Committee:	North Area Panel	**Agenda Item**
Date:	December, 2005	**6**
Title:	LOCAL AIR QUALITY MANAGEMENT	
Author:	Will Cockerell, Principal Environmental Health Officer, 01799 510581	Item for decision

Summary

1. The Council's 2005 Air Quality Progress Report has identified an upward trend in nitrogen dioxide levels in parts of Saffron Walden and the Government has advised that results for the next six months should be assessed to establish whether they represent a risk of exceeding national standards at the monitoring sites.

2. This report gives further details on the monitoring data used in the Progress Report and recommends that a Detailed Assessment be carried out if the trend continues.

Recommendations

1. It is recommended that the results for the next 6 months be subject to close scrutiny and if the current trend continues, the Council proceed to a Detailed Assessment.

Background Papers

The following papers were referred to by the author in the preparation of this report:

1. Uttlesford District Council's Local Air Quality Management Progress Report 2005 which is included in the appendix to this report, and

2. A letter from DEFRA dated 28th June 2005 which is available for inspection from the author of the report.

Impact

Communication/Consultation	Issue will be considerable concern to residents in the area affected.
Community Safety	The targets are health based
Equalities	None
Finance	Additional monitoring and consultancy advice may be required

Human Rights	None
Legal Implications	Environment Act 1995 Part IV
Ward-specific impacts	Parts of all Saffron Walden wards could be affected
Workforce/Workplace	None

Situation

1. Every year the Council is required to report on air quality within its area and if there is a risk of exceeding national standards for air quality then the Council should proceed to a Detailed Assessment. The 2005 report, which is attached as Appendix 1, identified 4 locations where nitrogen dioxide levels were predicted to exceed the 21 ppb (40 μ/m^3) annual mean value standard for nitrogen dioxide by the end of 2005, these were identified using diffusion tubes at roadside sites at Burton End Stansted close to the M11, and in Saffron Walden at the junction of Thaxted Road and East Street, near the YHA in the High Street and close to the PO in the High Street.

2. In previous years the trend has been downwards caused in the main by the improvements in road vehicle engine technology but increases in traffic volumes and congestion seem to be reversing that trend. A graph showing the long term trends at the roadside Saffron Walden sites is attached as figure 1, and the trend in back ground levels as figure 2. The continuing downward trend in back ground levels may indicate that localised traffic congestion is causing the roadside problems, and it is worth noting that roadside values today are about a third lower than they were in the early 1990's when monitoring first started.

3. The diffusion tube at Burton End is very close to the M11 and the Council's Local Plan includes a policy (ENV13) that precludes development within 100 metres of the central reservation on air quality grounds, and as such it is not likely that relevant public exposure will occur close to this site.

4. The site in Saffron Walden at the Thaxted Road junction with East Street has been subjected to a considerable amount of disruption due to roads works and it may be that the higher than expected results were influenced by these works.

5. The two other sites along the High Street in Saffron Walden are concerning as there are no obvious mitigating circumstances and there are residential property quite close to the roadside. The locations do represent the worst case as the site on the west side of the road close to the Post Office is subject to the effects of queuing traffic and at the site close to the junction with Castle Street and Myddleton Place the road narrows and traffic is often stationary whilst allowing oncoming vehicles to pass.

6. The results for 2005 so far at the Saffron Walden sites are as follows;

	Jan	Feb	Mar	April	May	June
Walden 1	22	21	22	21		
Walden 3	8	12	11	9		
Walden 4	21	21	22	21		
Walden 5	19	23	22	24		
Walden Fire Station	20	24	23	20	16	

7. The Walden Fire Station site is a continuous monitoring site located just behind the boundary wall of the Fire Station, and the prediction for 2005 based on 2004's results are that the standard will not be exceeded at that location but by a very small margin. The road adjacent to this site, Hill Street, is also affected by congestion and slow moving traffic and tends to confirm that these factors are significant contributors to local air quality.

