,000 ship movements per year and relevant exposure within 1km of the emission sources.

LAQM.TG (09) advises that when determining the number of shipping movements at a port this should be confined to large ships such as cross-channel ferries, Ro-Ro, container ships and cruise liners. Every visit from a ship will generate 2 movements.

Harwich Haven Authority has advised that the total number of ship arrivals at the Port of Felixstowe was 3,267 in 2011. The number of shipping movements in 2011 was therefore 6,534 (3,267 x 2 = ship movements). The Port of Felixstowe therefore falls within the category of 5,000 – 15,000 ship movements per year. If we also take into consideration shipping movements for Harwich – 4,730 in 2011 (based on 2,365 ship arrivals in 2011) and for Ipswich Port – 1,834 (based on 917 ship arrivals in 2011) the total ship movements in this area were 13,098 in 2011. This still falls within the category of 5,000 – 15,000 ship movements per year.

The closest area of public exposure to the ship emissions is the viewing area at Landguard Point in Felixstowe, approximately 600m away from the main ship berthing area. The closest residential receptors are at Adastral close in Felixstowe, approximately 700m away from the main ship berthing area.

Under the guidance provided in LAQM.TG (09), as there are no public receptor locations within 250m of the emission source, we would not need to proceed to Detailed Assessment for SO_2 from shipping.

This conclusion is borne out in the findings of the 'Detailed Assessment for Adastral Close and Ferry Lane, Felixstowe May 2008'. The Detailed Assessment used the results obtained from a continuous analyser measuring SO_2 to model concentrations at receptors near to the Port of Felixstowe boundary. The Detailed Assessment determined that modelled SO_2 concentrations are less than the air quality objectives for all locations outside the port boundary for a number of modelled scenarios; these include the situation in 2007 and in future years with Felixstowe South and Bathside Bay developments in place. The report is available for viewing at www.suffolkcoastal.gov.uk/yourdistrict/envprotection/airquality/reports/

Suffolk Coastal District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

The technical guidance LAQM.TG (09) advises that industrial sources are unlikely to make a significant local contribution to annual mean concentrations, but could be significant in terms of the short-term objectives. Sources in neighbouring authorities must also be considered. The assessment should consider all of the regulated pollutants, although those most at risk of requiring further work are SO_2, NO_2, PM_{10} and Benzene. There are three categories into which industrial installations may fall, each is detailed below.

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Since the previous Updating and Screening Assessment Report in 2009, there have been 10 new industrial installations within the district, 9 of which are permitted under the Environmental Permitting Regulations 2010. A list of all permitted processes within the district can be seen in Appendix H.

Seven of these installations have been operating within the district for a number of years but have only recently been brought under the permitting regime. These installations are listed below and were all assessed in the 2010 and 2011 Progress Reports produced for the district. None of the installations are significant emitters of the pollutants of concern. Further information can be obtained from the Progress Reports if required.

- Waste Recycling Limited, Foxhall Civic Amenity Site, Foxhall Road, Brightwell
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2010

- Waste Recycling Limited, Foxhall Household Waste Site, Foxhall Road, Brightwell
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2010

- Waste Recycling Limited, Felixstowe Civic Amenity Site, Carr Road, Felixstowe
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2010

- Waste Recycling Limited, Leiston Civic Amenity Site, Lovers Lane, Leiston
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2010

- Harrow Lane Farm (Leiston) Limited, Breakers Yard, Moat Road, Theberton
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2011

- Skipaway, Leiston Transfer Station, Master Lord Industrial Estate, Station Road, Leiston
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2011

- Shotley Holdings (Leiston), (trading as Collins skips) Master Lord Industrial Estate, Station Road, Leiston
  Regulated by the Environment Agency under Disposal of Waste, Section 5.2
  Assessed in the Progress Report 2011

The other three are new installations to the district. These installations are listed below and were all assessed in the 2010 and 2011 Progress Reports produced for the district. Information regarding each process is summarised below, further details can be obtained from the Progress Reports if required.

- Crematorium, Porters Covert, Nacton
  Regulated by Suffolk Coastal District Council under Crematoria, Section 5.1
  Assessed in the Progress Report 2010
  Not considered to be a significant emitter of any of the pollutants of concern no assessment required.

- REG Bio-Power UK Ltd, Unit F Building 89, Bentwaters Parks, Rendlesham
  Regulated by the Environment Agency under Combustion Activity, Section 1.1
  Assessed in the Progress Report 2010
  This installation involves the operation of 12 engines discharging through one 16m stack, using biofuel produced by the recovery of waste edible cooking oil (LF100) and virgin vegetable oil to generate electricity for off-site export to the national grid. The site generates 4.8MW and requires an Environmental Permit from the Environment Agency (A1 process) as the LF100 fuel is manufactured from waste.
  Air dispersion modelling (using AERMOD 7) was undertaken to determine the stack height and diameter required such that off-site impacts from emissions meet the required Environmental Assessment Limits. The pollutants considered were nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and particulate matter (PM_{10}). The modelling indicated that a stack height of 16m with a diameter of 0.781m would result in the air quality objectives being met. The modelling was run using these stack dimensions and results showed that all predicted long-term and short-term maximum ground level concentrations for all modelled substances will be below the relevant Air Quality Standard.
  No further assessment is required unless there are any changes to the process or complaints are received – there have been none to date.

- Agri-Gen Ltd, Building 723, Bentwaters Parks, Rendlesham
  Combined Heat and Power biogas plant
  Not regulated (Progress Report 2010)
  This is a Combined Heat and Power Biogas plant, with the potential for being a 2MW facility (producing 2MW of energy every hour) that will use up to 30,000 tonnes per annum of agricultural biomass. The plant is not yet fully built and is operating on a small scale producing 500kW. The biomass is processed using anaerobic digestion in sealed tanks to produce methane rich biogas, this is then burnt on site to generate electricity.
  An Air Quality Assessment was produced March 2009, as part of the Environmental Statement for the site Planning Application. This modelled emissions of nitrogen oxides (NOx) and particulates (PM_{10}) from the proposed biogas engines and their impacts on relevant receptor locations using the computer model ADMS 4. The report concluded that the impact of emissions from the biogas engines will be negligible according to criteria recommended by the National Society for Clean Air.
  No further assessment is required unless there are any changes to the process once it is up and running, or complaints are received – there have been none to date.

There are no new or proposed installations within any neighbouring authorities which would have any significant impact on air quality within the Suffolk Coastal District.

Suffolk Coastal District Council has assessed any new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Within the Suffolk Coastal district there are now two existing industrial installations, permitted under the Environmental Permitting Regulations 2010, with the potential to emit significant quantities of PM_{10} or NO_2, these are listed below.

- Eurovia Limited (previously Ringway Infrastructure Services), Foxhall Four Quarry, Foxhall Road, Brightwell (PM_{10})
- Novera Energy, Foxhall Generation Plant, Foxhall Landfill Site, Foxhall Road, Brightwell (NO_2)

Since the last assessment for the Progress Report 2011, a third site - **Cemex UK Materials Limited** (Trading as Ipswich Coated Stone), Sinks Pit, Kesgrave has closed down and therefore no longer requires any assessment.

LAQM.TG (09) advises that it should be determined whether any of the installations have either experienced substantially increased emissions (greater than 30%) or have received new relevant exposure in their vicinity since the last review and assessment (Progress Report 2011).

Neither of the installations have received any new relevant exposure. Recent emission testing reports (2011/2012) for the installations have been obtained for comparison.

In the 2011 Progress Report it was advised that emissions of PM_{10} from **Eurovia Limited,** although reduced (from 2.83 tonnes per annum of Total Particulate Matter in January 2011 to 1.09 tonnes per annum in July 2011), had increased by more than 30% since the last full assessment in the Updating and Screening Assessment 2009 - from 0.47 tonnes per annum to 1.09 tonnes per annum, and an assessment may be required. The latest emission test results were obtained for March 2012 which showed that emissions have now fallen to 0.17 tonnes per annum which is below the 0.47 tonnes per annum seen in 2009. **No further assessment is therefore required at this time.** We will review the situation again when the next emission results are received.

At the time of the 2011 Progress Report the **Novera Energy** NOx emission figures for 2010 were still being finalised and agreed by the Environment Agency and were unavailable. Both the 2010 and 2011 NOx emission reports have now been received. Annual emissions of NO_2 in 2010 were lower than in previous years, and results for 2011 lower again still. **No further assessment is therefore required at this time.**

There are no installations within any neighbouring authorities with substantially increased emissions that would have any significant impact on air quality within the Suffolk Coastal District.

Suffolk Coastal District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Suffolk Coastal District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Suffolk Coastal district area.

5.3 Petrol Stations

The technical guidance LAQM.TG (09) advises that there is some evidence that petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads.

All petrol stations with an annual throughput of more than 2,000 cubic metres of petrol and a busy road nearby that have not been covered by previous review and assessment reports should be identified. A busy road is classified as having a traffic flow greater than 30,000 vehicles per day.

There are no new petrol stations within the Suffolk Coastal district since the Updating and Screening Assessment in 2009.

Suffolk Coastal confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

The technical guidance LAQM.TG (09) advises that a small number of local authorities have identified potential exceedences of the PM_{10} objectives associated with emissions from poultry farms (defined as chickens (laying hens and broilers), turkeys, ducks and guinea fowl).

Any farms housing in excess of: 400,000 birds if mechanically ventilated; 200,000 birds if naturally ventilated; and 100,000 birds if a turkey unit should be identified. Those farms identified (if any) with relevant exposure within 100m of the poultry units will require a Detailed Assessment.

Poultry farms within the Suffolk Coastal District were assessed in the last round of review and assessment (2009), and there were none that meet the criteria for requiring a Detailed Assessment. There are no new units that we are aware of since this time and no further investigation is necessary.

Suffolk Coastal District Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

LAQM.TG (09) advises that consideration needs to be given to biomass installations in the range 50kW to 20MW thermal, to see if there is potential for the air quality objectives to be exceeded. Both PM_{10} and NO_2 should be considered.

Once any biomass plant within this range has been identified the following information is required in order to undertake a screening assessment:

- Height of stack
- Diameter of stack
- Dimensions of any buildings present within 5 times the stack height
- Description of the combustion appliance
- Maximum emission rates (g/sec) of NO_X and PM_{10}
- Background concentration of NO_X and PM_{10} (available from national background maps provided by Defra).

At the time of the Updating and Screening Assessment 2009 we were just beginning to gather information regarding biomass installations within the district but had not undertaken any assessments. In The Progress Report 2011 a list of 20 sites with known or proposed biomass plant with a thermal output greater than 50kW was drawn up for the district.

Screening assessments were undertaken for 16 of the installations which confirmed that individually the impact of each of the boilers was acceptable and they would also not have any significant combined impact, no further assessment was therefore required.

The remaining 4 biomass boilers, for which information was still being gathered in order to undertake a screening assessment, are detailed below.

Snape Maltings, Tunstall
Aldeburgh Productions music offices, Snape Maltings, Tunstall

The biomass boilers sited at Snape Maltings and Aldeburgh Productions Music Offices are situated within 100 metres of each other and, as such, require a combined assessment. The Snape Maltings boiler is 550 kW thermal and is used to supply heating and hot water to new development both commercial and residential on this site. The boiler at Aldeburgh Productions Music Offices is much smaller at 60 kW thermal and serves only their offices.

Due to the nature of the site, with a number of tall buildings close to the boilers and residential receptors within close range of the stacks, a Detailed Air Quality Assessment was commissioned from Air Quality Consultants in order to assess the impact of emissions from the 2 boilers. The assessment used the detailed computer dispersion model ADMS-4 to predict the contribution of NOx and PM_{10} from the 2 boilers at 30 receptor locations at the Snape Maltings site.

The Detailed Assessment concluded that the biomass boilers operated at the Snape Maltings site (550kW and 60kW thermal) are not judged to create any significant air quality

impacts. Long-term and short-term predicted NO_2 and PM_{10} concentrations demonstrate that air quality at the site is well below the air quality objectives and is acceptable for both residents and visitors to Snape Maltings. No further investigation is required. The Air Quality Assessment is attached as Appendix I

Heveningham Hall and estate buildings, Heveningham

This is a 900 kW thermal woodchip boiler. Due to staff shortages and maternity leave, we have not as yet been able to establish any further information regarding this boiler and so have been unable to undertake any air quality assessment. Work is continuing now our air quality officer has returned form maternity leave and we hope to establish the details required in order to do so. Once an air quality assessment has been undertaken the findings will be reported, we hope that this will be in the next air quality report due for production in 2013.

L F Geater & Sons Limited, West End Nurseries, Westward Ho, Leiston

This is a market gardening business which uses a 1.5 MW thermal straw burner to provide supplementary heating (the main heating is supplied by an oil fired boiler) to the glass houses during the colder months of the year. It is a Part B process permitted under the Environmental Permitting Regulations 2010 but also requires assessment here.

We have been able to obtain most of the information needed in order to undertake a screening assessment but still need a few more details in order to complete it. Should the screening assessment determine that a Detailed Assessment is required this will be undertaken. All findings will be presented in the next air quality report due in 2013.

We have also recently screened a new biomass boiler at **Super Sips, Newbourne Business Park, Newbourne** which manufactures structural insulated panels for buildings. The boiler is 150 kW thermal and will be burning logs and untreated wood. The stack height of the boiler is 5.81m and is only 17 cm above the ridge height of the building it is situated within and therefore the screening assessment within the Technical Guidance was unable to be used. In addition, the closest receptor locations are only 40m from the stack. The Defra Helpdesk was contacted and ran the dispersion model ADMS-Screen for the boiler. The Assumptions and model inputs, and the results are detailed below;

Assumptions and Model Inputs

Worst-case/closest sensitive receptor (assume residential) at 40 m from stack
Modelled meteorology for every hour in year (in reality, boiler operates daytime hours only between October and April)
Maximum short-term emission rates from EMEP/Corinair: 0.036 PM_{10}, 0.023 NOx
Assume all NOx as NO_2 at sensitive receptor
Exit velocity 4 m/s
Exit temperature 420^{o}C
Stack height 5.81m
Stack diameter 0.255m
Building height 5.64m
Background annual mean concentrations: 16.1 µg/m^3 PM_{10}, 12.9 µg/m^3 NO_2
Generic meteorology for East Anglia

Results

ADMS-Screen predictions at receptor 40 m from stack – stack contribution to ground level concentrations can be seen in table below.

($\mu g/m^3$)	NO_2	PM_{10}	Notes
Annual mean	2.31 $\mu g/m^3$ if continuous release 0.37 $\mu g/m^3$ if release only 1460 hours/year	3.61 $\mu g/m^3$ if continuous release 0.58 $\mu g/m^3$ if release only 1460 hours/year	No breaches of Air Quality Standards (AQS) objectives, even when stack contribution is added on to estimated annual mean background levels
Maximum 1-hour mean i.e. 100% percentile	25.7 $\mu g/m^3$ (worst case predicted 57 m from stack) 24.2 $\mu g/m^3$ (predicted at 32m sensitive receptor) Well below limit value of 200 $\mu g/m^3$	40.2 $\mu g/m^3$ (w.c. predicted 57 m from stack) 37.9 $\mu g/m^3$ (predicted at 32m sensitive receptor)	No cause for concern re NO_2 No assessment criterion for 1-hour mean PM_{10}
99.8^{th} percentile of 1-hour means	24.6 $\mu g/m^3$ Well below AQS objective of 200$\mu g/m^3$	-	No breaches of AQS objective, even when stack 99.8^{th} percentile contribution is added onto 2x estimated background level
90^{th} percentile of daily means	-	10.7 $\mu g/m^3$ Well below AQS objective of 50$\mu g/m^3$	No breach of AQS objective, even when added on to estimated annual mean background

Comments

Impacts of biomass boiler stack are screened out using ADMS-Screen. Therefore, no need to proceed to a Detailed Assessment using an advanced dispersion model.

However, this conclusion assumes/uses the EMEP/Corinair Emission Factors for this boiler. There are uncertainties regarding the actual emission rates of NOx and PM_{10} from this reconditioned boiler as it will be firing the boiler on logs and untreated wood. Defra advised that signs of smoke from the stack would necessitate further investigation.

Two site visits were made once the boiler was operational, once burning logs and once burning off-cuts, and there was no visible smoke from the stack. **No further assessment is required at this time.** Should any complaints be received from the public regarding smoke the boiler will be looked at again.

Suffolk Coastal District Council is continuing to gather the necessary information in order to assess the biomass combustion installations at Geaters Nurseries and Heveningham Hall. These require a screening assessment to determine whether they may impact on air quality and therefore require a Detailed Assessment.

We are currently working to obtain the information required in order to undertake screening assessment of each installation.

The findings from the above assessments will be presented in the Progress Report due for production in April 2013.

6.2 Biomass Combustion – Combined Impacts

There is the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM_{10} concentrations, particularly in areas where PM_{10} concentrations are close to or above the objectives. The Technical Guidance LAQM.TG (09) advises that areas (in 500m x 500m squares) with the highest densities of houses and service sector biomass combustion appliances should be identified.

A full investigation was undertaken in the last Updating and Screening Assessment report 2009 which looked at both commercial and domestic usage within the district and confirmed that there were no areas of concern, with the exception of 2 biomass boilers present at Snape Maltings. A Detailed Assessment of the combined impacts of two biomass boilers on the Snape Maltings site was undertaken, details are provided in section 6.1 above. It concluded that the biomass boilers are not judged to create any significant air quality impacts.

There is no new information since this time which would require us to be concerned regarding any other areas within the district. It is concluded that there are no areas within the district that would trigger a Detailed Assessment for combined impacts of biomass use.

Suffolk Coastal District Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

The previous rounds of Review and Assessment have identified areas where domestic solid fuel burning gives rise to exceedences of the objectives for SO_2. Areas (500m x 500m) where significant coal burning (more than 50 houses) takes place should be identified. Smokeless fuel has a similar sulphur content to coal and so should be treated in the same way.

Detailed information has been obtained in previous Review and Assessments regarding domestic solid fuel usage within the Suffolk Coastal district and is presented in the 2009 Updating and Screening Assessment Report. Investigations concluded that there are no areas within the district that would trigger a Detailed Assessment for domestic solid-fuel burning.

There is no new information since this time which would cause us concern for any areas within the district and no further review and assessment is required.

Suffolk Coastal District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Dust emissions from a number of fugitive and uncontrolled sources can give rise to elevated PM_{10} concentrations. These sources include, but are not limited to:

- Quarrying and mineral extraction
- Landfill sites
- Coal and material stockyards or materials handling
- Major construction works
- Waste management sites

Only locations not covered by previous rounds of review and assessment, or where there is new relevant exposure, should be covered in this section.

In the previous rounds of review and assessment these locations were fully investigated, and at all of the sites within the district the objectives were not likely to be exceeded. The details regarding each location have been checked and there is one site, Waldringfield Quarry, where site usage has altered slightly since the last review. It is confirmed that no significant changes have occurred at any of the other sites since the last assessment.

Waldringfield Quarry and Landfill site (landfill site for inert waste to fill quarry excavations), Waldringfield Road, Brightwell, Suffolk. This site was investigated in the previous rounds of review and assessment and it was concluded that the air quality objectives were not likely to be exceeded at the closest receptor locations.

The site currently has permission to quarry until 2013 and permission to landfill part of the quarry site with inert waste as the excavations are undertaken. Under the Environmental Permitting Regulations 2010 the land-filling operation at the site, which has been operating for many years, is now classified as an A1 activity and is regulated by the Environment Agency under section 5.2 – the Disposal of Waste by Landfill. The land-filling operation, although now regulated, has not altered since the previous round of review and assessment, and neither has the quarrying undertaken at the site.

During the previous round of review and assessment there had been two additions to activities on site; a mobile concrete crushing plant and a cement-batching process. Both processes were regulated under the Pollution, Prevention and Control (England and Wales) Regulations 2000 (as amended) at that time, and were not considered significant sources of PM_{10}, although it was advised that there would be some local dust emissions associated with the plant.

Since this time the mobile concrete crushing plant has been removed from this site, however a new permitted processes has been located there – Brett Aggregates Waste Recycling (process IPPC 33 – see Appendix H). This process is permitted by the Environment Agency and involves the re-use of inert material, such as sand. Material is brought into the site, graded and then sent back out again for use. There is also an amount of material stock-piling on site.

Technical guidance LAQM.TG(09) advises, in undertaking an assessment, that relevant exposure 'near' to the dust source must first be established, in order to determine whether further assessment will be necessary. The highest estimated 2011 annual mean PM_{10} background (obtained from the new background PM_{10} maps produced by netcen on behalf of Defra) for this site is 16.5 $\mu g/m^3$. LAQM.TG(09) advises that where the background

concentration is less than 26 μg/m^3 any relevant exposure within 200 metres of the dust source must be established. The closest residential property to the site boundary is 350 metres, and there were no visual dust problems arising from the site during a recent inspection. There have been no recent dust complaints received regarding this site. **No further investigation will be necessary for this site.**

There are no new locations with significant emissions and no areas we are aware of where there is any new relevant exposure. No further investigation is therefore required for fugitive and uncontrolled emissions.

Suffolk Coastal District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Action Plan Progress Report for Woodbridge AQMA

Junction of Lime Kiln Quay Road, Thoroughfare, Melton Hill and St. John's Street in Woodbridge, Suffolk (Woodbridge Junction)

8.1 Introduction

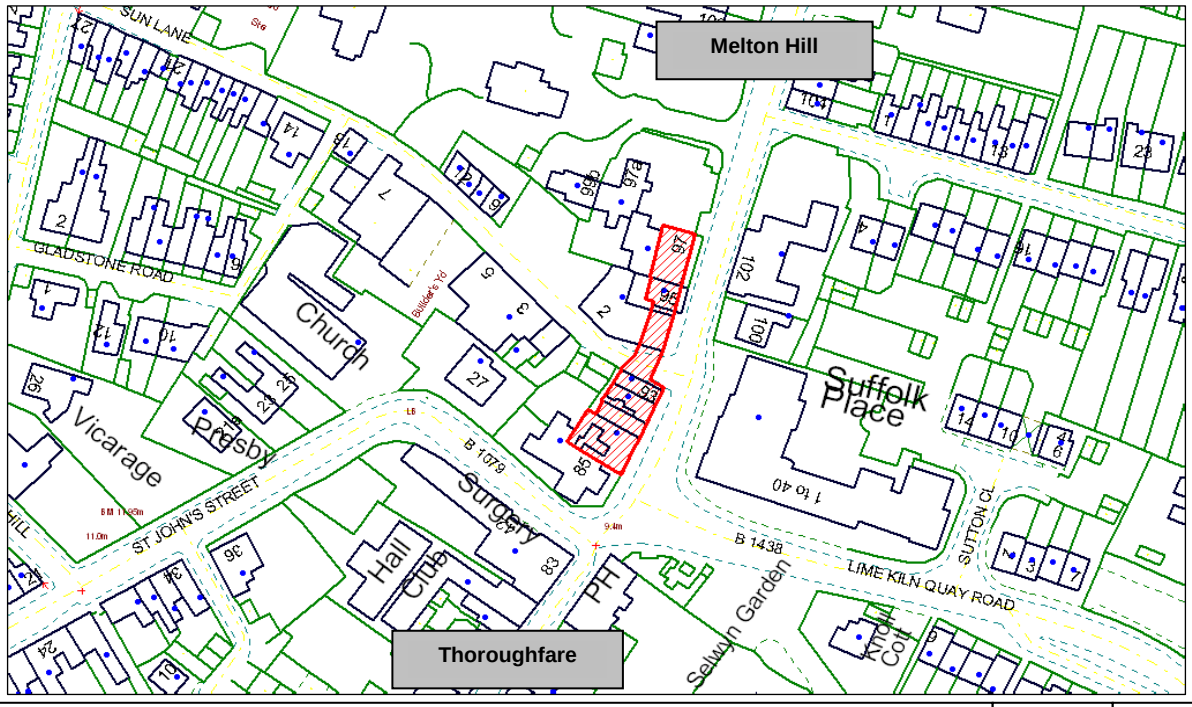
On 3 April 2006 an Air Quality Management Area Order made for an area of the Woodbridge Junction with regard to the annual mean NO_2 concentration came into effect. The designated area incorporates properties on the Western side of the Melton Hill arm of the junction. A copy of the AQMA Order is included as Appendix A and a location map is provided in Figure 8.1.

A Further Assessment was produced for the Woodbridge Junction AQMA in October 2007 and the draft Action Plan underwent Statutory and Public Consultation in 2010. The responses received were presented in the final Action Plan, accepted by Defra in May 2011.

The Action Plan confirms the likely source of NO_2 is from transport, in particular heavy goods vehicles. Evidence suggests that a 16% reduction in traffic emissions of oxides of nitrogen (NOx), a precursor to NO_2, is necessary (based on 2006 figures) to achieve the air quality standard. The Action Plan considers 79 options to improve air quality and recommends 20 of these for implementation.

Table 8.1 contains an updated summary of progress made on each of the measures within the Action Plan that are still being, or to be, implemented. Additional details regarding the measures are also provided in the main text.

Figure 8.1 Location of AQMA declared at the Woodbridge Junction (hatched in red)



Not to scale

N

8.2 Action Plan Measures update

Since the last Action Plan Progress Report in 2011, Suffolk County Council's Transport Services has undergone a comprehensive service review which has resulted in a new team of traffic and transport engineers being formed to look after Woodbridge and the surrounding area. At the same time, the Officer covering Local Air Quality Management and the Woodbridge Action Plan implementation at Suffolk Coastal has been on maternity leave. This has led to significant delays and timescales for delivery of each of the options have therefore slipped. Through our Partnership working with Waveney District Council, a watching brief has been maintained in order to ensure work crucial to supporting the AQMA Action Plan has continued, providing air quality monitoring and continuous traffic counting at the junction, but work on individual measures has not been progressed significantly. We can assure you that work is now underway again.

Results from the MOVA system (Measure 1) look encouraging and it is hoped that further measures to achieve air quality improvements, but commensurate with the level of improvement required to achieve the national objective levels, can be identified with a good degree of confidence. It is important to have local support for any measures proposed and we will need to demonstrate expected air quality improvements from each measure to help make sure that they are fully informed.

The new team at Suffolk County Council have taken a fresh look at the Air Quality Action Plan and come up with a number of new suggestions for some of the Measures together with further options for investigation. More detail follows within the option discussions below.

A discussion regarding the recent results of the automatic analyser and diffusion tube monitoring is included in section 8.4.

Measure 1 - MOVA installation (SCC)

MOVA has been fully functional since 26 June 2011, covering the latter 6 months of 2011. The post-MOVA queue length surveys have not yet been undertaken. It has been decided to undertake this as part of a wider traffic survey at the junction required to inform the air quality modelling for different action plan options. This will all be undertaken during the early part of 2013. The surveys required will be part funded by the Defra Grant obtained from the joint SCC/SCDC bid for assistance with option modelling, and part by SCDC.

Air quality monitoring at the junction is discussed later in this section, however NO_2 concentrations recorded by the automatic analyser (see Table 8.2) have decreased from 45µg/m^3 (seen in 2008, 2009 and 2010) to 42µg/m^3 in 2011. With the exception of the diffusion tube monitoring sites at WBG 15 and 23, NO_2 concentrations at all other diffusion tube monitoring sites in Woodbridge have also fallen between 2010 and 2011. Levels at WBG 15 and 23 have both increased by 1µg/m^3.

Traffic flows at the junction increased slightly between 2010 and 2011 and Heavy Duty Vehicle percentages did not alter significantly which confirms that at the junction any changes in emissions are likely to be related to the MOVA installation.

The reduction seen in NO_2 concentrations must be viewed in context as concentrations at the Urban Background site (WBG 3) have also fallen by 2µg/m^3 and this site will not have been affected by anything related to the junction. The reduction could therefore be in part due to Meteorological conditions during 2011. Monitoring locations have been kept in place during 2012 and will be retained in 2013 which will advise us whether the reduction appears to be more permanent. In addition, MOVA is now permanently operational.

Continued after Table 8.1

Table 8.1 Woodbridge Junction Action Plan Progress Summary Table

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
1	Install queue detectors (MOVA) on traffic signals to reduce queuing at the junction	Reduce queuing traffic at the lights	Suffolk County Council	2009	2011	Reduction in peak queue lengths	10%	Queue length survey undertaken late 2009. MOVA installed 2009 but due to software issues only fully functional in June 2011.	2011 monitoring data obtained. Reduction of 3µg/m^3 compared with 2010 (from 45 to 42µg/m^3) at analyser.	Originally 2011 for post MOVA queue length survey - now 2013.	MOVA was in place for 6 months during 2011. NO_2 levels at the analyser (WBG 1) have reduced from 45µg/m^3 to 42µg/m^3. WBG 1 is now the only monitoring location with concentrations above the annual mean objective. With the exception of WBG 15 and 23, concentrations at all other locations in Woodbridge decreased between 2010 and 2011. Traffic flows increased slightly between 2010 and 2011 and HDV percentages did not alter significantly so no traffic changes other than MOVA itself.
2	Install right hand turning lane at lights on Melton Hill arm of the junction	Reduce queuing traffic at the lights	Suffolk County Council	2011-2012	As of 2012 this is no longer an option for consideration – see comments.	Reduction in peak queue lengths	5%	Preliminary design prepared. Alternative options still need investigation.	SCC has looked at the design and do not think it is a practicable option to pursue on technical grounds. The proposed carriageway would be brought too close to the building of Suffolk Place retirement home. Further options for investigation have now been identified which are likely to be more locally acceptable, see further discussion on this in main text and new option 21. SCC and SCDC were successful in obtaining Defra grant funding to undertake the traffic data collection and modelling for this option. A request has been made to Defra to use the grant money to model an alternative option – see further discussion on this measure. **OPTION TO BE REMOVED FROM ACTION PLAN.**		

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
3	Extension of restrictions to Thoroughfare (8am-6pm)	Reduce queuing traffic at the lights	Suffolk County Council	2013-2014	2014-2015 Only consider if measures 1 is not successful	Reduction in peak queue lengths on Melton Hill	Not known Air quality modelling will enable us to put a figure to this	Preliminary discussions with new team at SCC show this option to be supported. See also comments under new Measure 21.	As per previous column	2014-2015	This could be one way of partly implementing the new Measure 21 (remove ability of traffic to go straight over from Melton Hill to Thoroughfare). This will be looked at when the modelling results are received.
4	Remove ability to turn right from direction of Melton Hill	Reduce queuing traffic at the lights	Suffolk County Council	2013 – 2014	2014-2015 Only consider if measure 1 is not successful	Reduction in peak queue lengths on Melton Hill	Not known Air quality modelling will enable us to put a figure to this	Request made to Defra to use part of the funding obtained for Measure 2 (which has been removed from this plan) for this project. Discussions with AECOM (SCC air quality consultant) regarding a brief for this.	As per previous column	2014-2015	We are not sure whether this scenario, either alone or in conjunction with option 21, would cause a reduction in emissions within the AQMA, although it would seem likely. If the modelling shows a reduction in emissions we can look at the options available to enable this to happen. Links with option 3 above.
5	Relocate the on street parking currently in Melton Hill to the opposite side of carriageway.	Reduce queuing traffic in AQMA	Suffolk County Council	2012 - 2013	2013 If study and consultation shows this is feasible.	Reduction in peak queue lengths. Only traffic heading away from junction along	5%	Preliminary design prepared. SCC and SCDC obtained Defra grant funding to undertake traffic data	Preliminary design prepared. Defra grant funding obtained for data collection and	2013	5% emission reduction may be an over-estimation as would only affect traffic travelling away from junction along Melton Hill. Air quality modelling will give us better idea of potential emission reductions.

