2011 Air Quality Progress Report for **Ipswich Borough Council**

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

Date: January 2012

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Executive Summary

Diffusion tubes and Continuous Monitors located within the existing Air Quality Management Areas have shown exceedences of the nitrogen dioxide annual average objective level. Exceedences were also obtained at a small number of locations outside of the existing Air Quality Management Areas, all of which are under investigation as part of ongoing assessments or very close to an Air Quality Management Area boundary where they will be reviewed as part of a Further Assessment.

Particulate monitoring showed no exceedances of the PM_{10} objectives over the course of 2010. The monitor has now been decommissioned following monitoring at two locations within the town (over the past few years) and in a residential area of dust complaints, with no exceedances of the objective levels identified. The results of the 2011 monitoring will be reported in the 2012 Updating and Screening Assessment.

Ipswich Borough Council has identified the following new or previously unidentified local developments, which may impact on air quality in the Local Authority area:

Biogas plant at Anglian Water Services, Cliff Quay
Donalds garage, West End Road – waste oil burning
Biomass Combustion plant proposed for the Environment Agency, Cobham Road
Tarmac Ltd, Ipswich Works have moved to Cliff Road, Ipswich.

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

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1 Introduction

1.1 Description of Local Authority Area

Ipswich is the county town of Suffolk and is the fastest growing urban centre in the East of England. A third of a million people live within 15 miles of Ipswich town centre.

Ipswich is a centre for financial services, for major public sector employers and for maritime and related industries. It is home to one of England's newest universities, University Campus Suffolk, which has its main campus on the Waterfront. Suffolk New College, catering for further education, is based nearby and is close to the town centre and the Waterfront. A new sixth-form centre is located on the edge of Ipswich.

The main routes into and out of Ipswich are congested during typical rush hour times and travel across Ipswich is restricted to certain routes by the River Orwell. Transport and traffic management are key priorities for the town as the Waterfront and the other areas of the town are undergoing significant redevelopment. Continuing economic prosperity is dependent on people being able to move around the town for work, shopping and leisure. The car remains a significant form of travel.

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

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

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	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	Maximum daily 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

Round 1
The first round of air quality review and assessment was completed in March 2001 and consisted of three stages, each reported separately and progressively looking into more detailed analysis when required;

Stage 1 comprised of an initial study to identify which pollutants required further investigation;

Stage 2 required estimating, modelling or measuring pollutants where there was an indication that national objectives would not be achieved; and

Stage 3 involved using advanced modelling techniques and emissions inventories.

The final assessment (third stage report) concluded that the Air Quality Objectives would be met. There were, however, some areas of concern where levels of nitrogen dioxide from road traffic pollution were expected to be close to reaching the objective level and the need to keep these under review was recognised.

Round 2
In 2003, all local authorities were required to complete a second round of air quality reviews and assessments. The Government issued guidance to assist with this and to direct authorities on the methodology for completing the review. The first stage of the review was an Updating and Screening Assessment (USA). This was based on a checklist to identify those matters that had changed since the first review completed in 2001 and which required further assessment. The USA covered new monitoring data, new sources of pollution and other changes that affected air quality.

The Council's USA, completed in December 2003, concluded that further detailed assessments of nitrogen dioxide from road traffic sources and particulate matter from an industrial source were required to determine whether air quality objectives would be exceeded in 2005. In July 2005, further detailed assessments were completed in respect of the impact of road traffic on concentrations of nitrogen dioxide in St Margaret's Street, Norwich Road/Chevallier Street junction and the Star Lane gyratory system/St Helen's Street. The assessment was completed using a dispersion model, traffic and meteorological data and an ambient real time continuous monitor to produce concentration plots for 2005 and 2010.

The results of the detailed assessments for nitrogen dioxide indicated that the annual mean objective pollution level would be exceeded along most of the roads under study. In places, the exceedance of the 40µg/m^3 annual mean standard extended 50 metres from the kerb into residential areas.

Under Section 83(1) of the Environment Act 1995, local authorities have to designate areas with a predicted exceedance of the Air Quality Objectives as Air Quality

Management Areas (AQMAs). Ipswich Borough Council declared three AQMAs on the 11th of April 2006:

- *Ipswich Air Quality Management Order No 1, 2006: Norwich Road, Chevallier Street and Valley Road*

  This junction is located on one of the main routes into Ipswich town centre with four roads leading into a double mini roundabout (a map of the AQMA is shown in Figure 1).

  Generally, the area around this junction is open with some green space and buildings set back from the road. However, there is a public house (with flat above) and some residential flats that are both located adjacent to the junction. In addition, one road, Chevallier Street, leading from the roundabout has terraced properties facing directly onto a pavement.

- *Ipswich Air Quality Management Order No 2, 2006: Junction of Crown Street with Fonnereau Road and St Margaret's Street and St Margaret's Plain*

  This AQMA includes four roads all leading off each other (a map of the AQMA is shown in Figure 1). There are main traffic lights at the junction of St Margaret's Street and St Margaret's Plain and pedestrian crossing lights just beyond the junction of Crown Street and Fonnereau Road. The area along St Margaret's Street is partially canyoned.

  St Margaret's Street has historically been flanked by flats on one side, and a vacant building on the other. The vacant building has recently been demolished but historic permission has been given for this to be turned into residential dwellings. There are residential buildings on all roads within the AQMA.

- *Ipswich Air Quality Management Order No 3, 2006: Star Lane gyratory system and St Helen's Street/Grimwade Street*

  The gyratory system is a circular network of one-way roads located next to the docks (a map of the AQMA is shown in Figure 1). There are many residential dwellings (mainly high-rise flats) within these areas and some commercial and office buildings. Further development of the Gyratory system and Dockside is ongoing, although slower in recent times.

  Traffic flow through many of the areas of this AQMA can be congested.

The Department for Environment, Food and Rural Affairs (DEFRA) also requires that local authorities should submit annual air quality (Progress Reports) in between three yearly USAs. This is to provide a means of ensuring that air quality review is a continuous process and act as a timely indication of the need for measures to improve air quality, rather than delaying for three years until a full review is carried out. Ipswich Borough Council completed a Progress Report in September 2005.

Round 3

The third round of review and assessment commenced in 2006 to enable local authorities to determine whether Air Quality Objectives in their areas would be met by specific target dates by means of a USA review. Ipswich Borough Council completed its USA in January 2008. The USA concluded that four of the seven prescribed pollutants were likely to meet their Air Quality Objectives and as such a Detailed Assessment was not required. However, it was found that further screening works for Benzene, Nitrogen Dioxide (NO_2) and particulates (PM_{10}) were required, as well as a Detailed Assessment of both NO_2 and PM_{10} at the Yarmouth Road/ Bramford Road and Chevalier Street Junction.

The Detailed Assessment, recommended in the USA, was completed in draft in December 2009 and finalised August 2010, and concluded that there were likely to be exceedances of the annual mean NO_2 objective at this location. It was unlikely that the hourly objective will be exceeded. The predicted exceedances of the annual mean objective can be attributed to slow moving vehicles, congestion and queuing traffic. A new AQMA was declared in December 2010 and is shown on figure 1:

- *Ipswich Air Quality Management Order No. 4, 2010: Bramford Road/Yarmouth Road/Chevallier Street junction.*

For the pollutant PM_{10}, modelling indicated a very unlikely risk of exceeding the annual mean PM_{10} objective in the base year and the future year of 2010.

The screening works resulting from the round 3 USA have been completed as part of round 4 USA. At the advice of DEFRA, the information usually included in a progress report has also been incorporated into the round 4 document.

Round 4

The fourth and current round of review and assessment began in 2009. The USA was completed in January 2010. The USA concluded that five of the seven prescribed pollutants were likely to meet the Air Quality Objectives. However, it was found that a Detailed Assessment for NO_2 was required for the Civic Drive/St Matthews Street junction and St Helens Street, along with a Detailed Assessment of both NO_2 and PM_{10} at a Biomass Boiler on Nacton Road. The Detailed Assessment of NO_2 and PM_{10} at a Biomass Boiler on Nacton Road was completed in September 2011 and concluded that there was no need for any further assessments of this process. Further screening for NO_2 and PM_{10} at the Reg Driver Centre, Christchurch Park was also required and was reported in the 2010 Progress Report which was completed in October 2010. It was found that the emissions rates from the Reg Driver Centre were well below those requiring further investigation or screening.

Summary

The various stages of the previous review and assessments are summarised in Table 1.2.