Figure 1

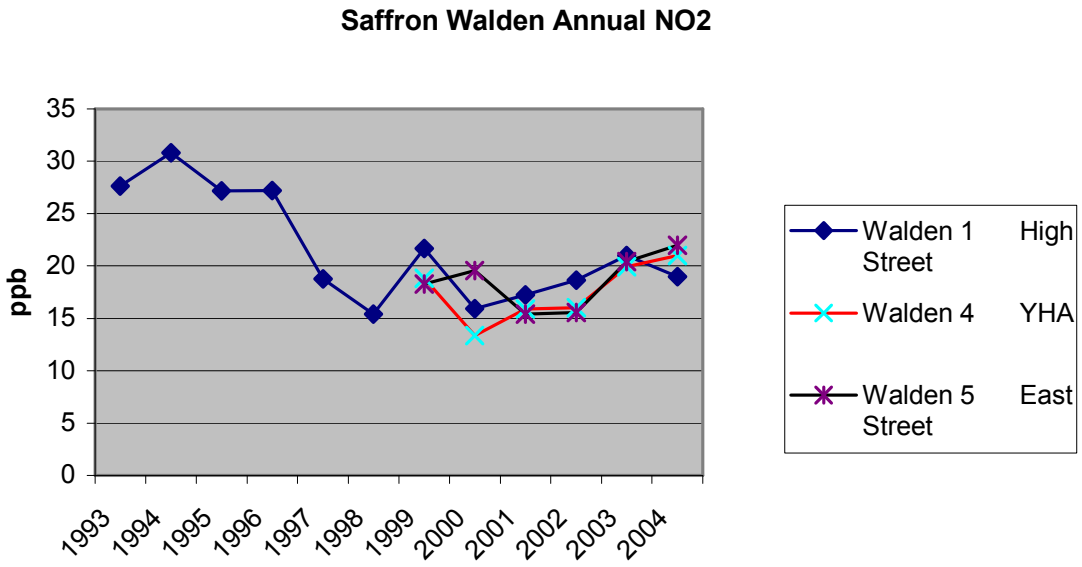
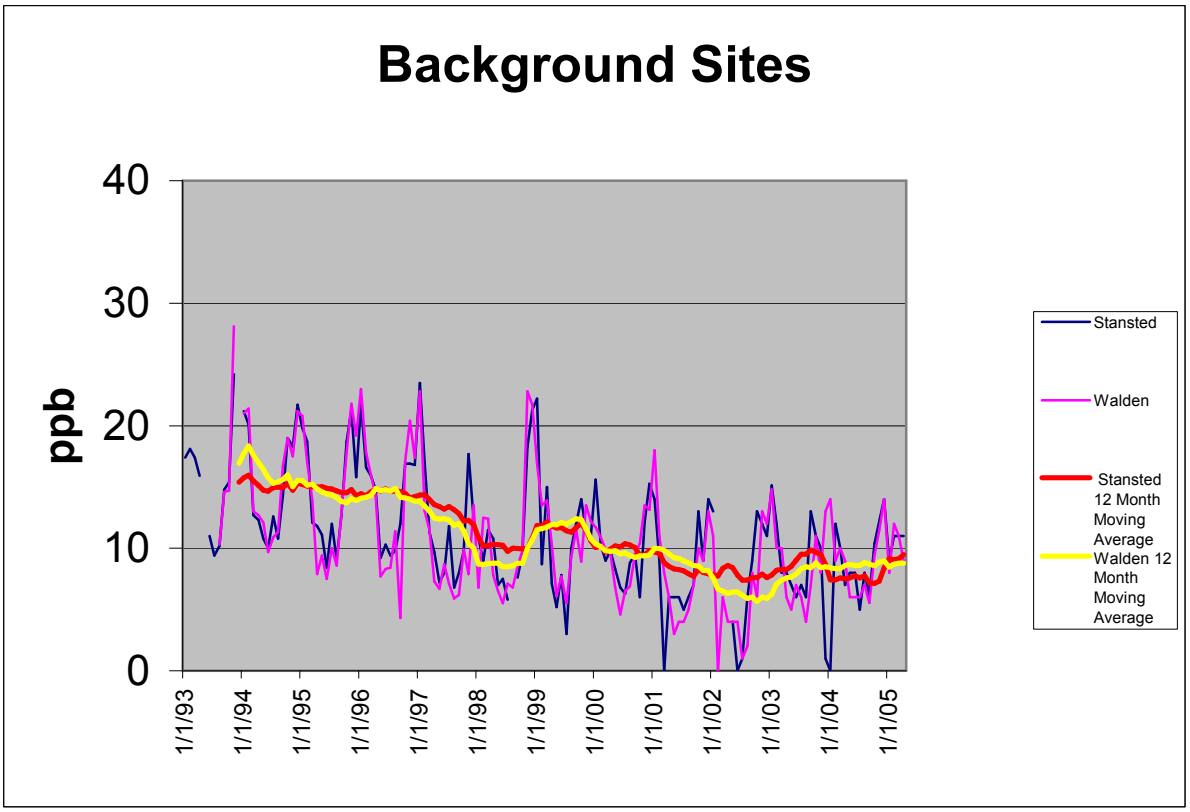


