

UTTLESFORD DISTRICT COUNCIL
DETAILED ASSESSMENT OF AIR QUALITY
SAFFRON WALDEN
DECEMBER 2006

Draft

Saffron Walden Monitoring

Monitoring for nitrogen dioxide using diffusion tubes has been undertaken in the central part of Saffron Walden since 1993. The initial three diffusion tubes were part of a national survey and were located at roadside, intermediate and background locations. The roadside tube was placed on a road sign support pole close to the Post Office in the High Street and during the first four years nitrogen dioxide levels were above the annual mean objective of 21ppb (40ugm³) but, in line with national trends related to the introduction of improved engine technology, this reduced to below the exceedence and remained so for five or so years, in the last two years the earlier gains have been reversed and levels increased back to the exceedence level (although not as high as the initial results in 1993) probably due to the increases in traffic and congestion. The background DT in Gibson Gardens has always been below the annual mean objective and is current at less than half that level, the intermediate DT in Abbey lane was also below the exceedence objective and was discontinued in 2003 when this type of location was dropped from the national monitoring scheme. In 2000 two new locations were established in Saffron Walden, one at the Thaxted Road junction with East Street and Radwinter Road attached to one of the traffic light poles on the north side of East Street, and another close to the YHA in the High Street and opposite the junction with Castle Street attached to another pole supporting road traffic information. The results from these DTs have followed the same trend as the PO site with initial falls in levels being reversed in the last few years and now at a level at or above the annual mean objective.

Real time monitoring for Nitrogen dioxide (and Carbon Monoxide and PM₁₀) commenced in 1997 at the front of the fire station in Hill Street. Levels of nitrogen dioxide have consistently been below the annual mean objective.

Additional Monitoring for the Detailed Assessment

Following the Progress Report in 2005 four new diffusion tube sites were established, two designed to gauge the spatial extent of any exceedence and two at receptor locations to ascertain if there was relevant exposure to members of the public. Monitoring commenced in January 2006 and was intend to last for 12 months, however DEFRA has asked that the Detailed Assessment be submitted by the end of the calendar year so that only 9 months data will be used for the assessment and that bias adjustment will have to be based on 2005's observations. Extensive road works started in October 2006 which have substantially altered the traffic flows within the town, these are due to be completed by the end of the year but would have had a distorting effect on nitrogen dioxide levels and would have had to be excluded from the DA.

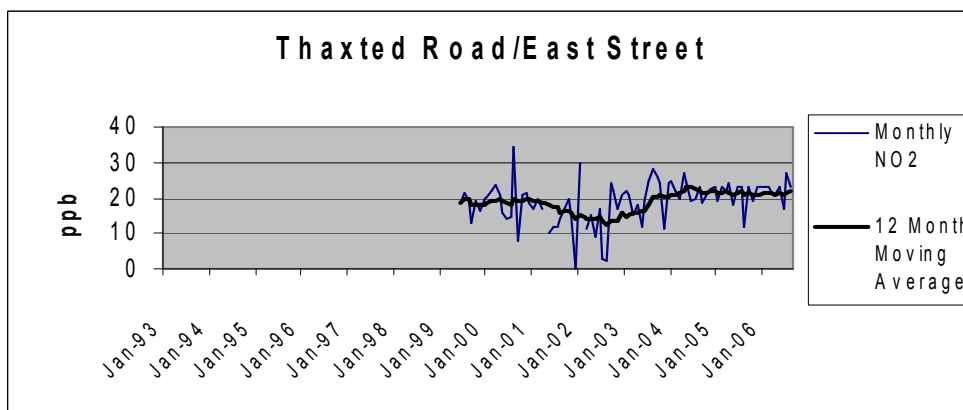
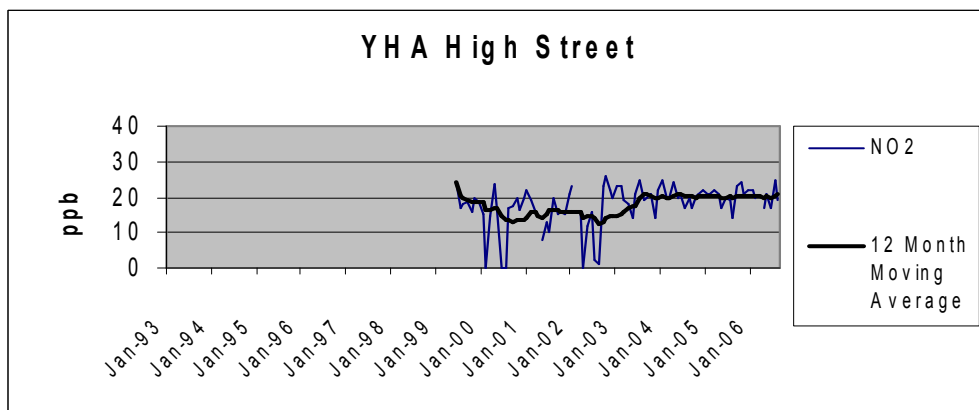
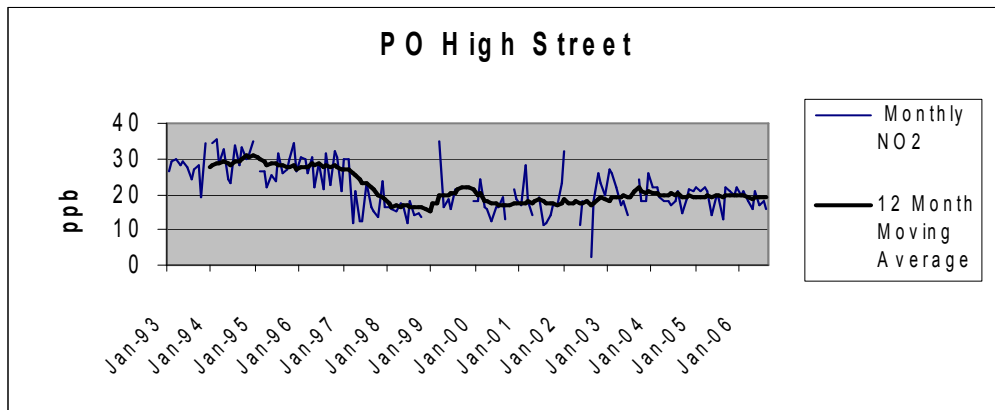
The two receptor sites have been established at the façade of Hill House, High Street and on the west side of the High Street opposite the Cross Keys PH as close as practical to a terrace of three houses. The existing tubes at the Thaxted Road/East Street junction and close to the YHA in the High Street are as close as practical to the facades of the nearby residential dwellings.