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
						Melton Hill		collection and modelling. This option is supported by new SCC Team.	modelling.		Nothing further undertaken on this measure as the modelling is tied up with measure 2 which has now been removed from the plan. New modelling brief to be written which will be same as before for this measure. SCC has advised that we could trial this temporarily if residents are concerned.
6	Remove the on street parking currently in Melton Hill.	Reduce queuing traffic in AQMA	Suffolk County Council	2012-2013	2014 Only for consideration if measure 5 is not successful.	Reduction in peak queue lengths Would only be traffic heading away from junction along Melton Hill	5%	Preliminary design prepared. SCC and SCDC obtained Defra grant funding to undertake traffic data collection and modelling. This option is supported by new SCC Team.	Preliminary design prepared. Defra grant funding obtained for data collection and modelling.	2014	5% emission reduction may be an over-estimation as would only affect traffic travelling away from junction along Melton Hill. Air quality study/ modelling to give us better idea of potential emission reductions. Nothing further undertaken on this measure as detailed in Measure 5 above.
7	Investigate Satellite Navigation (SatNav) system routes around town	Reduce traffic flows through AQMA	SCDC	N/A	2013		1%	Most popular SatNav systems tested, some routes are via the junction but majority sent via the bypass.	Discussed with new Team at SCC, suggested a number of new options here. See	2013	Video cordon survey to investigate amount of HGV through traffic. If significant will look at lorry ban. Unsure whether anything can be gained from the new delivery investigations listed. Once we know will

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
								Completed 2010.	notes in main text.		try to apply an emission reduction target if possible.
8	Bus operators to use cleanest fleet in Woodbridge – contact them to request.	Reduce emissions from HDVs through the AQMA junction	SCDC	2010	2013	Number of Euro IV buses operating in Wood-bridge.	2%	List of 8 bus operators compiled. 3 bus operators contacted.	Nothing further undertaken.	2013	Of operators contacted none willing so far to alter fleet as only very small service operates in Woodbridge. All buses maintained regularly so no emission reductions to be gained as yet. All First buses operating out of Ipswich now low floor, but Euro standard information not available.
9	Demand Responsive Transport	Reduce traffic flows through AQMA junction	Suffolk County Council	N/A	2009	None	2%	Scheme in place as of 2009	Scheme is doing really well and will be retained for next 4 years in Wilford and Alde areas.	2009 **Completed**	SCC has been able to provide patronage info to advise that it has gone up by 9% in Wilford Area since scheme in place, which is 4,311 extra single passenger journeys between 2008/9 and 2011/12. Will have a positive effect to reduce cars using junction and therefore emissions.
10	Simplified Ticket Scheme	Reduce traffic flows through AQMA junction	Suffolk County Council	2013	2014	Increased ticket sales	1%	Working group set up 2009 to investigate option. Now looking into Oyster style card for young people and report to	Project group running to look into Oyster style card, consultant employed and report to Cabinet Jan	2014	Original bus patronage indicator removed, as above. Unsure about ticket sales indicator. If implemented, will have a positive effect to reduce cars using junction, but no real way to measure whether emission reduction

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
								go to Cabinet in Jan 2013.	2013. Details in main text below.		target will be reached.
11	Improve accessibility to bus timetable	Reduce traffic flows through AQMA junction	Suffolk County Council	2009	2009	Website launch. Leaflets delivered.	1%	Website launched. New leaflets delivered. New style of timetable developed – more accessible and easy to read.	New computer system in place replacing old timetables with new 'stick' style ones – see main text for details	2009 **Completed**	Bus patronage indicator removed, as above. No other relevant indicator. Will have had a positive effect to reduce cars using junction, but no real way to measure whether emission reduction target has been reached.
12	Turban Centre new bus station/ interchange Now withdrawn as no funding.	Reduce traffic flows through AQMA junction	Suffolk County Council	2010 /2011	2012	Opening of new bus shelter.	2%	Design could not be agreed in time for budget cuts. Funding now withdrawn. Bus shelters will now just be upgraded.	Bus shelters to be upgraded December 2012.	2012 for upgraded bus shelters	May be some positive influence on bus patronage due to new bus shelters. Not possible to predict what reduction in emissions this may give.
13	Procurement of bus contracts to include fleet upgrade	Reduce emission from HDVs through AQMA junction	Suffolk County Council	2009	2009 2015	Quality assess-ment process in place. Buses to be Euro III standard	2%	Quality assessment process in place as of 2009. New Quality Scoring System due Jan 2013.	New Quality Scoring system to come in Jan 2013. Further details in main text.	2015	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.

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
14	Car sharing scheme	Reduce car trips	SCDC	N/A	2010 and on-going	Increase in registered users of scheme	2%	Baseline no. of scheme users obtained 1/9/10 as 1,599. No. users July 2011 = 1,831. No. users November 2012 = 2,334. SCDC website updated. Articles published.	Updated number of users of site. Nothing further undertaken during 2011-12.	On-going 2013 Investigate whether data is available on journeys saved near junction, see main text for details.	Increased number of users can only have a positive effect. Scheme Suffolk wide but information is available on a postcode basis to state how much CO_2, or the number of miles, that have been saved by members in that area since they started the scheme. See main text for discussion.
15 a	Business Travel Plans	Reduce reliance on car and queuing time in AQMA	Suffolk County Council / SCDC	N/A	2010 - 2011	Businesses contacted. Number of Travel Plans adopted by businesses	2% for 15a,b and c combined	List of businesses in Woodbridge with > 20 employees sent to SCC to contact.	No progress by SCC due to limited staff resources.	2012	Investigations show there are not really any large businesses within Woodbridge. Potential to adopt Travel Plans much smaller and any impact from them also minimal.
15 b	School Travel Plans	Reduce reliance on car and reduce queuing time in AQMA	Suffolk County Council / SCDC	N/A	2010	Contact schools to remind them about Travel Plan. Contact Wood-bridge School re adopting a Travel Plan.	2% for 15a,b and c combined	All schools in Woodbridge with exception of Woodbridge School have a Travel Plan in place. Woodbridge School has been contacted by letter but no reply received.	Woodbridge School has been contacted by letter but no reply received. SCC has installed new footpath on Pytches Road and a 30mph reduce your speed sign	2013 For contacting schools	All schools currently have a Travel Plan so most associated emission reductions will have already been made. Will have a positive effect to reduce cars using junction, but no real way to measure whether emission reduction target will be reached.

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
									for Woodbridge CPS users.		
15 c	Travel Plan for the District Council offices	Reduce reliance on car and reduce queuing time in AQMA	SCDC	N/A	2009	Travel Plan adopted Key actions completed Reduction in staff work mileage	2% for 15a,b and c combined	Travel Plan adopted late 2009 Key actions completed late 2010. Travel Plan amalgamated into the Council's Joint Environmental Sustainability and Action Plan (JESPAP). See main text for details	Nothing further undertaken.	2013 obtain data to assess any emission reductions due to Travel Plan.	Potential indicators to assess emission reduction are; reduction in staff mileage; information in one day staff travel survey undertaken each year by SCC. See main text for details Appears difficult to ascertain overall emissions reduction from the original Travel Plan, although it can only have a positive effect on emissions in the AQMA.
16	Promotion of cycling and walking in Woodbridge	Reduce traffic flows through AQMA	Suffolk County Council	2010	2011/2012	Build base network of current situation Investigate any ideas from the above process	1%	Cycling and walking in Woodbridge reviewed and a wish list drawn up, see main text below. Shared space scheme for Town Centre will not be implemented.	Cycling and walking wish list drawn up. Town Centre Management Group trying to improve walking from waterfront to Town Centre. New footpath on Pytches Road and 30mph lit sign to calm traffic and aid	2013 - cycle rack installation. 2013 - looking into cycle schemes on Sandy Lane. 2013 - investigate wish list	As walking and cycling report not written as originally thought but wish list drawn up instead, and also as shared space scheme not to be adopted do not have any information re emission reductions as yet for this measure.

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
									walking to school. Funding for more cycle racks and cycle schemes on Sandy Lane.		
17	Integration with Planning System	Avoid worse-ning air quality and open S106 funding stream	SCDC	2010/ 2011	2011	Produce Supple-mentary Planning Document for Suffolk and consult	1%	Draft Document produced and consultation undertaken. Document finalised. Document to be adopted by Members. Being used as guidance in interim.	As per previous column No planning applications received related to this AQMA where S106 funding would be appropriate.	2012 / 2013 for production 2013 for adoption of final document S106 funding On-going	Document will 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.
18	Raise air quality awareness	Reduce traffic flows in AQMA	SCDC	N/A	On-going	Promotion of air quality and reports on website	N/A	Articles published in local magazines and papers. Air quality reports on the SCDC website	As for previous column	On-going	No emission reduction targets possible for this measure although it can only have a positive effect on car usage and emissions in the AQMA.
19	Monitor air quality	To report progress	SCDC	N/A	On-going	Continue monitoring	N/A	Monitoring on-going	As previous column	On-going	Monitoring is main way to inform us whether Measures are being successful. Emissions in 2011 have reduced from those recorded in 2010.

No.	Measure description	Focus	Lead authority	Plan-ning phase	Impleme-ntation date	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated comple-tion date	Comments relating to emission reductions
20	Undertake identified feasibility studies	To fully understa nd impact of identified measure	SCDC / Suffolk County Council	N/A	2013	Feasibility studies for measures 2 and 5 undertaken	N/A	Feasibility studies for measures 2 and 5 have started but measure 2 now to be removed as not feasible. Study will now investigate effect of Measure 4 and 21, together with 5 and 6.	New SCC Team have determined from plans produced that Measure 2 not feasible. Will model new scenarios of Measures 4 and 21 with 5 and 6 (parking). Brief currently being drawn up for the Consultants.	2013/ 2014	Feasibility studies will inform us what emission reductions we are likely to see as a result of implementing Measure 4 (stop traffic turning right from Melton Hill), Measure 21 (stop traffic travelling straight over from Melton Hill), and the parking measures 5 and 6. Should the studies show a reduction in NO_2 emissions within the AQMA (and no knock effects anywhere else on the junction) work will begin to determine which Measures to put in place to achieve this.
21	Remove the ability of traffic to go straight on from Melton Hill to Thoroughfare	Reduce queuing traffic at the lights	Suffolk County Council	2013-2014	2014-2015 Only consider if measures 1 is not feasible / successful	Reduction in peak queue lengths on Melton Hill.	Not known Air quality modelling will enable us to put a figure to this.	Request made to Defra to use part of the funding obtained for option 2 (now removed from this plan) for this project. Discussions with AECOM (SCC air quality consultant) regarding a brief for this work.	As per previous column	2014-15	We are not sure whether this scenario either alone or in conjunction with option 4 would cause a reduction in emissions within the AQMA, although it would seem likely. If the modelling shows a reduction in emissions we can then look at the options available to enable this to happen. Links with option 3 and option 20 above.

Measure 2 – Consideration of right hand turning lane (SCC) - The new team at SCC has taken a fresh look at the design for this option and do not think that the proposal for altering the junction to provide an additional turning lane, thus bringing the carriageway much closer to Suffolk Place, is a practicable option to pursue on technical grounds. This option will therefore be removed from the Action Plan.

Defra grant funding was obtained in order to undertake this project – to model the scenario of a right hand turning lane together with options 5 and 6 which involve moving or removing the parking on Melton Hill (see Table 8.1).

It is proposed that the Air Quality Project Plan is changed to include options which would be more locally acceptable. The new plan would include investigation of the original proposals relating to air quality effects of changing parking arrangements on Melton Hill (see options 5 and 6), but also include investigation of the following:

a) Removal of the option for the traffic to turn right from Melton Hill into St. John's Street (Measure 4)
b) Removal of the option for traffic to go straight on from Melton Hill into The Thoroughfare (New Measure – 21, also links with Measure 3).

By modelling these two general scenarios it will inform the changes in air quality we could expect if we were to propose options which would enable the above to happen. The results of the modelling exercise will allow a cost benefit analysis to be carried out and the selection of the most appropriate measure, or combination of measures, for implementation.

The first scenario (a) is already within the Action Plan as Measure 4, the second scenario (b) will be incorporated into the Action Plan as a new option – Measure 21. This scenario also links strongly with Measure 3 in the plan – Extension of restrictions to Thoroughfare (8am-6pm).

A request has been made to Defra to allow the Grant funding to be used to model these new scenarios in place of the original brief. Discussions have started with Suffolk County Councils consultant AECOM for the preparation of briefs for both air quality and traffic modelling requirements. AECOM's traffic and Transport Team would carry out the required traffic modelling work and the Air Quality Team would carry out the final air quality modelling work. Timescales for delivery have slipped and no traffic counts have been carried out to date. Requirements are to be reviewed in light of the 2 new scenarios. Consequently a project completion date of March 2013 is not now achievable. SCC anticipate that the final Project report would be completed at the earliest by December 2013, and at the latest by March 2014, if difficulties are encountered with traffic data collection.

Measure 3 - Extension of the Thoroughfare restrictions - to be considered if Measure 1 is not successful (SCC) – Early thoughts on this are that a Traffic Regulation Order would be required to implement this proposal. This will be investigated in detail if Measure 1 does not sufficiently reduce NO_2 concentrations within the AQMA, and air quality modelling detailed under Measure 2 above confirms that an air quality improvement would be obtained from reducing/removing traffic travelling straight on from the Melton Hill direction. This measure is supported by SCC.

Measure 4 - Remove the ability to turn right from the direction of Melton Hill - to be considered if Measure 1 is not successful (SCC) – Traffic Regulation Order would be required. This will be investigated in detail if Measure 1 does not sufficiently reduce NO_2 concentrations within the AQMA. Air quality modelling, detailed under Measure 2, will be undertaken to confirm whether any air quality improvement would be obtained from removing traffic turning right from Melton Hill into St. John's Street.

Measure 5 - Relocate Parking (SCC) – Traffic Regulation Order would be required. Modelling of the impacts of this proposal will be carried out as an additional part of the feasibility study work for Measure 2. It is important to ensure that moving parking from one side of the road to the other would result in an improvement in air quality. Residents and Councillors are more likely to support this change than Measure 6 below, which would result in all parking being removed. SCC has advised that this Measure could be trialled at first if residents are concerned.

Measure 6 - Remove parking - to be considered if 5 is not successful (SCC) – Traffic Regulation Order would be required. Modelling of this Option would also be included in the feasibility study work so that a full appreciation of the impact of the Options can be obtained before consulting residents. Consultation responses to the Action Plan suggest that this Option would not be supported.

Measure 7 - Investigate Satellite Navigation (SatNav) system routes around town (SCDC) – Discussions with the new Team at SCC show the Small Town Delivery map to be unpopular. If we can determine that there is a significant amount of HGV/lorry through traffic they would support investigating the option of a lorry ban for Woodbridge. This would allow access only for HGVs/lorries. SCDC will fund a further origin and destination video camera survey to include detail on HGVs so that we can determine the percentage of through traffic.

SCC has also suggested looking at HGV/lorry SatNavs, Tesco delivery routes and contacting the Chamber of Commerce to see if they know anything about business delivery routes. SCDC will investigate this.

Measure 8 - Bus operators to use cleanest fleet in Woodbridge (SCDC) – A list of 8 bus operators which run services through the Woodbridge junction has been compiled. Three of these have been contacted to date but none are willing to alter their fleet using the junction without financial incentive. The bus service operating through the Woodbridge junction is quite small when compared to those running in nearby Ipswich, and this is where the newer fleet is being directed. We are compiling information from each bus operator on the ages, Euro standards and service & maintenance schedules of the fleet that serve Woodbridge to see if there are any other suggestions we can make to the bus operators to reduce emissions. No further work has been undertaken on this Measure.

Measures 9 to 13 - Bus measures (SCC) - Suffolk County Council have set up a dedicated web-site called "Get on board" which can be found at: http://www.suffolkonboard.com/ A more general web-page is available at http://www.suffolk.gov.uk/environment-and-transport/public-transport/ Both sites deliver information on Passenger Transport, Demand Responsive Transport Services, Community Transport, Education Transport and Tendering and Contract procedures.

Due to an increase in competition between operators from Leiston via Woodbridge to Ipswich, a new bus service will come on line in early December 2012 running through Woodbridge (the 164 service operated by Anglian). SCC are pleased that a new service has been able to be introduced which may take more cars off the roads.

SCC routinely monitors planning applications and where appropriate seeks contributions from developers to improve or introduce sustainable transport mitigation measures.

Measure 9 - Demand Responsive Transport (SCC) – This service is a demand responsive service that provides links to bus and train services in more remote areas by phoning and making a booking. It has been put in place of bus services in remote areas where the buses were not being regularly used. See weblink for further information

http://www.suffolkonboard.com/ which identifies the Areas where the service is currently set up. This includes for the Alde Area, to the north of Woodbridge, which may have some influence on Woodbridge traffic and also the Wilford Area which includes Woodbridge and villages to the east. The scheme is doing really well for the Alde and Wilford areas and data has been gathered for the Wilford area which shows a rise in patronage of 9% between 2008/9 and 2011/12 (from 67,991 to 72,302 single passenger journeys – a rise of 4,311). The contract has been retendered for the Wilford Area for the next 4 years and will also be undertaken for the Alde Area early in 2013.

Measure 10 – Simplified Ticket Scheme (SCC) – In May 2012, Mark Bee Leader of SCC announced his aspirations for an Oyster style card to be introduced in Suffolk for young people initially. This card would allow people to buy credit and then use the card for journeys (potentially at a slightly discounted rate), with respect to Woodbridge the card would allow use on both Anglian and First Buses. This scheme may then be rolled out to other bus users in time. A consultant has been employed and a project group has been set up and working on this issue in order to send a report to SCC Cabinet In January 2013.

Measure 11 – Improve accessibility to bus timetable (SCC) – SCC have now got a new computer system moving away from the old matrix style timetables and on to a 'stick' style timetable. This works by having the bus route laid out as a straight line with each stop marked on with a dot, the arrival times for each stop are then printed in a list downwards below the dot. This should make timetables easier to read quickly and more accessible. One route that has been completed is the blue route from Woodbridge to Aldeburgh.

Bus timetables and additional leaflets are available, together with other timetables such as rail, on http://www.suffolkonboard.com/timetables_leaflet Leaflets have been made more widely available across the county.

Measure 12 - Turban Centre new bus station/interchange (SCC) - Scheme funding for the original project of a new interchange was withdrawn due to design issues between Suffolk County Council and Suffolk Coastal District Council taking the project into the period of funding cut-backs. This resulted in funding withdrawal for the original project, instead existing facilities were reviewed and new bus shelters were to be provided by way of improvement. New bus shelters to be installed in December 2012.

Measure 13 – Procurement of bus contracts to include fleet upgrade (SCC) – A Quality Assessment Procedure is in place and all operators seeking to be included on the list of suppliers are required to provide details of their fleet proposals as included on the Suffolk County Council web page;
http://www.suffolkonboard.com/tendering_contracts/list_of_approved_transport_suppliers
SCC has also now introduced quality scoring to their procurement process with a slant on environmentally friendly and accessible vehicles. From January 2013 new European Union Regulations will also come in which mean that there is also a score for 'socially responsible public procurement' – for examples companies who employ local people, practise ethical trading etc.

Measure 14 - Car sharing scheme (SCDC) – Promotion of the www.SuffolkCarShare.com website has been historically undertaken in local magazines and papers and on the Council's website. The number of registered users of the scheme has increased as follows:

- October 20101 - 1,599 members
- July 2011 - 1,831 members
- November 2012 – 2,334 members

Projections provided by the scheme state that for the number of current members (2,334) there will be a saving of £741.44 on average per person per year.

This scheme however is county wide, so members could be located anywhere in Suffolk. Investigations into the scheme have resulted in information on the total CO_2 and number of miles saved by members living at a certain postcode. IP12 1AU (Council Offices) has been looked at and this provided a saving of 3.22g CO_2 or 8,475 miles by members of the scheme whose journeys started or ended at this postcode. This information could then be obtained for other postcodes near to the junction. The only problem is that the savings are for the whole journey undertaken by the member and not just for travelling via the junction. Further work will be undertaken into statistics available to see if we can obtain information that could help us estimate NOx savings within the junction. For example, the total number of saved journeys by member journeys starting or ending at postcodes close to the junction would tell us how many vehicle trips have been saved. It may then be possible to calculate emission savings from this.

Measure 15a - Business Travel Plans (SCDC and SCC) – A listing of local businesses with >20 employees has been prepared by SCDC. There are no larger businesses (+60 employees) in Woodbridge (with the exception of SCDC who already have a Travel Plan) which could make a significant difference should a Travel Plan be adopted, and so it may be difficult to provide the estimated emissions reductions suggested for this measure. SCC has been unable to progress this measure during 2012 due to limited staff resources but, working with SCDC, will refresh its approach during 2013. Any Travel Plans adopted by local businesses will however have a positive effect in reducing emissions at the junction.

Measure 15b - School Travel Plans (SCDC and SCC) – All schools within Woodbridge and the surrounding area, with the exception of Woodbridge School (a private school), have Travel Plans in place. We will write to each of the schools to ask them to promote their Travel Plan where possible in relation to our local air quality problem being experienced at the Woodbridge junction.

Woodbridge School have been approached in the past with regard to adopting a Travel Plan but decided against it. We have approached them again by letter to see if the local context may persuade them to reconsider but have received no reply. We will undertake one more approach in person, should they decide not to adopt a Travel Plan we will not approach them again.

A new piece of footpath has been installed along Pytches Road, together with a 30mph speed sign which flashes on if vehicles are travelling faster than 30mph. These two things will increase pedestrian safety along Pytches Road which should encourage more families to walk to Woodbridge CPS. This is the closest school to the AQMA junction so it could help reduce vehicles using the junction and therefore emissions.

Measure 15c - Travel Plan for the District Council offices (SCDC) – SCDC adopted a Travel Plan late 2009 which had nine key objectives. These were all completed in 2010. Unfortunately there are no indicators associated with the plan which could provide information regarding reduced car usage following the Travel Plan introduction. Staff mileage figures are being looked at to obtain information regarding work mileage, but this does not provide information about use of vehicles by staff in general to and from work. Further investigations are being carried out to determine whether this information can be obtained. Each year SCC undertakes a one-day staff travel survey for all local authorities. We will look at the information provided in here to see if anything can be deduced before and after the Travel Plan was put in place. Potential problem is that it is not compulsory and therefore only undertaken by a small percentage of the workforce.

The Travel Plan has now been amalgamated with a number of other policies and strategies in the Council's Joint Environmental Sustainability Policy and Action Plan (JESPAP). There are a number of actions in the JESPAP which relate to the Travel Plan and are still to be undertaken. Further detail is provided in section 8.5 below

Measure 16 - cycling and walking (SCC) – The new team at SCC has advised that the shared space scheme under consideration will not be implemented. Effort has been made by Woodbridge Town Centre Management Group to improve and increase walking from the water front to the Town Centre. And SCC is constantly reviewing restrictions / permissions for use for the Thoroughfare to look at any improvements that can be made. Although this is unlikely to directly affect air quality within the AQMA, it would encourage greater pedestrian activity in Woodbridge which is positive.

SCC were not able to provide a formal report regarding the review of previous walking and cycling studies carried out, but have provided a wish list of different schemes. These schemes have not yet been analysed for feasibility or funding potential, this will be undertaken during 2013.

A new piece of footpath has been installed along Pytches Road, together with a 30mph speed sign which flashes on if vehicles are travelling faster than 30mph. These two things will increase pedestrian safety along Pytches Road which should encourage more families to walk to the school situated here – Woodbridge CPS.

The County Councillor for the Woodbridge area (Councillor Caroline Page) is also planning to use her funding to increase the number of cycle racks behind Café Nero from 3 to 5 and to install 3 cycle racks on Market Hill (where there is currently no provision). In addition, Councillor Paige is promoting some schemes for Sandy Lane to encourage cycling and walking here and improve the links between Martlesham and Woodbridge. Progress will be reported in the next Air Quality Progress Report due in 2013.

Measure 17 - Integration with Planning System (SCDC) – An Air Quality Supplementary Planning Document for Suffolk has been drafted and a full public Consultation exercise undertaken. The results of the Consultation have been collated and the document amended accordingly. The document now needs to be adopted by this Authority. In the interim it is being used as guidance. This document will aid in the planning process to ensure that air quality assessments are undertaken by applicants where required.
Section 106 agreements will be made as and when a planning application requires them and will not necessarily relate to the AQMA at Woodbridge as they will depend upon where the application site is situated. We have not had any applications where it has been relevant to seek S106 funding relating to our AQMA.

Measure 18 - Raise air quality awareness (SCDC) – This is on-going with articles published in local magazines and newspapers, Consultation undertaken on air quality in the district, and information updated on the Council's website as required.

Measure 19 - Monitor air quality (SCDC) – This is on-going at the junction using both a continuous NOx analyser and 13 diffusion tube sites in various locations around the junction, see section 2 of this report for detail regarding the monitoring. This is our main indicator to determine whether NO_2 reductions are being achieved. Monitoring results for 2011 showed a reduction in levels at most sites, see later in this section of the report for discussion, and the only alteration is the introduction of the MOVA system for the latter 6 months of 2011.

Measure 20 - Undertake identified feasibility studies (SCDC) – The feasibility studies identified in the Action Plan are associated with Measures 2 and 5 but will also extend to other measures as time continues. Updates are provided on Measures 2 and 5 in the text above which advise that the feasibility studies have begun with a preliminary design drawn up for these measures.

Measure 21 – Remove ability of traffic to go straight on from Melton Hill (SCC) – This measure is a suggestion from the new team at SCC which could reduce queuing on the

Melton Hill arm of the junction directly opposite the AQMA. Currently if a vehicle wishes to travel straight over from Melton Hill into the Thoroughfare it has to wait at the lights whilst the green left hand filter is on, thus stopping any other vehicles from filtering left due to lack of room. Measure 2 was originally investigated as an answer to this problem (install a right hand queuing lane) but this has now been removed from the Action Plan as an Measure following plans drawn up which showed that it would bring the carriageway too close to Suffolk Place Residential Home. A request has been made of Defra to use the grant money obtained for feasibility studies to run the scenario of removing the ability of traffic to go straight over which would allow us to see if any air quality benefit would be obtained. Should the feasibility study show that an air quality benefit would be obtained options will be assessed. This measure also links in with Measure 3 (extension of the Thoroughfare restrictions) as this may be one way to reduce the number of vehicles undertaking this manoeuvre during peak hours.

Additional Action Plan Measures

Investigations are continuing on a number of additional measures, progress made for each is detailed below:

a) Through traffic reduction

A video cordon survey was undertaken on behalf of SCDC 30 June 2009 to look at the number of vehicles which are travelling along the B1438 between Ipswich Road and Melton crossroads via the Woodbridge junction and AQMA without stopping – which would therefore be classed as 'through traffic'. The survey revealed that 38% of all journeys undertaken South to North (Ipswich Road towards Melton crossroads) and 43% of all journeys undertaken North to South (Melton crossroads towards Ipswich Road) can be classed as 'through traffic'. This equated to approximately 800 journeys on the day of the survey and would be classed as significant. If even a small percentage of these vehicles could be re-routed along the bypass it may have a significant impact on traffic flows, and therefore emissions, within the AQMA.

SCC was asked to look at options for reduction of through traffic along this route and report back and advised that a formal report on the feasibility of options for re-routing of traffic, traffic calming and 20mph speed limits would be prepared with the next six months. Preliminary considerations suggest that traffic calming is unlikely to be feasible, since it would encourage rat-running and increase the likelihood of generating air quality problems elsewhere. Emergency vehicles would also still need to use this route. The new team at SCC has advised that no further work has been undertaken on this matter to date.

SCDC will undertake an updated through traffic survey, again using video cameras, but this time we will also record the number of heavy goods vehicles which would be classed as through traffic. This should give us a better idea which modes of transport we need to focus on.

b) Traffic Signing

A number of Consultation responses requested a review of traffic signing on the main routes into Woodbridge with a view to trying to reduce vehicles being directed through the town unnecessarily. The new sign for the approach to the Melton Cross Roads from Wilford Bridge has been installed by SCC. This should ensure that traffic gets into the correct lane to minimise unnecessary trips into Woodbridge.

In addition, the new team at SCC has recently advised us that they have replaced some signs on Quayside opposite the Hamblin Road exit from the car parking areas. These signs originally sent A12 traffic to the east, along Lime Kiln Quay Road and through the junction to Melton crossroads. The team has taken on board the need to reduce unnecessary trips

through the junction and the signs now direct A12 traffic to the west along Ipswich Road and out. This minor alteration will hopefully decrease some of the traffic passing through the junction.

c) Weight Restrictions

No further work has been undertaken on this measure. As detailed above, It is our intention to undertake an updated through traffic survey, again using video cameras, but this time we will also record the number of heavy goods vehicles which would be classed as through traffic. This should give us a better idea of whether we need to focus on heavy goods vehicle through traffic and the options for removing/reducing it.

8.3 Funding of SCC measures

SCC have advised that funding will be considered for cost effective measures, taking into account the size and level of exceedance of the national NO_2 Objective in the Woodbridge AQMA. Funding for design and assessment work specifically in Woodbridge was available for the financial year 2010/2011, not all of which was spent. The unspent portion has now unfortunately been lost, as the Transport Strategy Team were not prepared to allow a carry forward. Consequently this funding pot is no longer available.

The bid to Defra for grant funding to carry out feasibility study work associated with any junction alterations was successful. The money has not yet been spent and the options to be modelled have now changed following development of the new team at SCC (see Measures 2, 3, 4 and 21 above). A request has been made to Defra to use the grant funding to model the alternative scenarios which have been suggested,.

At present, it is not possible to identify how Suffolk County Council will address measures in Woodbridge over the longer term as this will depend on implementation of the first stages of measures and their success or otherwise in improving air quality.