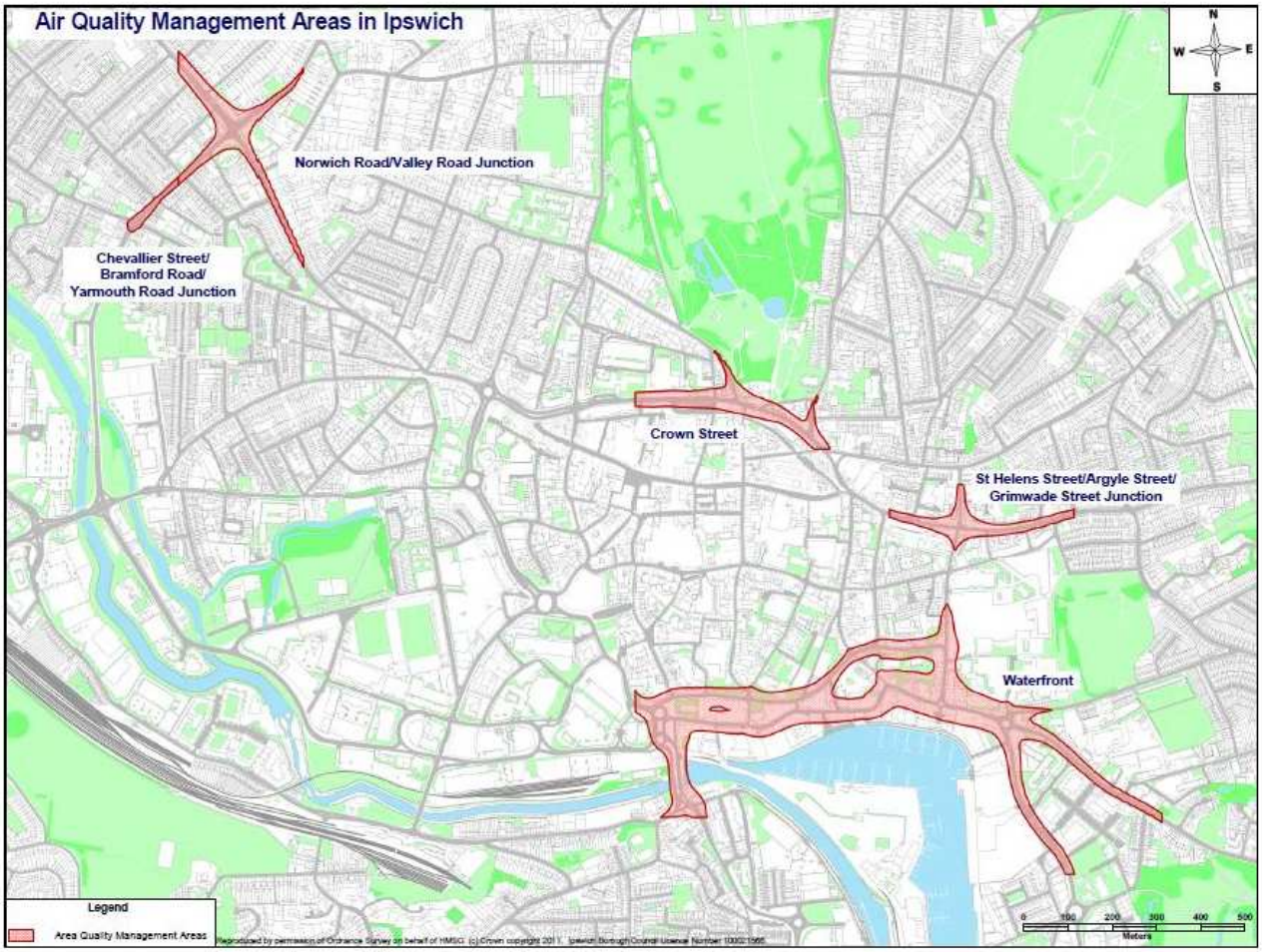
Table 1.2 Summary of previous review and assessments carried out by Ipswich Borough Council

Round	Date	Type of Assessment	Conclusion/Outcome

1	March 2001	Final Assessment	Predicted that the Air Quality Objectives would be met Areas of concern where levels of nitrogen dioxide from road traffic pollution were expected to be close to reaching the objective level were kept under review.
2	December 2003	Updating and Screening Assessment	Concluded that further detailed assessments of nitrogen dioxide from road traffic sources and particulate matter from an industrial source was required to determine whether Air Quality Objectives would be exceeded in 2005.
	July 2005	Detailed Assessment	Concluded that the annual mean objective pollution level would be exceeded along most of the roads under study.
	11th April 2006		Declaration of 3 Air Quality Management Areas.
3	January 2008	Updating and Screening Assessment	Concluded that four of the seven prescribed pollutants were likely to meet their Air Quality Objectives and as such a Detailed Assessment was not required. Recommended further screening works for Benzene, Nitrogen Dioxide (NO_2) and particulates (PM_{10}) and a Detailed Assessment of both NO_2 and PM_{10} at the Yarmouth Road/ Bramford Road and Chevalier Street Junction.
	January 2007	Progress Report	Data included in the 2009 Updating and Screening Report as requested by Defra
	December 2009	Detailed Assessment	Completed draft December 2009. Submitted December 2009. Finalised August 2010. Concluded that there are likely exceedances of the NO_2 annual mean objective at the Bramford Road/Yarmouth Road/Chevalier Street junction

4	January 2010	Updating and Screening Assessment	Concluded that a Detailed Assessment for nitrogen dioxide is required at St-Matthew's Street and St-Helen's Street. A Detailed Assessment was also required for a 2.90MW biomass combustion plant on Nacton Road for particulate matter with consideration given to nitrogen dioxide. Particulate matter and nitrogen dioxide emissions from the Reg Driver Centre, Christchurch Park, Ipswich also required further screening work.
	October 2010	Progress Report	Further investigation of emissions of particulate matter and nitrogen dioxide emissions from the Reg Driver Centre, Christchurch Park, Ipswich concluded that they are well below those requiring further investigation or screening. Particulate monitoring at one location within the borough shows no exceedances of the objective levels. Six new or previously unidentified local developments were acknowledged as requiring further investigation during the next Updating and Screening Assessment, scheduled for 2012.
	21 December 2010		Declaration of Air Quality Management Area – Bramford Road/Chevallier Street junction.
	September 2011	Detailed Assessment	NO_2 and PM_{10} at a Biomass Boiler on Nacton Road – concluded no exceedances of objective levels.

Figure 1 Map of AQMA Boundaries



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Ipswich Borough Council runs three Automatic Monitoring Stations. All three monitor Nitrogen Dioxide concentrations, and one particulates (PM10). All three monitors were located within AQMAs until November 2010 when one was relocated to a residential area outside of the AQMA. Suffolk County Council also runs a continuous monitor (monitoring Nitrogen Dioxide) that is intended to support the proposed Urban Traffic Management Control System (UTMC). Ipswich Borough Council provides the support to the Suffolk County council machine on the routine calibration visits.

Appendix A summarises frequency of calibrations, site audits and data validation and ratification procedures.

The locations of the monitors are shown below in figure 2.1.

Table 2.1 summarises the automatic monitor details.

Figure 2.1 Map of Automatic Monitoring Sites 2010

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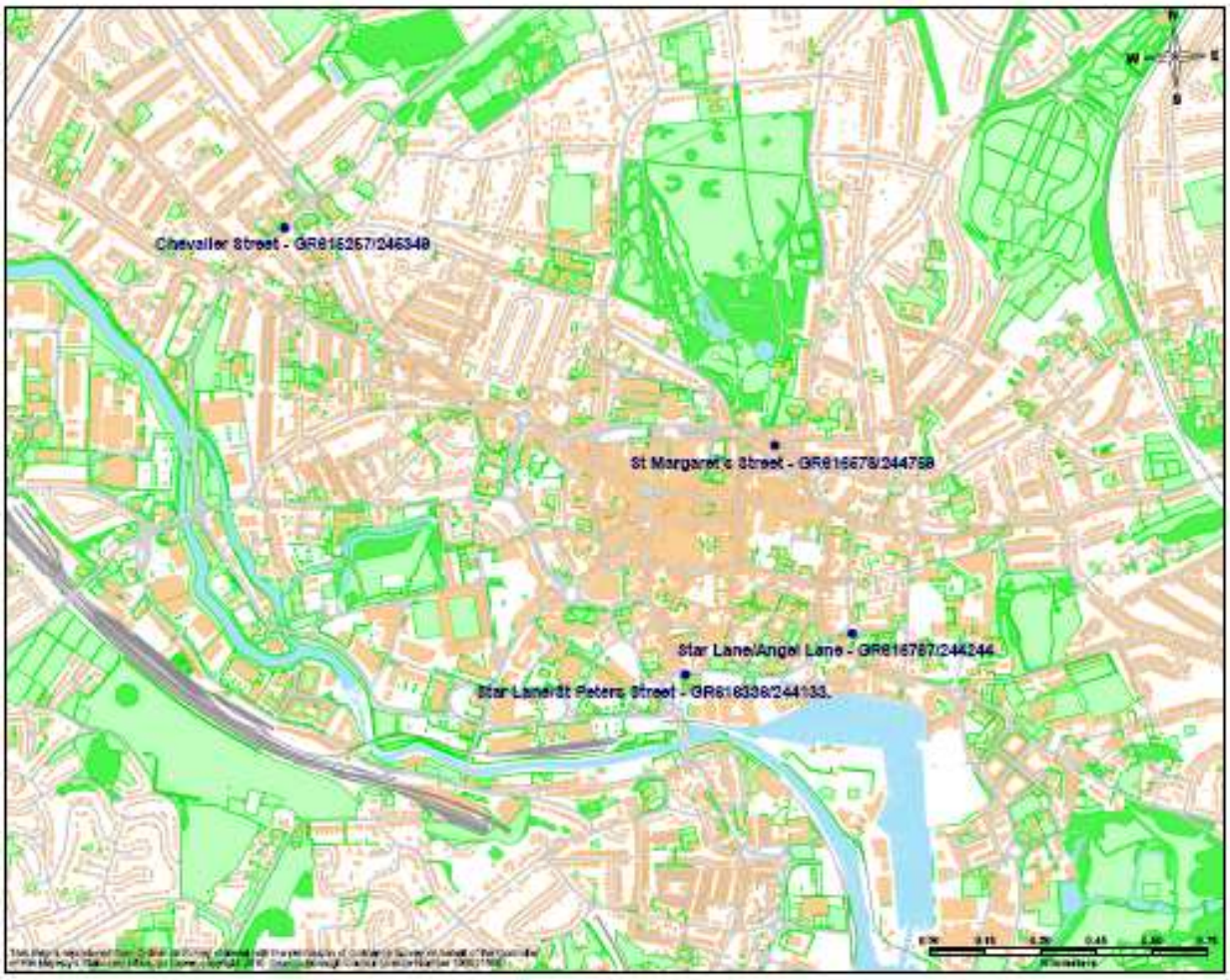