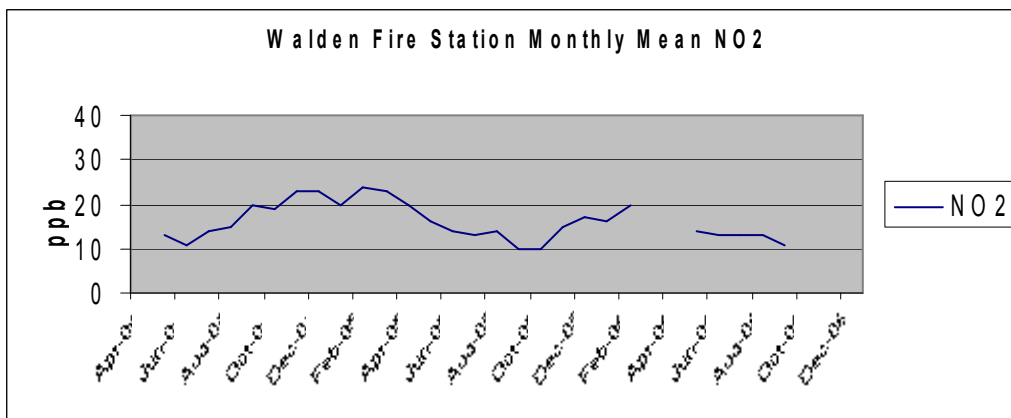
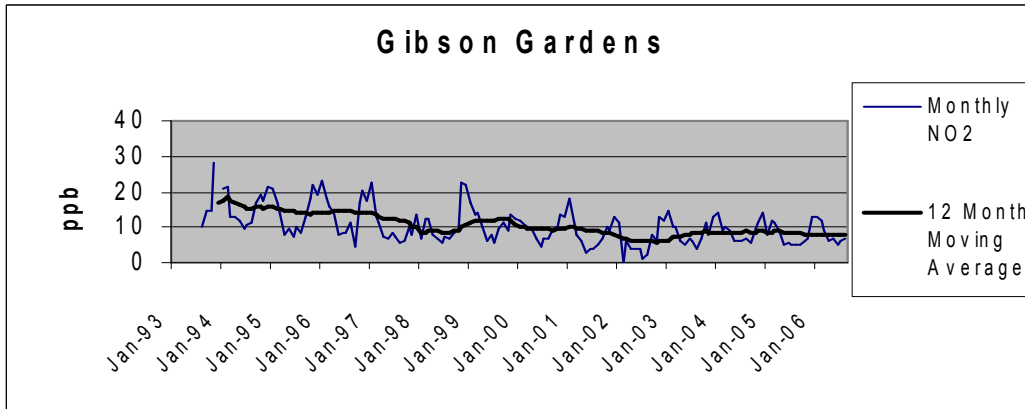
The two spatial tubes are located in Church Street and East Street, the Church Street tube is as close as practical to the façade of the first residential dwelling on the south side of the street and the East Street tube is located within the pedestrian refuge at the junction of East Street and Audley Road. The purpose of these DTs is to judge how far the higher levels of nitrogen dioxide in the High Street and the Thaxted Road junction spread into surrounding streets.

Results and Analysis

Previous monitoring

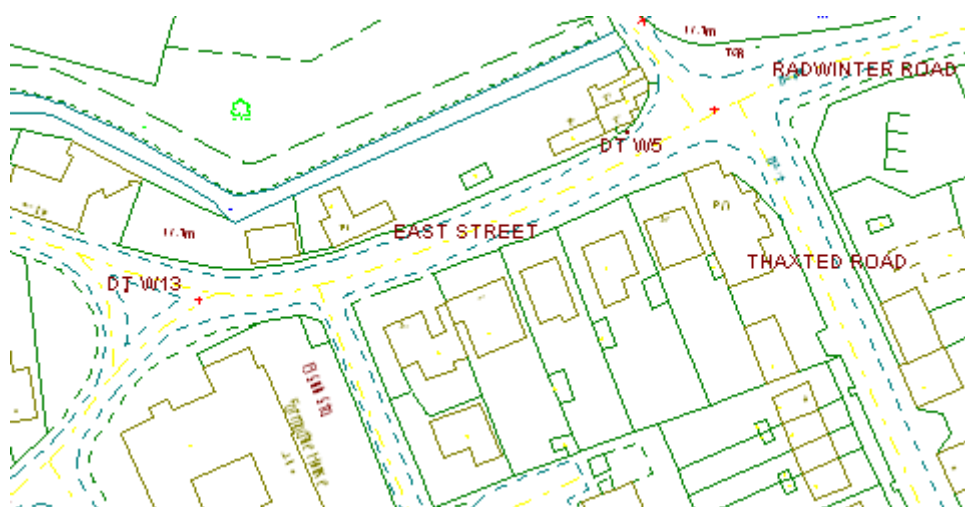
Trends in nitrogen dioxide levels are shown in the following charts (results for diffusion tubes not bias corrected).





Current Monitoring and Relevant Exposure

Thaxted Road junction with Radwinter Road and East Street



This junction is controlled by traffic lights and queuing traffic are routinely stationary close to 43, 45, 47, 62, 64, and 66 East Street, the diffusion tube data for 2005 and 2006 from the Walden 5 site positioned on the traffic light pole next to 45 East Street indicates levels above the 21ppb annual mean objective (Figure 1) . The diffusion tube (Walden 13) positioned on the pedestrian refuge to the west of this junction indicates that the annual mean objective is not being exceeded (Figure 2).

The buildings in this area are predominately residential.