8.4 Monitoring data

Monitoring data from the continuous analyser and diffusion tubes at the junction for 2011 is presented in section 2 of this report, with detailed results presented in Appendix E and F. A summary of the data is presented below. In addition to the most recent monitoring, results for 2007, 2008, 2009 and 2010 have also been included in the tables for comparison purposes;

Table 8.2 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean and 1-hour mean Objectives

Year	2007	2008	2009	2010	2011
Annual Mean Concentration ($\mu g/m^3$)	**46**	**45**	**45**	**45**	**42**
Number of exceedences of hourly mean (200 $\mu g/m^3$)	2	2	1	0	0

Table 8.3 Results of Nitrogen dioxide diffusion tube monitoring

Site ID	Location	Within AQMA	Annual mean concentration (µg/m^3)				
		Yes / No	2007	2008	2009	2010	2011
WBG 1	93 Thoroughfare	Yes	**46**	**46**	**45**	**42**	**42**
WBG 3	8 Kingston Farm Road	No	19	20	15	18	16
WBG 5	Suffolk Place, Lime Kiln Quay Road	No	31	30	28	29	25
WBG 6	87 Thoroughfare	Yes	**43**	**44**	**41**	**41**	37
WBG 8	95 Thoroughfare	Yes	**47**	**46**	**42**	**41**	38
WBG 10	St John's Street signpost	No	37	35	34	34	31
WBG 12	8 Lime Kiln Quay Road	No	30	30	26	26	24
WBG 13	85 Thoroughfare	No	39	37	34	36	33
WBG 15	87 Thoroughfare	Yes	**44**	39	38	38	39
WBG 17	Suffolk Place, Lime Kiln Quay Road	No	32	33	31	30	28
WBG 18	106/108 Thoroughfare	Yes	**40**	39	38	38	32
WBG 22	Suffolk Place, Lime Kiln Quay Road	No	~	26	24	23	21
WBG 23	50 St. John's Street	No	~	~	29	27	28

The automatic analyser is sited within the declared Air Quality Management Area (AQMA) and shows the annual mean concentration to still be above the air quality objective (Table 8.1). Trends over time show that the annual mean concentration remained stable between 2007 and 2010 at 45/46µg/m^3 but dropped in 2011 to 42µg/m^3. The Air Quality Action Plan has been formally in place since the start of 2011, and during the second half of 2011 one of the main measures (Measure 1 - installation of a traffic queue detection system to the traffic lights at the junction) was implemented. This could be one explanation for the reduction in levels seen.

The 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times per year) was not exceeded in Woodbridge in 2011 (see Table 2.4). A small number of exceedances were seen for the years 2007-2009 but in the last two years the objective has not been exceeded at all.

Table 8.2 shows the diffusion tube results for 2007 – 2011 in Woodbridge. With the exception of the diffusion tube monitoring sites at WBG 15 and 23, NO_2 concentrations at all sites in Woodbridge have also fallen between 2010 and 2011. Levels at WBG 15 and 23 have both increased by 1µg/m^3.

The reduction seen in NO_2 concentrations must be viewed in context as concentrations at the Urban Background site (WBG 3) have also fallen by 2µg/m^3 and this site will not have been affected by anything related to the junction. The reduction could therefore be in part due to Meteorological conditions during 2011. Monitoring locations have been kept in place during 2012 and will be retained in 2013 which will advise us whether the reduction appears to be more permanent. In addition, MOVA will now be permanently operational.

Investigation of traffic flows at the junction show a slight increase between 2010 and 2011 so the reduction in emissions cannot be attributed to reduced traffic volumes. Heavy Duty Vehicle percentages have also not altered significantly so the reduction cannot be attributed

in any part to this either. This strongly suggests that if there have been any real changes in emissions at the junction, they are likely to be related to the MOVA installation.

8.5 Joint Environmental Sustainability Policy and Action Plan 2012–2022 (JESPAP)

The Council's JESPAP combines and replaces a number of Policies and Documents including the Council's Climate Change Strategy and the Green Travel Plan. It sets out a number of priorities where the Council will focus its efforts and those relevant to our AQMA are:

5.1.1 Continue in our efforts to reduce the Councils' use of energy, fuel and water and amount of waste going to landfill through building and fleet management, improving information and communication technology and staff engagement.

5.4.6 The Council will through meeting its strategic objectives: Fulfil its duties under the Environment Act 1995 to produce and implement Action Plans for any declared Air Quality Management Areas within the districts.

The Council has already undertaken measures under the original Climate Change Strategy and Green Travel Plan which would have a positive impact on emissions within our AQMA as it is located very close to the Council Offices at Melton Hill;

- Improvements to the Council's fleet vehicles
- Video conferencing facilities installed at the Council Offices to reduce need to travel.
- The Suffolk Coastal Business Advice Service has undertaken 146 energy audits of local small and medium sized enterprises offering suggestions to reduce energy use. Travel is one of the criteria looked at for some businesses.

The JESPAP Action Plan includes a number of measures which will assist with emission reduction within the district and therefore aid with work within our AQMA;

- Action 10 – Efforts to reduce emissions reported through the annual greenhouse gas report. To demonstrate commitment to reducing greenhouse gas emissions and highlight reasons for any significant shifts in direction of travel.
- Action 12 - Support and facilitate the Councils' Officer Greenest County Steering Group and Green Team action to engage staff and encourage a shift towards reducing energy and water use, homeworking, teleconferencing, videoconferencing, online training, car sharing, and use of trains and cycles and more fuel efficient driving.
- Action 13 - Amend the Suffolk Coastal Lift Home Scheme as appropriate and to include cyclists and adopt across the two Councils. To increase the numbers of staff cycling or car sharing to and from work.
- Action 14 - Extend the Waveney Cycle to Work scheme to cover Suffolk Coastal. To increase the numbers of staff cycling to and from work.
- Action 27 - With the Suffolk Sustainable Travel Forum endeavour to facilitate major investment in public transport to improve existing services and develop new ones.
- Action 33 - Ensure delivery of the sustainable transport initiatives as set out in Suffolk's Local Transport Plan 2011-2031. Encourage a shift to more sustainable travel patterns

As the Woodbridge AQMA is located close to the Council Offices any actions which will reduce vehicle emissions from the Council itself will aid in emission reduction within the AQMA as many Council journeys will travel through the junction.

8.6 Planning Applications

Defra's comments received in relation to our 2011 Progress Report, which included the Action Plan Progress Report, stated that we had not commented on what impact any of the Planning Applications mentioned would have on the Woodbridge AQMA.

There were 5 planning applications mentioned in the Progress Report, but only 2 of these applications could impact on the AQMA due to their location, and then only minimally. The others are located too far away to have an impact.

Land at junction of Station Road and Wilford Bridge and Girdlestone Pumps, Station Road, Melton (C09/0584)

This application was for the demolition of the Girdlestones building to be replaced by the erection of 10,735m^2 of light and general industrial use. This will consist of two and three storey business units to include offices, workshops, coffee shop/café. There will also be associated external works, off site highway works and formation of new access to Station Road.

The application provided an Air Quality Assessment which determined that overall it is considered that the impact of the proposed development on the ambient air quality near the development site and at the junction of Wilford Bridge Road and Melton Road will be very small and will not cause a breach of the limits set out in the Air Quality Limit Value Regulations of 2000.

At the Woodbridge Junction, where our AQMA is located, the increase in traffic from this development was predicted to be 3 light duty vehicles during the peak hour flow which was not considered significant and does not constitute a material consideration in the assessment of the planning application.

The Air Quality Assessment was reviewed by this Department and the findings accepted. The application was determined on 4 March 2010 and approval was given. A Section 106 agreement has been signed including the Conditions to be placed upon the site. Work has not yet begun on the site.

Redevelopment of Adastral Park, Martlesham Heath (C09/0555)

This is a revised outline planning application submitted by British Telecommunications plc (BT) for the regeneration of Adastral Park and land to the east and south. Adastral Park itself covers nearly 40 hectares (100 acres), and BT own a further 100 hectares (250 acres) of land surrounding the site, much of which has been or will be quarried to extract sand and gravel. BT's revised outline planning application includes refurbishment of Adastral Park and development of the adjoining land for the creation of a new residential community with its own infrastructure, services and facilities.

The site is approximately 7 km fro the AQMA in Woodbridge and it will therefore have little or no impact on the AQMA. Possibly some residential traffic may visit Woodbridge occasionally but as they would enter Woodbridge to the west of the AQMA they would be likely to park before they encounter the AQMA junction. Any impacts will therefore be negligible.

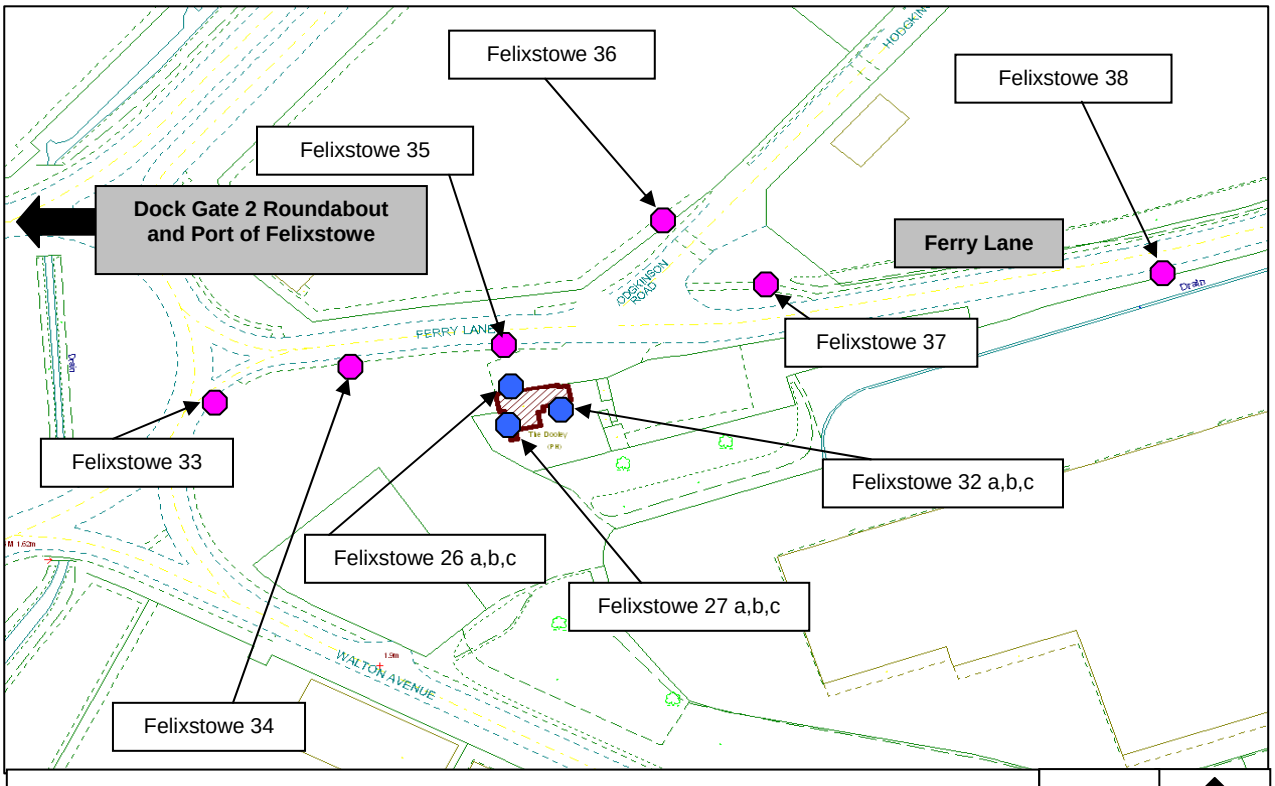
9 AQMA update – The Dooley Inn, Ferry Lane, Felixstowe

On 1 May 2009 an Air Quality Management Area Order was made by Suffolk Coastal District Council for the Dooley Inn, Ferry Lane, Felixstowe with regard to the annual mean NO_2 concentration. A copy of the AQMA Order is included as Appendix B and a location map is provided below as Figure 9.1.

External consultants Transport Research Laboratories (TRL) were commissioned to complete the Further Assessment and Action Plan required for the AQMA.

The Further Assessment was produced in April 2010 and received Defra approval. As part of the Further Assessment, a source apportionment exercise was conducted to calculate the proportion of oxides of nitrogen (NOx) that are emitted from different sources and their impact on the AQMA. The results showed that container handling operations (including vehicles on roads within the Port boundary) are the largest contributor to the NOx concentrations at the AQMA, with emissions from heavy duty vehicles (HDVs) on roads outside the Port boundary being the second largest contributor.

Figure 9.1 **Map showing the boundary of the AQMA declared at The Dooley Inn, Ferry Lane, Felixstowe (hatched in dark red) and the locations of diffusion tube monitoring sites**



A draft Action Plan was drawn up in August 2011 which included options suggested by the Port of Felixstowe and suggestions received from members of the public, where relevant. The report was sent to Defra and a full Public and Statutory Consultation on the options was undertaken in March 2012. The draft Action Plan was accepted by Defra and a number of recommendations made.

The final Action Plan was produced in September 2012 and has recently received Defra approval, the Action Plan can be viewed at:

http://www.suffolkcoastal.gov.uk/assets/Documents/District/Air-quality/FelixstoweFerryLaneAQAPSeptember2012.pdf

It takes into account comments received from Defra and from the wider consultation exercise. These have not led to any alteration in the final list of options. The report identifies measures to be adopted as part of the formal Action Plan and sets out how these measures will be implemented and monitored.

The final list of options, and their implementation schedules, is provided in Table 9.1 overleaf. The list is a mix of measures to be completed by Suffolk Coastal District Council and the Port of Felixstowe. A number of the measures assigned to the Port of Felixstowe are already underway or in place.

A discussion regarding results of diffusion tube monitoring follows Table 9.1.

Table 9.1 Final Action Plan measures for The Dooley Inn, Ferry lane, Felixstowe

Option		Responsible authority	Cost rating	Benefit rating	Cost/Benefit rating	Potential emission reduction	Timescale for implementation	Comment	Indicator
1	**Behaviour**								
a	Carry out an air quality awareness campaign targeting local businesses using major roads in the area *e.g.* the A14.	Suffolk Coastal District Council	1	1	2	Potential to encourage more benign travel options and efficient driving behaviour at all times irrespective of poor air quality events.	Medium term (1-5 years)	Could be supported by eco-driving training, Freight Quality Partnerships and/or smart ignition cards.	Measured concentrations at the Dooley Inn public house.
b	Implement an Environmental Management System (EMS) to include educating Port employees and tenants about best practice, such as eco-driving programmes, efficient handling training, or best practices for construction.	Port of Felixstowe	2	3	6	Eco-driving programmes can reduce all emissions.	Ongoing	The Port currently trains employees on environmental issues in their induction. They have delivered training on the EMS and individual responsibilities to approximately 200 employees over the last year (2011/12).	No direct indicator.
2	**Policy**								
a	Engage National / EU / international governments to develop policies which influence port activities to improve air quality.	Suffolk Coastal District Council	4	2	8 (assuming a national strategy is implemented and adopted by all UK ports)	Potential to influence activities at other ports in the UK – potential for significant reduction in emissions.	Medium term (1-5 years)	Port of Felixstowe agreed; acknowledged that all ports should consider adopting a strategy to overcome competition issues.	No direct indicator.
b	Develop a Port action plan which considers the net effect of emissions from processes over a longer term (five year)	Port of Felixstowe	3	2	6	Potential for the Port to further improve environmental status.	2011	The Port's five year carbon reduction plan is now in version 2 and to date, the estimate is that outputs of the plan are responsible for an	Emissions monitoring at the Port (including CO_2 emissions).

Option		Responsible authority	Cost rating	Benefit rating	Cost/Benefit rating	Potential emission reduction	Timescale for implementation	Comment	Indicator
	timescale.							annual reduction of approximately 4000 tonnes CO_2.	
c	Identify Section 106 planning gain opportunities to balance any future air quality impact caused by local development.	Suffolk Coastal District Council	4	1	4	Potential to mitigate any increase in emissions through various measures. These might involve providing sustainable transport options. It could also include installing long term air quality monitoring stations.	Ongoing	Planning obligations aim to balance the extra pressure from development, with improvements to the surrounding area, in order that a development makes a positive contribution to the local area.	Uptake/implementation of Section 106 agreements.
3	**Alternative power and cleaner fleet**								
a	Evaluate and implement efficient power technologies (e.g. hybrid-electric) for cargo handling equipment (rubber tyre gantry (RTG) cranes) and internal movement vehicles (IMVs) in the Port.	Port of Felixstowe	1	2	2	Would reduce demand for fuel oil. The Port has recently purchased eco-RTGs, which have a 40% reduction in fuel use.	The Port has invested in a number of environmental projects recently and will continue to do so, where practicable. This will be taken forward as part of a package of 'green' measures currently being considered by the Port*	The Port has purchased 22 eco-RTGs – these have smaller engines which allow them to run at maximum efficiency, leading to reductions in emissions.	Power use at the Port.
b	Retro-fitting fuel saving controls to existing RTG cranes in the Port.	Port of Felixstowe	2	2	4	Reduction in fuel use of approximately 25% compared to original RTGs.	2011	The Port has carried out retro-fit of 22 RTGs (greater than 25% of the fleet).	Fuel use at the Port.
c	Investigate feasibility to convert IMVs in the Port from diesel fuel to liquefied natural gas (LNG).	Port of Felixstowe	2	1	2	Possible reductions in NO_X, PM_{10} and CO_2. Difficult to quantity.	Ongoing	The Port is investigating this – there are issues with net emission savings owing to the practicalities of storing LNG to be	No direct indicator.

Option		Responsible authority	Cost rating	Benefit rating	Cost/Benefit rating	Potential emission reduction	Timescale for implementation	Comment	Indicator
								considered further.	
d	Adopt NO_X abatement technologies on IMVs in the Port.	Port of Felixstowe	2	1	2	Possible reductions in NO_X. Could be quantified by assuming that these vehicles would meet more stringent NO_X emissions standards. The estimation process would introduce many errors.	2011 (ongoing replacement plan)	The Port planned to purchase 35 new IMVs during 2011 as part of ongoing replacement plan. The intention is to fit these with selective catalytic reduction using Adblue. This is not currently being used en masse but is used in a few pieces of new equipment.	Air quality monitoring using diffusion tubes within the Port boundary.
4	**Operational controls**								
a	Use of a vehicle booking system (VBS) to manage access to the Port.	Port of Felixstowe	-	-	-	Increased efficiency of container handling. Queues previously seen on Dock Gate 2 Roundabout seem to be reduced. In addition peak traffic flows are tending to reduce slightly and instead shifting to less busy periods.	The Port has implemented this system and all vehicles now have to book a time slot in which they can arrive. If a vehicle arrives out of its allotted time slot, it is not allowed on to the Port and is required to re-book. This is strictly enforced.	If booked, vehicles can arrive any time between midnight and 7am to encourage more deliveries during this time period. This and other traffic management systems have changed traffic flows in and around the Port, significantly reducing peak HGV flows.	Traffic flows (HGVs).
5	**Other options**								
a	A state of the art review of air pollution mitigation options being considered in UK, European and non-European ports.	Suffolk Coastal District Council	3	2	6	The review will establish the emission-reduction potential of options under consideration as well as new options.	Medium term (1-5 years)	It is considered likely that air pollution mitigation measures are being implemented across all ports. Circumstances will vary depending on the characteristics of	No direct indicator.

Option		Responsible authority	Cost rating	Benefit rating	Cost/Benefit rating	Potential emission reduction	Timescale for implementation	Comment	Indicator
								the port and its hinterland. This work would be complementary to Appendix C. A key element of the review will establish the role of government to support national-based initiatives to overcome competitive barriers.	
b	Vehicle number plate surveys.	Suffolk Coastal District Council	3	3	9	The survey will assist the Council in gaining a clear understanding of the nature of the vehicle fleet, in particular the age and type of heavy goods vehicles at specific locations. This allows tailored options to be developed to target the more polluting vehicle types operating in the vicinity of the Dooley Inn.	ANPR survey undertaken in 2011 and results summarised in this report.	An evidence-based option to increase the knowledge base. These studies can help to provide a more in depth understanding of emissions profiles and can help explain peaks in air quality monitoring data, for example.	No direct indicator. Can assist in quantifying the impact from articulated HGVs over time if repeated.
c	Developing a Supplementary Planning Document (SPD) – Air Quality.	Suffolk Coastal District Council	3	1	3	Establishes a formal planning control mechanism to appraise the potential air quality impacts of proposed development, especially within or near to existing AQMAs.	Draft SPD completed and awaiting formal adoption in 2012.	The SPD – Air quality is currently being developed and will include air pollution as a consideration in the planning process. Its role is to provide advice to practitioners and developers on what may or may not be acceptable given current air quality issues.	No direct indicator.

Monitoring data

In previous years an automatic analyser measuring oxides of nitrogen (NOx) was situated within the AQMA at The Dooley Inn. At the end of 2010 there were significant layout changes carried out at The Dooley Inn by the new owner and a plan of on-going alterations for the external areas. This meant that the air quality monitoring equipment would need to be moved. Options for re-siting the analyser in a suitable location were minimal and also subject to possible further layout changes in 2011/2012 and onwards. It was therefore decided that the analyser would be removed from the Dooley Inn at the end of 2010. Additional diffusion tube locations were sited on and around the property to provide additional data starting in 2011, these can be seen in the Map in Figure 9.1 presented earlier in this section.

The results from the diffusion tube monitoring carried out in 2011 in the vicinity of the AQMA, together with the Urban Background site for this area (FLX 21), are summarised in Table 9.2 overleaf. In addition, results for 2008, 2009 and 2010 have also been included in the table for comparison purposes. Detailed tables showing the monthly monitoring results for all sites in 2011 are presented in Appendix F.

There are 9 monitoring locations in the vicinity of the AQMA in total, 3 of which (FLX 26, 27 and 32) are within the AQMA itself. The additional sites (FLX 33, 34, 35, 36, 37 and 38) are not situated at relevant receptors, they were put in place to help are ascertain NO_2 levels around the declared AQMA at the Dooley Inn PH, and whether the local road network (Ferry Lane and Hodgkinson Road) is producing more emissions than originally estimated.

Table 9.2 Results of Nitrogen Dioxide diffusion tubes in Felixstowe 2008-2011

Site ID	Location	Within AQMA?	Annual mean concentrations (μg/m^3) adjusted for bias. *(Adjustment factor used for 2011 is 0.84)*			
			2008	2009	2010	2011
FLX 21	4 Kingsfleet Road, Trimley St. Mary Urban Background site nearby	No	27	25	24	25
FLX 26a,b,c	Front of The Dooley Inn at first floor window height	**Yes**	**42**	**45**	**43**	**40**
FLX 27a,b,c	Side of The Dooley Inn facing the Port of Felixstowe	**Yes**	36	38	33	36
FLX 32a,b,c	Guttering at rear of Dooley Inn facing the rear garden	**Yes**	~	~	~	37
FLX 33	Dock Gate 2 Roundabout. Not relevant receptor	No	~	~	~	**66**
FLX 34	Ferry Lane, Midway between roundabout and Dooley Inn. Not relevant receptor	No	**~**	**~**	**~**	**51**
FLX 35	Dooley Inn signpost at front. Not relavant receptor	No	**~**	**~**	**~**	**48**
FLX 36	Street Sign in Hodgkinson Road. Not relevant receptor	No	**~**	**~**	**~**	**41**
FLX 37	Lampost at Ferry Lane on corner of Hodgkinson Rd. Not a relevant receptor	No	**~**	**~**	**~**	**48**
FLX 38	Lampost on Ferry Lane, past Hodgkinson Rd. Not a relevant receptor	No	**~**	**~**	**~**	39

Of the 3 monitoring locations within the AQMA, FLX 26 is the only site in 2011 at the annual mean NO_2 objective level of 40µg/m^3. FLX 27 and 32 fall below the objective at 36µg/m^3 and 37µg/m^3 respectively.

FLX 26 and 27 have been in place for a number of years and monitoring data from 2008 onwards for these sites s provided in Table 9.2. This shows fluctuations over the years at these locations, both sites following the same trend until 2011 when levels at FLX 26 have reduced but at FLX 27 have increased. Included in Table 9.2 are records for FLX 21 which is an Urban Background site for the Felixstowe and Trimley area, this site provides data for an area not affected by emissions related to the Port of Felixstowe or any other significant nearby source. This site shows fairly stable levels over the last 3 years. The changes at the AQMA would therefore appear to be related to the locality of The Dooley Inn and not any Meteorological conditions or general monitoring issues.

The additional monitoring sites in the area, FLX 32-38, show the highest concentration of NO_2 at Dock gate 2 roundabout (FLX 33), the concentrations reduce as you travel towards The Dooley Inn (FLX 34 and 35) and past it, with FLX 38 being just below the objectives at 39µg/m^3. Monitoring at the entrance to Hodgkinson Road (FLX 36 and 37) shows higher concentrations on the side where vehicles exit the junction (48µg/m^3 at FLX 37), this same concentration is also seen on the signpost at the front of The Dooley Inn (FLX 35). This may indicate that local Heavy Goods Vehicles associated with the depots in Hodgkinson Road are an emission source relevant to our AQMA.

The diffusion tube results do not give any definitive answers but they do indicate that levels within the AQMA have fallen to be now at or below the annual mean objective level of 40µg/m^3. All monitoring locations have been kept in place for 2012 and will also be retained in 2013. The results for 2012 will be reported in the first Progress Report due for this AQMA in 2013.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Monitoring undertaken in 2011 by the automatic NO_X analyser and diffusion tubes situated within the AQMA at Woodbridge and the diffusion tubes situated within the AQMA at Felixstowe confirm that the annual mean NO_2 objective continues to be exceeded at both locations. Concentrations recorded at both locations have however lowered since 2010, the highest recorded concentration at Woodbridge being 42µg/m^3 and at Felixstowe being 40µg/m^3. The continuous analyser confirms that the 1–hour objective is not exceeded at Woodbridge.

The results of NO_2 monitoring undertaken across the district in 2011 using diffusion tubes show a number of sites within the district where the annual mean NO_2 objective is exceeded. With the exception of 1 location at Stratford St. Andrew, all sites at relevant receptor locations are within the declared AQMAs at Woodbridge or Felixstowe.

The site at Stratford St. Andrew is located on a group of five houses which open directly onto the pavement of the A12. Monitoring is being undertaken at several sites along the A12 as part of the pre-planning application scoping exercise for Sizewell C. This location is the only site with NO_2 concentrations above the annual mean objective. During 2011 this site was monitored using a single diffusion tube, and so for increased accuracy in 2012 this site has been triplicated. A number of additional sites have also been put in place in the locality to provide additional monitoring information. Once the results are obtained for 2012 we will determine whether Detailed Assessment will be required.

10.2 Conclusions from Assessment of Sources

There are no new / newly identified road traffic sources or other transport sources within the Suffolk Coastal district since the 2009 Updating and Screening Assessment.

Since the previous Updating and Screening Assessment Report in 2009, there have been 10 new industrial installations within the district, 9 of which are permitted under the Environmental Permitting Regulations 2010. There are no significant emissions predicted from any of these installations and Detailed Assessment is not required.

Assessment of commercial and domestic sources of pollutants has investigated a number of biomass combustion installations within the district and identified 2 for which additional information and investigation is still needed; Heveningham Hall in Heveningham, and West End Nurseries in Leiston. We are continuing to work to gather the necessary information required in order to undertake a screening assessment of each installation to determine whether they may impact on air quality and therefore require a Detailed Assessment. The findings will be presented in the next air quality report (Progress Report), due for production in April 2013.

10.3 Woodbridge AQMA Conclusions

The Action Plan for the Woodbridge junction AQMA was accepted by Defra in May 2011. It consists of 20 measures (out of 79 potential ones) that could be undertaken at the junction to hopefully ease the congestion / reduce the overall traffic flows and therefore in turn reduce the elevated levels of nitrogen dioxide being experienced. The measures can be split into 2 types; 'on the ground works' (mainly to be undertaken by SCC with SCDC input) and more 'softer measures' to be undertaken mainly by SCDC.

The new computerised system for the traffic lights (MOVA) has been in place and working since July 2011, this should reduce congestion and therefore queue lengths. Monitoring results for 2011 show a reduction in NO_2 levels at most of the sites on the junction, reducing the highest recording site from 45/46µg/m^3 to 42µg/m^3. As the MOVA system was only in place for half of 2011, and measurements can alter from year to year due to Meteorological conditions, we are waiting to see what the recorded levels in 2012 will be before we can begin to try and draw any conclusions.

If this option is not successful at reducing emissions to a level which does not exceed the Objectives then removing the ability to turn right and/or go straight over from the direction of Melton Hill will be investigated. The feasibility studies for these options have begun and this will inform us whether an emission reduction could be expected and potentially how much that would be.

The 'softer measures' include contacting bus companies that use the junction to see whether they can use a cleaner fleet in Woodbridge, travel plans for schools and businesses and investigating improving cycling/walking links in the town and these continue to be actioned.

10.4 Felixstowe AQMA Conclusions

The Final Action Plan for the AQMA at Ferry Lane, Felixstowe has recently been completed and received Defra approval. There are 6 measures which are the responsibility of Suffolk Coastal District Council, and 7 which are the responsibility of the Port of Felixstowe. Many of the Port of Felixstowe's actions are already underway or have been completed.

The diffusion tube monitoring results indicate that levels within the AQMA have fallen to be now at, or below, the annual mean objective level of 40µg/m^3. All monitoring locations have been kept in place for 2012 and will also be retained in 2013. The results for 2012 will be reported in the first Progress Report due for this AQMA (in 2013).

10.5 Proposed Actions

- The 2012 NO_2 diffusion tube monitoring results on the A12 at Stratford St. Andrew will be obtained and a Detailed Assessment undertaken if they are above the Objective level of 40µg/m^3.

- Required information will be collected for the 2 remaining sites with biomass plant which require investigation (Heveningham Hall and West End Nurseries). A screening assessment will be undertaken for each installation and presented in the next annual air quality report. Should the screening assessment indicate that a Detailed Assessment is required this will be undertaken.

- Implementation of the Action Plan measures for the AQMA at the Woodbridge Junction will continue and additional investigations required will be undertaken.

- Implementation of the Action Plan measures for the AQMA at The Dooley Inn, Ferry Lane, Felixstowe will begin.

- Findings of the above actions will be presented in the next annual air quality report - the Progress Report, due for production in April 2013.

11 References

1. *Environment Act 1995*, Chapter 25. HMSO, 1997.

2. *Air Quality (England) Regulations 2000* – S.I 2000, No 928. HMSO, 2000.