Table 2.1 Details of Automatic Monitoring Sites

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 (N/A if not applicable)	Does this location represent worst-case exposure?
Star Lane/Angel Lane	Urban Roadside	616787	244244	NO_2 and PM_{10}	FDMS TEOM	Y	Y (across road, approx 20m)	3	Yes – closer to heavily used traffic lane than relevant exposure across the road near low usage bus lane.
Chevallier Street	Urban Roadside	615257	245349	NO_2		Y	Y (next door residential properties equal distance from kerb, approx 2.5m)	2.5	Yes
St Margarets Street	Urban Roadside	616578	244759	NO_2		Y	Y (sited immediately adjacent to residential property 3m)	3	Yes
Star Lane/opp St Peters Street	Urban Roadside	616336	244133	NO_2		Y	N (placed alongside proposed development areas within AQMA). Hotel across road.	2.5	Yes. Located on footpath near heavily used road which has frequent congestion.

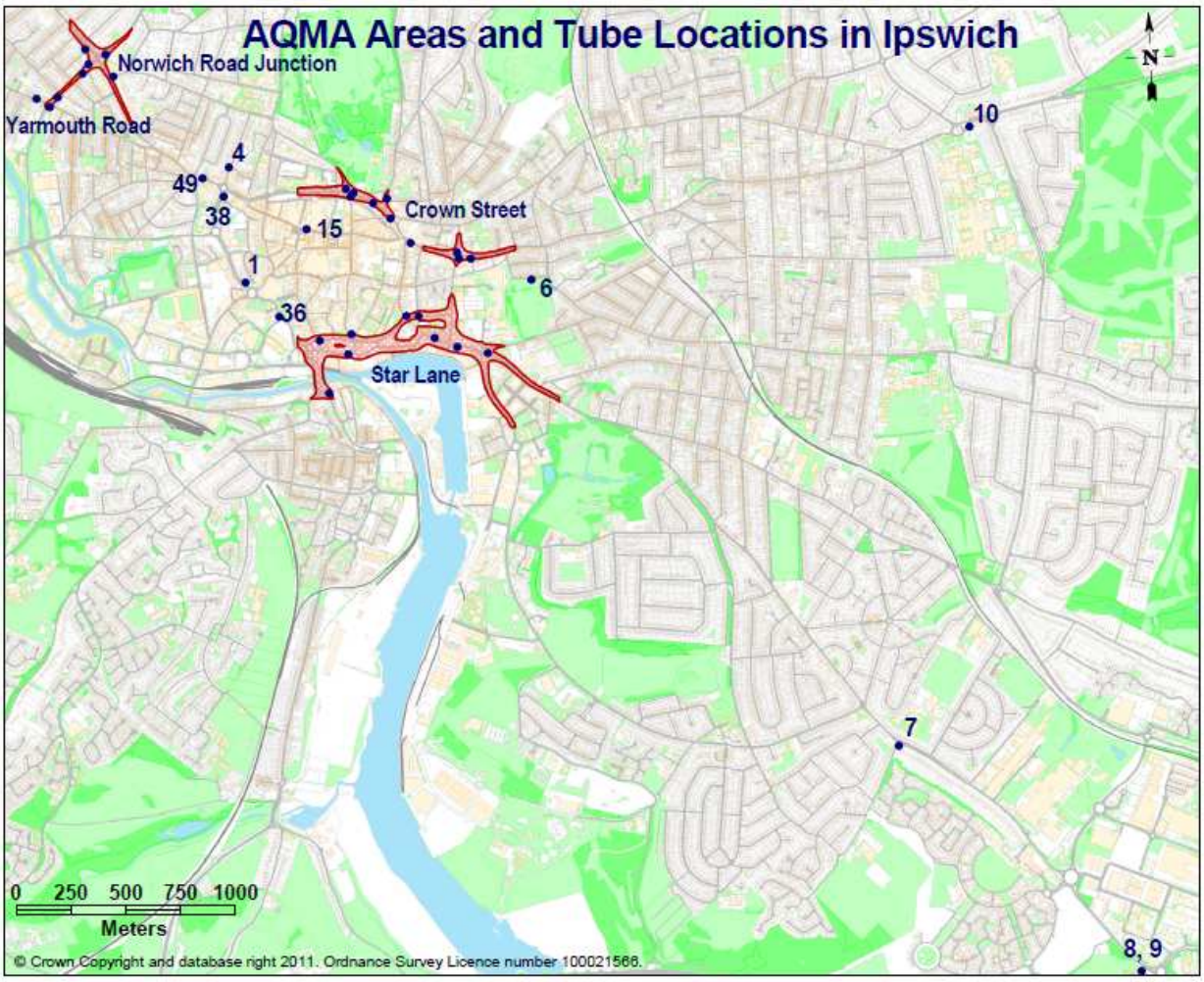
2.1.2 Non-Automatic Monitoring Sites

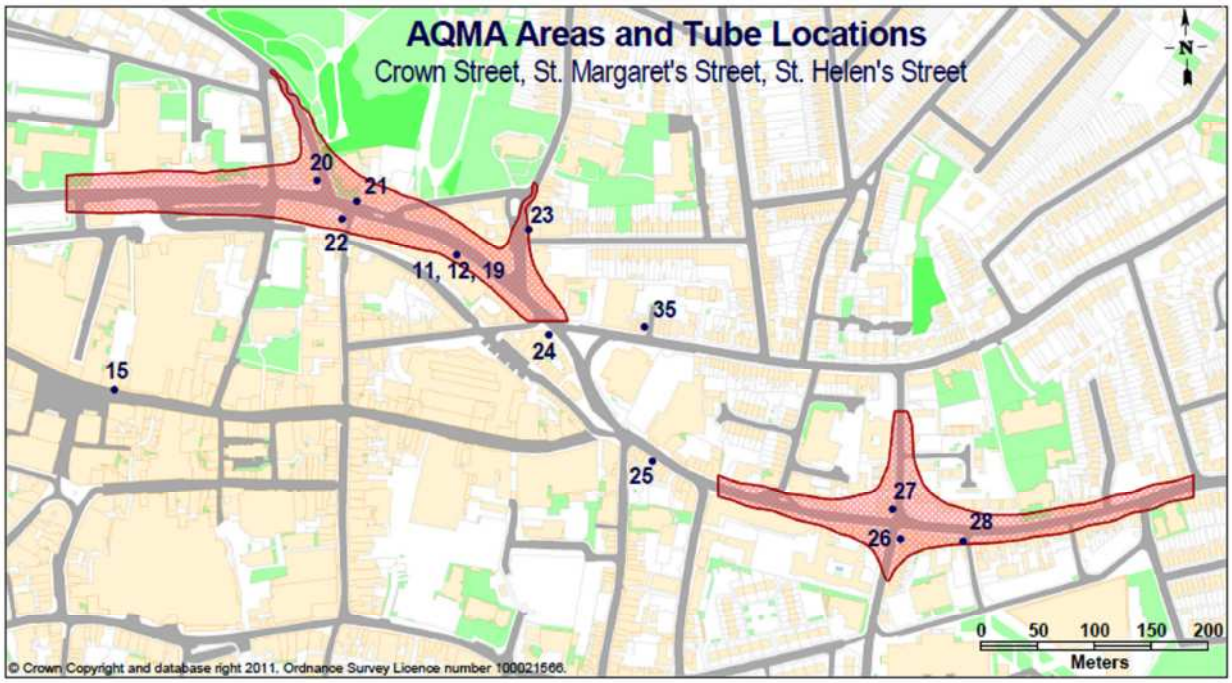
During 2010, Ipswich Borough Council carried out non-automatic monitoring of NO_2 using diffusion tubes located in 74 different sites in the borough. 91 diffusion tubes monitor kerbside and roadside concentrations of NO_2 and 2 diffusion tubes monitor background concentrations of NO_2. A large number of the tubes were placed part way through the year and as such limited results have been obtained for 2010. Only the results for those sites with over 9 months worth of data have been included in this report. The results from the other monitoring locations will be listed in future reports.