Figure 2



Targets

The Government's standard for nitrogen dioxide is 21 ppb (40 μ/m^3) annual mean value to be met by the end of 2005. The evidence from the diffusion tube monitoring is that this level may well be exceeded by the target date in some parts of Saffron Walden and that the Council will have to carry out a Detailed Assessment to determine whether it needs to start the process of declaring an Air Quality Management Area.

Options

The Council can continue to monitor for nitrogen dioxide at the present locations in Saffron Walden and wait until the results are available for the complete year, expected to be available in February or March 2006. Alternatively close scrutiny of the results can be carried out as the year progresses and if seems likely that the target level will be breached preparation for a detailed assessment can be commenced before the final results become available.

Penalties

The Council is under a legal obligation to designate an Air Quality Management Area if as the result of an air quality review it appears that air quality standards are not being achieved, failure to do so would result in the Secretary of State using reserve powers to carry out the Council's functions.

Risk Analysis

The following have been assessed as the potential risks associated with this issue.

Risk	Likelihood	Impact	Mitigating Actions
Target levels for nitrogen dioxide exceeded	Possible	Adverse health effects on vulnerable groups	Carry out detailed assessment and declare AQMA if appropriate.

Appendix 1

Uttlesford District Council

Local Air Quality Management – Progress Report

April 2005

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This report has been compiled
as part of the
Essex Air Quality Consortium
Monitoring Network.

ESSEX Air Quality Consortium

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Introduction

1.1 Background

This Progress Report is a requirement of the Environment Act 1995, Part IV, which places a duty on local authorities to review and assess air quality within their area periodically. The report is provided on an annual basis, following the Updating and Screening Assessment (USA) that was carried out in 2003, as part of the second round of Review and Assessment. The schedule for reporting is shown in Appendix

The objective of the Progress Reports is to provide continuity in the Local Air Quality Management (LAQM) process, by identifying any potential changes in air quality that might occur between the scheduled Review and Assessments which are due to be undertaken on a three-yearly basis. They are intended also to help local authorities by providing a means for communicating air quality information, increasing the effectiveness of the monitoring effort being carried out and providing a cost effective solution to address future monitoring needs.

This Progress Report has been compiled with reference to the Progress Report Guidance (LAQM.PRG (03)) which was published by Defra in 2003. It presents information that has been collated since the production of the USA report, including air quality monitoring data, information about emission sources and any proposed developments, which have the potential to affect air quality in the District.

1.2 Outcome of previous Review and Assessments

Uttlesford District Council undertook their First Round of review and assessment, including Stage 1 and 2 reports, in the period 1998-1999. The main air quality issues were found to be emissions of NO_2 and PM_{10} from vehicles on the M11 and A120. It was predicted that all of the air quality objectives would be achieved and that it was not necessary therefore to declare any Air Quality Management Areas (AQMAs) for any pollutant.