3. *Air Quality (England) Amendment Regulations 2002* – S.I 2002, No. 3043. HMSO, 2002.

4. *The Environmental Permitting (England and Wales) Regulations 2010* – S.I 2010, No. 675. HMSO, 2010.

5. *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1 and 2)*. Report by the Department of Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh assembly Government and Department of the Environment Northern Ireland. DEFRA Publications, July 2007.

6. *Part IV of the Environment Act 1995, Local Air Quality Management, Technical Guidance*. *LAQM.TG(09).* Report by the Department of Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh assembly Government and Department of the Environment Northern Ireland. DEFRA Publications, February 2009.

7. *Part IV of the Environment Act 1995, Local Air Quality Management, Policy Guidance PG(09).* Report by the Department of Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh assembly Government and Department of the Environment Northern Ireland. DEFRA Publications, February 2009.

8. *Technical Guidance: Screening Assessment for biomass boilers.* AEA Energy & Environment, July 2008.

9. *2009 Air Quality Updating and Screening Assessment for Suffolk Coastal District Council.* Produced by Suffolk Coastal District Council, August 2009.

10. *2011 Air Quality Progress Report for Suffolk Coastal District Council.* Produced by Suffolk Coastal District Council, August 2011.

11. *Suffolk Coastal District Council Air Quality Action Plan for Woodbridge.* Prepared by AEA Technology plc under contract to Suffolk Coastal District Council, August 2009.

12. *Air Quality Review and Assessment. Detailed Assessment for Adastral Close and Ferry Lane, Felixstowe.* Prepared by AEA Technology plc under contract to Suffolk Coastal District Council, May 2008 (Version 2).

13. *Draft Local Air Quality Management Action Plan for the Air Quality Management Area at Ferry Lane Felixstowe.* Prepared by Transport Research Laboratory under contract to Suffolk Coastal District Council, August 2011.

14. *Suffolk Coastal District Council website* – all air quality reports produced by Suffolk Coastal District Council can be viewed at http://www.suffolkcoastal.gov.uk

15. *National Air Quality Information Archive – National Background Maps*. Information from which can be viewed at www.airquality.co.uk/archive/laqm/tools/php. Defra.

16. *Supplementary Guidance – Air Quality Management and New Development 2011 – Suffolk Local Authorities.* Suffolk Air Quality Management Group, 2011.

Appendices

Appendix A: AQMA Order - Woodbridge Junction

Appendix B: AQMA Order – Ferry Lane, Felixstowe

Appendix C: QA:QC Data

Appendix D: Maps showing NO_2 diffusion tube locations

Appendix E: NOx analyser results summary

Appendix F: Diffusion tube results for 2011

Appendix G: Traffic count information

Appendix H: Permitted Processes

Appendix I: Air Quality Assessment: Snape Maltings, Suffolk

Appendix A:
AQMA Order - Woodbridge Junction

Environment Protection Act 1995, Part IV section 83(1)

Suffolk Coastal District Council

Air Quality Management Area Order

THE SUFFOLK COASTAL DISTRICT COUNCIL AIR QUALITY MANAGEMENT AREA ORDER NO 1, 2006

Suffolk Coastal District Council, in exercise of the powers conferred upon it by Section 83(1) of the Environment Act 1995, hereby makes the following Order

This Order may be referred to as '**The Suffolk Coastal District Council Air Quality Management Area Order No 1, 2006',** and shall come into effect on the **3rd April 2006**

The area shown on the attached map hatched in red is to be designated as an air quality management area (the designated area). **The designated area incorporates properties on the Western side of the Thoroughfare and Melton Hill arm of the junction with Lime Kiln Quay Road, in Woodbridge, Suffolk.**

The map may be viewed at the Council Offices, at Melton Hill, Woodbridge, between the hours of 08.45am to 5.15pm Mondays to Thursdays, and 08.45am to 4.45pm on Fridays.

This Area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Regulations (England) (Wales) 2000.

This order shall remain in force until it is varied or revoked by a subsequent order.
Dated; this Third day of March 2006

The Common Seal of Suffolk Coastal District Council was affixed in the presence of;

Ian S de Prez

……..
Authorised Officer

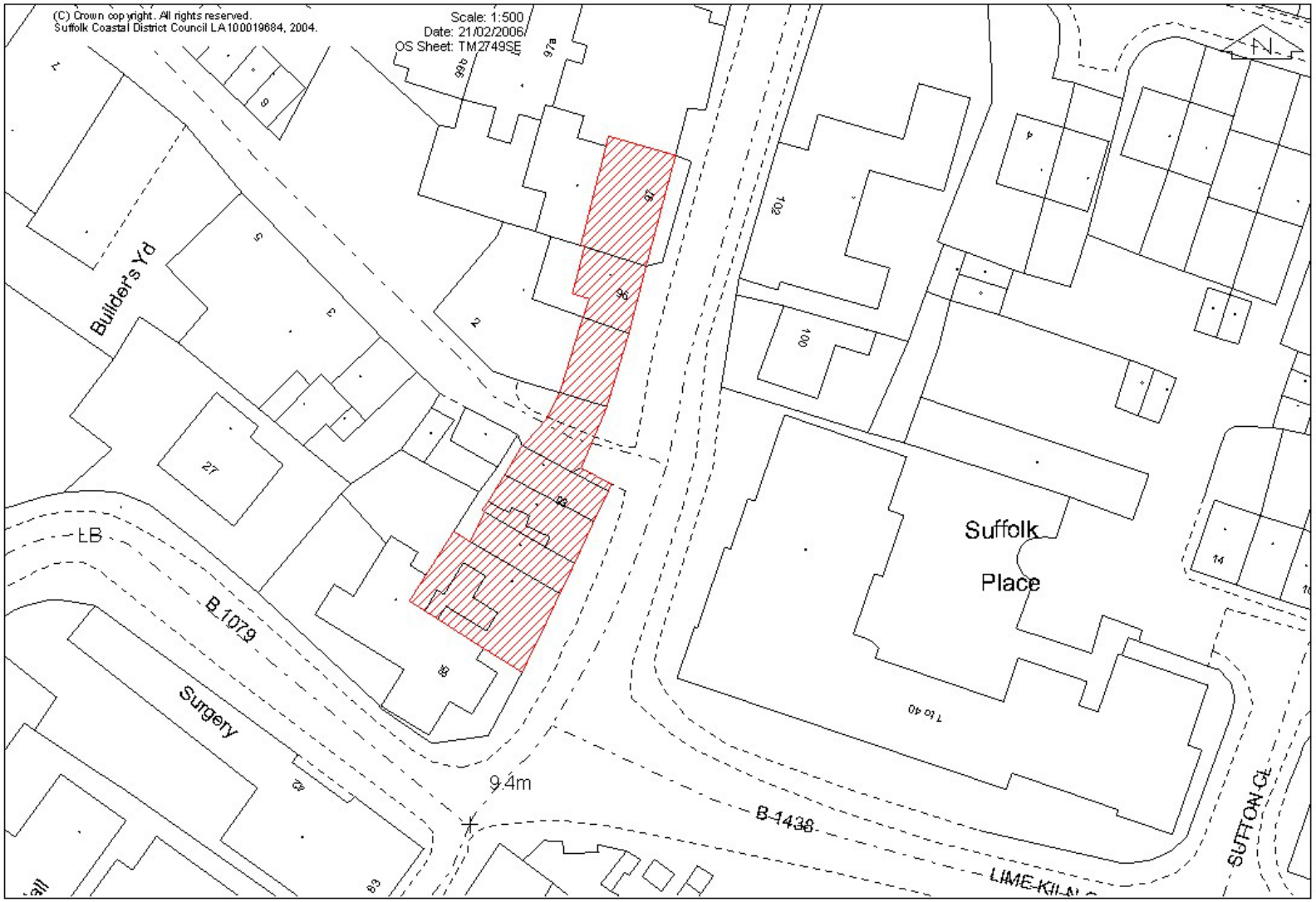
And

Simon Burridge

…… **CS** 9281
Authorised Officer

Dated: 3rd March 2006

THE SUFFOLK COASTAL DISTRICT COUNCIL AIR QUALITY MANAGEMENT AREA ORDER NO 1, 2006



Appendix B:
AQMA Order – Ferry Lane, Felixstowe

Environment Protection Act 1995, Part IV section 83(1)
Suffolk Coastal District Council

Air Quality Management Area Order

THE SUFFOLK COASTAL DISTRICT COUNCIL AIR QUALITY MANAGEMENT AREA ORDER NO 2, 2009

Suffolk Coastal District Council, in exercise of the powers conferred upon it by Section 83(1) of the
Environment Act 1995, hereby makes the following Order

This Order may be referred to as
'**The Suffolk Coastal District Council Air Quality Management Area Order No 2, 2009',**

and shall come into effect on the **1st May 2009**
The area shown on the attached map hatched in red is to be designated as an air quality management area (the designated area).

The designated area contains the property known as The Dooley Inn, situated at Ferry Lane, Felixstowe, Suffolk.

The map may be viewed at the Council Offices, at Melton Hill, Woodbridge, between the hours of
08.45am to 5.15pm Mondays to Thursdays and 08.45am to 4.45pm on Fridays.

This Area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Regulations (England) (Wales) 2000.

This order shall remain in force until it is varied or revoked by a subsequent order.
Dated; this Twenty-third day of April 2009

The Common Seal of Suffolk Coastal District Council was affixed in the presence of;

Ian S de Prez
……..
Authorised Officer

And

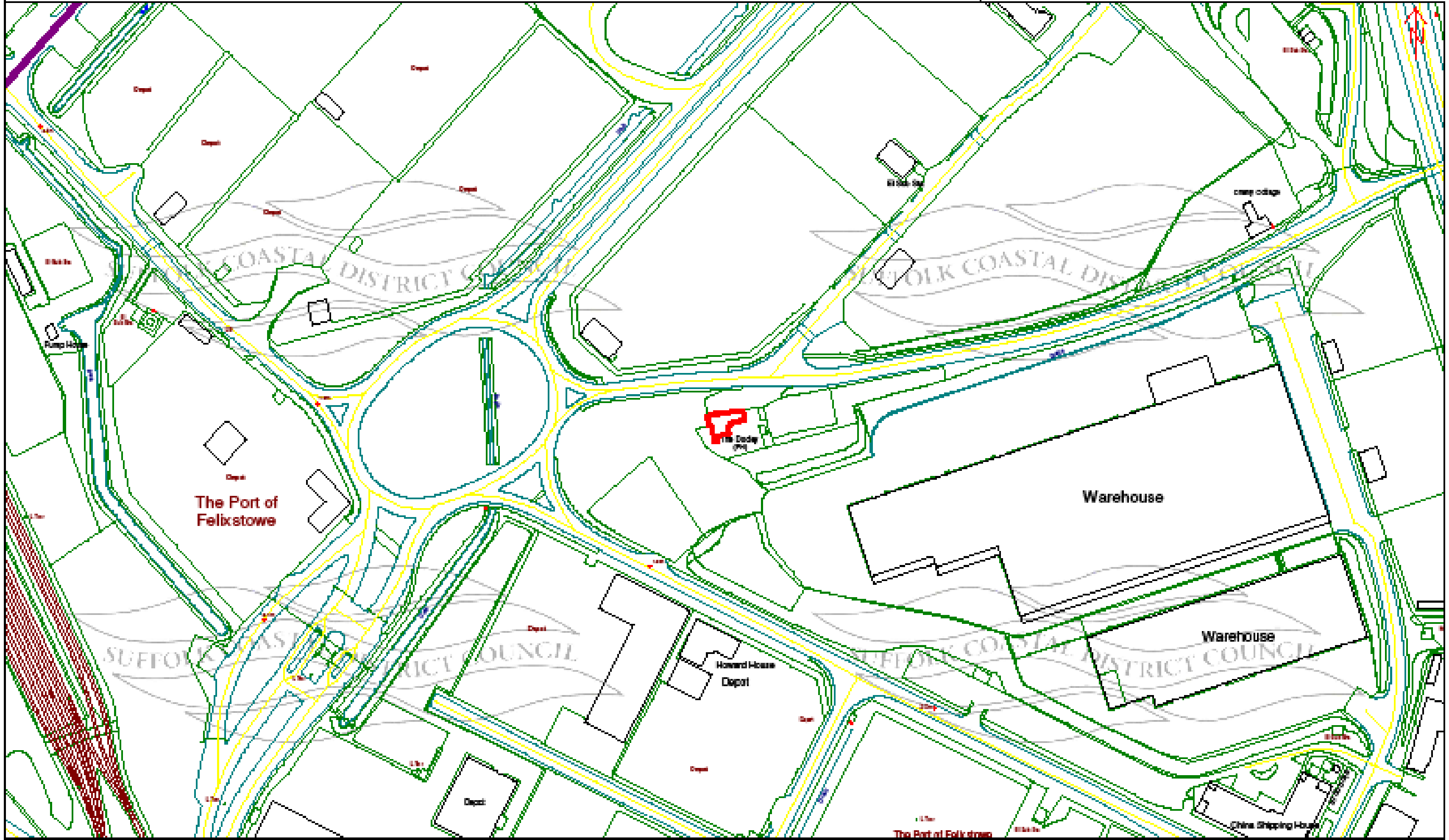
Simon Burridge
…… **CS** 9281
Authorised Officer

Dated 23rd April 2009

Dooley Inn, Ferry Lane, Felixstowe

Scale
0 25 50 75 100 125 m

Map produced on 29 April 2009 at 11:18



Suffolk Coastal District Council

Appendix C: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The analytical laboratory used for supply and analysis of NO_2 diffusion tubes is Harwell Scientifics. 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).

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 Harwell Scientifics in 2011, in the March 2012 edition of 'National Spreadsheet of Bias Adjustment Factors' was **0.84**, using results from eighteen different studies.

Factor from Local Co-location Studies (if available)

There is a Kerbside automatic monitoring site 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. 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 .

Based on 11 months for which there was a valid diffusion tube mean and a valid automatic mean -
Automatic analyser annual mean (2011) = 42 µg m^{-3} with 96% data capture.
Triplicate diffusion tube mean (2011) = 50 µg m^{-3} with a mean precision (expressed as the coefficient of variation) of 3%.
Bias adjustment factor (2011) = 0.84 based on 11 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 concentration from diffusion tube sites within Woodbridge 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 2010 bias adjustment factor of 0.84 obtained at Woodbridge has been applied to the other sites within Woodbridge only.

All diffusion tube monitoring sites within Felixstowe, Kesgrave, Melton and Martlesham have been adjusted for bias using the combined or "national" bias adjustment factor of 0.84.

Bias adjustment of the annual mean diffusion tube result for all sites is shown in Appendix F.

Short-term to Long-term Data adjustment

Some diffusion tube sites failed to achieve full data capture, mainly due to stolen tubes. Where there was less than 90% data capture for the year (because two or more diffusion tube results were missing or invalid), the mean of the 2011 data has been "annualised" using the procedure set out in LAQM.TG(09) to produce the best estimate of the annual mean. 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 to avoid any very local effects that may occur, and should wherever possible lie within a radius of about 50 miles. The two sites used here are St. Osyth (Rural) and Wicken Fen (Rural). Both sites are part of the UK Automatic Urban and Rural Network (AURN).
- 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 2010 was based on the diffusion tube exposure periods rather than 1st Jan – 31st Dec 2010.
- Work out the period mean (Pm) for the period of interest at each of the comparison sites.
- Calculate the ratio of the annual mean to the period mean (Am:Pm) for each location, see table 2.5 below.
- 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 2011.

  WBG 6: the (unadjusted) measured period mean (M) was 47.3 µg/m^3:
  47.3 µg/m^3 (M) x 0.94 (R_a) = **44.5 µg/m^3 (annualised mean)**
  WBG 13: the (unadjusted) measured period mean (M) was 39.4 µg/m^3:
  39.4 µg/m^3 (M) x 1.01 (R_a) = **39.8 µg/m^3 (annualised mean)**

- This annualised mean will then be bias adjusted as for all other sites.

Table C1 Annualisation of diffusion tube data from sites with more than one missing month

Site	Missing months	Annual mean NO_2, St Osyth µg m^{-3} (Am)	Annual mean NO_2, Wicken Fen µg m^{-3} (Am)	Period mean NO_2, St Osyth µg m^{-3} (Pm)	Period mean NO_2, Wicken Fen µg m^{-3} (Pm)	Ratio Annual: Period mean St Osyth (Am:Pm)	Ratio Annual: Period mean Wicken Fen (Am:Pm)	Average Am:Pm of both sites (R_a)
WBG 6	Jun & Jul	14.78	11.39	15.80	11.97	0.94	0.95	0.94
WBG 13	Feb, Mar & Jun	14.78	11.39	14.91	11.03	0.99	1.03	1.01

QA/QC of automatic monitoring

NO_2 concentrations were monitored by ozone chemiluminescence. Quality assurance of the data from the continuous monitoring station was carried out by AEA Energy and Environment following the same procedures used for sites within the Government's Automatic Urban and Rural Network. Calibrations were undertaken fortnightly 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 Air Liquide UK Limited with traceability to National Metrology Standards obtained via regular UKAS Quality Control Audits carried out by AEA Energy & Environment. 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 AEA Energy & Environment. 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 AEA Technology. The ratified data summary reports are included in Appendix E.

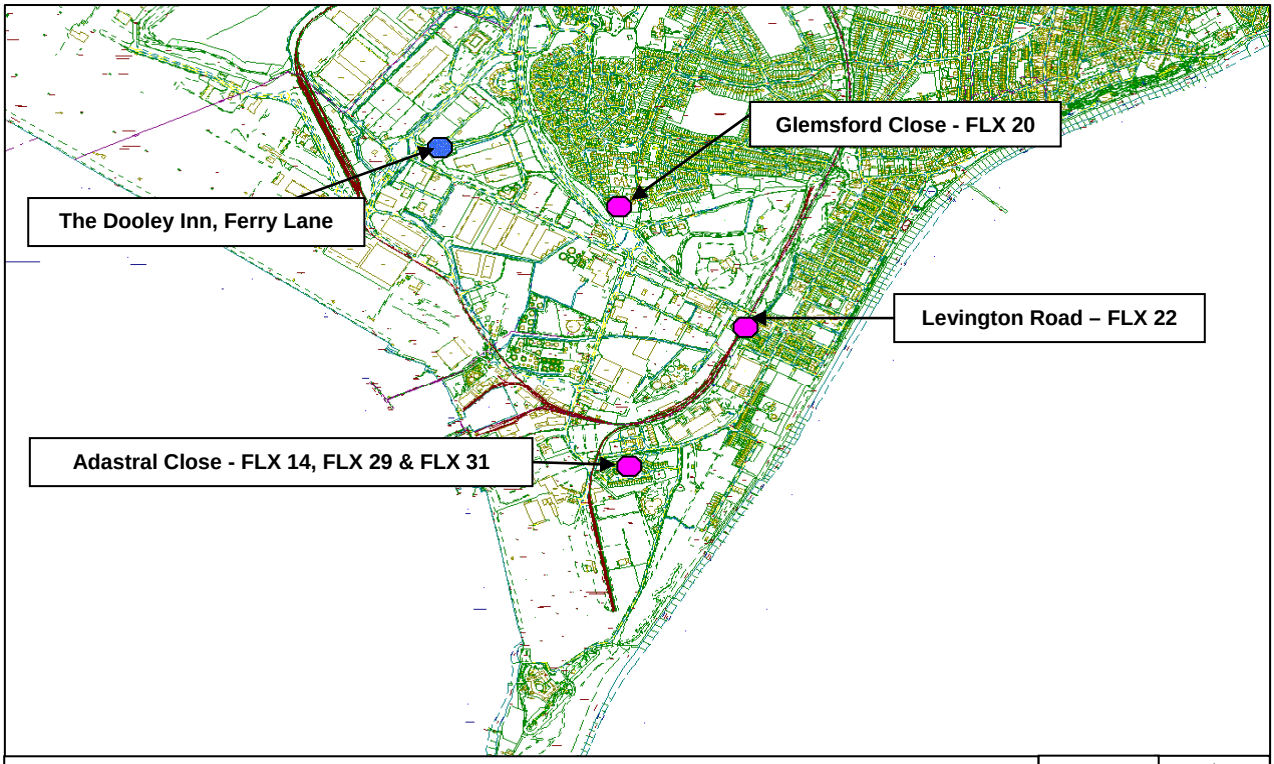
The data set was screened, scaled and validated using all available routine site calibrations, audit results and service engineer records. This was an ongoing process with checks made daily to ensure high data capture is achieved. A final process of data ratification ensures that the data provide the most accurate record of the pollution concentrations across the measurement period. The data management process adopted is that evolved and implemented by AEA Energy & Environment 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

The analysis of NO_2 diffusion tubes by Harwell Scientifics meets the guidelines set out in Defra's 'Diffusion tubes for Ambient NO_2 Monitoring: Practical Guidance'. They participate in the Workplace Analysis Scheme for Proficiency (WASP) for analysis of diffusion tubes. This is an inter laboratory comparison study for analysing spiked NO_2 diffusion tubes and the results show that Harwell Scientifics was ranked as a **Category Good** laboratory in 2011.

Appendix D:
Maps showing NO_2 diffusion tube locations

NO_2 diffusion tube locations in Felixstowe



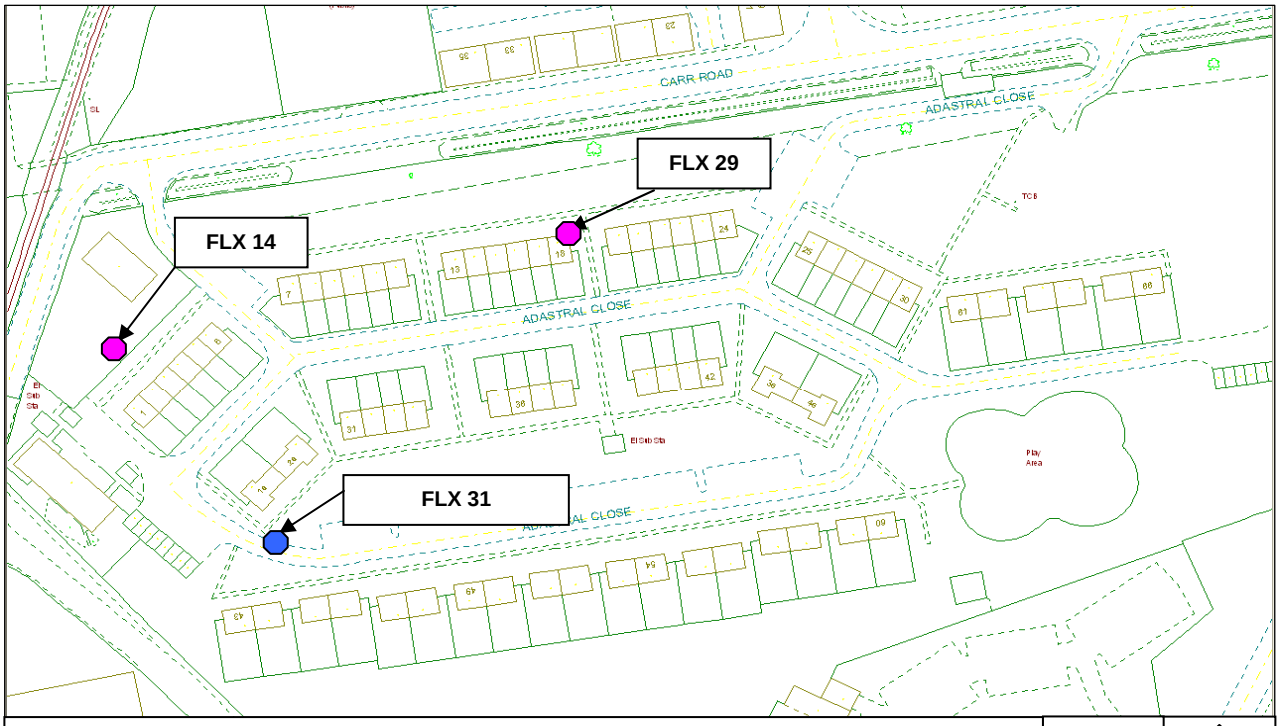
This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Licence No. 100019684. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Not to scale

N

Single Diffusion tube site Triplicate diffusion tube site

Map 1 shows the locations of the Diffusion Tubes at Glemsford Close, Levington Road and Adastral Close, Felixstowe and the location of the declared AQMA at The Dooley Inn, Ferry Lane.

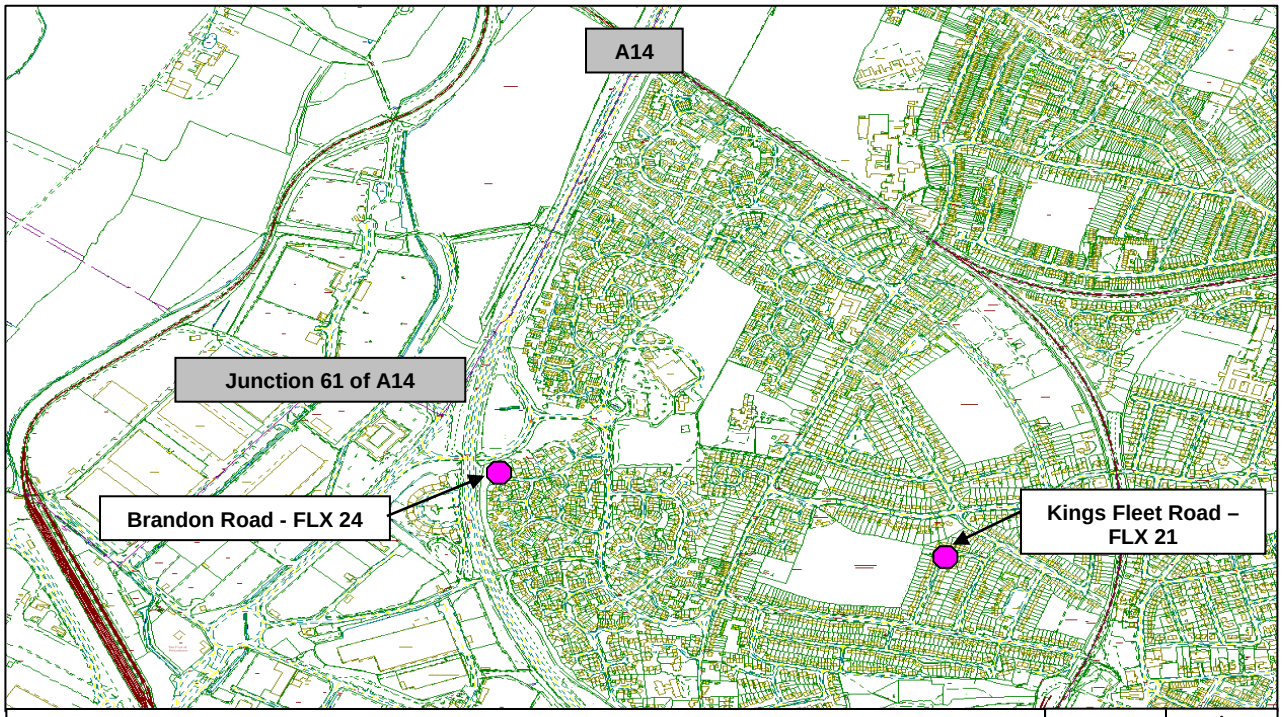


Not to scale

N

Single Diffusion tube site Triplicate diffusion tube site

Map 2 shows the locations of the Diffusion Tubes at Adastral Close, Felixstowe.