During 2010 the tubes were supplied to Ipswich Borough Council from Harwell Scientifics. The preparation method was 50% TEA in Acetone. A summary of the QA/QC information is reported in Appendix A.

The bias adjustment figure applied to the diffusion tube results is a local factor of 0.87 as a local average unless the site is very similar to one of the two continuous monitors used to calculate the bias when a factor of 0.94 was used based on the monitor at St Margarets Street, or 0.8 based on the monitor on Chevallier Street. A national co-location study gives a bias adjustment factor of 0.85.

Figure 2.2 Map of Non-Automatic Monitoring Sites




AQMA Areas and Tube Locations
Crown Street, St. Margaret's Street, St. Helen's Street
N
20
21
22
23
11, 12, 19
35
24
15
25
27
28
26
0 50 100 150 200
Meters
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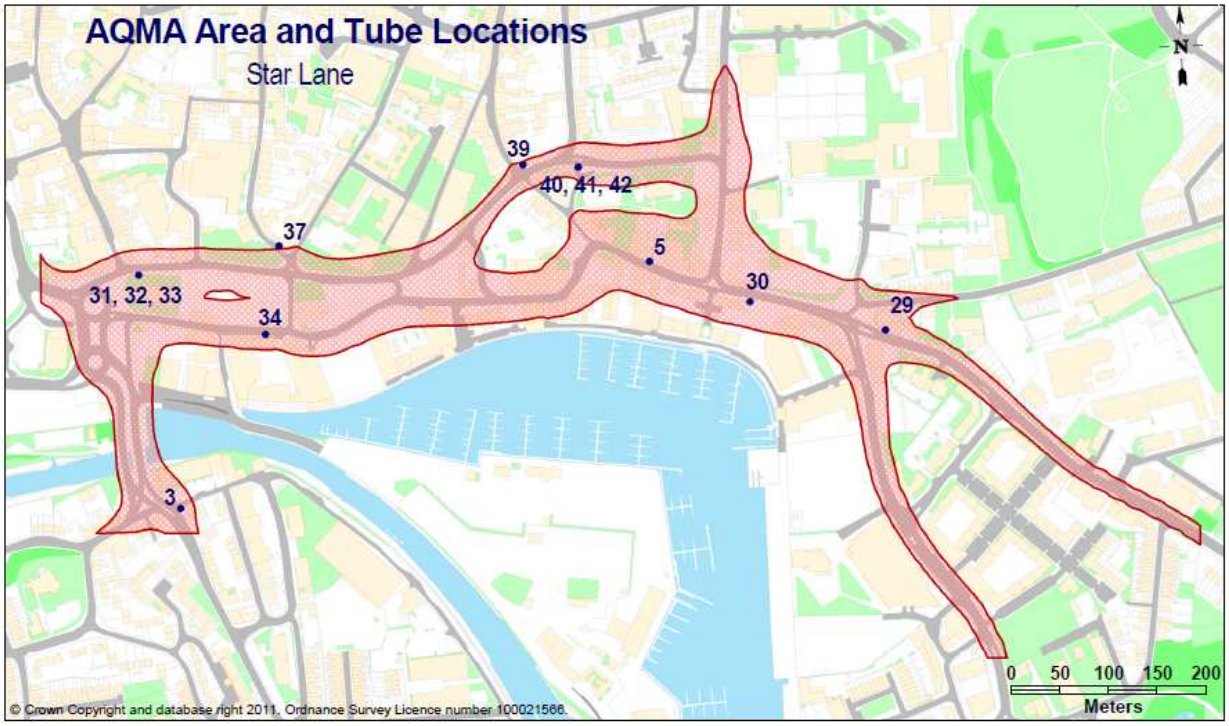
AQMA Area and Tube Locations
Star Lane
N
39
40, 41, 42
37
5
31, 32, 33
34
30
29
3
0 50 100 150 200
Meters
© Crown Copyright and database right 2011. Ordnance Survey Licence number 100021566.


AQMA Area and Tube Locations
Norwich Road - Chevalier Street Junction
N
18
13, 16
14, 17
45, 46, 47
48
0 20 40 60 80 100
Meters
© Crown Copyright and database right 2011. Ordnance Survey Licence number 100021566.


AQMA Area and Tube Locations
Bramford Road, Yarmouth Road and Chevallier Street Junction
N
2
44
43
0 10 20 30 40
Meters
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Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Tube No	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure?	Estimated distance of diffusion tube to kerb of nearest road	Worst-case Location?
Civic Drive	1	Urban Roadside	615999/244399	NO_2	N	Yes. Residential properties located equal distance from kerb.	3.8m	Y
Chevallier Street o/s no. 6&8	2	Urban Roadside	615142/245242	NO_2	Y	Yes. On façade of property	1.7m	Y
Dock Street	3	Urban Roadside	616379/243894	NO_2	Y	Yes. Residential properties located approximately 4.6m from kerb.	2.8m	Y
Berners Street o/s No.31	4	Urban Roadside	615923/244923	NO_2	N	Yes. Residential properties located 1.7m from kerb.	1.7m	Y
Fore Street	5	Urban Roadside	616860/244147	NO_2	Y	No.	1.7m	Y
Kings Avenue	6	Urban Background	617299/244412	NO_2	N	Located in park as background reading.	14.6m	N/A
Nacton Road	7	Urban Roadside	618974/242291	NO_2	N	Yes. Residential properties located approximately 8.5m from kerb.	3.8m	Y
Nacton Rd/A14 junct	8	Suburban	620078/241263	NO_2	N	Yes. Residential properties located approximately 35.8m from the kerb.	30.3m	Y
Nacton Rd/A14 junct	9	Suburban	620078/241263	NO_2	N	Yes. Residential properties located approximately 35.8m from the kerb.	30.3m	Y
Woodbridge Rd East	10	Suburban	619294/245109	NO_2	N	Yes. Residential properties located approximately 12m from the kerb.	10.2m	Y
St Margaret's		Urban	616578/244759	NO_2	Y	Yes. Residential	2.2m	Y

Street, Pipers Court	11	Roadside				properties located approximately 2.2m from kerb.		
St Margaret's Street, Pipers Court co-location	12	Urban Roadside	616578/244759	NO_2	Y	Yes. Residential properties located approximately 2.2m from kerb.	2.2m	Y
St Margaret's Street, Pipers Court co-location	19	Urban Roadside	616578/244759	NO_2	Y	Yes. Residential properties located approximately 2.2m from kerb.	2.2m	Y
Valley/Norwich Road	13	Urban Roadside	615361/245436	NO_2	Y	Yes. Residential approximately 5.5m from the kerb.	2.9m	Y
Valley/Norwich Road	16	Urban Roadside	615361/245436	NO_2	Y	Yes. Residential properties located approximately 2.6m from the kerb.	2.9m	Y
Tavern Street	15	Urban Centre background	616277/244641	NO_2	N	Yes (background). Shops located approximately 0.5m from kerb. Pedestrian-only road with limited traffic flow in the morning and evening for loading and unloading.	On pedestrianised street	N/A
Chevallier Street, outside number 63	14	Urban Roadside	615283/245391	NO_2	Y	Yes. Residential properties located approximately 2.6m from kerb.	2.6m	Y
Chevallier Street, outside number 63	17	Urban Roadside	615283/245391	NO_2	Y	Yes. Residential properties located approximately 2.6m from kerb.	2.6m	Y
Norwich/Blenheim Road	18	Urban Roadside	615269/245460	NO_2	Y	Yes. Residential properties located approximately 30.2m from kerb.	1.5m	Y
St Margaret's Plain/Fonnereau Road	20	Urban Roadside	616455/244824	NO_2	Y	Yes. Flats and shops located approximately 2.2m from kerb.	2.2m	Y

St Margaret's Plain	21	Urban Roadside	616490/244806	NO_2	Y	Yes. Residential located approximately 1.7m from kerb, 9m down road from tube.	1.7m	Y
St Margaret's Plain/Northgate St	22	Urban Roadside	616477/244790	NO_2	Y	Yes. Public house located approximately 1.5m from kerb.	1.6m	Y
St Margaret's Green/ St Margaret's Street	23	Urban Roadside	616641/244781	NO_2	Y	Yes. Residential properties located approximately 3m from kerb.	3m	Y
St Margaret's Street	24	Urban Roadside	616659/244689	NO_2	Y	Yes. Residential properties located 3.2m from kerb.	3m	Y
St Helen's Street	25	Urban Roadside	616750/244578	NO_2	Y	Yes. Flats located approximately 2.2m from kerb.	1.3m	Y
St Helen's St/Grimwade Street	26	Urban Roadside	616968/244510	NO_2	Y	Yes. Residential properties located approximately 3.6m from kerb.	3.6m	Y
St Helen's St/Argyle Street	27	Urban Roadside	616961/244536	NO_2	Y	Yes. Flats located approximately 1.7m from kerb.	1.5m	Y
St Helen's St/Dove Street	28	Urban Roadside	617023/244508	NO_2	Y	Yes. Public house and flats located approximately 1.9m from kerb.	1.5m	Y
Fore Hamlet	29	Urban Roadside	617102/244077	NO_2	Y	Yes. Flats located approximately 2.2m from kerb.	2.2m	Y
Fore Street	30	Urban Roadside	616963/244106	NO_2	Y	Yes. Flats located approximately 7.7m from kerb.	4m	Y
Star Lane (opp St Peters Street)	31	Urban Roadside	616336/244133	NO_2	Y	No. Hotel located across road. Proposed development sites in area.	2.4m	N
Star Lane (opp St Peters Street)	32	Urban Roadside	616336/244133	NO_2	Y	No. Hotel located across road. Proposed	2.4m	N