Figure 1: Thaxted Road / East Street

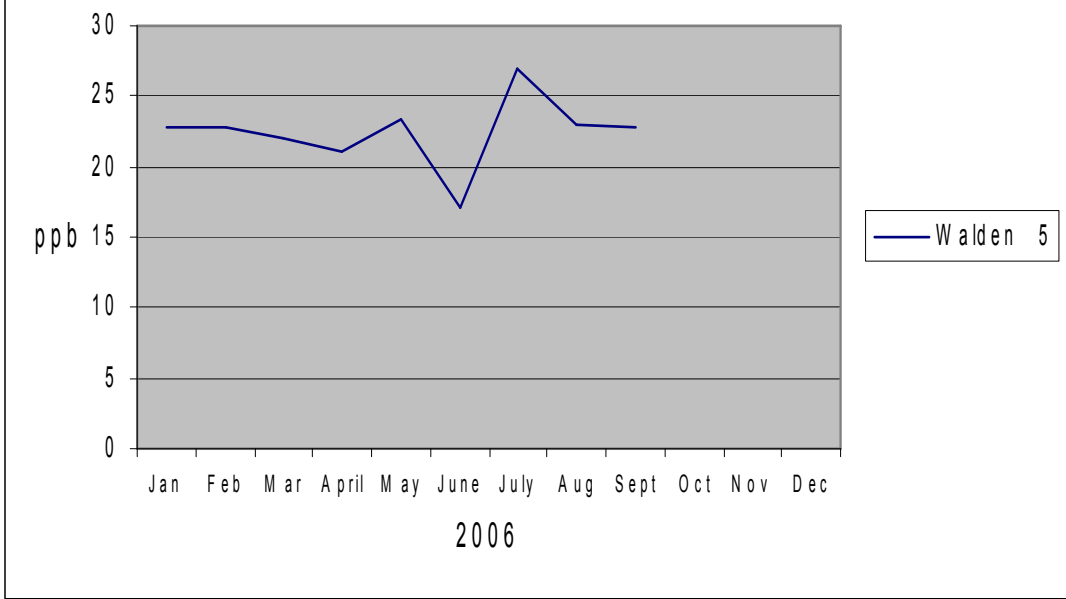
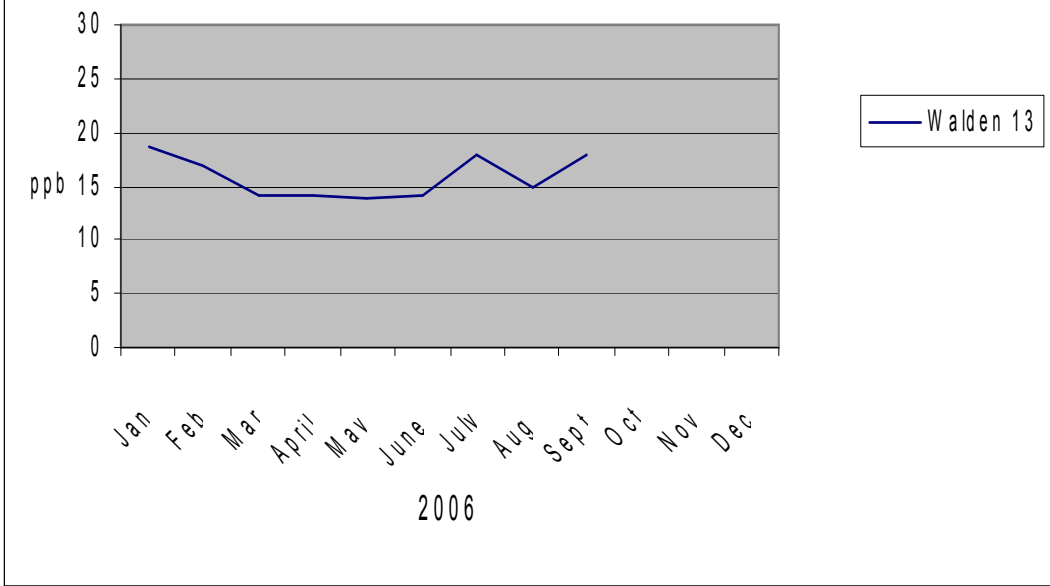
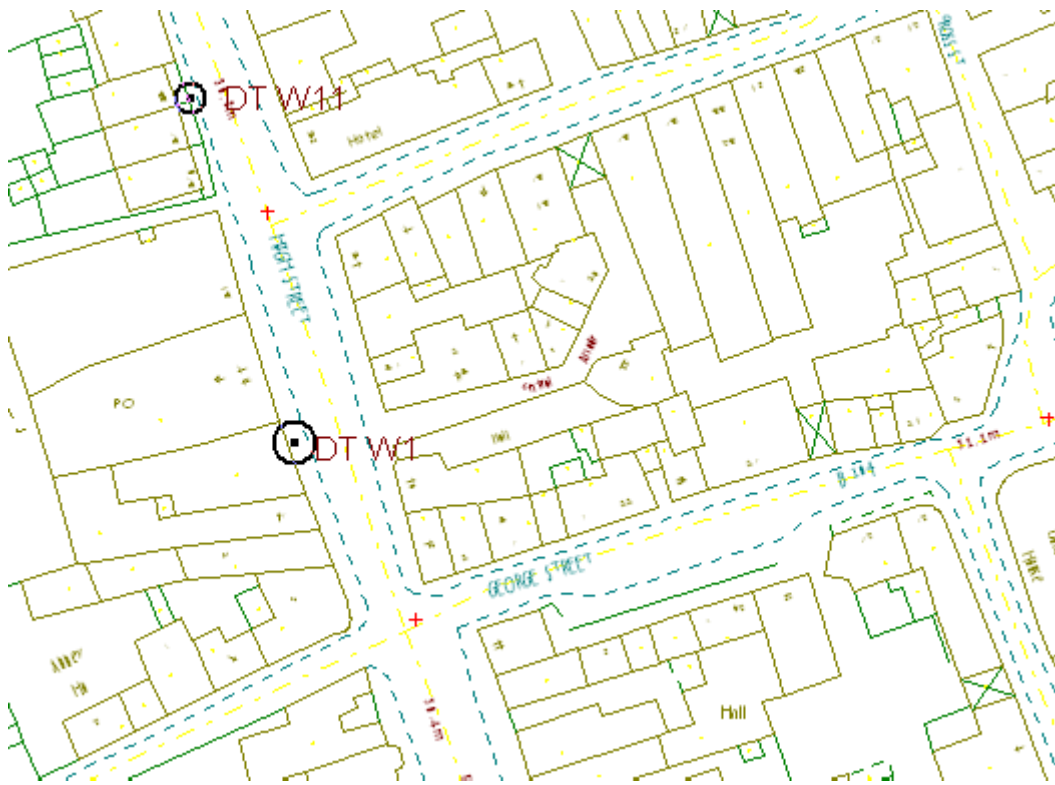


Figure 2 : East Street Saffron Walden



High Street junction with George Street



This junction is controlled by traffic lights and queuing traffic is frequently stationary in the High Street in both directions especially during the 'school run' periods. The diffusion tube data for 2004, 2005 and 2006 from the Walden 1 site positioned on the information pole next to the Post Office indicates levels above the 21ppb annual mean objective (Figure 3) when bias adjusted. The newly established site on the west side of the High Street opposite the Cross Keys Hotel, Walden 11, indicates a bias adjusted level of 21ppb based on the first 9 months data of 2006 and the 2005 bias adjustment factor (Figure 4).

The buildings in the area are predominately commercial but there are a number of flats above these premises and some relatively new houses adjacent to the Walden 11 site.