Not to scale

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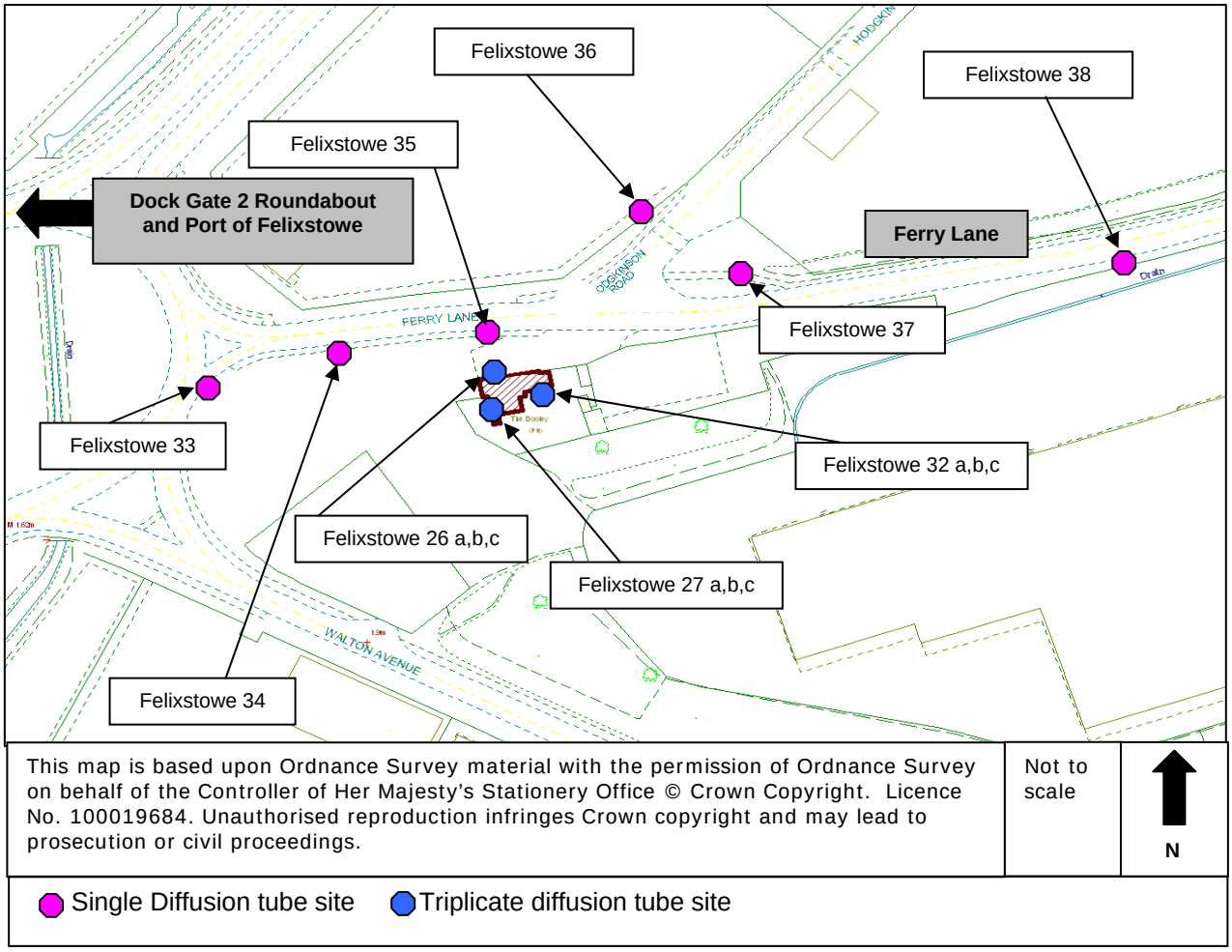
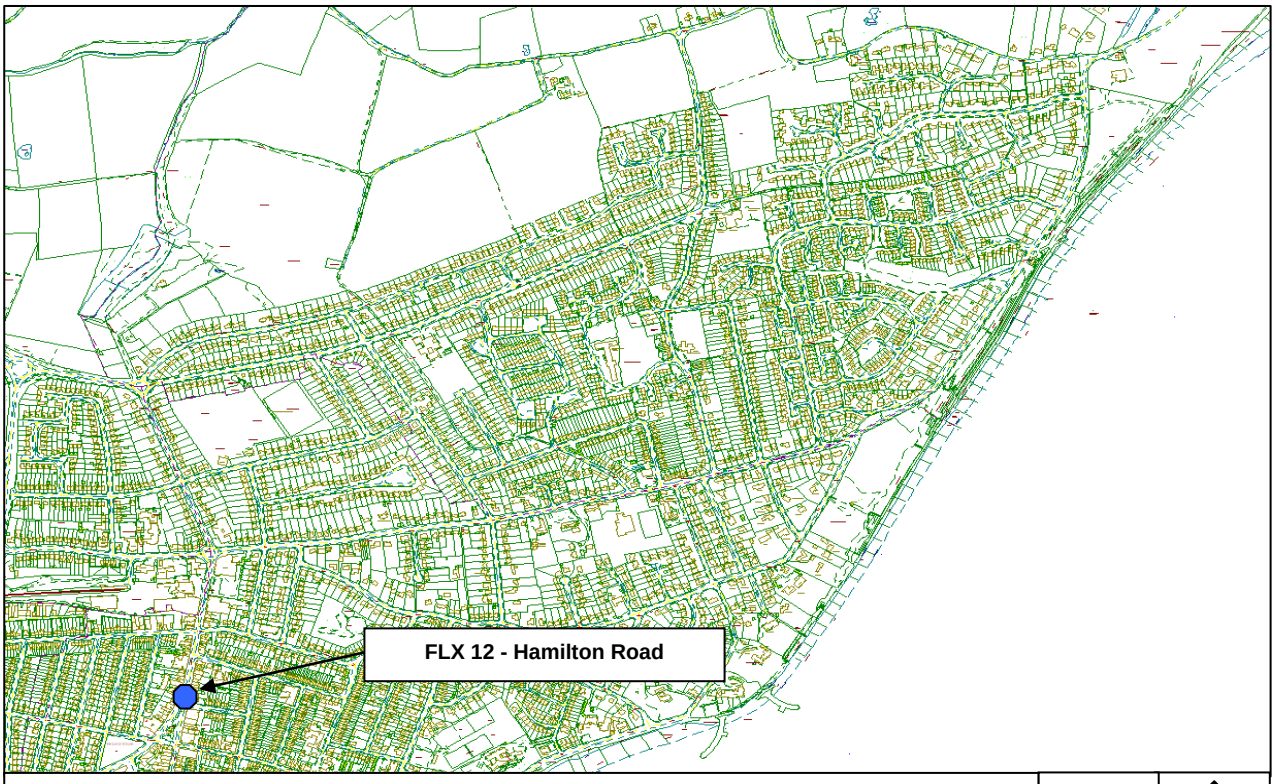
Single Diffusion tube site

Map 3 shows the locations of the Diffusion Tubes at Kingsfleet Road, and Brandon Road, Felixstowe.



Map 4 shows the locations of the Diffusion Tubes located at Ferry Lane, Felixstowe. AQMA is hatched in red.



Not to scale

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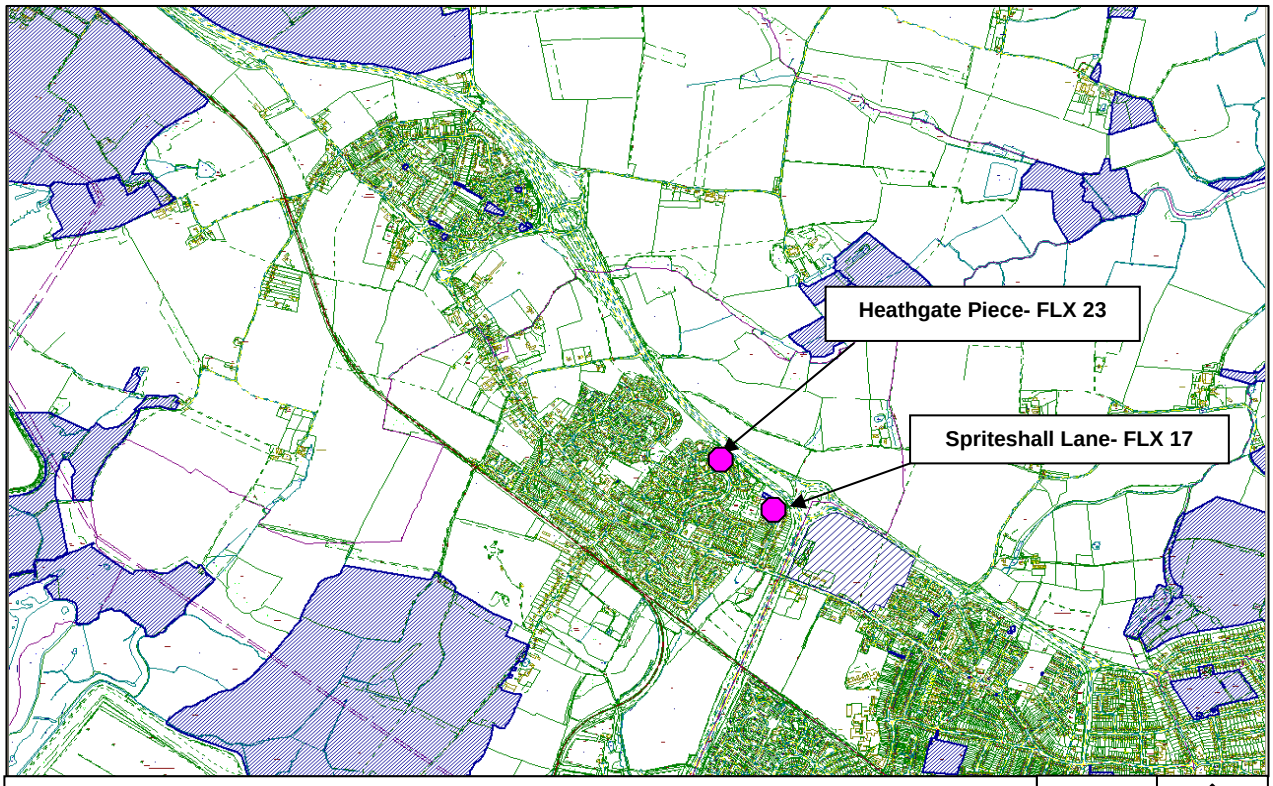
Single Diffusion tube site

Triplicate diffusion tube site

Map 5 shows the locations of the Diffusion Tubes at Hamilton Road, Felixstowe.



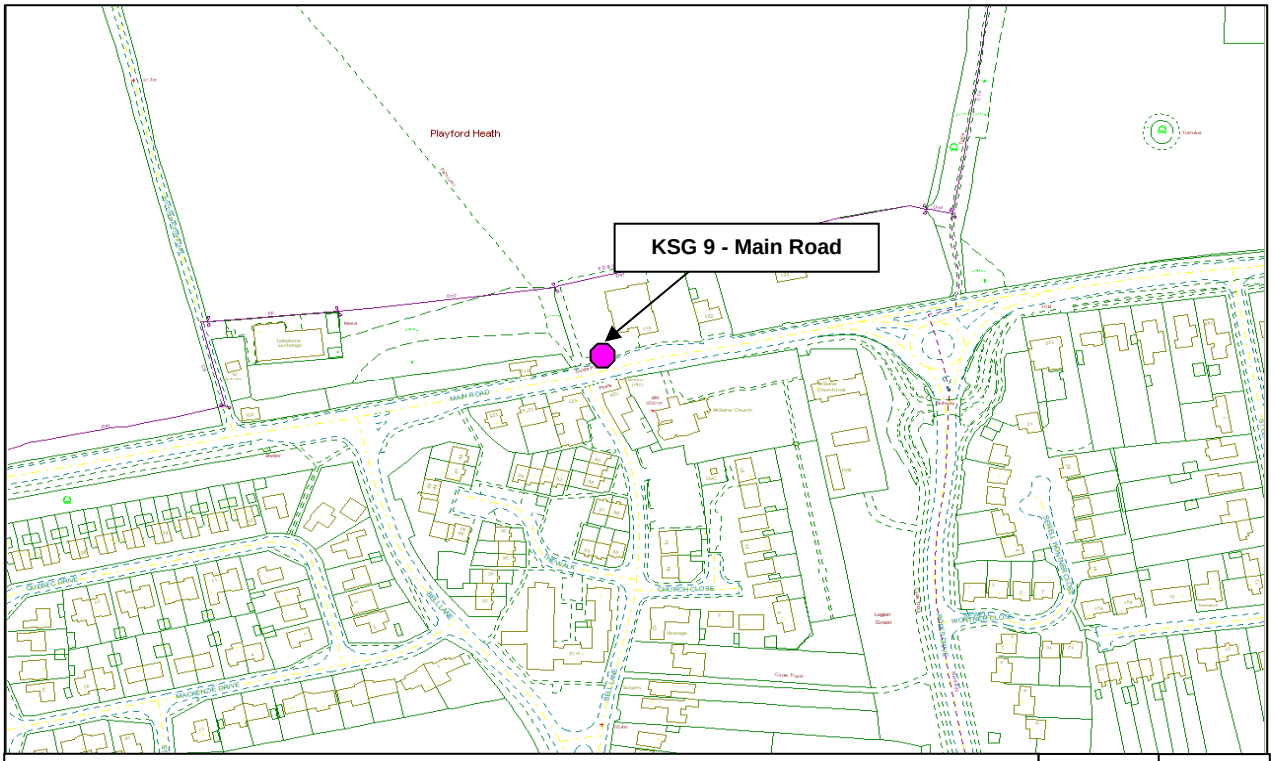
Not to scale

N

Single diffusion tube site

Map 6 shows the locations of the Diffusion Tubes at Heathgate Piece and Spriteshall Lane, Felixstowe.

NO_2 diffusion tube location in Kesgrave



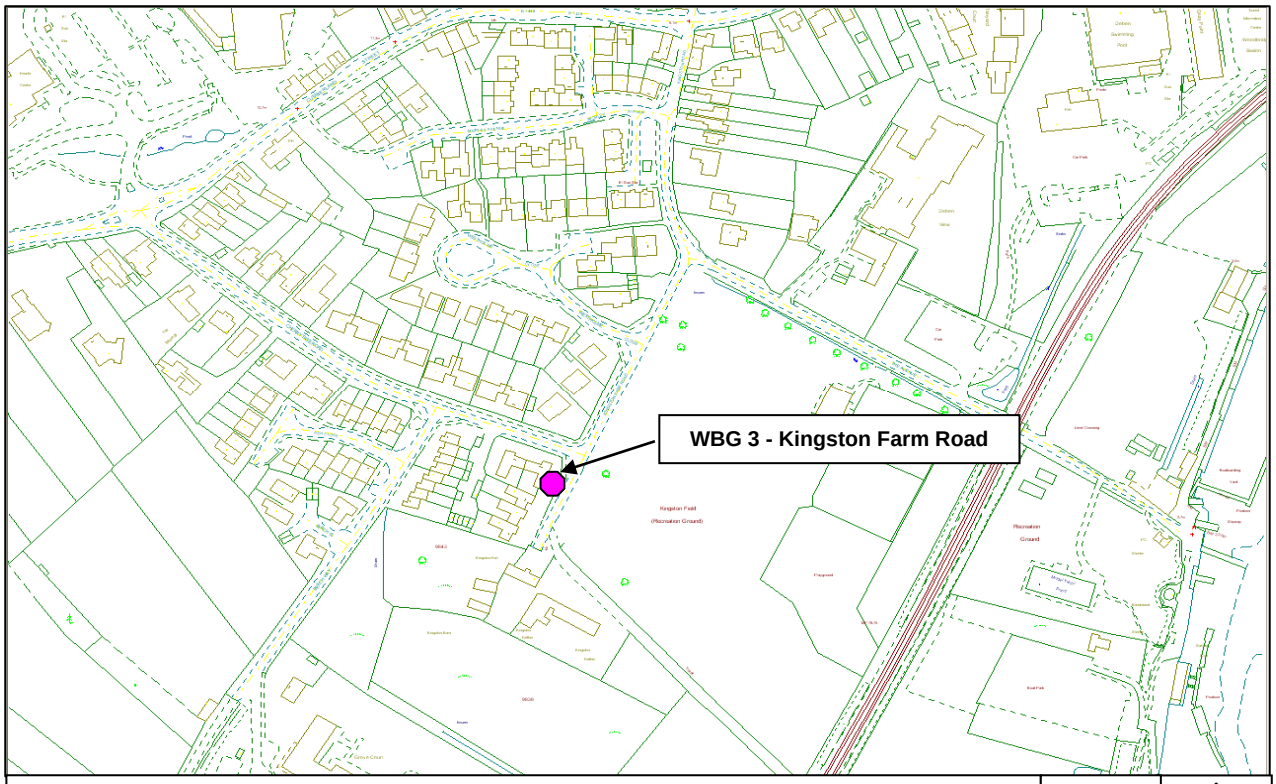
Not to scale

N

Single Diffusion tube site

Map 7 shows the locations of the Diffusion Tubes at Main Road, Kesgrave.

NO_2 diffusion tube locations in Woodbridge

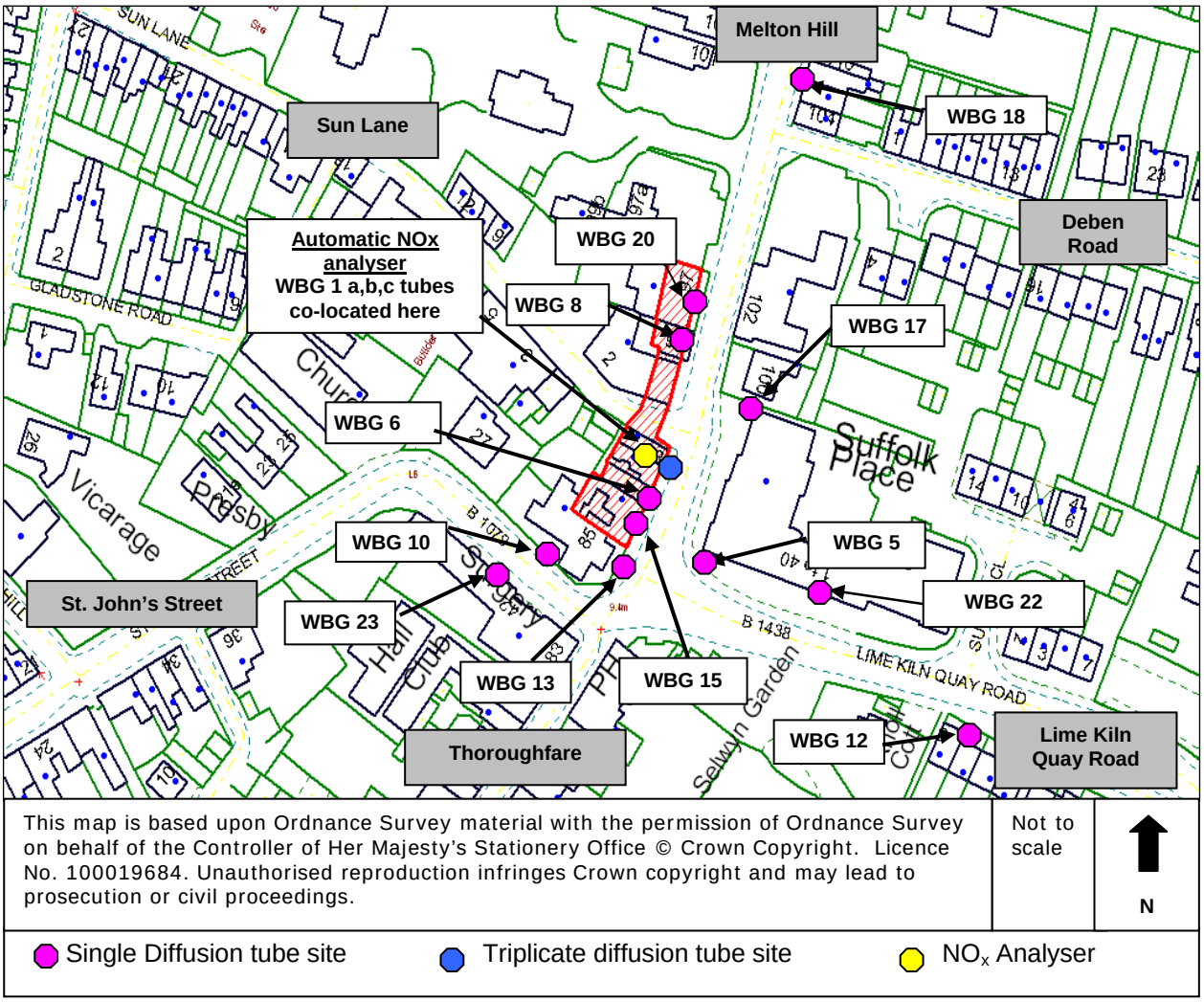


Not to scale

N

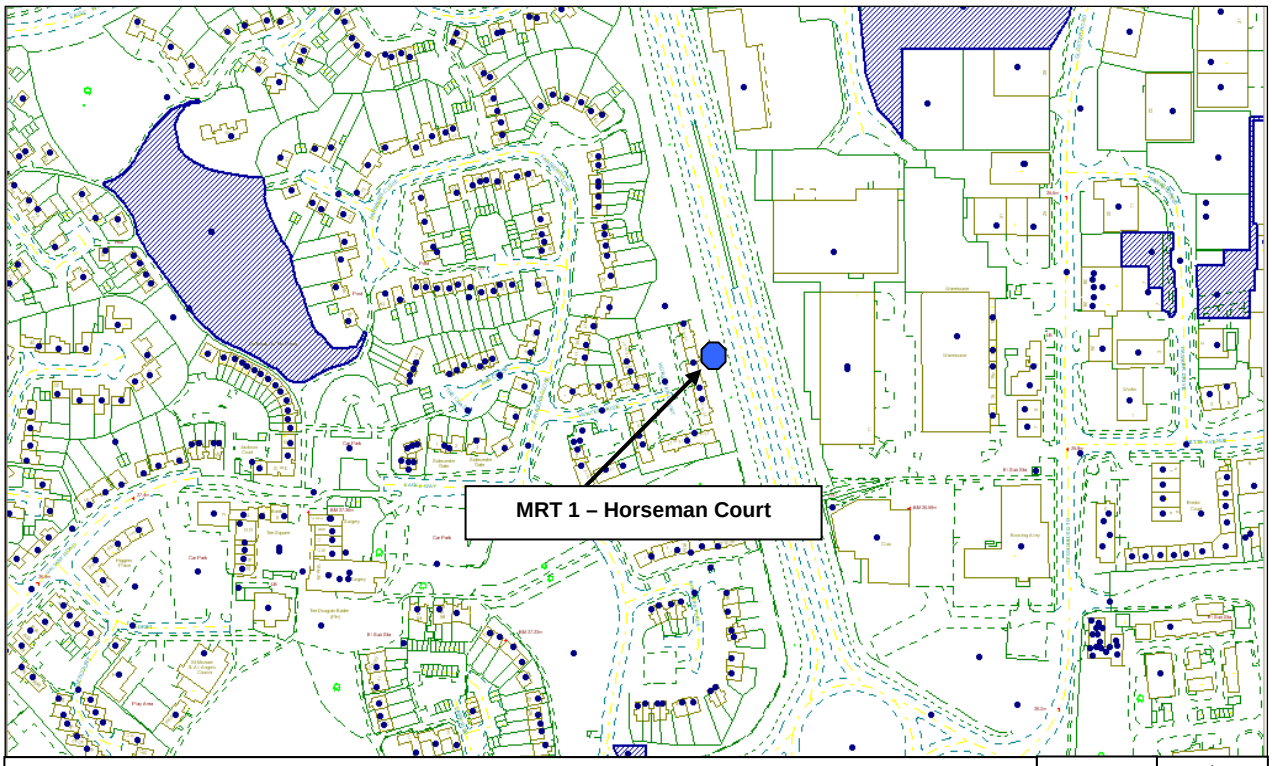
Single Diffusion tube site

Map 8 shows the locations of the Diffusion Tubes at Kingston Farm Road, Woodbridge.



Map 9 shows the locations of the Diffusion Tubes and continuous analyser at Lime Kiln Quay Road, St Johns Street and Thoroughfare, Woodbridge.

NO_2 diffusion tube location in Martlesham



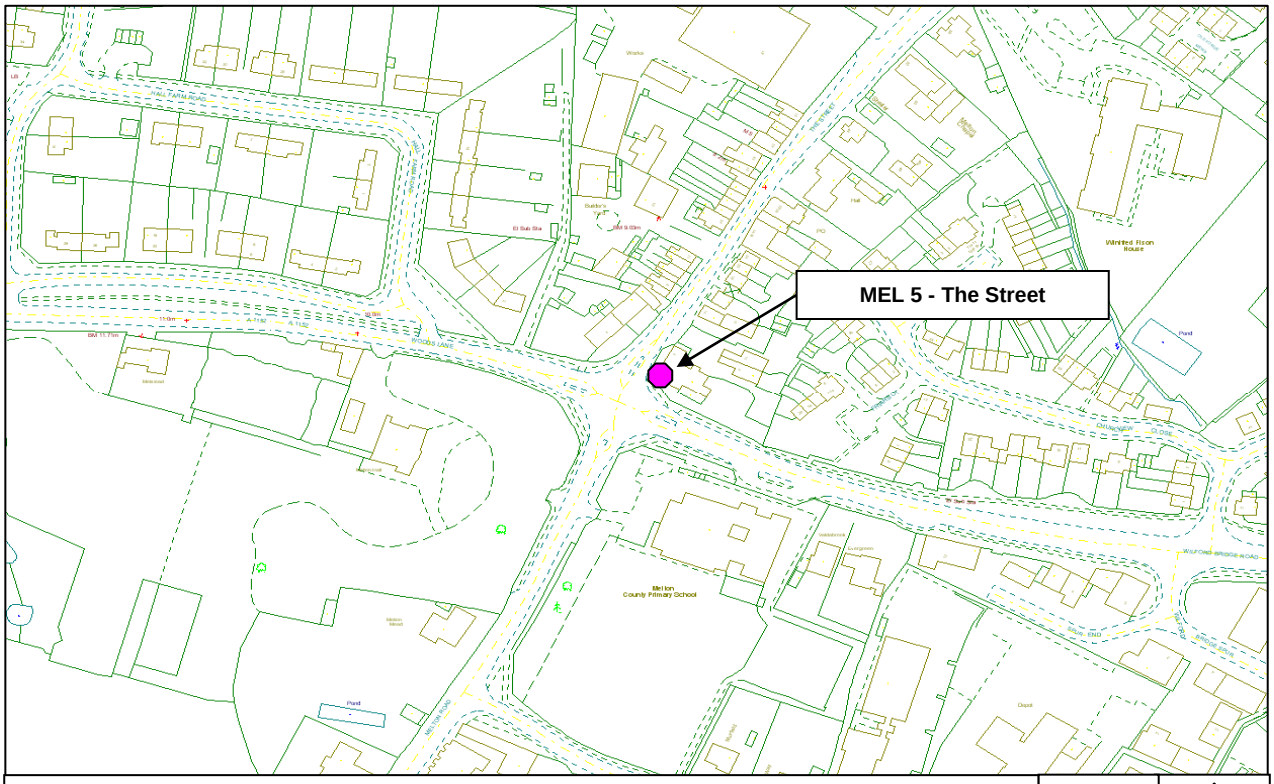
Not to scale

N

Triplicate diffusion tube site

Map 10 shows the locations of the Diffusion Tubes at Horseman Court, Martlesham.

NO_2 diffusion tube location in Melton



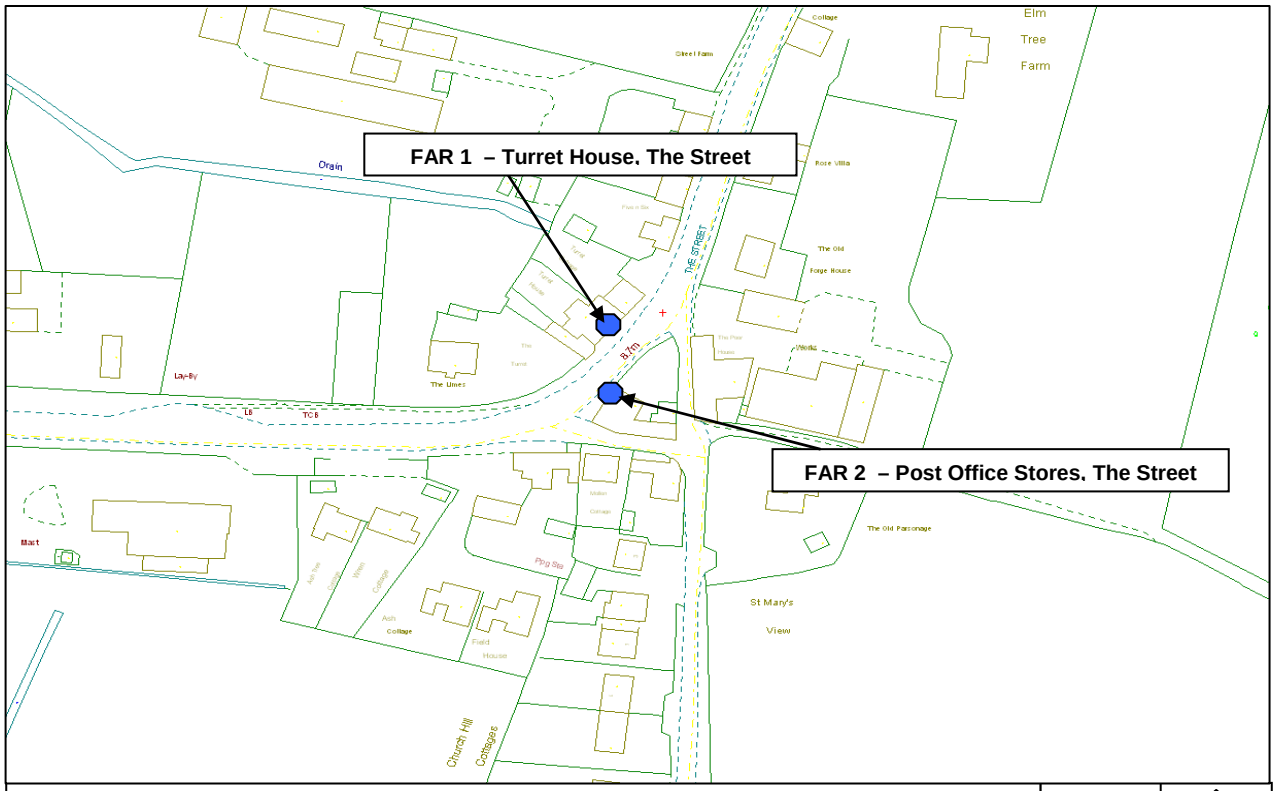
Not to scale

N

Single Diffusion tube site

Map 11 shows the locations of the Diffusion Tube at The Street, Melton

NO_2 diffusion tube locations in Farnham



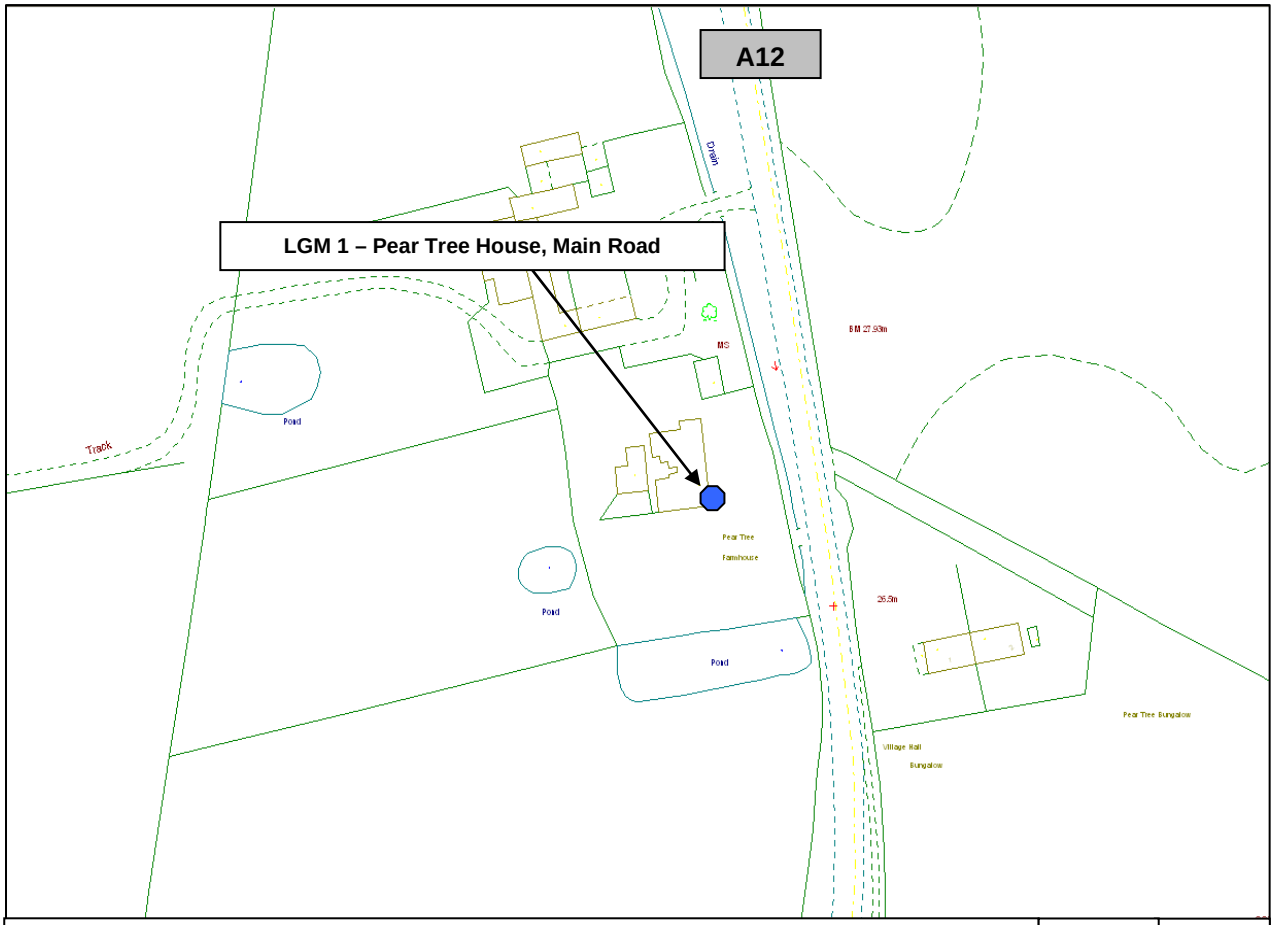
Not to scale

N

Triplicate Diffusion tube site

Map 12 shows the locations of the Diffusion Tubes at The Street, Farnham

NO_2 diffusion tube locations in Little Glemham



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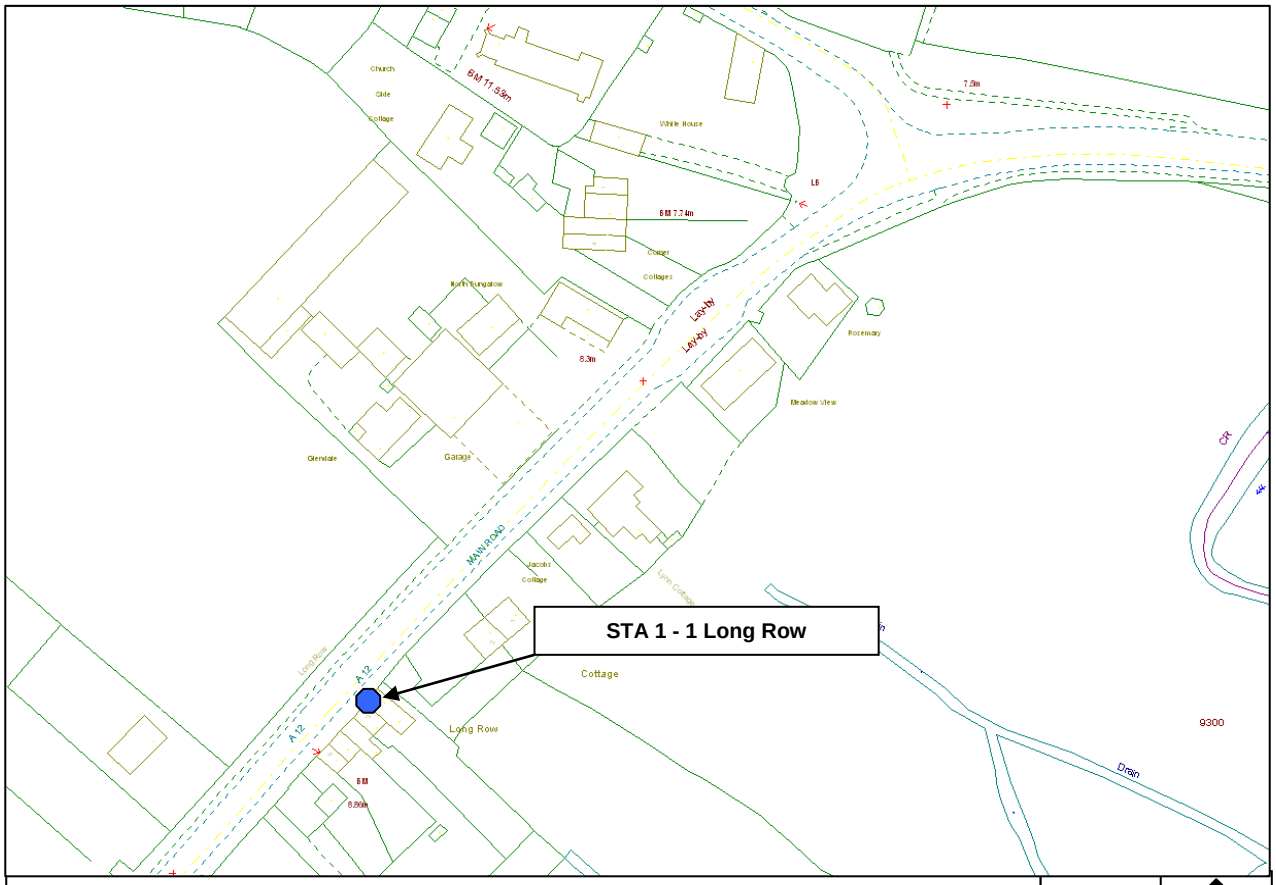
Not to scale