						development sites in area.		
Star Lane (opp St Peters Street)	33	Urban Roadside	616336/244133	NO_2	Y	No. Hotel located across road. Proposed development sites in area.	2.4m	N
College Street	34	Urban Roadside	616466/244072	NO_2	Y	Yes. Residential properties located 1.7m from kerb.	1.7m	Y
Cobden Place	35	Urban Roadside	616743/222696	NO_2	Y	Yes. Residential properties located 1.1m from kerb.	1.1m	Y
Franciscan Way/Wolsey Street	36	Urban Roadside	616153/244242	NO_2	N	Yes. Residential properties located 1.85m from kerb.	1.85m	Y
Lower Brook Street	37	Urban Roadside	616480/244163	NO_2	Y	No. Offices located 3.5m from kerb.	2.8m	Y
Civic Drive by Victoria PH	38	Urban Roadside	615898/244789	NO_2	N	Yes. Residential properties located 7.2m from kerb.	1m	Y
Star Lane/Fore Street	39	Urban Roadside	616730/244246	NO_2	Y	No.	0.6m	Y
Star Lane/ Angel Lane	40	Urban Roadside	616787/244244	NO_2	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	3m	Y
Star Lane/ Angel Lane co-location	41	Urban Roadside	616787/244244	NO_2	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	3m	Y
Star Lane/ Angel Lane co- location	42	Urban Roadside	616787/244244	NO_2	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	3m	Y
Yarmouth Rd/Bramford Road	43	Urban Roadside	615107/245197	NO_2	N	Yes. Residential properties located approximately 4.8m	3.8m	Y

						from kerb.		
Bramford Road	44	Urban Roadside	615049/245234	NO_2	N	Yes. Residential properties located approximately 1.4m from kerb.	1.4m	Y
Chevallier Street, Wellington Centre	45	Urban Roadside	615257/245349	NO_2	Y	Yes. Residential properties short distance along road 6.4m from kerb.	4.1m	Y
Chevallier Street, Wellington Centre co-location	46	Urban Roadside	615257/245349	NO_2	Y	Yes. Residential properties short distance along road 6.4m from kerb	4.1m	Y
Chevallier Street, Wellington Centre co-location	47	Urban Roadside	615257/245349	NO_2	Y	Yes. Residential properties short distance along road 6.4m from kerb.	4.1m	Y
Norwich Rd/Anglesea Road	48	Urban Roadside	615397/245337	NO_2	Y	Yes. Residential located approximately 1.8m from kerb.	1.8m	Y
St Matthews Street	49	Urban Roadside	615803/244872	NO_2	N	Yes. Residential properties located approximately 1.8m from kerb.	1.8m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Table 2.3a summarises the results of the automatic monitoring of Nitrogen Dioxide within the Ipswich borough compared to the annual average objective. Table 2.3b shows the same monitoring data, but compared to an hourly average objective.

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

Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations (μg/m^3)		
					2008	2009	2010
Star Lane/Angel Lane	Y	Y (across road, approx 20m)	88.5[1]	88.5[1]	-	38[2]	**40[1]**
Chevallier Street	Y	Y (next door residential properties equal distance from kerb, approx 2.5m)	87.5	87.5	31	32	34
St Margarets Street	Y	Y (sited immediately adjacent to residential property 3m)	99.3	99.3	**46**	**48**	**51**
Star Lane/opp St Peters Street	Y	N (placed alongside proposed development areas within AQMA). Hotel across road.	99.7	99.7	-	**41.6[3]**	**51.3**

1 Monitoring carried out November 2009 – November 2010

2 April – December

3 March - December

The annual average objective is exceeded at three of the four automatic monitoring locations. The trend in the annual mean nitrogen dioxide concentrations is that of increasing concentrations across all automatic monitoring sites.

Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Number of Exceedences of hourly mean (200 μg/m^3)		
					2008	2009	2010
Star Lane/Angel Lane	Y	Y	88.5	88.5	-	0	0
Chevallier Street	Y	Y	87.5	87.5	0	3	0
St Margarets St	Y	Y	99.3	99.3	0	0	0
Star Lane/St Peters St	Y	N	99.7	99.7	-	1	0

The results of the automatic monitoring of Nitrogen Dioxide do not show any exceedances of the 1-hour mean objective of 200ug/m^3 not to be exceeded more than 18 times a year.

Diffusion Tube Monitoring Data

Table 2.4 summarises the results of the diffusion tube monitoring of Nitrogen Dioxide across the Ipswich borough.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Relevant public exposure?	Data Capture for monitoring period[a] %	Data Capture for full calendar year 2010[b] %	Annual mean concentrations (μg/m^3)		
						2008	2009	2010[2]
1	Civic Drive	N	Yes. Residential properties located equal distance from kerb.	N/A	100	28	29	29.9/29.3
2	Chevallier St	Y	Yes. On façade of property	N/A	100	N/A	N/A	**45.8/48.7**
3	Dock Street	Y	Yes. Residential properties located approximately 4.6m from kerb.	N/A	100	N/A	N/A	35.6/34.8
4	Berners Street	N	Yes. Residential properties located 1.7m from kerb.	N/A	100	N/A	N/A	**41/40.1**

5	Fore Street	Y	No.	N/A	100	39	**43**	**52.1/47.1**
6	Kings Avenue	N	Located in park as background reading.	N/A	91.7	18	20	19.7/19.2
7	Nacton Road	N	Yes. Residential properties located approximately 8.5m from kerb.	N/A	100	N/A	26	29.7/29
8	Nacton Rd/A14	N	Yes. Residential properties located approximately 35.8m from the kerb.	N/A	100	N/A	27	27.8/27.2
9	Nacton Rd/A14	N	Yes. Residential properties located approximately 35.8m from the kerb.	N/A	100	N/A	28	29.4/28.7
10	Woodbridge Rd E	N	Yes. Residential properties located approximately 12m from the kerb.	N/A	100	N/A	25	28.4/27.8
11	St Margarets St	Y	Yes. Residential properties located approximately 2.2m from kerb.	N/A	100	**46**	**51**	**50/45.2**
12	St Margarets St	Y	Yes. Residential properties located approximately 2.2m from kerb.	N/A	100	**45**	**50**	**51.4/46.5**
19	St Margarets St	Y	Yes. Residential properties located approximately 2.2m from kerb.	N/A	83.3	**42**	**50**	**49.8/45.1**
13	Valley Rd/Norwic	Y	Yes. Residential approximately 5.5m from the kerb.	N/A	100	38	38	39.9/39
14	Chevallier St	Y	Yes. Residential properties located approximately 2.6m from the kerb.	N/A	100	**44**	**46**	**54.7/58.1**

17	Chevallier St	Y	Yes. Residential properties located approximately 2.6m from kerb.	N/A	91.7	**43**	**48**	**56.6/60.1**
15	Cornhill	N	Yes (background). Shops located approximately 0.5m from kerb. Pedestrian-only road with limited traffic flow in the morning and evening for loading and unloading	N/A	100	25	32	30.9/30.2
16	Valley/Norwich R	Y	Yes. Residential properties located approximately 2.6m from kerb.	N/A	100	37	**40**	**41.9/41**
18	Norwich/Blenheim	Y	Yes. Residential properties located approximately 30.2m from kerb.	N/A	100	28	32	34.7/33.9
20	St Margarets Plain/Fonn Rd	Y	Yes. Flats and shops located approximately 2.2m from kerb.	N/A	100	34	36	34.8/34
21	St Margarets Plai	Y	Yes. Residential located approximately 1.7m from kerb, 9m down road from tube.	N/A	100	32	**40**	**41.3/40.3**
22	St Margarets Plain/Northgate S	Y	Yes. Public house located approximately 1.5m from kerb.	N/A	100	37	39	**45/43.9**
23	St Margarets Gre	Y	Yes. Residential properties located approximately 3m from kerb.	N/A	100	N/A	N/A	26.9/26.3
24	St Margarets St	N	Yes. Residential properties located 3.2m from kerb.	N/A	100	**42**	**45**	**51/46.1**