Figure 3 : PO High Street Saffron Walden

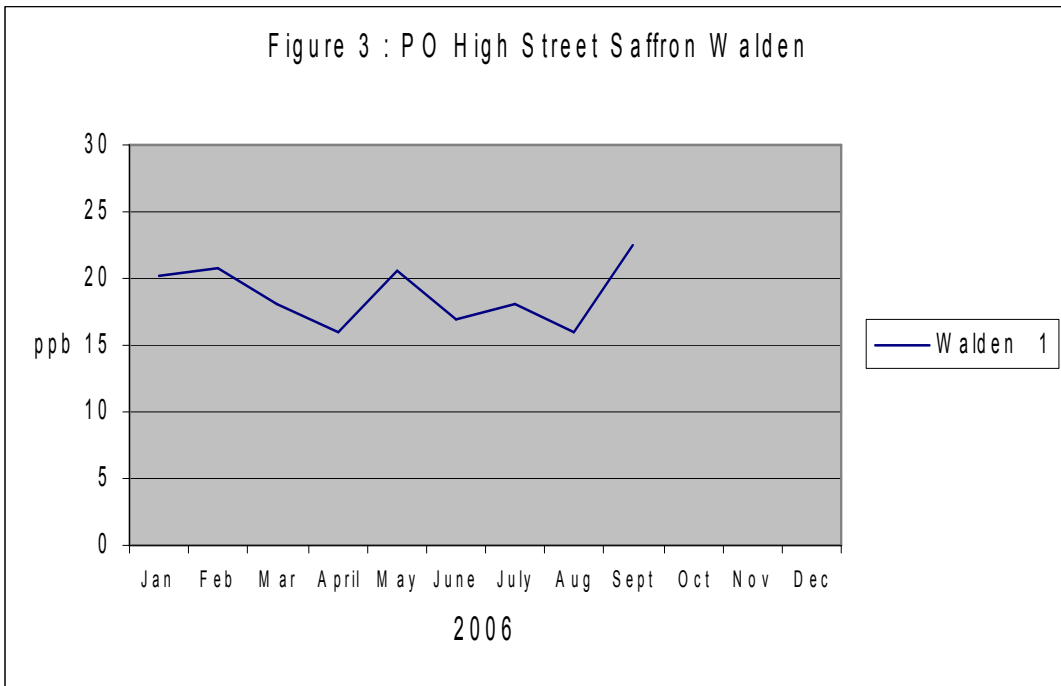
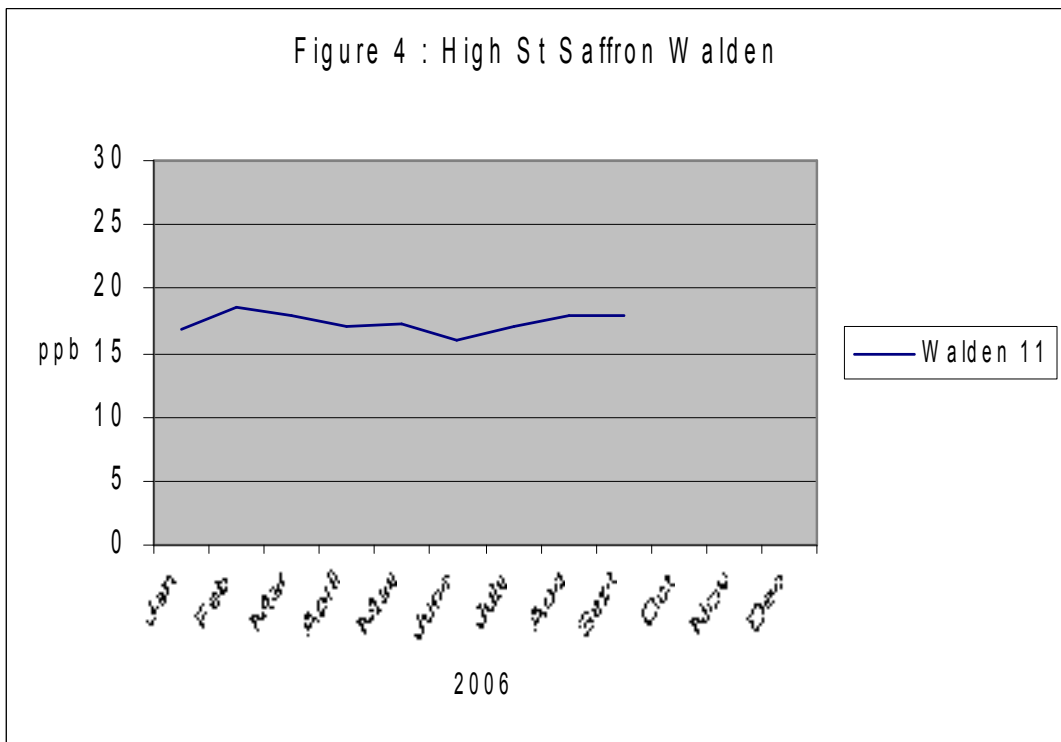


Figure 4 : High St Saffron Walden



The two other sites established during 2006 in this area are on the south side of Church Street, Walden 12, and as close to the façade of Hill House, High Street, Walden 14. Data from the first 9 months of 2006 (when bias adjusted with the 2005 factor) as significantly below the 21ppb annual mean objective, (Figures 5 and 6).

The long term background monitoring site Walden 3, and the Real Time Monitoring site at the Fire Station are also significantly below the 21ppb annual mean objective, (Figures 7 and 8)