N

Triplicate Diffusion tube site

Map 13 shows the locations of the Diffusion Tubes at Main Road, Little Glemham

NO_2 diffusion tube locations in Stratford St Andrew



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Not to scale

N

Triplicate Diffusion tube site

Map 14 shows the locations of the Diffusion Tubes at Stratford St Andrew

Appendix E: NOx analyser results summary

Produced by AEA on behalf of Suffolk Coastal District Council

SUFFOLK COASTAL WOODBRIDGE 2
01 January to 31 December 2011

These data have been fully ratified by AEA

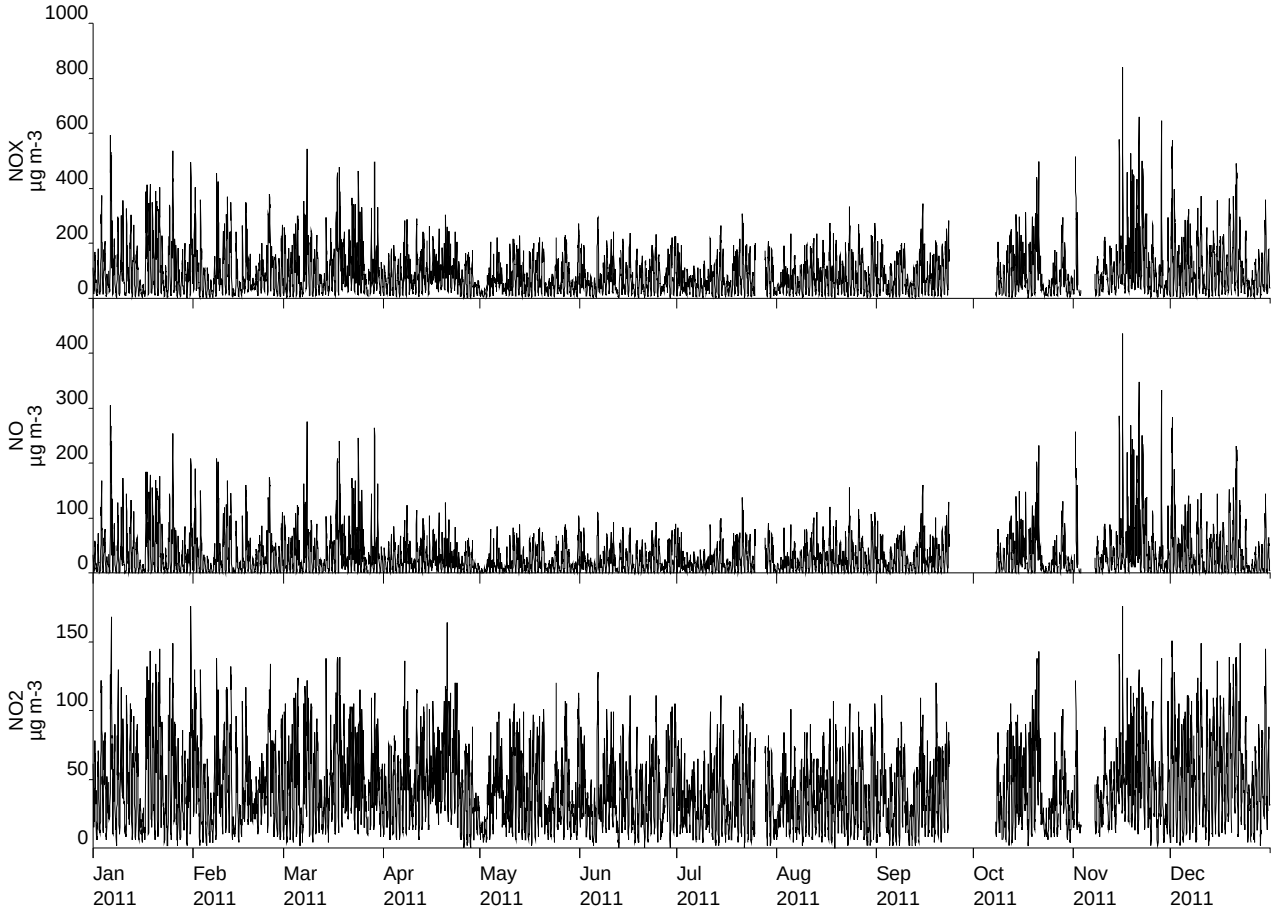
POLLUTANT	NO_X	NO	NO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	8145
Maximum 15-minute mean	1004 µg m^{-3}	574 µg m^{-3}	329 µg m^{-3}
Maximum hourly mean	842 µg m^{-3}	436 µg m^{-3}	176 µg m^{-3}
Maximum running 8-hour mean	469 µg m^{-3}	226 µg m^{-3}	130 µg m^{-3}
Maximum running 24-hour mean	272 µg m^{-3}	123 µg m^{-3}	86 µg m^{-3}
Maximum daily mean	272 µg m^{-3}	123 µg m^{-3}	84 µg m^{-3}
Average	88 µg m^{-3}	30 µg m^{-3}	42 µg m^{-3}
Data capture	93.0 %	93.0 %	93.0 %

All gaseous pollutant mass units are at 20'C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure.
NO_X mass units are NO_X as NO_2 µg m-3

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0	0

Produced by AEA on behalf of Suffolk Coastal District Council

Suffolk Coastal Woodbridge 2
Hourly Mean Data for 01 January to 31 December 2011



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Appendix F: Diffusion Tube Results

Suffolk Coastal District Council

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites in Felixstowe during 2011, figures in micrograms per cubic metre (mg/m^3).

Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual Mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
FLX 12a	47.9	41.4	40.9	44	32.8	33.3	26.6	28	40.6	41.9	50	43.1	see FLX 12 mean		~
FLX 12b	45	40.6	46.2	47.1	31.3	27.8	28.3	32.9	37.8	35.9	50.1	35.8	see FLX 12 mean	~	~
FLX 12c	51.3	47.1	41.5	44.7	29.7	31.9	31.2	31.1	39	37	45.4	45.3	see FLX 12 mean	~	~
FLX 12 a,b,c-mean	48.1	43.0	42.9	45.3	31.3	31.0	28.7	30.7	39.1	38.3	48.5	41.4	**39.0**	**0.84**	**32.8**
FLX 14	41.7	36.3	32.5	37.4	21.4	22.2	21.9	23.7	28.4	26.7	34.8	35.1	**30.2**	**0.84**	**25.3**
FLX 17	47.3	39.3	38.5	40.3	23.8	23.8	25.4	21.7	33.9	31.4	44.7	28.2	**33.2**	**0.84**	**27.9**
FLX 20	39.4	33.3	27.7	30.6	27.1	26.3	18.6	25.0	33.8	33.7	36.2	36.7	**30.7**	**0.84**	**25.8**
FLX 21	39.1	40.2	30.9	31.9	19.7	22.8	15.3	22.1	34.3	30.7	36.9	39.6	**30.3**	**0.84**	**25.4**
FLX 22	40.8	34.9	29.6	37.2	25.1	24.8	17.6	24.3	30.3	28.9	34.3	35.3	**30.3**	**0.84**	**25.4**
FLX 23	49.3	43.1	41.5	43.1	27.6	24.3	29.3	25.6	32.3	30.5	40.3	24.4	**34.3**	**0.84**	**28.8**
FLX 24	42.2	39.8	39.5	40.7	30.3	30.7	26.0	30.3	38.2	38.6	41.4	41.5	**36.6**	**0.84**	**30.7**
FLX 26a	60.1	53.5	53.6	53.3	43.9	47.1	34.3	36.1	50.5	53.6	50.5	49.8	See FLX 26 Mean	~	~
FLX 26b	61.3	49.3	50.9	54.3	35.9	44.8	34.7	43	48.8	43.8	54.5	51	See FLX 26 Mean	~	~
FLX 26c	58.2	37.2	47.0	48.2	31.6	45.6	35.7	34.9	48.1	50.3	53.9	51	See FLX 26 Mean	~	~
FLX 26 a,b,c - mean	59.9	46.7	50.5	51.9	37.1	45.8	34.9	38.0	49.1	49.2	53.0	50.6	**47.2**	**0.84**	**39.7**
FLX 27a	57	43.7	38.6	42.9	35.7	36.5		31.2	42.1	41.8	39	49.3	See FLX 27 Mean	~	~
FLX 27b	50.9	48.1	43.3	45.9	35.3	37.3		33.9	43.8	44	47.8	51.3	See FLX 27 Mean	~	~
FLX 27c	50.7	45.8	43.9	42.9	31.6	39.3		34.4	36.3	46.6	49.2	49.5	See FLX 27 Mean	~	~
FLX 27 a,b,c- mean	52.9	45.9	41.9	43.9	34.2	37.7		33.2	40.7	44.1	45.3	50.0	**42.7**	**0.84**	**35.9**
FLX 29	45.9	25.3	31.3	37.5	19.1	19.6		18.6	25.5	27.6	33.6	36.2	**29.1**	**0.84**	**24.5**
FLX 31a	42.1	38	34.4	40.7	23.6	25.1	20.1	22.2	26.9	33.9	42	30	see FLX 31 mean	~	~
FLX 31b	42.5	39.8	32.2	41.5	21.9	22	22.3	24.7	30.8	34.4	41.6	37.7	see FLX 31 mean	~	~
FLX 31c	45.8	38.4	33.1	44.2	21.8	27.7	23.9	24.2	31.1	33.6	41.4	35.8	see FLX 31 mean	~	~
FLX 31 a,b,c-mean	43.5	38.7	33.2	42.1	22.4	24.9	22.1	23.7	29.6	34.0	41.7	34.5	**32.5**	**0.84**	**27.3**
FLX 32a	59.4	54.2	46.6	50.9	33.1	36.3	30.8	35.2	45	48.3	52.3	50.8	see FLX 32 mean	~	~
FLX 32b	61.4	53	43.6	44.5	36.5	37.2	32	29.4	42	46.6	51.9	46.7	see FLX 32 mean	~	~
FLX 32c	48.1	48.8	45.3	40	37	42.1	30.3	26.8	40.5	46.1	52.5	51.6	see FLX 32 mean	~	~
FLX 32 a,b,c-mean	56.3	52	45.2	45.1	35.5	38.5	31.0	30.5	42.5	47.0	52.2	49.7	**43.8**	**0.84**	**36.8**
FLX 33	111.3	84.1	83.1	71.5	68.7	75.3	68.8	56.2	86.2	79.5	70.8	82.6	**78.2**	**0.84**	**65.7**
FLX 34	77.8	67.2	69.4	66	50	51.5	48.1	50.4	56.6	61.9	61.2	62.7	**60.2**	**0.84**	**50.6**
FLX 35	65.7	66	66.6	56	50.2	50.7	38.1	50	51.2	60	61	67.4	**56.9**	**0.84**	**47.8**
FLX 36	63.5	51.5	56.3	50.8	37	43.4	28.8	33.9	48.1	50.8	56.7	57.2	**48.2**	**0.84**	**40.5**
FLX 37	77.1	64.5	60.0	56.4	52.6	52.1	37.7	46.9	55.7	54.5	58.1	64.4	**56.7**	**0.84**	**47.6**
FLX 38	52.3	46.3	36.4	51.7	45.4	44.6	38.5	43.9	48.6	47.4	46.6	55.8	**46.5**	**0.84**	**39.0**

Key:

FLX 12 a,b,c	Roadside site, drainpipe at 119 Hamilton Road, 'Ford Bros. Bike Shop' Felixstowe
FLX 14	Industrial site, drainpipe on 1 Adastral Close, Felixstowe.
FLX 17	Roadside site, drainpipe on 38 Spriteshall Lane, Trimley St. Mary.
FLX 20	Industrial/Roadside site, rear garden of 73 Glemsford Close, Felixstowe
FLX 21	Urban Background site, lampost at 4 Kings Fleet Road, Felixstowe
FLX 22	Industrial site, drainpipe on 13 Levington Road, Felixstowe
FLX 23	Roadside site, drainpipe on 23 Heathgate Piece, Trimley St. Mary.
FLX 24	Roadside site, rear garden of 22 Brandon Road, Felixstowe
FLX 26 a,b,c	Industrial/Roadside site, first floor window over front car park at The Dooley Inn, Ferry Lane, Felixstowe.
FLX 27a,b,c	Industrial/Roadside site, first floor front window facing the Docks at The Dooley Inn, Ferry Lane, Felixstowe
FLX 29	Industrial Site, 18 Adastral Close, Felixstowe
FLX 31 a,b,c	Industrial Site, 44 Adastral Close, Felixstowe
FLX 32 a,b,c	Industrial Roadside Site, Guttering to rear of Dooley Inn PH
FLX 33	Roadside Site, Dock Gate 2 Roundabout
FLX 34	Industrial/Roadside Site Ferry Lane, Midway between roundabout and Dooley Inn PH
FLX 35	Industrial/ Roadside Site, The Dooley Inn Signpost at front of building
FLX 36	Industrial/ Roadside Site, Street Sign in Hodgkinson Road, Felixstowe
FLX 37	Industrial/ Roadside Site, Lampost at Ferry Lane on corner of Hodgkinson Road
FLX 38	Industrial/ Roadside Site, Lampost on Ferry Lane, past Hodgkinson Road

#

Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be a combined ("national") bias adjustment factor, or one calculated from a co-location study with a continuous analyser carried out by the authority themselves.
The 2011 data from Felixstowe were adjusted using a combined (national) bias adjustment factor of 0.84

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites in Kesgrave during 2011, figures in micrograms per cubic metre ($\mu g/m^3$).

Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
KSG 9	45.3	56.9	39.0	31.8	28.0	32.9	21.8	32.2	40.5	46.9	59.4	50.5	**40.4**	**0.84**	**34.0**

Key

KSG 9 Roadside site, roadside lampost at 118 Main Road, Kesgrave

\# Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be a combined ("national") bias adjustment factor, or one calculated from a co-location study with a continuous analyser carried out by the authority themselves. The 2011 data from the Kesgrave site were adjusted using a combined (national) bias adjustment factor of 0.84

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites in Woodbridge during 2011, figures in micrograms per cubic metre ($\mu g/m^3$).

Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
WBG 1a	58.8	56.7	56.0	53.9	40.4	47	40.1	46.6	48.7	47.8	56.6	51.4	see WBG 1 mean	~	~
WBG 1b	58.8	51.5	56.4	56.1	43.4	46.2	40.5	45.4	47.3	40.9	56.1	53.2	see WBG 1 mean	~	~
WBG 1c	56.5	54.8	55.1	57.9	41.1	46.4	41.4	46.5	47.8	44.4	50.6	49.1	see WBG 1 mean	~	~
WBG 1 a,b,c - mean	58.0	54.3	55.8	56.0	41.6	46.5	40.7	46.2	47.9	44.4	54.4	51.2	**49.8**	**0.84**	41.8
WBG 3	25	26.8	20.4	18.1	12.4	13.7	8.5	11.2	15.7	19.8	31.4	20.3	**18.6**	**0.84**	15.6
WBG 5	36	37.1	38.7	31.6	21.5	24.7	17.8	22.5	23.8	31.3	38.9	26.4	**29.2**	**0.84**	24.5
WBG 6	50.8	54.9	51.9	48.9	36.9			40.9	40.9	47.8	52.5	47.7	**47.3**	**0.84**	39.7
WBG 8	54.1	52.3	48.4	48.9	32.6	40.5	35.1	38.3	40.7	46.8	55.3	48.7	**45.1**	**0.84**	37.9
WBG 10	39.2	43.2	46.1	40.8	28.4	33.3		30.3	29.2	37.8	48.8	29	**36.9**	**0.84**	31.0
WBG 12	32.9	35.7	32.5	31.3	22.6	21.5	17.5	23.9	29.1	30.6	34.9	36.3	**29.1**	**0.84**	24.4
WBG 13	48.7			49.6	31.4		33.7	34.4	33.6	40.3	47.8	35.4	**39.4**	**0.84**	33.1
WBG 15	59.3	53.7	58.4	51.6	34.4	43.9	29.9	38.3	42.9	41.3	55.9	47	**46.4**	**0.84**	39.0
WBG 17	35.3	40.8	37.9	36.8	27.4	30.8	22.8	24.8	31.3	30.5	42.1	32.6	**32.8**	**0.84**	27.5
WBG 18	44.6		52.8	46.5	29.2	35.4	28.9	32.4	33.1	38.3	53.1	30.6	**38.6**	**0.84**	32.4
WBG 22	34.1	32.7	28.2	27.8	16.8	19.3	16.5	15.7	19.5	24.8	32.1	25.1	**24.4**	**0.84**	20.5
WBG 23	36.1	42.4	38.3	38.2	25.4	30.7	21.3	26.6	33.0	34.8	42.6	36	**33.8**	**0.84**	28.4

Key:

WBG 1a,b,c	Kerbside site, signpost outside 93 Thoroughfare, Woodbridge **(Triplicate site co-located with continuous analyser)**
WBG 3	Urban Background site, lampost outside 8 Kingston Farm Road, Woodbridge
WBG 5	Roadside site, drainpipe on corner of Suffolk Place, Lime Kiln Quay Road, Woodbridge
WBG 6	Roadside site, drainpipe on 87 Thoroughfare, Woodbridge
WBG 8	Roadside site, drainpipe on 95 Thoroughfare, Woodbridge
WBG 10	Roadside site, signpost in St. John's Street (opposite Surgery), Woodbridge
WBG 12	Roadside site, drainpipe on 8 Lime Kiln Quay Road, Woodbridge.
WBG 13	Roadside site, traffic lights at front of 85 Thoroughfare, Woodbridge
WBG 15	Roadside site, Top guttering in middle of 87 Thoroughfare, Woodbridge
WBG 17	Roadside site, drainpipe at front Northern end of Suffolk Place, Lime Kiln Quay Road, Woodbridge
WBG 18	Roadside site, drainpipe between 106 / 108 Thoroughfare, Woodbridge
WBG 22	Roadside Site, first floor balcony on Suffolk Place facing Lime Kiln Quay Road. **New Site from April 2008**
WBG 23	Roadside Site, lampost o/s new buildings (number 50), St Johns Street, Woodbridge. **New site from January 2009**

Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be obtained from the analyst laboratory or calculated from a co-location study with a continuous analyser by the authority themselves. In 2010 a co-location study was undertaken by SCDC using results from a continuous NOx analyser located at a site in Woodbridge. The bias adjustment factor for 2011 was calculated from this study and was 0.84 Annual mean diffusion tube concentrations were, therefore, multiplied by a factor of 0.84.

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites in Melton during 2011, figures in micrograms per cubic metre ($\mu g/m^3$). Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
MEL 5	44.4	40.4	36.7	40.8	28.5	30.9	29.4	31.6	32.8	39.2	42.5	42.4	**36.6**	**0.84**	**30.8**

Key:
MEL 5 Roadside site, 6 The Street, Melton.

Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be a combined ("national") bias adjustment factor, or one calculated from a co-location study with a continuous analyser carried out by the authority themselves. The 2011 data from the Melton site were adjusted using a combined (national) bias adjustment factor of 0.84

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites in Martlesham during 2011, figures in micrograms per cubic metre ($\mu g/m^3$). Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
MRT 1a	33.9	35.5	38.5	36.2	20.1	20.7	36.6	17.6	24.1	31.6	37.8	28.1	see MRT 1 mean	~	~
MRT 1b	33.4	36.2	38.2	35.7	21.4	20.9	22.3	18.2	22.3	30	39	27.5	see MRT 1 mean	~	~
MRT 1c	35.8	29.9	38.5	35.6	22.2	22.4	19.8	18.5	23.5	27.8	36.4	26	see MRT 1 mean	~	~
MRT 1a,b, c-Mean	34.4	33.9	38.4	35.8	21.2	21.3	26.2	18.1	23.3	29.8	37.7	27.2	**29.0**	**0.84**	**24.3**

Key:
MRT 1a,b,c Site located on drainpipe behind Horseman court, off Eagle Way, Martlesham. **(Triplicate Site) New Site as of May 2009**
Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be a combined ("national") bias adjustment factor, or one calculated from a co-location study with a continuous analyser carried out by the authority themselves. The 2011 data from the Martlesham site were adjusted using a combined (national) bias adjustment factor of 0.84

Monthly and annual mean nitrogen dioxide (NO_2) concentrations recorded at sites along the A12 during 2011, figures in micrograms per cubic metre ($\mu g/m^3$).

Annual mean concentration corrected for bias where relevant.

Site	Time in months												Annual mean ($\mu g/m^3$)	Bias correction factor used	Bias corrected annual mean ($\mu g/m^3$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
LGM 1a	23	27.3	27	28.5	15.2	18.2	15.4	11.8	13.0	20.9	29.8	13.1	see LGM 1 mean	~	~
LGM 1b	22.6	28.3	23.5	27.9	16.4	19.6	13.7	10.9	14.3	21.4	28.9	12.8	see LGM 1 mean	~	~
LGM 1c	22.4	24.4	21	25.3	16.8	18.8	13.1	10.9	15.1	21.3	28.6	13	see LGM 1 mean	~	~
LGM 1a,b,c-mean	22.7	26.7	23.8	27.2	16.1	18.9	14.1	11.2	14.1	21.2	29.1	13.0	**19.8**	**0.84**	**16.7**
FAR 1a	42.5	37.9	39.0	40.7	29.8	36.8	31.0	28.6	30.7	32.0	38.5	25.7	see FAR 1 mean	~	~
FAR 1b	41.5	36.2	37.6	39.7	28.8	32.5	32.3	29.5	29.6	26.8	38.3	27.7	see FAR 1 mean	~	~
FAR 1c	41.9	40.4	38.4	42.1	29.6	33.2	32.3	30.3	28.7	32.9	37.7	26.2	see FAR 1 mean	~	~
FAR 1a,b,c-mean	42.0	38.2	38.3	40.8	29.4	34.2	31.9	29.5	29.7	30.6	38.2	26.5	**34.1**	**0.84**	**28.6**
FAR 2a	41.7	45.5	41.6	47.4	29.7	36.5	32.5	34.1	37.3	41.8	44.3	34.2	see FAR 2 mean	~	~
FAR 2b	48.3	44.7	42.5	44.2	30.7	36.2	35.3	32.7	35.6	40.2	39.4	34.7	see FAR 2 mean	~	~
FAR 2c	44.3	45.3	43.6	39.5	29.0	35.8	33.3	36.9	35.4	40.5	49.8	34.7	see FAR 2 mean	~	~
FAR 2a,b,c-mean	44.8	45.2	42.6	43.7	29.8	36.2	33.7	34.6	36.1	40.8	44.5	34.5	**38.9**	**0.84**	**32.6**
STA 1	54.2	57.3	56.3	52.2	40.2	52.6	44.2	52.7	56.7	47.1	60	45.3	**51.6**	**0.84**	**43.3**

Key:

LGM 1a,b,c Roadside Site, Drainpipe on Pear Tree House, Main Road, Little Glemham
FAR 1a,b,c Roadside Site, Turret House, The Street, Farnham
FAR 2a,b,c Roadside Site, Post Office Stores, The Street, Farnham,
STA 1 Roadside Site, 1 Long Row, Main Road, Stratford

Diffusion tube annual mean data is ratified to improve accuracy. The bias adjustment factor for the diffusion tubes must either be a combined ("national") bias adjustment factor, or one calculated from a co-location study with a continuous analyser carried out by the authority themselves. The 2011 data from these sites were adjusted using a combined (national) bias adjustment factor of 0.84

Appendix G: Traffic count information

Road	Traffic count site description	SCC site identification details	Grid reference Eastings	Grid reference Northings	7-day AADTs – all motorised vehicles. Details for 2008 (unless otherwise stated)	7-day AADTs – all motorised vehicles. Details for 2011 (unless otherwise stated)	Sites above 10,000 AADT for which traffic flow has increased between 2008 and 2011. Percentage increase
A14	TRIMLEY HEATH (HIGHWAYS AGENCY SITE)	M081	628800	237300	**34025**	**34065**	**0.1%**
A14	TRIMLEY HEATH E/B	9927	628800	237300	**16793**	**16248**	**-**
A14	TRIMLEY HEATH W/B	9928	628800	237300	**17232**	**16817**	**-**
A12	WOODBRIDGE BYPASS SOUTH OF B1079	M002	626000	249200	**30998**	**29544**	**-**
A12	BRIGHTWELL	M026	624830	244485	**36696**	**35379**	**-**
A12	SOUTH OF YOXFORD	M042	639300	268120	**11061**	**8759**	**-**
A12	SAXMUNDHAM BYPASS	M095	637850	265320	**10001**	**7909**	**-**
A12	FARNHAM	Y141	636060	260110	**16111**	**16054**	**-**
A12	BENHALL, SOUTH OF B1121	Y142	637765	261010	**13762**	**12057**	**-**
A12	BLYTHBURGH, SOUTH OF A145	Y111	645200	275700	**12659**	**12659**	**-**
A144	SOUTH OF BRAMFIELD	Y005	640250	272488	**3244**	**3244**	**-**
A154	FELIXSTOWE	M020	629577	235915	**15531**	**14383**	**-**
A1094	NORTH WEST OF ALDEBURGH	M027	644116	258307	**4098**	**4194**	**-**
A1094	SNAPE EAST OF B1069	Y115	639747	259329	**8512**	**8077**	**-**
A1120	SAXTEAD SOUTH WEST OF U2119	P005	624650	263930	**4194**	**4041**	**-**
A1120	WEST OF PEASENHALL	Y013	634920	269130	**1916**	**1916**	**-**
A1120	SAXTEAD BOTTOM	Y118	626380	265720	**2110 (2004)**	**2110**	**-**
A1152	WEST OF MELTON	M003	627350	250430	**13475**	**13181**	**-**
A1152	MELTON WILFORD BRIDGE	M053	629019	250267	**14822**	**14557**	**-**
A1152	BROMESWELL EAST OF B1084	Y120	629700	250140	**8908**	**8481**	**-**
A1152	BROMESWELL NORTH OF B1084	Y121	630644	250306	**5938 (2004)**	**5928**	**-**
A1156	WARREN HEATH – IPSWICH	P004	619758	242493	**23440**	**25052**	**6.9%**
A1214	MARTLESHAM WEST OF A12	M004	623764	246132	**20659**	**20158**	**-**
B1069	TUNSTALL EAST OF C335	M074	635950	235082	**3464**	**3464**	**-**
B1069	NORTH EAST OF TUNSTALL	Y017	636630	255590	**2681 (2006)**	**2121**	**-**
B1069	KNODISHALL COMMON	Y018	642373	259901	**4492**	**4492**	**-**
B1069	SOUTH OF TUNSTALL	Y119	635775	254810	**4149 (2004)**	**4149**	**-**
B1077	SWILLAND NORTH OF C366	M055	618355	252349	**2078**	**2444**	**-**
B1078	OTLEY EAST OF C306	M036	619366	254036	**4769**	**4636**	**-**
B1078	CLOPTON EAST OF B1079	Y022	621880	254430	**2665 (2006)**	**2556**	**-**
B1078	WEST OF TUNSTALL	Y125	634608	255578	**963 (2003)**	**898**	**-**
B1078	EAST OF TUNSTALL	Y126	636530	255050	**1259 (2004)**	**783**	**-**
B1079	GRUNDISBURGH SOUTH OF B1078	Y024	620448	254746	**2719 (2007)**	**2719**	**-**
B1079	SUTTON WALKS SOUTH OF C340	Y025	621500	253480	**2846 (2006)**	**2302**	**-**
B1079	WOODBRIDGE EAST OF A12	Y127	626110	249340	**5356**	**5356**	**-**
B1083	BROMESWELL NORTH OF C340	Y128	629690	249150	**6356**	**6892**	**-**
B1084	BUTLEY, SPRATT STREET	Y027	633109	250599	**3624 (2004)**	**1971**	**-**