25	St Helens St	N	Yes. Flats located approximately 2.2m from kerb.	N/A	91.7	**45**	**47**	**49.6/48.5**
26	St Helens St/Grimwade St	Y	Yes. Residential properties located approximately 3.6m from kerb.	N/A	100	N/A	**40**	**43.2/42.2**
27	St Helens St/Argy	Y	Yes. Flats located approximately 1.7m from kerb.	N/A	100	**40**	**43**	**48.7/47.6**
28	St Helens St/Dov	Y	Yes. Public house and flats located approximately 1.9m from kerb.	N/A	100	29	32	31.4/30.7
29	Fore Hamlet	Y	Yes. Flats located approximately 2.2m from kerb.	N/A	91.7	32	36	**40.4/**39.4
30	Fore Street	Y	Yes. Flats located approximately 7.7m from kerb.	N/A	91.7	39	34	34.3/33.5
31	Star Lane	Y	No. Hotel located across road. Proposed development sites in area.	N/A	100	N/A	39	**40**
32	Star Lane	Y	No. Hotel located across road. Proposed development sites in area.	N/A	100	N/A	39	39.1
33	Star Lane	Y	No. Hotel located across road. Proposed development sites in area.	N/A	100	N/A	38	39.8
34	College St	Y	Yes. Residential properties located 1.7m from kerb.	N/A	91.7	N/A	N/A	**45.5/44.5**
35	Cobden Place	N	Yes. Residential properties located 1.1m from kerb.	N/A	100	N/A	N/A	30/29.3
36	Franciscan Way/Wolsey St	N	Yes. Residential properties located 1.85m from kerb.	N/A	100	N/A	N/A	37.3/36.4

37	Lower Brook St	Y	No. Offices located 3.5m from kerb.	N/A	100	28	30	30.6/29.9
38	Civic Drive	N	Yes. Residential properties located 7.2m from kerb.	N/A	91.7	N/A	N/A	**41.7/40.8**
39	Star Lane/Fore St	Y	No.	N/A	100	**45**	**48**	**48.5/47.4**
40	Star Lane/Angel L	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	100	83.3	N/A	36	38.6/35.3
41	Star Lane/Angel L	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	100	83.3	N/A	36	39.7/36.3
42	Star Lane/Angel L	Y	Yes. Residential properties located across road (20m), equal distance from kerb.	100	83.3	N/A	35	38.1/34.8
43	Yarmouth Rd/Bramford Rd	Y	Yes. Residential properties located approximately 4.8m from kerb.	N/A	100	**40**	**43**	**45.5/44.4**
44	Bramford Rd	N	Yes. Residential properties located approximately 1.4m from kerb.	N/A	100	34[3]	**43**	**46.4/45.3**
45	Chevallier St	Y	Yes. Residential properties short distance along road 6.4m from kerb.	N/A	100	30	35	35.3/37.5
46	Chevallier St	Y	Yes. Residential properties short distance along road 6.4m from kerb	N/A	100	32	34	34.4/36.5

47	Chevallier St	Y	Yes. Residential properties short distance along road 6.4m from kerb.	N/A	100	32	34	34.2/36.4
48	Norwich Rd/Angle Rd	N	Yes. Residential located approximately 1.8m from kerb.	N/A	100	28	32	33.1/32.4
49	St Matthews St	N	Yes. Residential properties located approximately 1.8m from kerb.	N/A	100	**46**	**47**	**51.3/50.2**

[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%.).
[2]Local average/national average bias adjusted tubes. Local bias adjustment factors of 0.8,0.87,0.94 applied dependent on location of tube; national bias adjustment factor applied 0.85.
[3] Figure influenced by a low result one month.

As can be seen within table 2.4, the diffusion tube monitoring shows a number of exceedances of the annual average objective. Of the locations showing an exceedance of the objective, just six are outside of existing AQMAs in the 2010 period. Four, Berners Street, Civic Drive, St Margarets Street and St Matthews Street, are all within an area undergoing a Detailed Assessment as a result of the 2009 USA report. The Civic Drive result is reduced to well below the objective level once fall off with distance is calculated. The exceedance at Bramford Road will be considered as part of the Further Assessment of the AQMA.

Fall off with distance calculations have been applied to a number of the results as shown in table 2.5. However these results should be treated with caution as distances have been estimated and tube and receptor locations are all within 3m of each other except for tube number 38.

Table 2.5 Results with distance fall off applied as relevant

Tube ID and Location	**Measured Result ug/m³**	**Result with fall off for Distance ug/m³ (1)**
24 St Margarets Street	51/46.1	**50.5/45.7**
25 St Helens Street	49.6/48.5	**46.3/45.3**
27 St Helens Street/Argyle St	48.7/47.6	**47.9/46.8**
38 Civic Drive	41.7/40.8	32.9/32.4
43 Yarmouth Rd/Bramford Rd	45.5/44.4	**43.8/42.8**

(1) Local Bias Correction Factor applied / National Bias Correction Factor applied.

2.2.2 PM_{10}

Ipswich Borough Council has one automatic monitor that monitors concentrations of PM_{10} along with NO_2.

This monitor is a TEOM FDMS with a type C drier. It has been operational since April 2009. Whilst it was located in an open space beside a busy urban road, it is of approximately equal distance from the kerbside of a busy traffic lane as the kerbside is to relevant receptor locations on the opposite side of the road near a less busy bus lane and so is considered representative of worst case.

The monitor was re-located in November 2010 to an area where complaints of dust have been received, upwind from a number of potential sources of particulates.

Table 2.6a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations (μg/m^3)		
				2008	2009	2010
Star Lane/Angel Lane	Y	84.1[1]	84.1[1]	-	23	23[1]

1 November 2009 – November 2010

Table 2.6b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2010 %	Number of Exceedences of daily mean objective (50 μg/m^3)		
				2008	2009	2010
Star Lane/Angel Lane	Y	84.1[1]	84.1[1]	-	6	11[1]

1 November 2009 – November 2010

The results from the years worth of particulate monitoring show that neither the annual average objective of 40ug/m^3 or the daily average of 50 ug/m^3 (not to be exceeded more than 18 times a year), are exceeded.

The monitor has been relocated to a residential area where complaints of dust from the Port area of Ipswich have been received, upwind from several sources of particulates.

2.2.3 Sulphur Dioxide

Ipswich Borough Council has not carried out any monitoring of Sulphur Dioxide.

2.2.4 Benzene

Ipswich Borough Council has not carried out any monitoring of Benzene.

2.2.5 Other pollutants monitored

Ipswich Borough Council has not carried out monitoring for any other pollutants.

2.2.6 Summary of Compliance with AQS Objectives

Ipswich Borough Council has examined the results from monitoring Particulates (PM_{10}s) in the borough. Concentrations are all below the objective levels and there is no need to proceed to a Detailed Assessment.

Ipswich Borough Council has examined the results from monitoring Nitrogen Dioxide in the borough. Concentrations outside of the AQMAs are mainly below the objectives at relevant locations. Where there is an exceedance outside of the AQMA the concentrations of Nitrogen Dioxide are already being assessed as part of a Detailed or Further Assessment. There is no need for further Detailed Assessments.

3 New Local Developments

3.1 Road Traffic Sources

Ipswich Borough Council transport policy section confirms that there are no significant changes to transport flows during 2010 which will impact on air quality.

3.2 Other Transport Sources

A new proposed rail link is under development within the Ipswich borough. Air Quality is being considered during development.

3.3 Industrial Sources

Storage of petrol at Vopak has ceased.

Whilst not in the year 2010, it is relevant to note that the Environment Agency have one new permitted installation at Anglian Water Services, Cliff Quay - a Biogas plant issued in February 2011. This comprises of 2 spark ignition engines with combined thermal input of 2.9MW and 2 hot water boilers with a thermal input of 1.4MW each.

The Environment Agency confirms that emissions from other permitted processes within Ipswich have had no significant change in emissions or have reduced emissions.

Donalds Garage, West End Road, was permitted for waste oil burning in 2010.

Tarmac Ltd Ipswich Works have moved premise to Cliff Road, Ipswich, Suffolk IP3 0AX for both the cement batching and roadstone coating.

3.4 Commercial and Domestic Sources

A new Biomass Combustion plant is proposed for the Environment Agency site, Cobham Road.

There has been no obvious increase in areas of small individual biomass combustion within the borough. The council has not received significant numbers of complaints about nuisance dust or odour relating to burning and there is no obvious smell of burning of solid fuel apart from isolated incidents around the borough. Properties within the Ipswich borough have access to mains gas and there are no known high level sales of solid fuel via home delivery or local outlets.

3.5 New Developments with Fugitive or Uncontrolled Sources

There are no new landfill sites or quarries within the Ipswich area, or immediately adjacent to it, that would affect air quality.

There were no known unmade haulage roads on industrial sites indentified during 2010. Whilst a number of dust complaints were received by the Council, there were no statutory nuisances witnessed.

There have been no new waste transfer stations in 2010.

The port area is a potential source of fugitive particulate emissions and a number of dust complaints have been received. The particulate monitor has been located upwind from the Port to monitor levels of particulate in the residential area. No statutory nuisance has been witnessed.

Ipswich Borough Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

Biogas plant at Anglian Water Services, Cliff Quay
Donalds Garage, West End Road – waste oil burning
Biomass Combustion plant proposed for the Environment Agency, Cobham Road
Tarmac Ltd Ipswich Works have moved to Cliff Road, Ipswich.

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

4 Planning Applications

There have been a number of small and large scale applications/permissions for development across Ipswich. The area around the riverside has been undergoing considerable regeneration into a residential and commercial extension to the centre of Ipswich over a number of years alongside the development of student quarters around the university. Air Quality is considered for each application with both the effect of the air quality on the new relevant receptors, and the effect of the development on the air quality of the area being assessed.