The USA was completed in October 2003 and this reconsidered the seven health based air quality objectives. The USA concluded that there was still no risk of exceedence of the air quality objectives and therefore, there was no requirement to carry out a detailed assessment for the Second Round of Review and Assessment.

Monitoring data

2.1 Atmospheric concentration measurements

Uttlesford District Council has been measuring air quality in the district since 1998 using two automatic air quality monitoring stations. One is located in Saffron Walden and a second is located in Takeley. Both stations measure concentrations of oxides of nitrogen and PM_{10}. The two sites are classified as urban background. In addition to these two sites, a mobile monitoring station has been deployed at Takeley Four Ashes. The locations of the automatic stations are shown in Figure 2.1.

In addition to the continuous monitoring, there are 16 nitrogen dioxide diffusion tube monitoring locations in the district. This has been increased from the 8 sites in 2003. The locations of the diffusion tube monitoring sites are shown in Figure 2.1.

The diffusion tubes used by Uttlesford District Council are supplied and analysed by Gradko. A preparation mixture of 50 % triethanolamine: acetone is used. A correction factor of 1.11 was used in 2003. The corresponding correction factor for 2004 has been calculated as the mean of four parallel (including diffusion tubes and automatic analysers). These measurements are given on the University of the West of England website and a figure of 1.12 has been recommended (http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls).

2.2 Nitrogen dioxide

The nitrogen dioxide measurements made at the Saffron Walden site by automated analysis are summarised in Table 2.1. The measured levels in 2004 were much higher than those in 2003 and the annual mean concentration was in excess of the air quality objective value (40 μg/ m^3). In addition, there were 6 exceedances of the 1-hour mean objective value (200 μg/ m^3; 18 permitted). Prediction of 2005 levels, assuming a decrease in emissions proposed by Defra, indicates an annual mean value marginally less than the objective value.

Table 2.1 Automatic monitoring results for Saffron Walden

Pollutant	Statistic	2003	2004	2005
Nitrogen dioxide	Annual mean (μg/ m^3)	30.0	40.5	39.5
	Max 1-h mean (μg/ m^3)		225.8	
	Exceedances of 1-h mean objective (200 μg/ m^3)		6	
	Data capture (%)		96.7	
Particles (PM_{10})	Annual mean (μg/ m^3)	28.9	24.5	
	Maximum 24-h mean (μg/ m^3)		83.5	
	Exceedances of 24-h mean objective (50 μg/ m^3)		19	
	Data capture (%)		93.7	

Note: the 2005 annual mean value for NO_2 is predicted from 2004 measurements and assuming a decrease in exhaust emissions detailed by Defra in LAQM.TG (03).

The nitrogen dioxide measurements made at the Takeley site by automated analysis are summarised in Table 2.2. The levels measured values were well within the objective levels and no exceedances of the 1-hour mean value were observed.

Table 2.2 Automatic monitoring results for Takeley

Pollutant	Statistic	2003	2004	2005
Nitrogen dioxide	Annual mean (μg/ m^3)	19.3	19.3	18.8
	Max 1-h mean (μg/ m^3)		94.7	
	Exceedances of 1-h mean objective (200 μg/ m^3)		0	
	Data capture (%)		93.5	
Particles (PM_{10})	Annual mean (μg/ m^3)	18.9	15.5	
	Maximum 24-h mean (μg/ m^3)		48.9	
	Exceedances of 24-h mean objective (50 μg/ m^3)		0	
	Data capture (%)		82.0	

Note: the 2005 annual mean value for NO_2 is predicted from 2004 measurements and assuming a decrease in exhaust emissions detailed by Defra in LAQM.TG (03).

The nitrogen dioxide measurements made at the mobile site (at Takeley Four Ashes) by automated analysis are summarised in Table 2.3. The annual mean concentration was well within the limits set by the objectives and there were no exceedances of the 1-hour mean objective level.