Road	Traffic count site description	SCC site identification details	Grid reference Eastings	Grid reference Northings	7-day AADTs – all motorised vehicles. Details for 2005 (unless otherwise stated)	7-day AADTs – all motorised vehicles. Details for 2008 (unless otherwise stated)	Sites above 10,000 AADT for which traffic flow has increased between 2008 and 2011. Percentage increase
B1084	ORFORD SOUTH OF U3829	Y028	641790	250661	**2295**	**2295**	**-**
B1116	DENNINGTON NORTH OF B1118	Y035	628330	268630	**1645 (2006)**	**1645**	**-**
B1116	NORTH OF PARHAM	M040	629974	260965	**4916**	**5234**	**-**
B1116	FRAMLINGHAM COLLEGE ROAD	Y204	627840	264300	**-**	**2252**	**-**
B1117	HEVENINGHAM SOUTH OF C220	Y130	634633	273768	**867**	**867**	**-**
B1118	DENNINGTON WEST OF B1116	Y036	628020	268320	**593 (2007)**	**485**	**-**
B1119	WEST OF SAXMUNDHAM BYPASS	M058	637305	263626	**1870**	**1622**	**-**
B1119	EAST OF SAXMUNDHAM	Y038	641077	262535	**3783**	**2683**	**-**
B1119	SAXTEAD GREEN	Y132	626110	264430	**3838 (2006)**	**3802**	**-**
B1120	FRAMLINGHAM BADINGHAM ROAD	Y040	629300	264220	**1158 (2007)**	**1130**	**-**
B1121	STERNFIELD EAST OF C247	Y041	639415	261438	**1021**	**1021**	**-**
B1121	NORTH OF SAXMUNDHAM	Y172	638333	265570	**1578**	**1624**	**-**
B1121	SOUTH OF SAXMUNDHAM	Y173	638233	261642	**2464**	**2464**	**-**
B1121	THEBERTON	M078	643910	265689	**9080**	**4423**	**-**
B1122	EAST OF YOXFORD	Y042	640488	268444	**2689**	**2689**	**-**
B1122	LEISTON SOUTH OF B1353	Y043	644640	260780	**3319**	**2976**	**-**
B1122	SOUTH OF LEISTON	Y133	644525	261179	**-**	**5048**	**-**
B1123	LINSTEAD	Y044	635604	277675	**1464**	**1464**	**-**
B1125	SOUTH OF WESTLETON	Y045	643786	267944	**2204**	**1999**	**-**
B1353	WEST OF THORPENESS	Y049	645507	260685	**2722 (2006)**	**2722**	**-**
B1353	ALDRINGHAM	Y136	644289	261019	**-**	**2143**	**-**
B1387	BLYTHBURGH EAST OF A12	Y137	645223	274239	**2733 (2006)**	**1112**	**-**
B1438	SOUTH OF WOODBRIDGE	M059	625641	247964	**11.331**	**10479**	**-**
B1438	QUAYSIDE WOODBRIDGE	M070	627673	248955	**9482**	**9482**	**-**
B1438	SOUTH OF WICKHAM MARKET	M088	629929	254074	**4122**	**4122**	**-**
B1438	SOUTH OF UFFORD	Y138	629050	252100	**3844**	**3735**	**-**
C228	LEISTON KING GEORGES AVENUE	Y174	645261	262502	**-**	**4025**	**-**
C322	FOXHALL ROAD IPSWICH	M089	621524	244033	**10812**	**10187**	**-**
C340	SUTTON WALKS	Y139	630050	248910	**-**	**3812**	**-**
C372	MARTLESHAM FELIXSTOWE ROAD	Y182	624940	246500	**4988**	**4988**	**-**
C376	MARTLESHAM EAST OF BLACKTILES LANE	Y176	624620	246442	**2879**	**2879**	**-**
U2822	LEISTON LOVERS LANE	Y152	644800	263740	**-**	**1642**	**-**
U3215	MARTLESHAM EAGLE WAY NORTH	Y170	624444	245806	**-**	**4474**	**-**
U3215	MARTLESHAM EAGLE WAY SOUTH	Y171	624660	245218	**-**	**3833**	**-**
A14	TRIMLEY HEATH	M081	628050	237350	**34026**	**34065**	**-**
B1079	SOUTH OF OTLEY	Y024	620448	254746	**2719 (2007)**	**2719**	**-**

Appendix H: Permitted Processes

Table H-1 List of processes regulated under the Environmental Permitting Regulations 2010 within the Suffolk Coastal district.

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Linstead Garage Linstead Parva	Suffolk Coastal District Council (EPA 01)	63339 27782	Combustion Activity Section 1.1 PG 1/1 (1995)	Waste Oil Burner; less than 0.4MW
Samkin of Saxmundham Ltd Chantry Road, Saxmundham	Suffolk Coastal District Council (EPA 02)	63846 26301	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Standard Bait Co. Ltd Oak Hill, Bramfield	Suffolk Coastal District Council (EPA 03)	63955 27551	Treatment of Animal and Vegetable Matter Section 6.8	Maggot Breeding
Bridge Garage Charsfield	Suffolk Coastal District Council (EPA 05)	62642 25609	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Cemex Readymix East Anglia Sinks Pit, Kesgrave	Suffolk Coastal District Council (EPA 07)	62288 24636	Production of Cement and Lime Section 3.1	The blending of cement in bulk
Cemex Readymix East Anglia Theberton Airfield, Leiston	Suffolk Coastal District Council (EPA 08)	64134 26438	Production of Cement and Lime Section 3.1	The blending of cement in bulk
The Paddocks Hacheston	Suffolk Coastal District Council (EPA 13)	63075 25945	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
The Garage Church Road, Dallinghoo	Suffolk Coastal District Council (EPA 36)	62642 25495	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Shell Garage A12 Northbound (Woodbridge), 715 Grove Road, Woodbridge	Suffolk Coastal District Council (EPA 38)	62598 24951	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Shell Garage A12 Southbound (Woodbridge) 805 Grove Road, Woodbridge	Suffolk Coastal District Council (EPA 39)	62605 24950	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Haynings Service Station Saxmundham Road, Framlingham	Suffolk Coastal District Council (EPA 40)	62885 26349	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
WM Morrisons Plc Grange Farm Avenue, Cavendish Park Estate, Felixstowe	Suffolk Coastal District Council (EPA 42)	62863 23477	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Solar Garage High Road West, Felixstowe	Suffolk Coastal District Council (EPA 44)	63034 23520	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Sainsbury's Supermarkets Ltd Felixstowe Road, Purdis Farm	Suffolk Coastal District Council (EPA 45)	62015 24235	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Martlesham Heath Services Service Area, Anson Road, Martlesham Heath	Suffolk Coastal District Council (EPA 47)	62466 24586	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Moter Fuel Company Felixstowe Dock Service Area Anzani Avenue, Felixstowe	Suffolk Coastal District Council (EPA 49)	62798 23451	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Tesco Stores Ltd Anson Road, Martlesham Heath	Suffolk Coastal District Council (EPA 50)	62473 24592	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Stratford Service Station A12 Main Road, Stratford St Andrew	Suffolk Coastal District Council (EPA 52)	63578 26007	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
L. B. Shotter & Sons Waterloo Avenue, Leiston	Suffolk Coastal District Council (EPA 55)	64377 26260	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
John Grose Melton Road, Melton	Suffolk Coastal District Council (EPA 56)	62785 24987	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
A. G. Potter Ltd. Station Road, Framlingham	Suffolk Coastal District Council (EPA 58)	62852 26285	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Mr. M. Ladd, Vehicle Surgeon Grundisburgh Road, Hasketon	Suffolk Coastal District Council (EPA 59)	62420 25002	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Smith & Wesby (Sax) Limited Service Station, Main Road, A12, Darsham	Suffolk Coastal District Council (EPA 62)	64061 26980	Gasification, Liquefaction and Refining Activities Section 1.2	Unloading of petrol into storage tanks at a Service Station
Brett Concrete Limited Waldringfield Quarry, Martlesham Heath	Suffolk Coastal District Council (PPC 01)	62568 24485	Production of Cement and Lime Section 3.1	The blending of cement in bulk
VAS Autoservices Ltd 3/4 Quayside, Woodbridge	Suffolk Coastal District Council (PPC 02)	62759 24892	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Truckeast Limited 6 Hodgkinson Road, Felixstowe	Suffolk Coastal District Council (PPC 04)	62810 23446	Combustion Activity Section 1.1	Waste Oil Burner; less than 0.4MW
Nationwide Crash Repair Centres Ltd. 29 Gloster Road, Martlesham Heath	Suffolk Coastal District Council (PPC 05)	62481 24562	Coating Activity Section 6.4	Respraying of Road Vehicles
Eurovia Roadstone Foxhall Four Quarry, Foxhall Road Brightwell	Suffolk Coastal District Council (PPC 06)	62446 24375	Other Mineral Activities Section 3.5 PG 3/15a (2004)	Coating of road stone with tar or bitumen
L F Geater & Sons Ltd West End Nurseries, Westward Ho, Leiston	Suffolk Coastal District Council (PPC 07)	64380 26321	Combustion Activity SED Directive PG 1.12 (2004)	Straw Burning between 0.4 and 3 MW
Hazlewood Hand Laundry Aldeburgh Road, Aldringham, Leiston	Suffolk Coastal District Council (PPC 08)	64471 26033	Solvent Activity SED Directive PG 6/46 (2004)	Dry Cleaning
Johnsons The Cleaners Ltd 67 Hamilton Road, Felixstowe	Suffolk Coastal District Council (PPC 09)	63032 23467	Solvent Activity SED Directive PG 6/46 (2004)	Dry Cleaning

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
West End Dry Cleaners Unit 12, Undercliff Road West, Felixstowe	Suffolk Coastal District Council (PPC 11)	62969 23411	Solvent Activity SED Directive PG 6/46 (2004)	Dry Cleaning
Kesgrave Dry Cleaners Unit 3 Tesco Store, Ropes Drive, Kesgrave, Ipswich	Suffolk Coastal District Council (PPC 12)	62196 24538	Solvent Activity SED Directive PG 6/46 (2004)	Dry Cleaning
Castle Cleaners 10A Church Street, Framlingham	Suffolk Coastal District Council (PPC 13)	62860 26353	Solvent Activity SED Directive PG 6/46 (2004)	Dry Cleaning
Clappits Plant Ltd Clappits Pit, Woodbridge Road, Newbourne	Suffolk Coastal District Council (PPC 14)	62741 24381	Other Mineral Activities PG 3/16 (1996)	Crushing, grinding or size reduction of bricks, tiles or concrete (mobile)
V W Anticks 2-4 The Forge, Bredfield	Suffolk Coastal District Council (PPC 15)	62661 25218	Combustion Activity Section 1.1 PG 1/1 (1995)	Waste Oil Burner; less than 0.4MW
East Suffolk Crematorium Ltd., Seven Hills Crematorium, Nacton	Suffolk Coastal District Council (EPR 01)	62300 24130	Incineration Activity Section 5.1	Cremation of human remains
British Energy Generation Ltd Sizewell B Power Station, Leiston	Environment Agency (EPA 22)	64736 26397	Disposal of non-hazardous waste by Incineration Section 5.1	Part A1activity (Incinerator on site)
British Energy Generation Ltd Sizewell B Power Station, Leiston	Environment Agency (EPA 30)	64736 26397	Combustion Activity Section 1.1	Part A1activity (Auxiliary boilers on site)
British Energy Generation Ltd Sizewell B Power Station, Leiston	Environment Agency (EPA 30)	64736 26397	Disposal of non-hazardous waste by Incineration Section 5.1	Part A1activity (Essential Supplies Diesel Generators on site)

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Viridor Waste Management Foxhall Landfill Site, Foxhall Road, Brightwell	Environment Agency (IPPC 03)	62399 24390	Disposal of Waste by Landfill Section 5.2	Part A1 activity
Brett Aggregates Ltd Waldringfield Quarry, Martlesham Heath	Environment Agency (IPPC 04)	62619 24475	Disposal of Waste by Landfill Section 5.2	Part A1 activity
Novera Energy Foxhall Generation Plant, Foxhall Landfill Site, Foxhall Road, Brightwell	Environment Agency (IPPC 05)	62380 24400	Combustion Activity Section 1.1 A (1) (b) (iii)	Part A1 activity
Sewell Hewitt Farms Ltd Hill Farm, Chillesford	Environment Agency (IPPC 06)	63951 25230	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Wenhaston Farm The Broiler Site, Bartholomews Lane,	Environment Agency (IPPC 07)	64146 27504	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Countess Wells Breeding Limited Pig Breeding Unit, New Road, Framlingham	Environment Agency (IPPC 08)	66286 22649	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Crown Chicken Ltd Heveningham Poultry Site, Irongate Farm, Heveningham	Environment Agency (IPPC 09)	63333 27163	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Red House House Farm Red House Road Badingham	Environment Agency (IPPC 10)	63194 26923	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Great Pinners Farm Clopton Road, Tuddenham St Martin	Environment Agency (IPPC 11)	66196 22499	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Vion Agriculture Ltd. Otley Poultry Farm, Hall Lane, Otley	Environment Agency (IPPC 12)	62090 25650	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Vion Agriculture Ltd. Framlingham Poultry Unit, Lampard Brrok, Framlingham	Environment Agency (IPPC 13)	62740 26200	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Vion Agriculture Limited Earl Soham Poultry Unit, Poplar Cottage, Bedfield Road, Earl	Environment Agency (IPPC 14)	62438 26470	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Vion Agriculture Ltd. High House Farm, Heveningham Long Lane, Peasenhall	Environment Agency (IPPC 15)	63450 27082	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Vion Agriculture Ltd. High House Farm, Badingham	Environment Agency (IPPC 16)	63220 26870	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
P.R. & R.H. Leggett Ltd Walnut Tree Farm, Ashbocking	Environment Agency (IPPC 17)	61859 25449	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Green Label farms Ltd. Loomswood Farms, Debach	Environment Agency (IPPC 18)	62437 25334	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Crown Chicken Ltd Darsham Poultry Farm, The Street,	Environment Agency (IPPC 20)	64103 27198	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Hook 2 Sisters Limited Driftway Farm, Cratfield Road, Linstead Magna	Environment Agency (IPPC 21)	63070 27725	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Woodlark Farming Ltd Chediston Hall Pig Unit, Chediston Hall, Chediston	Environment Agency (IPPC 22)	63697 27759	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
R.H. & R. Paul Broxtead Estate, Sutton	Environment Agency (IPPC 23)	63123 24580	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Vion Agriculture Ltd. Peasenhall Poultry Farm, Peasenhall	Environment Agency (IPPC 24)	63570 26860	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Hillfairs Poultry Farm Thorington Quarry, Thorington	Environment Agency (IPPC 25)	64215 27283	Intensive Farming Activity Section 6.9 A(1) (a) (i)	Part A1 activity
Waste Recycling Limited Foxhall Civic Amenity Site Foxhall Road, Brightwell	Environment Agency (IPPC 26)	62399 24390	Disposal of Waste Section 5.2	Part A1 Activity
Waste Recycling Limited Household Waste Site Foxhall Road, Brightwell	Environment Agency (IPPC 27)	62399 24390	Disposal of Waste Section 5.2	Part A1 Activity
Waste Recycling Limited Felixstowe Civic Amenity Site Carr Road, Felixstowe	Environment Agency (IPPC 28)	62898 23295	Disposal of Waste Section 5.2	Part A1 Activity
Waste Recycling Limited Leiston Civic Amenity Site Lovers Lane, Leiston	Environment Agency (IPPC 29)	64554 26341	Disposal of Waste Section 5.2	Part A1 Activity
Bio-Power UK Ltd Unit F Building 89 Bentwaters Parks, Rendlesham	Environment Agency (IPPC 30)	63472 25351	Combustion Activity Section 1.1 A (1) (b) (iii)	Part A1 Activity
Foxhall Fridge Storage Harrow Lane Farm (Leiston) Ltd., Breakers Yard Moat Road, Theberton	Environment Agency (IPPC 31)	64284 26504	Disposal of Waste Section 5.2	Part A1 Activity
Skipaway Leiston Transfer Station Master Lord Industrial Estate, Station Road, Leiston	Environment Agency (IPPC 32)	64416 26273	Disposal of Waste Section 5.2	Part A1 Activity

Name and address of authorised process	Authority issuing authorisation (Public Register file reference – where applicable)	Grid reference for process	Installation Activity Section number and Process Guidance (PG) note under which process is authorised	Process description
Shotley Holdings (Leiston) (trading as Collins skips) Masterlord Industrial Estate, Station Road, Leiston	Environment Agency (IPPC)	64416 26273	Disposal of Waste Section 5.2	Part A1 Activity

Appendix I: Air Quality Assessment: Snape Maltings, Suffolk

Air Quality Assessment:
Snape Maltings, Suffolk

May 2012

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1254/1/F1	2 May 2012	Final Report	Prof. Duncan Laxen

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Contents

1 Introduction

1.1 This report describes the potential air quality impacts associated with the operation of two biomass boilers (1 x 550kW and 1 x 60kW) at Snape Maltings in Suffolk. The assessment has been carried out by Air Quality Consultants Ltd on behalf of Suffolk Coastal District Council.

1.2 Suffolk Coastal District Council has commissioned this air quality assessment, having raised concerns regarding potential air quality impacts of emissions from the boilers affecting new residential properties at the Snape Maltings site.

1.3 This report examines the air quality at the Snape Maltings site, the process contribution of the boilers to local air pollutant concentrations, and the potential impacts these process contributions may be having on residents at the site.

1.4 This report has been prepared taking into account all relevant local and national guidance and regulations, and follows a methodology agreed with Suffolk Coastal District Council.

2 Policy Context and Assessment Criteria

Air Quality Strategy

2.1 The Air Quality Strategy published by the Department for Environment, Food, and Rural Affairs (Defra) provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment (Defra 2007). It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Assessment Criteria

Health Criteria

2.2 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality Regulations, 2000, Statutory Instrument 928 (2000) and the Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002).

2.3 The objectives for nitrogen dioxide and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance (Defra 2009). The annual mean objectives for nitrogen dioxide and PM_{10} are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for nitrogen dioxide applies wherever members of the

public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.

2.4 The European Union has also set limit values for nitrogen dioxide and PM_{10}. Achievement of these values is a national obligation rather than a local one (Directive 2008/50/EC of the European Parliament and of the Council, 2008). The limit values for nitrogen dioxide are the same levels as the UK objectives, but applied from 2010 (The Air Quality Standards Regulations 2010 (No. 1001), 2010). The limit values for PM_{10} are also the same level as the UK statutory objectives, but applied from 2005.

2.5 The relevant air quality criteria for this assessment are provided in Table 1.

Table 1: Air Quality Criteria for Nitrogen Dioxide and PM_{10}

Pollutant	Time Period	Objective
Nitrogen Dioxide	1-hour mean	200 μg/m^3 not to be exceeded more than 18 times a year [a]
	Annual mean	40 μg/m^3
Fine Particles (PM_{10}) [b]	24-hour mean	50 μg/m^3 not to be exceeded more than 35 times a year [c]
	Annual mean	40 μg/m^3

[a] This approximates to the 99.8th percentile of the hourly mean concentrations

[b] Measured by the gravimetric method

[c] This approximates to the 90th percentile of the daily mean concentrations

2.6 For a year of complete data, the 99.8th percentile of 1-hour mean concentrations corresponds with the 19th highest hour - which in turn corresponds with the 1-hour objective for nitrogen dioxide (which allows 18 exceedences of 200 μg/m^3 as a 1-hour mean). Similarly, the 90th percentile of 24-hour mean concentrations corresponds with the 36th highest daily mean - which in turn corresponds with the 24-hour objective for PM_{10} (which allows no more than 35 exceedences of 50 μg/m^3 as a daily mean concentration).

Environment Agency Assessment Criteria

2.7 The Environment Agency (EA) has considered potential impacts from industrial and boiler emissions in its H1 guidance (Environment Agency, 2011). This explains that no matter what the baseline environmental conditions are, a process can be considered as insignificant if:

- the long-term (annual mean) process contribution is <1% of the long-term environmental standard; and
- the short-term (24-hour mean or shorter) process contribution is <10% of the short-term environmental standard.

2.8 It should be recognised that these criteria determine when an impact can be screened out as insignificant. They do not imply that impacts will necessarily be significant above these levels, merely that above these levels there is a potential for significant impacts that should be assessed using a detailed assessment methodology such as detailed dispersion modelling (as has been carried out for this project in any event).

2.9 In addition, EA H1 guidance explains that:

"*As a guide, detailed dispersion modelling of long term emissions maybe useful where:*

- *local receptors maybe sensitive to long term emissions;*
- *released substances fall under an Air Quality Management Plan;*
- *the sum of the background concentration and process contribution exceed 70% of the appropriate long term standard";*

and that: "As a guide, detailed dispersion modelling of short term emissions maybe useful where:

- *local receptors maybe sensitive to short term emissions;*
- *the short term process contribution is more than 20% of the relevant short term environmental standard minus twice the long term background concentration."*

2.10 The approach taken in this assessment has been to use detailed dispersion modelling in the first instance, but to apply the EA screening criteria to the model outputs. If any impacts are shown to be below these screening criteria, the impacts are judged to be insignificant regardless of the ambient background levels. If this initial screening shows the potential for significant impacts, then an assessment of the predicted total concentrations is carried out to determine the overall significance.

3 Assessment Methodology

Modelling Methodology

3.1 The impacts of emissions from the 550kW and 60kW biomass boilers at Snape Maltings have been modelled using the ADMS-4 dispersion model. ADMS-4 is a new generation model that incorporates a state-of-the art understanding of the dispersion processes within the atmospheric boundary layer. Entrainment of the plume into the wake of buildings has been simulated within the model.

3.2 ADMS-4 was run to predict the contribution of the Snape Maltings boiler emissions to annual mean concentrations of nitrogen oxides and PM_{10}, as well as to the 99.8th percentile of 1-hour mean nitrogen oxides concentrations, and the 90th percentile of 24-hour mean PM_{10} concentrations. For short-term impacts, a constant emission at the rate given in Table 2 was assumed. For annual mean impacts, the resultant concentration was adjusted to take account of the time each year that the plant is running (Table 2). The approach recommended by the Environment Agency (2010) was then used to predict annual mean nitrogen dioxide concentrations and 99.8th percentiles of 1-hour mean nitrogen dioxide concentrations. This assumes that:

- Annual mean nitrogen dioxide concentrations = Annual mean nitrogen oxides x 0.7; and
- 99.8th percentiles of 1-hour mean nitrogen dioxide concentrations = 99.8th percentiles of 1-hour mean nitrogen oxides x 0.35.

3.3 In order to predict the 99.8th percentile of 1-hour mean nitrogen dioxide concentrations, the worst-case approach set out in LAQM TG(09) (Defra, 2009) has been followed, which is summarised as follows: The 99.8th percentile of total hourly nitrogen dioxide concentrations is equal to the minimum of either G or H, where H is the maximum of either H1 or H2, and where:

G = 99.8th percentile hourly background total oxidant + 0.05 x 99.8th percentile process contribution NOx concentration.

H1 = 99.8th percentile process contribution NOx + 2 x 'background' annual mean nitrogen dioxide concentration

H2 = 99.8th percentile hourly background nitrogen dioxide + 2 x annual mean process contribution NOx concentration

3.4 In order to predict the 90th percentile of 24-hour mean PM_{10} concentrations to determine compliance with the 24-hour objective, the worst-case approach set out by Defra (2009) has been followed. This states that the 90th percentile total 24-hour mean PM_{10} concentration is equal to the maximum of either A or B where:

A = 90th percentile 24-hour mean 'background' PM_{10} + annual mean process PM_{10}

B = 90th percentile 24-hour mean process contribution + annual mean 'background' contribution

3.5 The 99.8th percentile of hourly background nitrogen dioxide concentrations, 99.8th percentile of hourly background total oxidant concentrations, and 90th percentile of 24-hour mean background PM_{10} concentrations were obtained from nearby automatic air quality monitoring stations operated as part of Defra's Automatic Urban and Rural Network (AURN), as discussed in paragraph 3.13.

Model Inputs

3.6 Model input data have been provided by Suffolk Coastal District Council. These include emission rates of NOx and PM_{10}, exhaust temperature and mass flow rate for the 550kW boiler, and flue stack parameters including height and diameter for both the 550kW and 60kW boilers. Emission rates, exhaust temperature and mass flow rate for the smaller 60kW boiler were not available. These parameters have therefore been estimated, based on data for similar sized biomass boilers held internally by AQC.

3.7 The model input parameters used in the assessment are presented in Table 2.

Table 2: Model Input Parameters for the Biomass Boilers at Snape Maltings

Parameter	60kW Biomass Boiler	550kW Biomass Boiler
Size of Plant	60 kW	550 kW
Stack Height	5.58 m	4.87 m
Stack Diameter	0.2 m	0.33 m
Exit Temperature	100 °C	128 °C
Mass Flow	14.3 m/s	11.4 m/s
NOx Emission Rate	0.0011 g/s	0.0078 g/s
PM_{10} Emission Rate	0.0034 g/s	0.0049 g/s
Operation	1428 hrs/yr	1008 hrs/yr

Buildings

3.8 The geometry of all major buildings at the Snape Maltings site has been included in the ADMS-4 model. This allows the model to take account of the entrainment of the plume into the wake of the buildings.

3.9 The buildings included in the ADMS-4 model are presented in Figure 1.

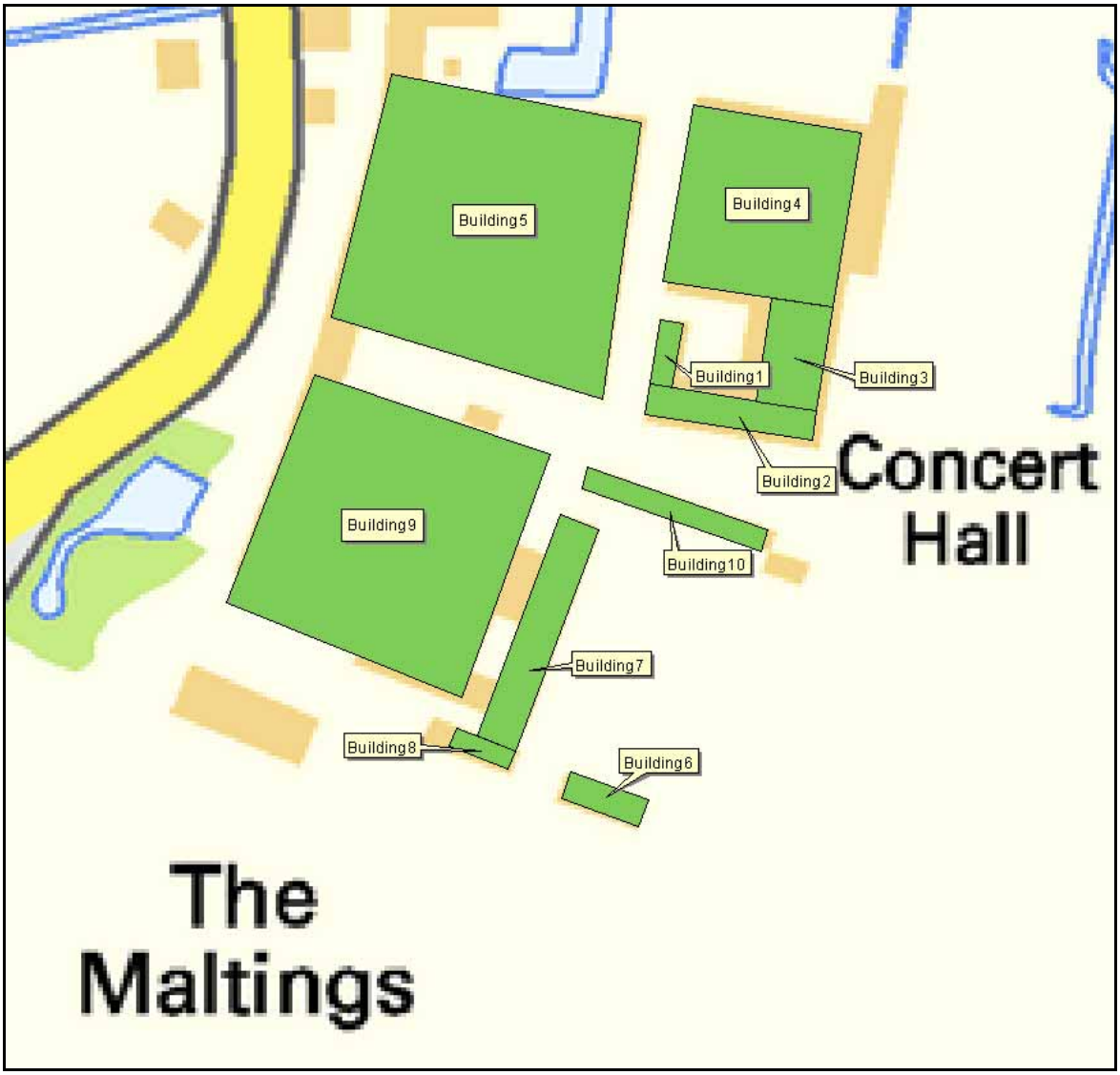

Figure 1: Modelled Buildings

Receptor Locations

3.10 Concentrations of nitrogen dioxide and PM_{10} have been predicted at a number of worst-case locations around the Snape Maltings site. Receptors have been selected to represent these worst-case locations. Receptors were modelled at two heights, 1.5 m and 4.5 m to represent ground and first-floor levels.