The following potential developments are identified as requiring further consideration at the Updating and Screening Assessment stage:

Grafton Way – mixed use development.
2-32 St Matthews Street – planning application for residential development
Kennings Site, Duke Street – planning application for mixed use development
7-11 Great Whip Street – application for mixed use and heating/power plant.

5 Air Quality Planning Policies

The Suffolk Local Authority Air Quality group has written draft guidance on planning and air quality. This is currently undergoing final consultation and amendment. It is hoped that all the Suffolk authorities will adopt the guidance. The aim of the guidance is to provide support to local authority air quality officers, planning officers and applicants/consultants, along with improving consistency.

6 Local Transport Plans and Strategies

The Local Transport Plan, prepared in 2005 by Suffolk County Council, to run from 2006 to 2011 is a county wide document for the purposes of stating transport policy: Suffolk County Council Local Transport Plan.

The Local Transport Plan contains information on the four shared priorities : accessibility, safety, congestion and air quality. It contains a chapter dedicated to Air Quality, (Ch 8) with the two main objectives stated as being:

- to comply with the requirements of the National Air Quality Strategy
- to seek to maintain and, where possible, improve air quality in Suffolk

An LTP2 Progress Report was prepared in the summer of 2008: LTP2 Progress Report . This document also included a dedicated chapter to air quality within Suffolk.

The Ipswich Borough Council Environment Strategy has considerable information on the role of the council in local transport strategy. The following extract is taken from the Environment Strategy and summarises ongoing work on sustainable travel:

'Ipswich's Role in Transport Strategy.
As the Passenger Transport Authority and the Highway Authority, Suffolk County Council (SCC) is the statutory body responsible for determining transport policy in Ipswich. However, Ipswich does have significant powers provided through its Highway Agency agreement with SCC. This means that Ipswich can undertake works within the highway without having to obtain permission, for example, making improvements to sustainable transport provision such as cycle and pedestrian routes.
Ipswich uses its discretionary powers to support public transport such as grants to support bus routes that are not commercially viable but socially desirable, the provision of bus shelters and highway infrastructure work to aid access.
The primary drivers for transport strategy are the Ipswich Transport Strategy (ITS) and the Council's Local Transport Plan (LTP). The strategic objectives are to contain the growth in traffic and congestion by improving flow at key junctions whilst discouraging single occupancy car use in favour of walking, cycling and public transport (modal shift). These aims are pulled together through the Ipswich Major Scheme 'Ipswich – Transport Fit for the 21st Century'. The scheme contains a package of sustainable transport measures covering the full range of travel patterns – in and around the town centre, between the town centre and the suburbs, and to and from the rural hinterland and towns. It comprises landmark changes to the town centre bus interchanges: expansion and improvement of other bus facilities; an Urban Traffic Management and Control system; Real Time Passenger information system and a detailed programme of improvements to the walk/cycle routes and crossings. The scheme aim is to achieve a 15% modal shift.
In support of this there are two schemes to promote modal shift that will be underway in 2010, Travel Smart and Ipswich Smiles.
TravelSmart funded by Defra Greener Living Fund and Suffolk County Council with input from IBC; offers individualised travel marketing and planning to 17,000

households in Ipswich. Delivered by the sustainable transport charity Sustrans, the project encourages modal shift to cycling, walking and public transport. Focussed on two sectors, the inner ring around the town centre and a second area that adjoins specific bus routes; the project covers the following wards: Castle Hill, Rushmere, St Margarets, Westgate, Gipping, Alexandra, Bridge, Sprites and Stoke Park. The programme aims to achieve modal shift of up to 15% in the target areas. Launching in Spring 2010 a final report will be made in Spring 2011.
IpswichSmiles is a pilot scheme that is principally funded by ERDF & SCC with further financial contributions from public transport providers, Business Improvement District and business networks. The aim of the scheme is to encourage modal shift by supporting small to medium sized local businesses (SMEs) in establishing travel plans in the organisation. The package will include technological innovations to make public transport more attractive, such as ticketing and timetabling by mobile phone, and a set of incentives and rewards for those travelling sustainably. The programme will also include exploration of how businesses might be able to use salary sacrifice to support the purchase of bus passes through the payroll. The scheme aims are to achieve a 15% reduction in carbon emissions arising from travel & congestion and encourage modal shift of up to 15%.

Both schemes are exploring ways of delivering multi operator and journey ticketing. The vision is to create simple and equitable schemes that encourage greater travel by passenger transport and promote accessibility to key services through provision of affordable travel. Multi operator ticketing schemes are considered particularly beneficial for Ipswich, where two major operators provide commercial services.
The Council is able to offer its own Green Travel Plan for staff travel as an exemplar of travel planning. Supported by charges for staff parking, the Plan offers discounted commuting on public transport and encourages walking, cycling and car sharing. Staff surveys indicate that the scheme is now achieving a level of 50% of staff travelling sustainably by bus, walking, cycling, rail or carsharing.'

The Travel Smart project referred to above has now been completed.

7 Climate Change Strategies

Ipswich Borough Council has not yet published a Climate Change Strategy. However, a comprehensive Environment Strategy has been adopted by the Council and is in the process of being updated.

The Environment Strategy is an overarching document which explains how other strategies, policies, and plans contribute to the councils environmental objectives. Included within the document is a brief summary of air quality work and the links to climate change. The main link between the air quality work and the climate change work within Ipswich is on transport and the need to move to sustainable travel and reduce emissions to air. The Ipswich AQMAs exist because of congestion and high levels of vehicle useage. Further detail on the Environment Strategy is given in chapter 6 of this report.

It is intended that a Climate Change Adaption Strategy will be written during 2011/12.

8 Implementation of Action Plans

Table 9.1 Action Plan Progress

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
1	Ipswich Major Scheme	Ensure AQ is fully considered within Major Scheme and Waterside/Gyratory road network alterations a) Princes Street roundabout alterations b) Bus Station Improvements c) Cycling and walking routes	Suffolk County Council	Detailed design during 2011	Construction during 2012 and 2013	Reduced Congestion and promotion of sustainable travel	>0.5ug/m^3	Funding confirmed by Dft in February 2011 Air quality assessments to be carried out for a) and b).	Design work is being carried out for the different components	May 2014	
2	Urban Traffic Management Control (UTMC)	Reduce congestion by use of UTMC which rationalises flows	Suffolk County Council	This is a major component of Ipswich Major Scheme	Construction during 2012 and 2013	Traffic would be controlled to reduce congestion and reduce idling.	0.5-1ug/m^3	Air Quality Assessments to be carried out for a) and b) above.	Design work has started. Air quality assessments to be carried out to support the design process and ensure optimisation.		
3	Idling Vehicles	Service of penalty notices on idling vehicles	Ipswich Borough Council			Raise awareness of importance of car emissions to air quality.	<0.5ug/m^3	None	None		

No	Measure	Focus	Lead authority	Planning phase	Implemen-tation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estima ted comp-letion date	Comments relating to emission reductions
4	Roadside Emission Testing	General roadside and bus emission campaign to ensure minimum standards are adhered to.	Ipswich Borough Council			Raise awareness of importance of car emissions to air quality.	<0.5ug/m^3	None	None		
5	Employm ent Zoning	Identify where the HGVs are headed through the Norwich Road/Chevallier Street roundabout by camera surveys. Identify more appropriate less polluting routes	Ipswich Borough Council/ Suffolk County Council			Re-routing HGVs reduces the emissions at this junction.	>0.5ug/m^3	None	None		
6	Bramford Road/ Chev. Street pedest-rian crossing review	Pedestrian crossing may be impacting on congestion in AQMA	Ipswich Borough Council			Should reduce congestion of traffic at lights.	<0.5ug/m^3	None	None		
7	St Margarets Street Signal Review	Signals in St Margarets Street may be impacting on congestion	Ipswich Borough Council			Reduce congestion in AQMA	<1ug/m^3	Urban Traffic Control in place	Ongoing		Anticipated further improve-ments as part of UTMC scheme.
8	Valley Road cycle Lane	Cycle lane leading into mini roundabout	Ipswich Borough Council			Encourage Cycling	<0.5ug/m^3	Completed			

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
9	Bus Stop Improvements	All buses used on local stage carriage works must be accessible	Suffolk County Council			Encourages bus use and reduces car use	<1ug/m^3	Ongoing			
10	Bus Timetable Improvements	To consolidate all timetables into one and real time information	Suffolk County Council			Encourages bus use and reduces car use by more customer friendly time-table information.	<0.5ug/m^3	Bus timetables and additional leaflets are available on http://www.suffolk.gov.uk/TransportAndStreets/PublicTransport together with other timetables such as rail. Leaflets have been made more widely available across the county.		On-going	There will be real time bus information at the station and at bus stops as part of Major Scheme.
11	Bishops Hill Bus Lane	New bus lane to prioritise bus movement into town	Suffolk County Council			Will make bus journey faster and	NEG-<0.5ug/m^3		Scheme completed and opened to		