Table 2.3 Automatic monitoring results for the Mobile Station (at Takeley Four Ashes)

Pollutant	Statistic	2004	2005
Nitrogen dioxide	Annual mean (μg/ m^3)	21.6	21.1
	Max 1-h mean (μg/ m^3)	103.1	
	Exceedances of 1-h mean objective (200 μg/ m^3)	0	
	Data capture (%)	93.5	
Particles (PM_{10})	Annual mean (μg/ m^3)	25.8	
	Maximum 24-h mean (μg/ m^3)	78.3	
	Exceedances of 24-h mean objective (50 μg/ m^3)	21	
	Data capture (%)	85	

Note: the 2005 annual mean value for NO_2 is predicted from 2004 measurements and assuming a decrease in exhaust emissions detailed by Defra in LAQM.TG (03).

Table 2.4 NO_2 Diffusion tube monitoring results

Site name	Site Type	Nitrogen Dioxide Concentration (μg/ m^3)				
		2001	2002	2003	2004	2005
Gibson Close, Saffron Walden	Background	21	17	18	19.2	18.7
Norman Court, Stansted	Background	23	22	18.4	19.7	19.2
Wicken Road, Newport	Roadside	33	26	31	32.1	31.3
Goose Lane, Lt Hallingbury	Roadside	30	32	35.8	33.4	32.5
Burton End, Stansted	Roadside	44	39	38.4	42.3	41.2
Thaxted Road, Saffron Walden	Roadside	41	40	39.1	47.5	46.3
YHA, Saffron Walden	Roadside	42	42	38.1	44.0	42.9
High Street, Saffron Walden	Roadside	45	48	40.2	40.9	39.9
A120 Start Hill	Roadside				39.0	38.0
A120 Takeley Street	Roadside				30.2	29.4
A120 Takeley Four Ashes	Roadside				25.8	25.1
A120 Stortford Road	Roadside				40.3	39.3
A120 Braintree Road	Roadside				37.4	36.5
A120 Blake End	Roadside				30.6	29.8
Airport 1	Receptor				29.1	28.3
Airport 2	Receptor				28.5	27.8

Notes: 2005 annual mean value is predicted from 2004 measurements and assuming a decrease in exhaust emissions detailed by Defra in LAQM.TG (03); annual mean values based on at least 9 months data are reported (< signifies insufficient data).

The diffusion tube monitoring results are shown in Table 2.4. The levels at some of the sites in Saffron Walden and at one in Stansted were above the annual mean objective for NO_2 (40 μg/ m^3). The others, some at busy