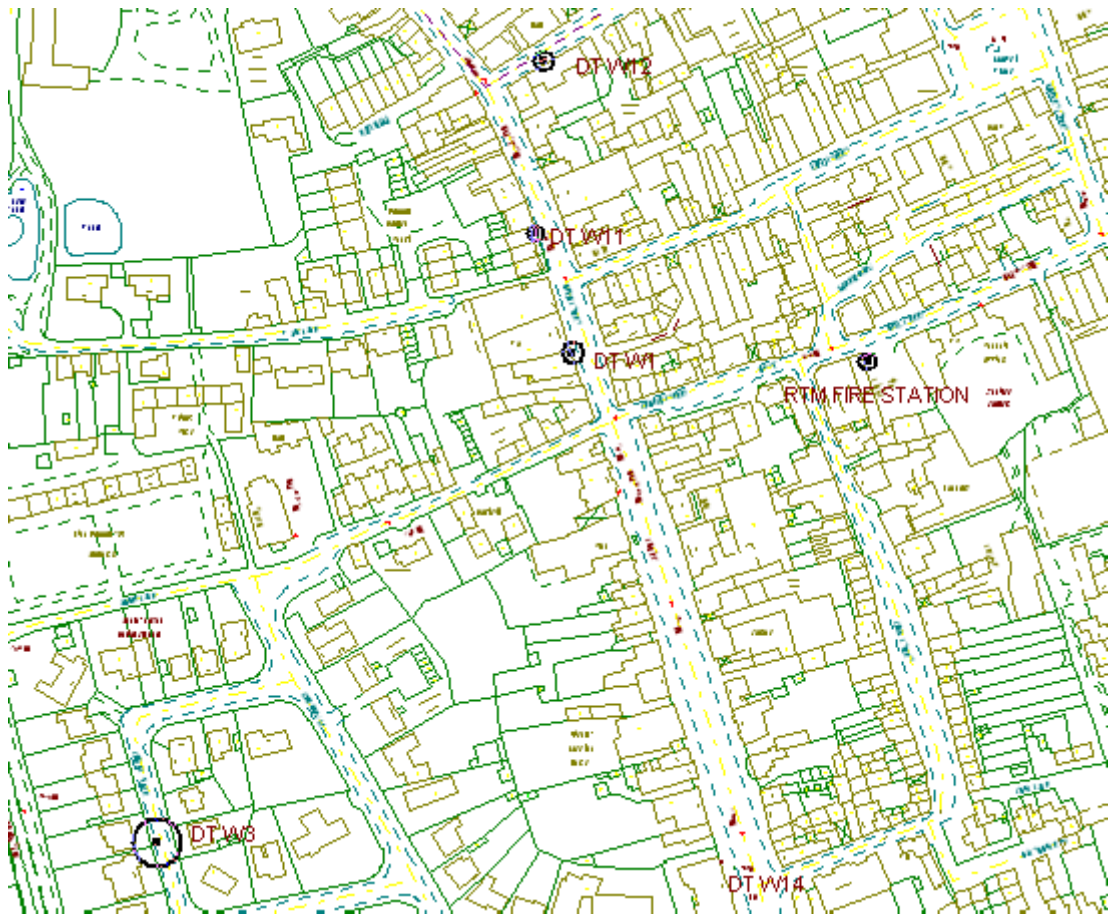


Figure 5 : Church Street Saffron Walden

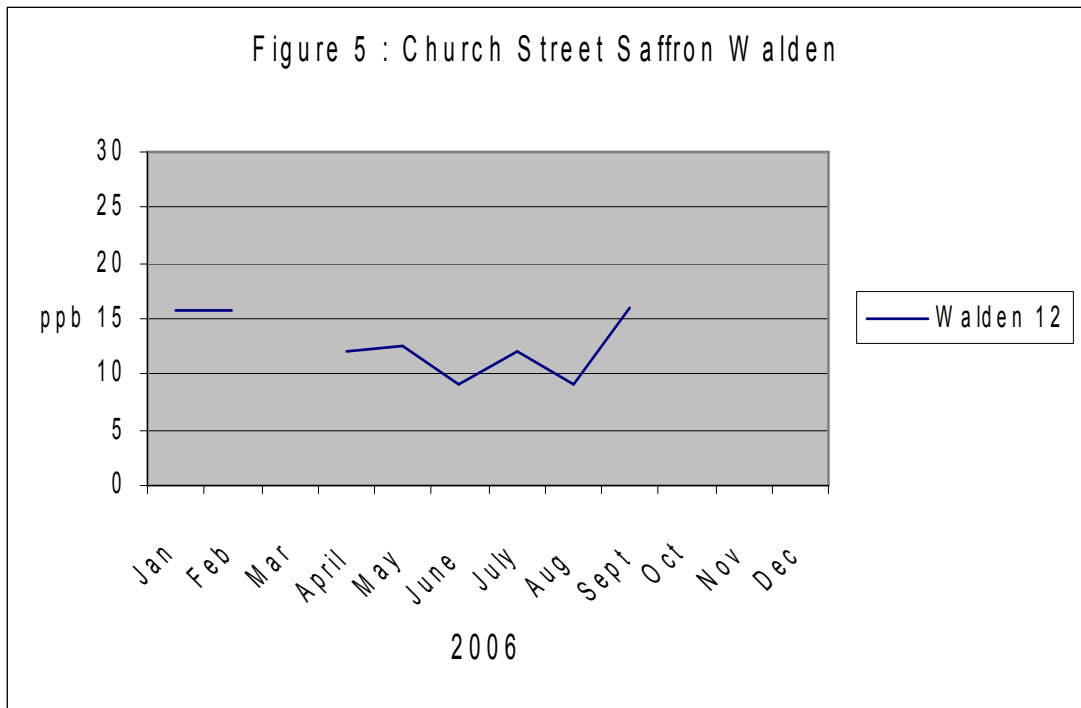


Figure 6 : Hill House Saffron Walden

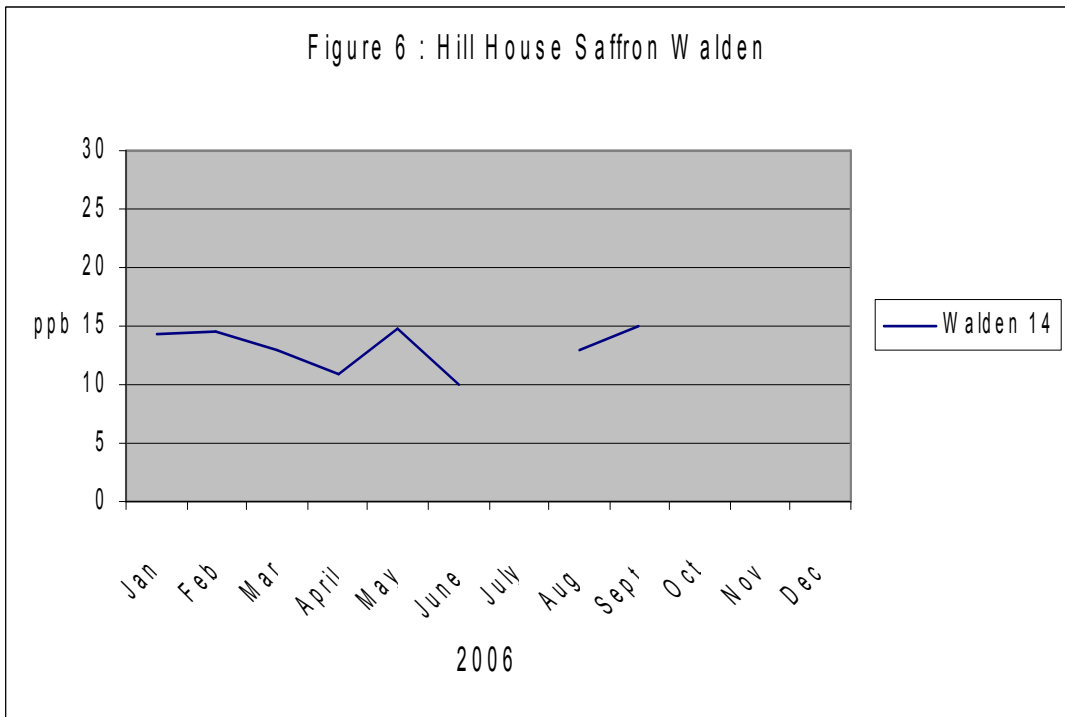


Figure 7 : Gibson Gardens Saffron Walden

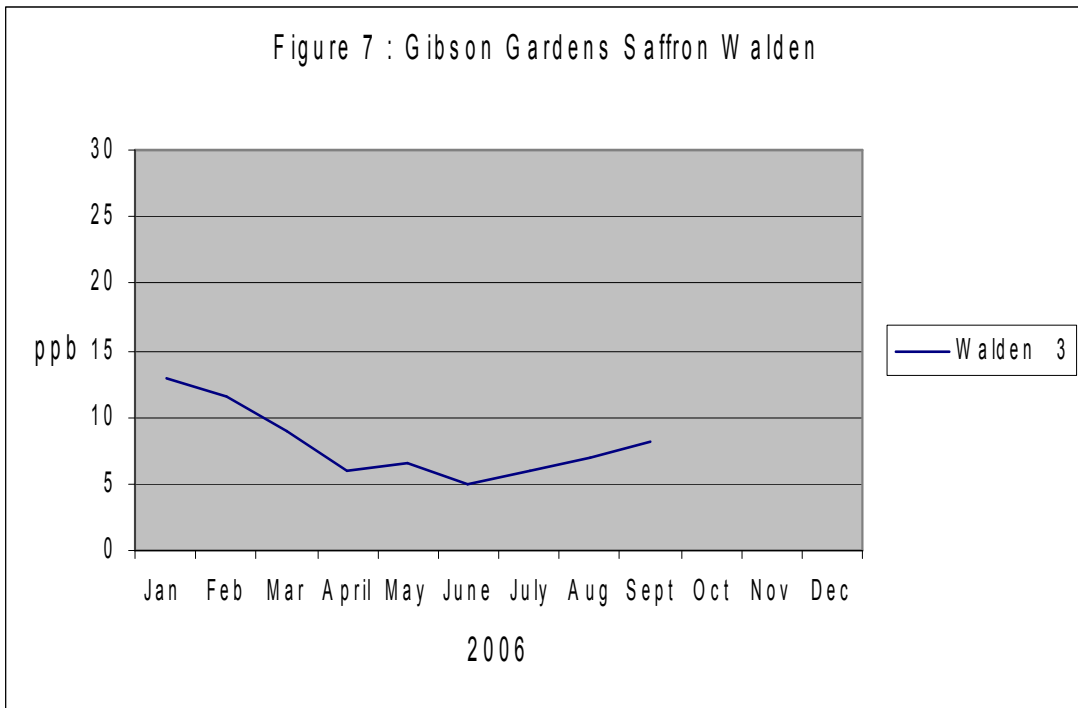
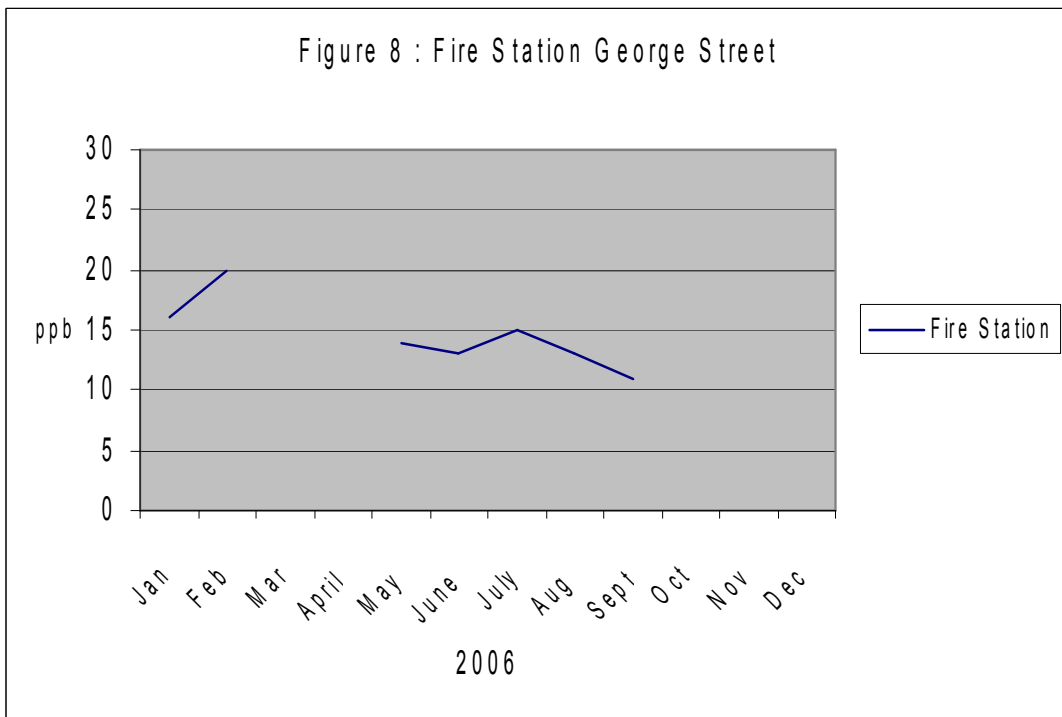


Figure 8 : Fire Station George Street



High Street junction with Castle Street

As vehicles approach this junction the road narrows and traffic often has to stop to allow an oncoming vehicle to pass, vehicles turning right into Castle Street may also have to stop while waiting for a break in traffic before making their manoeuvre. The Walden 4 DT site was established in 1999 and has followed the same trend as the other road side sites with levels remaining below the 21ppb annual mean objective until 2004 but increasing since that time to exceed that objective when the appropriate bias adjustment is applied. The alterations to traffic flow caused by the closure of George Street in October 2006 have also impacted on traffic patterns in this area. Data for 2006 is shown in Figure 9. The newly established DT in Church Street, Walden 12, is also in the vicinity and monitoring data from the first 9 months of 2006 (when bias adjusted with the 2005 factor) as significantly below the 21ppb annual mean objective (Figure 5).

The buildings in this area are predominately residential.