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
		centre				encourage bus use			traffic on 1st August 2011		
12	Train Service Improvements	Signalling changes to improve Ipswich – Lowestoft service	Suffolk County Council/ Rail Companies			Prioritise train use therefore reducing car use	<0.5ug/m^3		Progress with station investment plan – additional car parking provided at Melton and Campsea Ashe. Service improvements to an hourly train service between Ipswich and Saxmundham.	Completion expected by Dec 2012. Hourly service for whole of East Suffolk Line (Ips to Lowestoft) will occur by end Dec 2012.	
13	Use of Bus Subsidies	Promotion of existing discounted multi-buy tickets. Concentrate spend on services in AQMAs.	Suffolk County Council/ Ipswich Borough Council			Promotes bus use therefore reducing car use.	<0.5ug/m^3		Information outstanding		
14	Quality Bus Partnership development	Bus Quality Partnerships to ensure new engines used.	Suffolk County Council/ Ipswich Borough Council			Would reduce emissions from buses	<1ug/m^3	Being developed as part of the Major Scheme. Draft in place.	Progress delayed as reliant on Major Scheme funding.	Dependent on Major Scheme	
15	Healthy School	Each School in Suffolk develops plan to	Suffolk County			Reduced car use leading to	<0.5ug/m^3		Completed for all state	Completed	

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Status	include sustainable travel such as walking bus by March 2009	Council			reduced congestion.			schools.		
16	Park and Ride x 2	Two new park and ride sites proposed around Ipswich	Suffolk County Council	To be deleted. Funding not available.		Reduces car trips through AQMAs.	NEGATIVE - <1ug/m^3		None	N/A. To be deleted. Funding not available.	
17	Raise awareness of all passenger transport	Include raising awareness of www.traveline.info www.transportdirect.info - to give advice re how to travel door to door sustainably	Suffolk County Council			Encourages reduced car usage and therefore reduces emissions	<0.5ug/m^3		Suffolk County Council has set up a dedicated web-site called "Get on board!" which can be found at: http://www.suffolkonboard.com/ where details of public transport arrangements can be found. A more general web-page is available at		

No	Measure	Focus	Lead authority	Planning phase	Implemen-tation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estima ted comp-letion date	Comments relating to emission reductions
									http://www.suffolk.gov.uk/TransportAndStreets/PublicTransport where Passenger Transport, Demand Responsive Transport Services, Community Transport, Education Transport, Tendering and Contract Information and Further Information is available.		
18	Green Travel Plans	Green Travel Plans to be encouraged and promoted in local businesses. IBC Development Control require these for new developments.	Ipswich Borough Council – develop ment control through Planning Suffolk			Encourages people to use other methods of travel therefore reducing car use and congestion.	<1ug/m^3		Ongoing	On-going	

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
			County Council have 2 officers tasked with persuading businesses to have travel plans								
19	Smarter Travel Plan Suffolk	Travel Plan throughout Suffolk encouraging people onto sustainable modes of transport in and out of Ipswich. To include one to one advice by a travel plan advisor.	Suffolk County Council			Encourages reduced car usage and therefore reduces emissions	<1ug/m^3	Travel smart is a project offering households information and support to enable people to walk, cycle and use public transport more often. It started in Ipswich in 2010.	A total of 17,000 households in Ipswich were invited to take part since the project commenced in 2010. http://www.sustrans.org.uk/what-we-do/travelsmart/current-travelsmart-projects/travelsmart-in-ipswich		
20	Season	University Campus	Univer-			Some extra	<0.5ug/m^3	Students	Students can	On-	

No	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	tickets to students	Suffolk to offer free season tickets to students	sity Campus Suffolk			use of bus.		can purchase ticket for First Buses at child prices.	purchase ticket for First Buses at child prices.	going	
21	Electric Charging Points	There is a shortage of electric vehicle charging points in Ipswich	Ipswich Borough Council – to be deleted. Evalu8 are delivering the 'plugged in project'			Will ensure that people using electric vehicles can easily recharge. May encourage use of electric vehicles locally.	<0.5ug/m^3	One location within Ipswich now with electric charging point – University College.	Ongoing progress of project by Evalu8.	2013	Two locations with charging points outside of Ipswich – Adastral Park, Martlesham and Harwich Port.
22	Public Air Quality Monitoring Information	Make the continuous NO2 monitoring results available to the public in real time via a website link.	Ipswich Borough Council			The continuous monitors are all situated in the AQMAs, enabling access to real-time monitoring may raise awareness of the poor air quality and	<0.5ug/m^3			To be reviewed due to resource implications	

No	Measure	Focus	Lead authority	Planning phase	Implemen-tation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estima ted comp-letion date	Comments relating to emission reductions
						contribute to behaviour changes.					
23	Air Quality Assess-ments	Developers required to assess the air quality impact of developments in and around the AQMAs.	Ipswich Borough Council/ Suffolk County Council			Development detrimental to AQMAs controlled.	<1ug/m^3	Developers required to submit air quality assess-ments as appro-priate.	Air Quality and Planning Guidance Document developed and in final stages of consultation/ adoption.	On-going	

The Healthy School Status project is now completed. However, a School Travel Plan project is being undertaken by Suffolk County Council and is ongoing. All state schools have a travel plan, and some independent schools are undertaking the actions expected within a plan. The aim of the project is to encourage sustainable travel to school.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Ipswich Borough Council has monitored particulates and nitrogen dioxide within the borough. Concentrations of particulates are all below the objective levels and there is no need to proceed to a Detailed Assessment.

The results of the Nitrogen Dioxide monitoring show that concentrations outside of the AQMAs are mainly below the objective levels at relevant locations. Where there are exceedances outside of the AQMAs the concentrations are already being assessed as part of a Detailed Assessment or Further Assessment. There is no need for further Detailed Assessments.

Monitoring results within the AQMAs still show that the AQMAs are appropriate although there are areas of non exceedance within them.

9.2 Conclusions relating to New Local Developments

Ipswich Borough Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

Biogas plant at Anglian Water Services, Cliff Quay
Donalds garage, West End Road
Biomass Combustion plant proposed for the Environment Agency, Cobham Road
Tarmac Ltd Ipswich Works have moved to Cliff Road, Ipswich.

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

9.3 Other Conclusions

The Air Quality Action Plan is currently being reviewed and will be reported in future assessment reports.

9.4 Proposed Actions

The monitoring data has not identified the need to proceed to a Detailed Assessment for any of the pollutants monitored. The need for any additional monitoring is considered each year and adjustments made. Tube locations have been altered slightly for 2011 and 2012.

The next course of Action for Ipswich Borough Council is :

- Complete a Detailed Assessment for Nitrogen Dioxide concentrations at the Civic Drive/St Matthews Street junction;

- Complete a Detailed Assessment for Nitrogen Dioxide concentrations at the location between St Margarets Street AQMA and St Helen Street AQMA;
- Complete a Further Assessment for the Bramford Road/Chevallier Street AQMA.
- Continue to progress and review the AQMA Action Plan.

10 References

Air Quality Action Plan (2008)
Air Quality (England) Regulations 2000 (SI 928)
Air Quality Daughter Directive
Defra website http://smokecontrol.defra.gov.uk/appliances.php
Detailed Assessment (April 2005)
Detailed Assessment (2010)
Bramford Road/Chevallier Street Detailed Assessment (2010)
Environment Act (1995)
Further Assessment Report (August 2008)
Ipswich Air Quality Management Order No 1, 2006
Ipswich Air Quality Management Order No 2, 2006
Ipswich Air Quality Management Order No 3, 2006
National Atmospheric Emissions Inventory Database
Progress Report (2005)
Progress Report (2010)
Technical Guidance LAQM.TG (09)
The Air Quality (England) (Amendment) Regulations 2002 (SI 3043)
Updating and Screening Assessment (2003)
Updating and Screening Assessment (2008)
Updating and Screening Assessment (2009)

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The diffusion tubes were supplied to Ipswich Borough Council by Scientifics and were 50% TEA: 50% Acetone. The samples were analysed in accordance with guidelines set out in Defras 'Diffusion Tubes for Ambient Nitrogen Dioxide monitoring: Practical Guidance'.

In the WASP inter-comparison scheme, Scientifics was ranked as a Category Good laboratory.

Factor from Local Co-location Studies (if available)

The bias adjustment figure applied to the diffusion tube results is a local factor of 0.87 as a local average unless the site is very similar to one of the two continuous monitors used to calculate the bias when a factor of 0.94 was used based on the monitor at St Margarets Street, or 0.8 based on the monitor on Chevallier Street. A national co-location study gives a bias adjustment factor of 0.85.

QA/QC of Automatic Monitoring

The automatic monitors are routinely calibrated once every 2 weeks by an Ipswich Borough Council Environmental Protection Officer and serviced twice a year by contractors.

All data collected from the automatic monitors is managed by external consultants (AEA) to quality procedures developed under the UK National Network. The data management processes represent best practice and fully meet the requirements set out in LAQM TG(09).

All data are screened and scaled (on the basis of site calibrations) and the final data sets presented within this report have benefited from a full process of data ratification, including thorough additional data quality checks that include site UKAS quality control audits and a final data ratification process that corrects data for instrument sensitivity drift between routine calibrations.