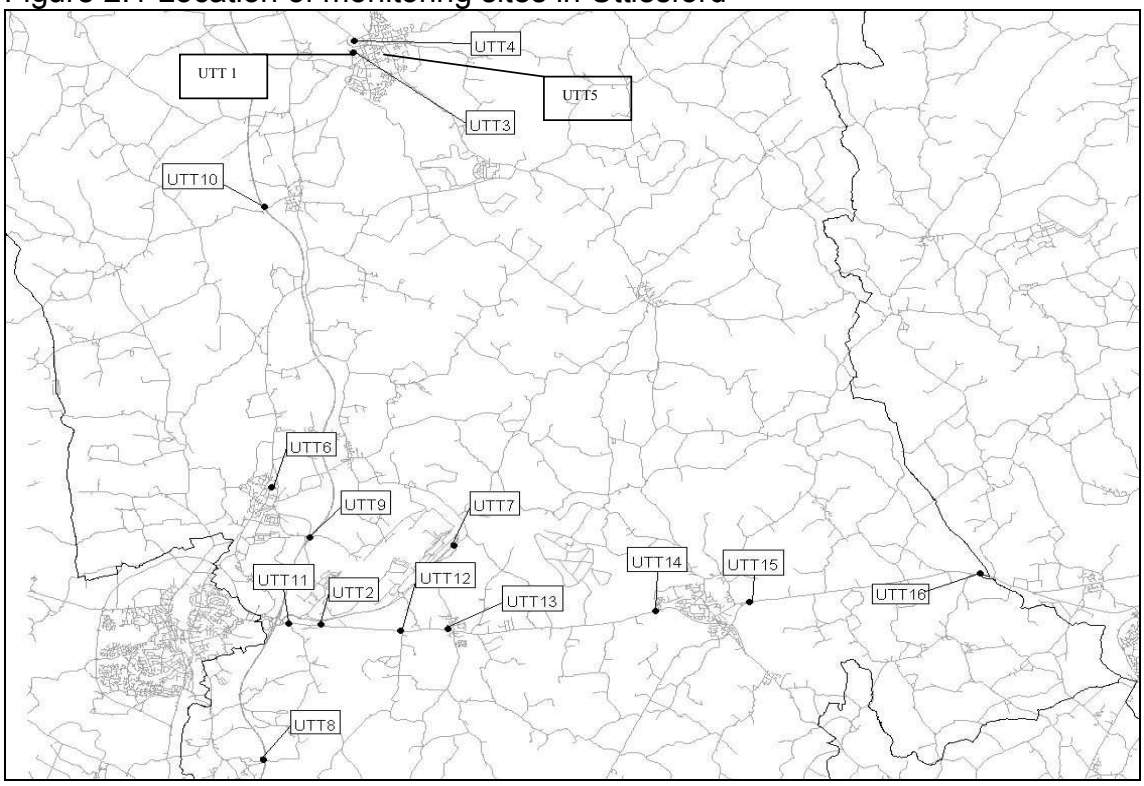
kerbside locations, were within the levels set by the objectives. There are too few data to indicate any statistically significant trends in concentrations with

time at the measurement sites. Prediction of 2005 NO_2 levels due to a decrease in emission levels, does not affect the annual mean concentrations significantly.

2.3 Particles (PM_{10})

Annual mean concentrations of PM_{10} at the three continuous monitoring sites were well below objective limit (40 μg/ m^3) during 2004. There were no exceedances of the 24 hour mean objective (50 μg/ m^3) at the Takeley site, although there were 19 and 21 exceedances of the objective level for the 24-hour mean at the Saffron Walden and Takeley Four ashes sites, respectively. The objective states that 35 exceedances are permitted. The 90th percentiles were 28.8 μg/ m^3, 42.5 μg/ m^3 and 43.6 μg/ m^3, at the Takeley, Saffron Walden and Takeley Four ashes sites, confirming compliance with the objective levels.

Figure 2.1 Location of monitoring sites in Uttlesford



No.	x	y	location
UTT2	553693	238402	Airport 1 Thatched Cottage Great Hallingbury
UTT3	552713	221403	Walden 3 Gibson Close Saffron Walden
UTT4	553540	238218	Walden 4 YHA Saffron Walden
UTT5	553580	238573	Walden 5 Thaxted Road Saffron Walden
UTT6	554305	238465	Stansted Norman Court Stansted

UTT7	551410	225435	Airport 2 Rose Cottage Takeley
UTT8	556181	223725	Hallingbury Goose Lane Lt Hallingbury
UTT9	551188	217432	Burton End Burton End Stansted
UTT10	552402	223972	Newport Wicken Road Newport
UTT11	551235	233693	Start Hill Old A120 Gt Hallingbury
UTT12	551855	221430	Takeley Street Old A120 Takeley
UTT13	554775	221225	Takeley 4 Ashes Old A120 Takeley
UTT14	556018	221270	Stortford Rd. Gd. Old A120 Great Dunmow
UTT15	561455	221795	Braintree Rd. Gd. Old A120 Great Dunmow
UTT16	563905	222070	Blake End old A120 Felsted
UTT1	553693	238402	Walden 1 High Street Saffron Walden

Emission sources

When the Updating and Screening Assessment was carried out in 2003, there were no Part A industrial sources and 21 Part B industrial sources (of which, 11 were petrol stations) in the District of Uttlesford. In the reporting period, two further petrol stations (BP Stansted and Dunmow Convenience Store) have commenced operations. The operations are listed in Table 3.1.