3.11 The receptors considered are shown in Figure 2, along with the locations of the biomass boiler flues.

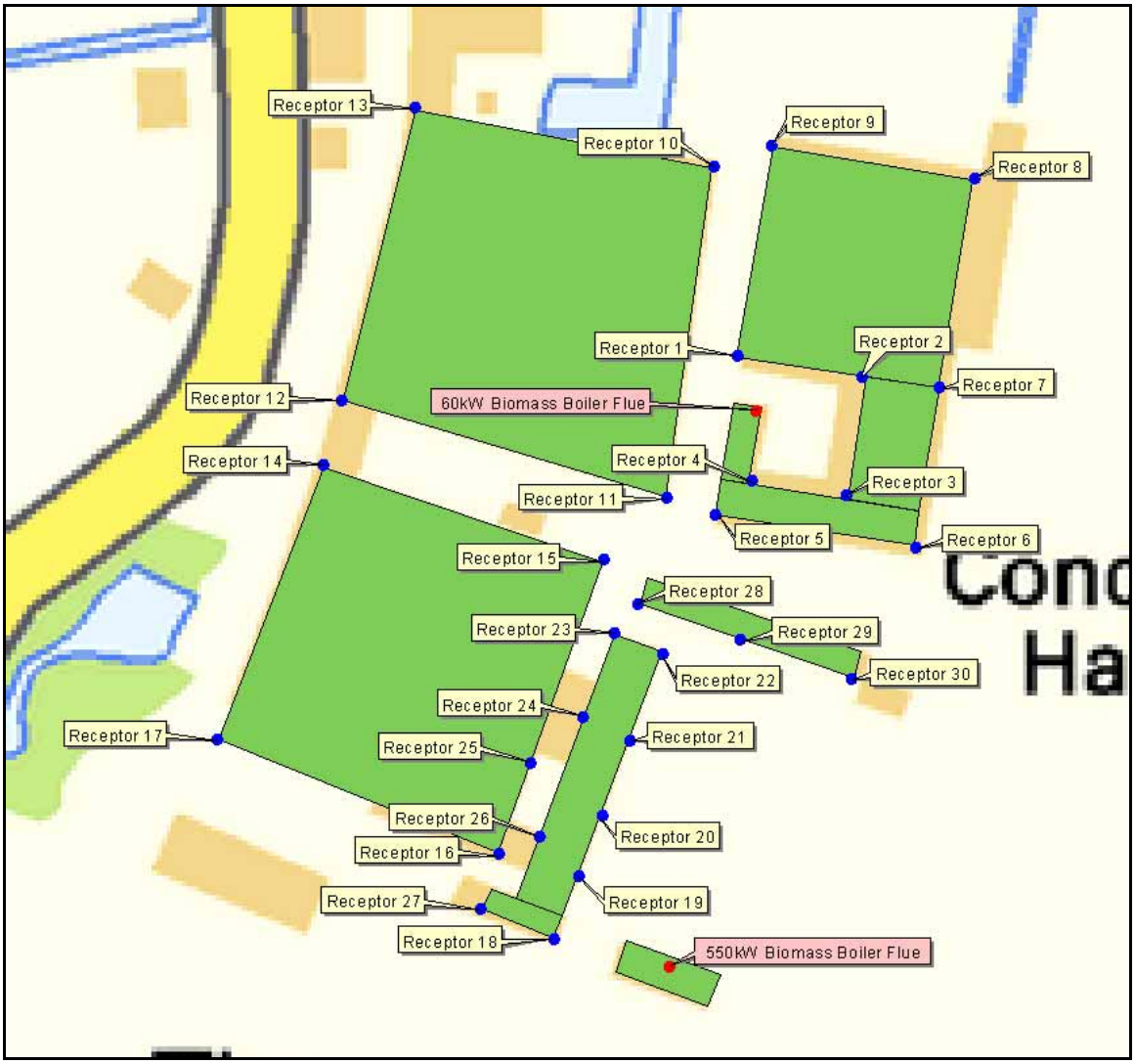

Figure 2: Receptor and Biomass Boiler Flue Locations

Background Concentrations

3.12 The background concentrations at the Snape Maltings site have been obtained for nearby automatic air quality monitoring stations operated as part of Defra's Automatic Urban and Rural Network (AURN). Background concentrations of oxides of nitrogen and nitrogen dioxide have been obtained from the AURN station located at St Osyth. Background concentrations of PM_{10} have been obtained from the AURN station located at Norwich Lakenfields.

3.13 The annual mean concentrations of NOx, nitrogen dioxide and PM_{10} and the 99.8th percentile of nitrogen dioxide and total oxidant (NO_2 + O_3) concentrations have been calculated from hourly-mean readings recorded by the AURN monitoring stations. The 90th percentile of PM_{10} concentrations has been calculated from daily mean PM_{10} values. The percentile concentrations are used for the calculation of short-term impacts, as discussed in paragraphs 3.3 and 3.4.

3.14 In addition, local background pollutant concentrations at the Snape Maltings site have been obtained from national pollution maps published by Defra (2012). These cover the whole country on a 1x1 km grid and are published for each year from 2008 until 2020. The maps include the influence of emissions from a range of different sources; including domestic, industrial, road, rail, airport, point, rural and other sources. The background pollutant concentrations obtained from the national maps were not used in the assessment, but are used for comparison against the AURN measured background concentrations, which have been used in the assessment.

3.15 The background pollutant concentrations used in the assessment are displayed in Table 3.

Table 3: Background Pollutant Concentrations

Source	NOx	NO_2		Total Oxidant ($NO_2 + O_3$)	PM_{10}	
	Annual Mean	Annual Mean	99.8th %ile	99.8th %ile	Annual Mean	90th %ile
St Osyth (AURN) OSGR: 610428, 213216	23.5	15.2	71.8	145.5	-	-
Norwich Lakenfields (AURN) OSGR: 623634, 306948	-	-	-	-	21.9	39.0
National Background Maps OSGR: 639500, 257500	12.3	8.8	-	-	16.1	-
Objective	-	**40**	**200**	**-**	**40**	**50**

3.16 Comparison of the measured background concentrations at St Osyths and Norwich Lakenfields against mapped background concentrations for the Snape Maltings site obtained from Defra's air quality website (Defra 2012), shows that the AURN measured concentrations are generally higher than the mapped background concentrations. Using the measured background concentrations in this assessment therefore represents a precautionary approach.

4 Impact Assessment

4.1 Modelled concentrations of nitrogen dioxide and PM_{10} at Snape Maltings are presented in Tables A2.1 and A2.2 in Appendix 2.

Process Contributions

4.2 The model results shown in Table A2.1 (Appendix 2) are the combined predicted process contributions of nitrogen dioxide and PM_{10} from the 550kW and 60kW biomass boilers, at each of the receptor locations shown in Figure 2.

4.3 In order to identify whether or not these process contributions may be discounted as insignificant, they have been compared to the EA assessment criteria described in paragraph 2.7 of this report. Exceedences of the EA criteria do not mean that the emissions are significant, but mean that background pollutant concentrations must also be considered before a conclusion on their significance can be made.

Assessment against Environment Agency Criteria

4.4 The modelled process contributions of the biomass boilers presented in Table A2.1 suggest that nitrogen dioxide and PM_{10} emissions from the biomass boilers at Snape Maltings result in process contributions above the EA screening criteria at a number of receptor locations. Long-term and short-term concentrations of both nitrogen dioxide and PM_{10} exceed the EA screening criteria at a number of receptor locations. It is therefore necessary to assess the impacts of these pollutant concentrations, taking into account background pollutant concentrations.

Overall Air Quality

4.5 The model results shown in Table A2.2 (Appendix 2) are the total predicted nitrogen dioxide and PM_{10} concentrations, at each of the receptor locations shown in Figure 2, including biomass boiler emissions, and background pollutant concentrations.

4.6 The concentrations displayed in Table A2.2 can be compared to the air quality objectives shown in Table 1.

Assessment against Air Quality Objectives

4.7 The final predicted nitrogen dioxide and PM_{10} concentrations presented in Table A2.2 are all well below the air quality objectives outlined in Table 1.

4.8 The biomass boilers operated at the Snape Maltings site are not judged to create any significant air quality impacts. Long-term and short-term predicted nitrogen dioxide and PM_{10} concentrations

demonstrate that air quality at the site is acceptable for both residents and visitors to Snape Maltings.

5 Summary and Conclusions

5.1 The impacts of emissions from the 550kW and 60kW biomass boilers on residents of and visitors to Snape Maltings in Suffolk have been assessed. Concentrations of nitrogen dioxide and PM_{10} due to boiler emissions have been predicted using the ADMS-4 detailed dispersion model.

5.2 The biomass boiler process contributions of nitrogen dioxide and PM_{10} at 30 receptor locations at the Snape Maltings site have been assessed against Environment Agency screening criteria for short-term and long-term impacts. Results suggest that the screening criteria for short-term and long-term nitrogen dioxide and PM_{10} concentrations are exceeded at a number of receptor locations, and therefore the boiler emissions cannot automatically be considered to have an insignificant impact. In order to appropriately assess the impacts of the boiler emissions, background pollutant concentrations must also be included.

5.3 Final predicted concentrations of nitrogen dioxide and PM_{10} at receptor locations on the Snape Maltings site are all well below the air quality objectives. The combined contributions of the biomass boilers and background pollutant concentrations will not lead to any exceedences of the air quality objectives at the site.

5.4 Overall, the biomass boilers operated at the Snape Maltings site are not judged to create any significant air quality impacts. Long-term and short-term predicted nitrogen dioxide and PM_{10} concentrations demonstrate that air quality at the site is acceptable for both residents and visitors to Snape Maltings.

6 References

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7 Glossary

Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal.
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides.
EA	Environment Agency
Exceedence	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations.
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
ADMS-4	Atmospheric Dispersion Modelling System
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometers in aerodynamic diameter.
NO_2	Nitrogen dioxide.
NO	Nitric oxide.
NOx	Nitrogen oxides (taken to be NO_2 + NO).
O_3	Ozone
OSGR	Ordinance Survey Grid Reference
$\mu g/m^3$	Microgrammes per cubic metre.

A1 Appendix 1 – Professional Experience

Prof. Duncan Laxen, BSc (Hons) MSc PhD MIEnvSc MIAQM

Prof Laxen is the Managing Director of Air Quality Consultants, a company which he founded in 1993. He has over forty years experience in environmental sciences and is a member of Defra's Air Quality Expert Group and the Department of Health's Committee on the Medical Effects of Air Pollution. He has been involved in major studies of air quality, including nitrogen dioxide, lead, dust, acid rain, PM_{10}, $PM_{2.5}$ and ozone and was responsible for setting up UK's urban air quality monitoring network. Prof Laxen has been responsible for appraisals of all local authorities' air quality Review & Assessment reports. He has carried out air quality assessments for power stations; road schemes; ports; airports; railways; mineral and landfill sites; and residential/commercial developments. He has also been involved in numerous investigations into industrial emissions; ambient air quality; indoor air quality; nuisance dust and transport emissions. Prof Laxen has prepared specialist reviews on air quality topics and contributed to the development of air quality management in the UK. He has been an expert witness at numerous Public Inquiries and published over 70 scientific papers and given numerous presentations at conferences.

Laurence Caird, MEarthSci, CSci, MIEnvSc, MIAQM

Mr Caird is a Principal Consultant with AQC, with over six years experience in the field of air quality including the completion of air quality assessments for local authorities, new commercial and residential developments, road schemes and industrial processes in the UK. He has experience in ambient air quality monitoring for numerous pollutants using a wide range of techniques and is also competent in the monitoring and assessment of nuisance odours and construction dust. Mr Caird has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers and process operators.

Full CVs are available at www.aqconsultants.co.uk

A2 Appendix 2 – Model Results

Process Contributions

A2.1 The predicted combined process contributions of nitrogen dioxide and PM_{10} from the 550kW and 60kW biomass boilers at the Snape Maltings site are presented in Table A2.1. Process contributions at each of the 30 receptor locations displayed in Figure 2 are shown. Results are presented for both 1.5 m (ground floor) and 4.5 m (first floor) heights.

Table A2.1: Biomass Boiler Process Contributions of Nitrogen Dioxide and PM_{10}

Receptor ID	Nitrogen Dioxide				PM_{10}			
	Annual Mean ($\mu g/m^3$)		99.8th Percentile [a] ($\mu g/m^3$)		Annual Mean ($\mu g/m^3$)		90th Percentile [b] ($\mu g/m^3$)	
	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m
Receptor 1	0.2	0.2	5.6	5.6	0.1	0.2	3.5	3.6
Receptor 2	0.2	0.2	5.8	5.8	0.1	0.2	3.2	3.2
Receptor 3	0.3	0.3	7.1	7.3	0.2	0.2	4.2	4.1
Receptor 4	0.3	0.3	7.8	7.5	0.2	0.2	**5.6**	**5.5**
Receptor 5	0.2	0.2	7.8	7.9	0.2	0.2	4.5	4.5
Receptor 6	0.3	0.3	7.3	7.5	0.2	0.2	4.7	4.6
Receptor 7	0.2	0.2	5.3	5.2	0.1	0.1	3.1	3.1
Receptor 8	0.1	0.1	3.8	3.8	0.1	0.1	2.5	2.4
Receptor 9	0.1	0.1	3.9	3.8	0.1	0.1	2.4	2.4
Receptor 10	0.1	0.1	3.8	3.8	0.1	0.1	2.5	2.5
Receptor 11	0.3	0.2	**22.7**	10.6	0.2	0.2	4.8	4.4
Receptor 12	0.1	0.1	6.2	6.2	0.1	0.1	2.8	2.7
Receptor 13	0.1	0.1	3.2	3.2	0.1	0.1	1.7	1.6
Receptor 14	0.1	0.1	5.8	5.8	0.1	0.1	2.6	2.6
Receptor 15	0.3	0.3	**23.4**	7.2	0.2	0.2	**5.1**	4.8
Receptor 16	**0.5**	**0.5**	16.9	19.3	0.3	0.3	**9.8**	**10.9**
Receptor 17	0.1	0.1	6.5	6.6	0.1	0.1	3.2	3.1

Receptor ID	Nitrogen Dioxide				PM_{10}			
	Annual Mean ($\mu g/m^3$)		99.8th Percentile [a] ($\mu g/m^3$)		Annual Mean ($\mu g/m^3$)		90th Percentile [b] ($\mu g/m^3$)	
	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m
Receptor 18	**0.4**	**0.7**	**21.4**	**34.1**	0.3	**0.5**	**8.3**	**16.0**
Receptor 19	**0.7**	**1.0**	**23.8**	**35.3**	**0.4**	**0.7**	**13.3**	**21.1**
Receptor 20	**0.6**	**0.8**	**22.4**	**27.9**	**0.4**	**0.5**	**12.3**	**15.3**
Receptor 21	**0.6**	**0.5**	**23.4**	15.6	**0.4**	0.3	**9.1**	**10.1**
Receptor 22	**0.5**	**0.4**	**22.7**	10.8	0.3	0.2	**7.2**	**7.2**
Receptor 23	**0.4**	0.3	**23.4**	8.7	0.2	0.2	**6.3**	**6.1**
Receptor 24	**0.4**	**0.4**	19.7	17.1	0.3	0.3	**7.3**	**8.4**
Receptor 25	**0.5**	**0.5**	16.3	17.8	0.3	0.3	**8.9**	**9.6**
Receptor 26	**0.6**	**0.7**	19.4	**23.2**	**0.4**	**0.4**	**11.4**	**13.0**
Receptor 27	**0.4**	**0.4**	16.8	19.6	0.2	0.3	**8.9**	**10.0**
Receptor 28	**0.4**	0.3	**22.7**	7.9	0.3	0.2	**6.1**	**5.5**
Receptor 29	**0.4**	**0.4**	16.6	11.7	0.3	0.3	**6.9**	**6.8**
Receptor 30	**0.5**	**0.5**	10.7	11.5	0.3	0.3	**8.0**	**7.8**
Criteria [c]	**0.4**		**20**		**0.4**		**5**	

[a] 99.8th percentile of hourly mean nitrogen dioxide concentrations.

[b] 90th percentile of 24-hour mean PM_{10} concentrations.

[c] Criteria below which the source contributions are considered insignficant in accordance with EA H1 guidance (Environment Agency, 2011). Contributions above these screening criteria are shown in **bold**.

Final Predicted Concentrations

A2.2 The predicted total concentrations of nitrogen dioxide and PM_{10} at the 30 receptor model locations at the Snape Maltings site (see Figure 2) are displayed in Table A2.2. The concentrations in Table A2.2 include the combined contributions of the 550kW and 60kW biomass boilers, plus background pollutant concentrations (as displayed in Table 3). Results are presented for both 1.5 m (ground floor) and 4.5 m (first floor) heights.

Table A2.2: Final Predicted Concentrations of Nitrogen Dioxide and PM_{10}

Receptor ID	Nitrogen Dioxide				PM_{10}			
	Annual Mean ($\mu g/m^3$)		99.8th Percentile [a] ($\mu g/m^3$)		Annual Mean ($\mu g/m^3$)		90th Percentile [b] ($\mu g/m^3$)	
	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m
Receptor 1	15.3	15.3	74.8	74.8	22.0	22.1	39.1	39.2
Receptor 2	15.3	15.3	75.0	75.0	22.0	22.1	39.1	39.2
Receptor 3	15.4	15.4	76.3	76.2	22.1	22.1	39.2	39.2
Receptor 4	15.4	15.4	76.4	76.3	22.1	22.1	39.2	39.2
Receptor 5	15.4	15.4	76.0	76.0	22.1	22.1	39.2	39.2
Receptor 6	15.5	15.4	76.9	76.8	22.1	22.1	39.2	39.2
Receptor 7	15.3	15.3	75.1	75.0	22.0	22.0	39.1	39.1
Receptor 8	15.3	15.3	73.9	73.8	22.0	22.0	39.1	39.1
Receptor 9	15.3	15.3	73.6	73.6	22.0	22.0	39.1	39.1
Receptor 10	15.3	15.3	73.7	73.6	22.0	22.0	39.1	39.1
Receptor 11	15.5	15.4	77.4	76.0	22.1	22.1	39.2	39.2
Receptor 12	15.3	15.3	74.4	74.4	22.0	22.0	39.1	39.1
Receptor 13	15.2	15.2	73.2	73.2	22.0	22.0	39.1	39.1
Receptor 14	15.3	15.3	74.1	74.1	22.0	22.0	39.1	39.1
Receptor 15	15.5	15.4	77.2	76.2	22.1	22.1	39.2	39.2
Receptor 16	15.6	15.7	79.7	80.4	22.2	22.2	39.3	39.3
Receptor 17	15.3	15.3	74.0	74.0	22.0	22.0	39.1	39.1
Receptor 18	15.6	15.9	78.7	84.6	22.2	22.4	39.3	39.5
Receptor 19	15.8	16.2	83.3	89.9	22.3	22.6	39.4	43.0
Receptor 20	15.8	15.9	82.4	85.6	22.3	22.4	39.4	39.5
Receptor 21	15.7	15.7	81.9	81.3	22.3	22.2	39.4	39.3
Receptor 22	15.6	15.5	79.7	78.5	22.2	22.1	39.3	39.2
Receptor 23	15.5	15.5	78.3	77.4	22.1	22.1	39.2	39.2
Receptor 24	15.6	15.6	79.2	79.5	22.2	22.2	39.3	39.3

Receptor ID	Nitrogen Dioxide				PM_{10}			
	Annual Mean ($\mu g/m^3$)		99.8th Percentile [a] ($\mu g/m^3$)		Annual Mean ($\mu g/m^3$)		90th Percentile [b] ($\mu g/m^3$)	
	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m	1.5 m	4.5 m
Receptor 25	15.6	15.6	79.9	80.3	22.2	22.2	39.3	39.3
Receptor 26	15.7	15.8	81.8	83.2	22.3	22.3	39.4	39.4
Receptor 27	15.5	15.6	78.3	79.2	22.1	22.2	39.2	39.3
Receptor 28	15.5	15.5	78.6	77.0	22.2	22.1	39.3	39.2
Receptor 29	15.6	15.6	79.1	78.8	22.2	22.2	39.3	39.3
Receptor 30	15.7	15.7	80.8	80.7	22.2	22.2	39.3	39.3
Objective [c]	**40**		**200**		**40**		**50**	

[a] 99.8th percentile of hourly mean nitrogen dioxide concentrations.

[b] 90.4th percentile of 24-hour mean PM_{10} concentrations.

[c] Assessment criteria as described in Table 1.

Glossary of Terms and Abbreviations

A

Air Quality Action Plan (AQAP) or Action Plan	Plan required by the Government to be drawn up for an Air Quality Management Area (AQMA) to provide information on what action will be taken to try and reduce pollutant levels to within the set objectives.
Air Quality Action Plan (AQAP) Progress Report	Once an Action Plan has been developed for an Air Quality Management Area (AQMA) the Government require that an annual report be produced to provide an update on progress.
Air Quality Management Area (AQMA)	Each local authority in the UK is required to undertake a review and assessment of air quality in their area. This involves measuring air pollution and trying to predict how it will change in the next few years. The aim of the review is to make sure that the national air quality objectives will be achieved throughout the UK by the relevant deadlines. These objectives have been put in place to protect people's health and the environment. If a local authority finds any places where the objectives are not likely to be achieved, it must declare an Air Quality Management Area there.
Air Quality Management Area (AQMA) Order	Air Quality Management Area Order – the official order which is made declaring an AQMA.
Air Quality Objectives	Policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedences, within a specified timescale. The Objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants.
Air Quality Standards	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The Standards are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups.
Air Quality Strategy	The Air Quality Strategy for England, Scotland, Wales and Northern Ireland describes the plans drawn up by the Government and the Devolved Administrations to improve and protect ambient air quality in the UK in the medium-term. The Strategy sets Objectives for the main air pollutants to protect health. Performance against these Objectives is monitored where people regularly spend time and might be exposed to air pollution.
Analytical laboratory	Laboratory used to analyse air pollution samples collected.
Annualised mean	Calculation of an annual mean concentration using a period of less than a year to produce a calculation for the whole year.

Annual mean concentration	The average concentration of a pollutant measured over one year.
Automatic analyser	Equipment used to undertake accurate and reliable detailed monitoring of an air pollutant. Equipment records air pollution levels continuously and produces real-time measurements of pollutant concentrations.
B	
Bias	The overall tendency of (diffusion tube) readings to depart from the true value, i.e to over or under read when compared to the reference method (automatic analyser)
Bias adjustment/correction factor	Diffusion tubes used to monitor air pollutants (mainly nitrogen dioxide) are affected by several sources of interference which can cause substantial under or overestimation (often referred to as "bias") compared to an automatic analyser. This is a problem where diffusion tube results are to be compared with air quality objectives. As a result, local authorities using diffusion tubes are required to quantify the "bias" of their diffusion tube measurements and apply an appropriate bias adjustment factor to the annual mean if required.
Biomass combustion	Biomass is a renewable energy source - biological material from living, or recently living organisms, such as wood, waste, (hydrogen) gas, and alcohol fuels. Biomass is commonly plant matter grown to generate electricity or produce heat, usually by direct incineration. Biomass combustion is therefore a means of converting biomass to usable energy (both heat and electricity) by burning.
C	
Co-location study	Study in which the accuracy of diffusion tubes is quantified by exposure alongside an automatic analyser, and the results used to calculate a bias adjustment factor.
D	
Data Capture	Term given to the percentage of measurements for a given period that were validly measured.
Defra	Department for the Environment, Food and Rural Affairs – government body who deal with air quality matters.
Detailed Assessment	Where an Updating and Screening Assessment identifies a risk that an air quality objective may be exceeded at a location then a Detailed Assessment of the site is required. The aim of a Detailed Assessment is to identify with reasonable certainty whether or not an exceedance will occur.
Diffusion tube	Low-cost method for indicative monitoring of ambient air pollutant concentrations, mainly used for measuring nitrogen dioxide. Collect pollutants by molecular diffusion along an inert tube to an efficient chemical absorbent. After exposure

	for a known time, the absorbent material is chemically analysed and the concentration calculated.
E	
Environment Act 1995 Part IV	The Parliamentary Act which sets out the requirements for Local Air Quality Management.
Environmental Impact Assessment	An assessment of the possible positive or negative impact that a proposed project may have on the environment, consisting of the natural, social and economic aspects. The purpose of the assessment is to ensure that decision makers consider the ensuing environmental impacts when deciding whether to proceed with a project.
Environmental Permitting Regulations 2010	Regulations under which certain types of industry are required to have a permit to operate The industrial premises must show compliance with their permit conditions. Includes discharge consenting, groundwater authorisations and radioactive substances regulation.
F	
Further Assessment	Where an Air Quality Management Area (AQMA) has been declared, a Further Assessment must be submitted to Defra within 12 months. This will supplement the information provided in the Detailed Assessment, confirm the objective exceedance, define what improvement in air quality and reduction in emissions is required to meet the objectives, and provide information on source contributions.
H	
Haven Gateway	Area incorporating the five Haven ports of Felixstowe, Harwich International, Harwich Navyard, Ipswich and Mistley.
HDV – Heavy Duty Vehicle	A motor vehicle rated at more than 3,856 kg - includes trucks/lorries, buses and coaches.
HGV – Heavy Goods Vehicle	Goods motor vehicles (i.e. trucks / lorries) capable of carrying heavy loads over 3.5 tonnes maximum permissible gross vehicle weight and requiring a special license to drive.
Hourly mean concentration (1-hour mean)	The average over a one hour period of an air pollutant concentration.
I	
IMVs	Internal Movement Vehicles, used on the Port of Felixstowe to move containers on the site.

L

Laboratory bias	There is considerable difference in the performance of diffusion tubes prepared by different laboratories, such that they may systematically over or under read when compared with an automatic analyser. The laboratory bias is the figure derived in order to correct the over/under read to the reference method – the automatic analyser results.
Local Air Quality Management (LAQM)	Each local authority in the UK is required to carry out a regular review and assessment of air quality in their area. This involves measuring air pollution and trying to predict how it will change in the next few years. The aim of the review is to make sure that national air quality objectives will be achieved throughout the UK by the relevant deadlines. These objectives have been put in place to protect people's health and the environment.
LAQM.PG(09)	Local Air Quality Management Policy Guidance February 2009. Policy guidance issued by Defra to assist local authorities when carrying out review and assessment of air quality within their district.
LAQM.TG (09)	Local Air Quality Management Technical Guidance February 2009. Technical guidance issued by Defra to assist local authorities in reviewing and assessing air quality on their district.
LDV – Light Duty Vehicle	A motor vehicle up to and including 3.5 tonnes Gross Vehicle Weight
LGV – Light Goods Vehicle	Goods vehicles, mainly vans (including car derived vans), not over 3.5 tonnes maximum permissible gross vehicle weight.

M

mg/m^3	Milligrams per cubic metre – unit for measurement of an air pollutant concentration. A measure of concentration in terms of mass per unit volume. A concentration of $1mg/m^3$ means that one cubic metre of air contains one milligram of pollutant.
$\mu g/m^3$	Micrograms per cubic metre – unit for measurement of an air pollutant concentration. A measure of concentration in terms of mass per unit volume. A concentration of $1\mu g/m^3$ means that one cubic metre of air contains one microgram of pollutant.

N

NO_2	Nitrogen Dioxide - a gas produced by the reaction of nitrogen and oxygen in combustion processes in air. Nitrogen Oxide (NO) is formed initially and this is subsequently oxidised to form NO_2.

NOx	Oxides of nitrogen – NOx is a generic term for the nitrogen oxides NO and NO_2 (nitric oxide and nitrogen dioxide). They are produced from the reaction of nitrogen and oxygen gases in the air during combustion, especially at high temperatures.
O	
OS Grid Ref – Ordanance Survey Grid Reference	The British Grid Reference System which can be used to accurately pinpoint any location in Great Britain and it's outlying islands through the use of a unique Ordnance Survey map reference – a Grid Reference.
Outline Planning Application	An outline of the plans and other information that developers send to the local authority for decision on whether or not to grant planning permission. If outline planning permission is granted the developers are required to provide more information later, in advance of each works, to make sure that they are acceptable.
P	
Percentile	A value below which that percentage of data will either fall or equal. For instance the 98th percentile of values for a year is the value below which 98% of all the data in the year will fall or equal.
Progress Report	A report intended to maintain the continuity of the Local Air Quality Management process and fill in the gaps between the 3 yearly cycle of the review and assessment process. Required in all years when an Updating and Screening Assessment is not undertaken.
PM_{10}	Particulate Matter with a diameter of less than 10 microns – air pollutant of concern
Q	
QA:QC – Quality Assurance : Quality Control	Relates to the collection of air quality monitoring data - the systematic monitoring and evaluation of the various aspects to maximize the probability that the data collected is of good quality.
R	
Relevant exposure	Review and assessment of air quality must focus on locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the specific objective, this is termed relevant exposure.
RTGs	Rubber Tyred Gantry Cranes – specialised equipment for yard handling of containers.

Review and Assessment process	Procedure put in place by Defra to ensure that all local authorities review and assess air quality within their district on a regular basis and take action for any location where the air quality objectives are exceeded.
Running mean	This is a mean - or series of means - calculated for overlapping time periods, and is used in the calculation of several of the National Air Quality Standards. For example, an 8-hour running mean is calculated every hour, and averages the values for eight hours. There are, therefore, 24 possible 8-hour running means in a day (calculated from hourly data)
S	
SCC	Suffolk County Council
SCDC	Suffolk Coastal District Council
Section 106 planning agreements	Section 106 of the *Town and Country Planning Act 1990* (as amended) allows local planning authorities to negotiate arrangements whereby the developer makes some commitment if he obtains planning permission.
SO_2	Sulphur dioxide – air pollutant of concern.
Source apportionment	This exercise is undertaken if a Further Assessment is required for a site. All potential emission sources for the pollutant and site of concern are identified and investigations undertaken to determine how much of the problem is attributed to each emission source.
U	
USA – Updating and Screening Assessment	The first step of the review and assessment process which must be undertaken by all local authorities every 3 years. Based on a checklist to identify those matters which have changed since the previous round of review and assessment was completed.
W	
Worst case exposure	Location where air pollution from a specific source will be the highest.
15-minute mean	The average over a 15 minute period of an air pollutant concentration.
24-hour mean	The average over a 24 hour period of an air pollutant concentration.