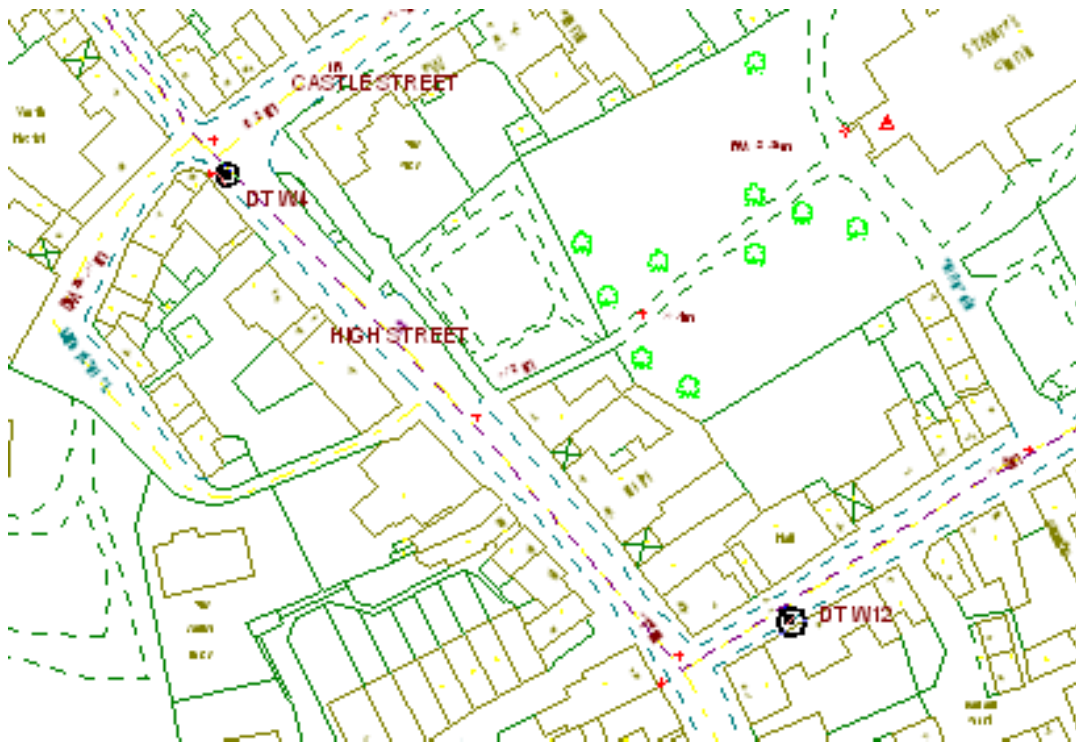


Figure 9 : YHA High Street Saffron Walden

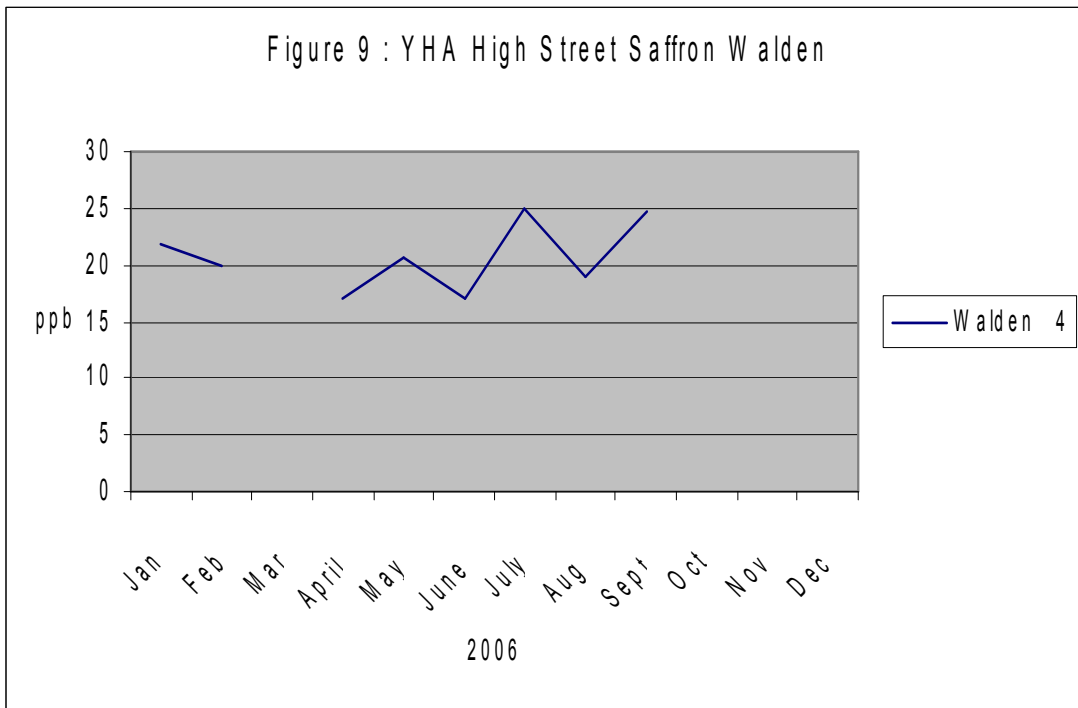
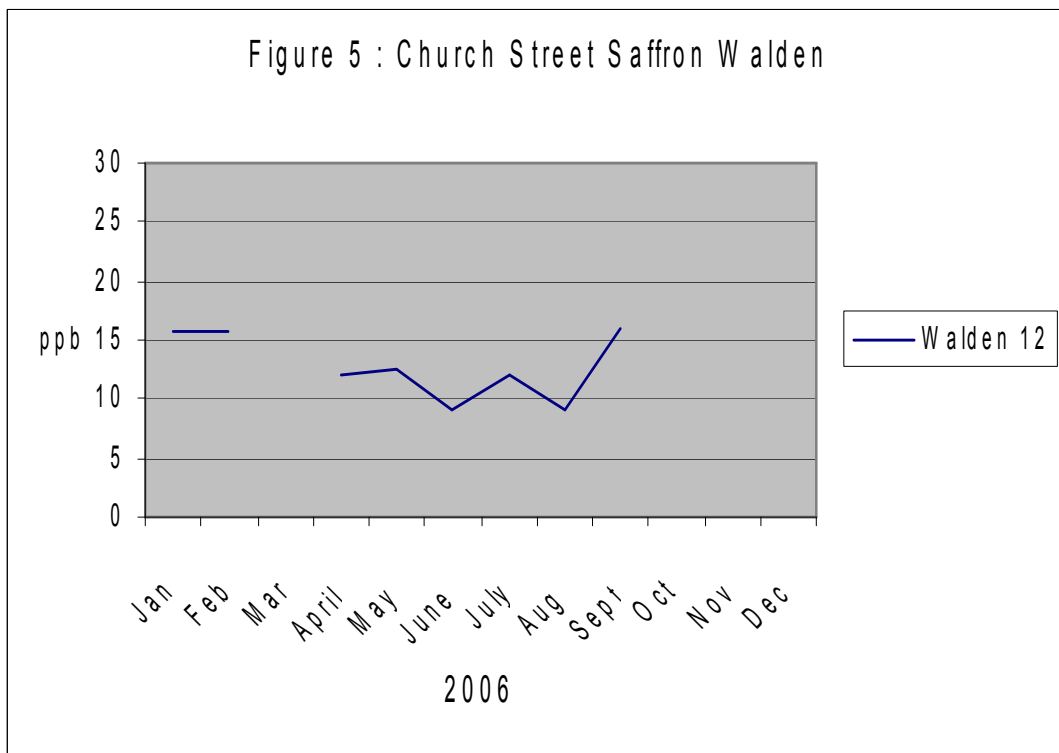