Table 3.1 Industrial Emission Sources in Uttlesford

Process Name	Process Type	PG Note	Notes
Printpack Europe	Flexible packaging printer	6/ 17	
RMC Ready Mix	Bulk cement process	3/ 1	
Acrow Galvanising	Hot dip galvanising	2/ 2	
Roding Motor Services	Small waste oil burner	1/ 1	
Tyre Mart	Small waste oil burner	1/ 1	
Tom Sim Joinery	Wood coating	6/ 33	
Station Coachworks	Vehicle respraying	6/ 34	
R B Haigh	Mobile concrete crushing/ screening (2)	6/ 16	
Easton Plant	Mobile concrete crushing	6/ 16	
E. Corr Loppingdales	Mobile concrete crushing	6/ 16	
Q8 Stansted	Unloading Petrol	1/ 14	
Tesco Stores, Saffron Walden	Unloading Petrol	1/ 14	
Tesco Stores, Great Dunmow	Unloading Petrol	1/ 14	
Welcome Break, Birchanger	Unloading Petrol	1/ 14	
Starthill, Gt Hallingbury	Unloading Petrol	1/ 14	
Takeley Service Station	Unloading Petrol	1/ 14	
Saracens Filling Station, Thaxted	Unloading Petrol	1/ 14	
Total, Stansted	Unloading Petrol	1/ 14	
Shire Hill, Saffron Walden	Unloading Petrol	1/ 14	
Central Garage, Newport	Unloading Petrol	1/ 14	
Stansted Airport North Side	Unloading Petrol	1/ 14	
BP Stansted	Unloading Petrol	1/ 14	New
Dunmow Convenience	Unloading Petrol	1/ 14	New

New developments and planning in Uttlesford

The new route of the A120 is likely to have a positive impact on air quality in the District. The District Council are involved in the 'Before and After' study which is due to be completed in 2005.

Any proposals for an expansion at Stansted Airport will require an Environmental Assessment, which will include consideration of air quality. Any relevant studies will be reported in future Progress Reports. In addition, the Stansted Airport operators are obligated to carry out an air quality monitoring programme, including diffusion tubes and real time monitoring. Preliminary data indicate that there are currently no breaches of air quality standards at locations with relevant public exposure.

There are currently no planning applications for new developments for which an air quality assessment is required or which might have a detrimental impact on air quality in Uttlesford.

Local Transport Plan

Uttlesford is covered by the Essex County Council Local Transport Plan (LTP). There are a number of general measures in the Essex LTP which are aimed at reducing the impact of road transport on air quality.

The Council is working in partnership with the Highways and Transportation department of Essex County Council to ensure that new traffic management schemes consider the potential impact on air quality. Additional air quality monitoring programmes are being introduced as part of the monitoring requirements of the LTP. A mobile air quality monitoring station was deployed on the A120 using LTP funding. In addition, 6 diffusion tube sites have been set up as part of the before and after study of the A120 re-routing, specifically looking at the impact of the scheme on concentrations along the existing route.

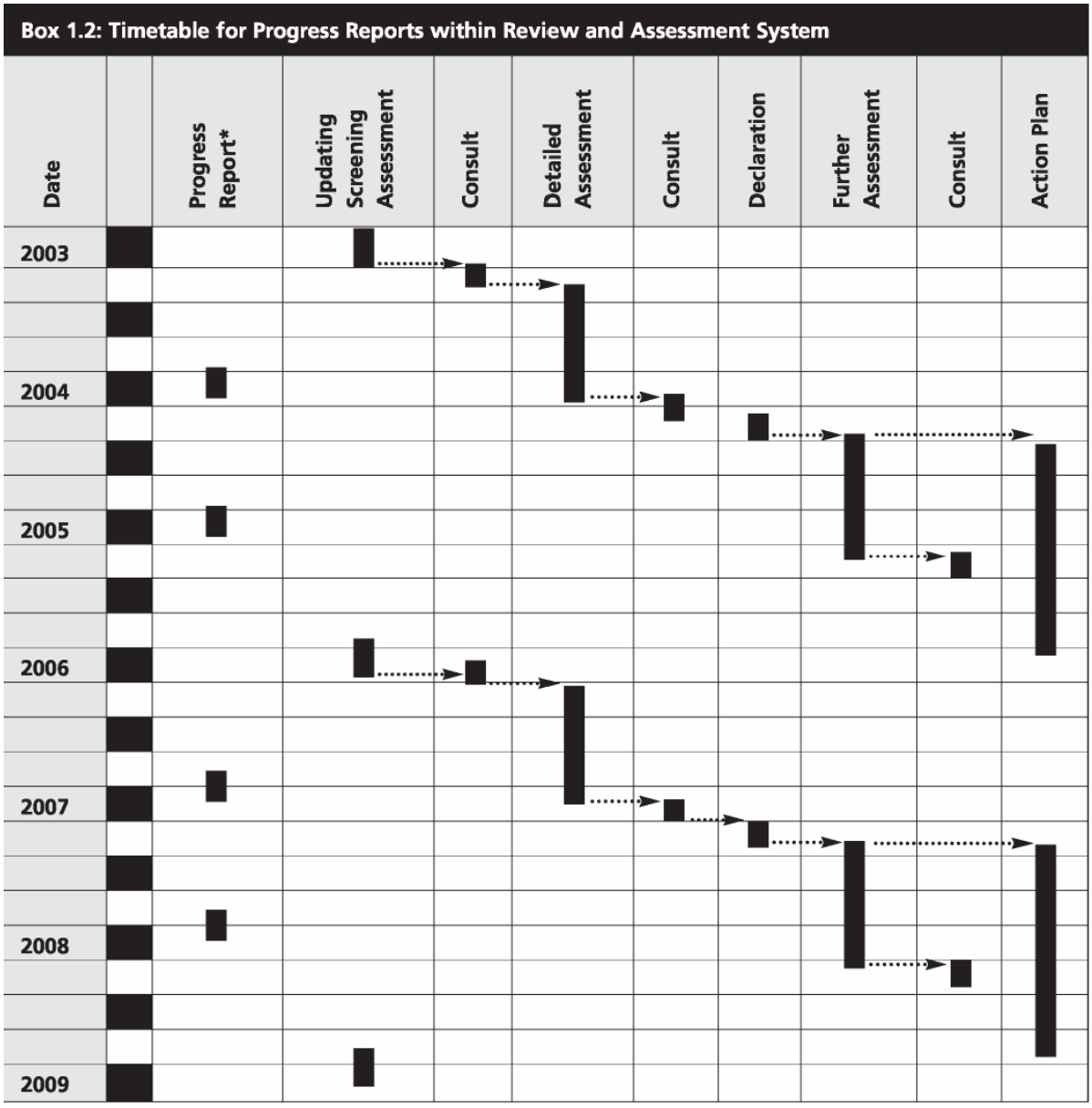
Summary and Conclusions

The Progress Report shows that Uttlesford District Council is currently meeting the air quality objectives at most locations for nitrogen dioxide. However, at several sites in Saffron Walden and at one site in Stansted, the annual mean concentrations of nitrogen dioxide were above the limits set by the objective. It is recommended that the measurements for 2005 are closely scrutinised and the need for a further assessment or for the designation of an Air Quality Management Area should be made on the outcome. Levels of PM_{10} measured in the Uttlesford District were within the limits set by the objective.

The District Council is working in partnership with key stakeholders to ensure that the air quality in Uttlesford continues to improve.

The next air quality report to be prepared and submitted to Defra will be the 2006 Progress Report.

SUMMARY OF REPORTING SCHEDULE



Source: Progress Report Guidance LAQM.PRG (03), Defra (2003).