Figure 5 : Church Street Saffron Walden



Conclusions

The real time monitoring and the long term background monitoring clearly show that in the majority of the central part of Saffron Walden nitrogen dioxide levels are below the annual mean objective of 21ppb. However there are three 'hot spots' which are of concern, two sites where traffic queuing and congestion together with narrow streets combine to produce higher emissions and poor dispersal, and one site where traffic queuing and congestion combine with relevant exposure close to the road side.

High Street junction with George Street

There is good evidence to conclude that the annual mean objective for nitrogen dioxide is being exceeded in this area but is likely to be localised. There are no current plans to tackle existing traffic congestion in the area so exceedences are likely to continue.

High Street junction with Castle Street

There is good evidence to conclude that the annual mean objective for nitrogen dioxide is being exceeded in this area but is likely to be very localised. There are no current plans to tackle existing traffic congestion in the area so exceedences are likely to continue.

Thaxted Road junction with East Street and Radwinter Road

There is good evidence to conclude that the annual mean objective for nitrogen dioxide is being exceeded in this area but is likely to be localised. There are no current plans to tackle existing traffic congestion in the area so exceedences are likely to continue.

As a result of the above conclusions, and in accordance with the Council's statutory obligations under Local Air Quality Management (LAQM), the following recommendations are made:

- That (an) Air Quality Management Order(s) should be designated within the relevant area(s) identified above under section 83(1) of the Environment Act 1995, by means of an official order.
- Draft boundary(s) for the AQMA(s) should be detailed at this stage of the review and assessment process for wider consultation purposes.
- Consultation on the formal boundary of the AQMA(s) should be carried out following the publication of this report.
- The formal boundary of any AQMA(s) should be finalised and the formal AQMA order completed in April 2007.

- A Saffron Walden Air Quality Steering Group is established to take forward the development and implementation of an air quality action plan in pursuit of the relevant air quality objectives.

Summary of Monitoring Information for January to September 2006

2006	Annual Mean	Bias adjusted
Walden 1	19	22
Walden 3	8	9
Walden 4	21	24
Walden 5	22	26
Walden 11	17	21
Walden 12	13	15
Walden 13	16	19
Walden 14	13	16
Fire Station	15	

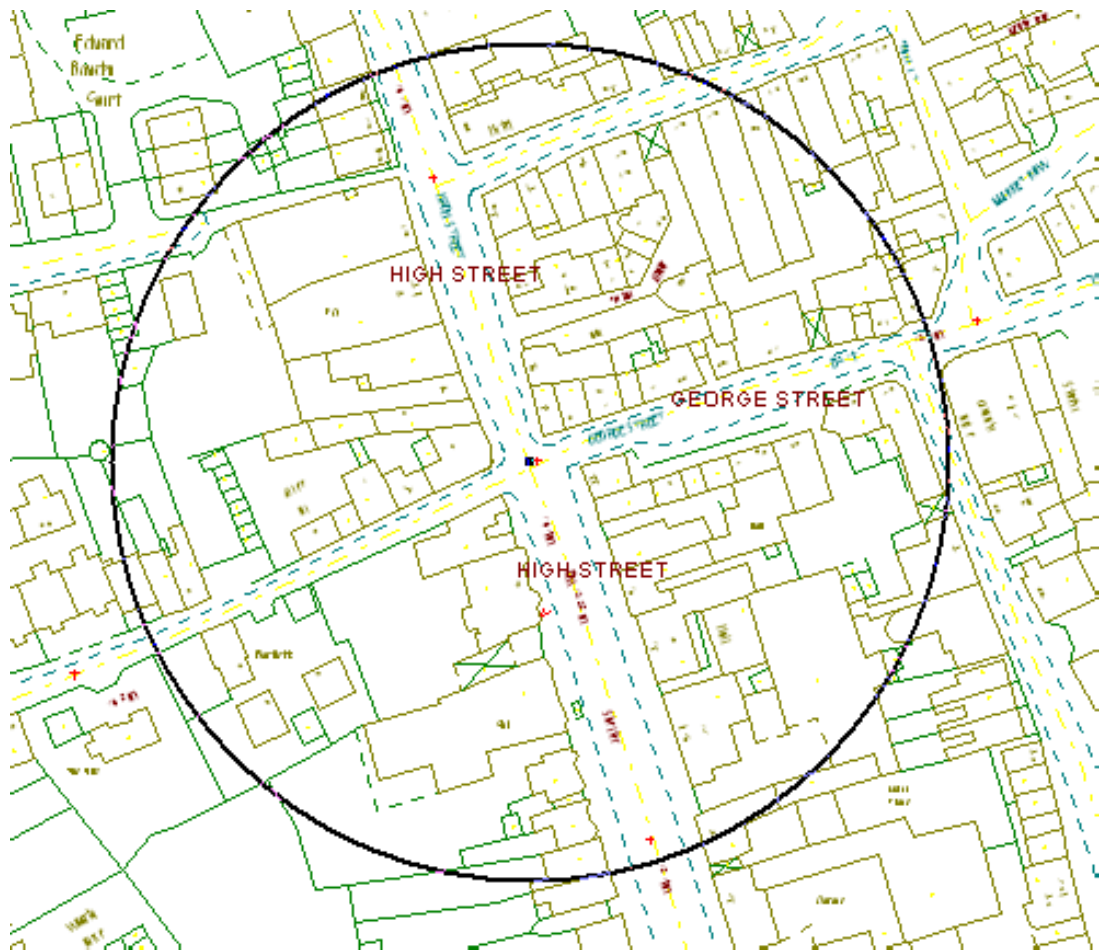
Summary of Monitoring Information for 2005

2005	Annual Mean	Bias adjusted
Walden 1	20	23
Walden 3	8	9
Walden 4	20	24
Walden 5	21	25
Fire Station	16	

Proposals for Air Quality Management Areas

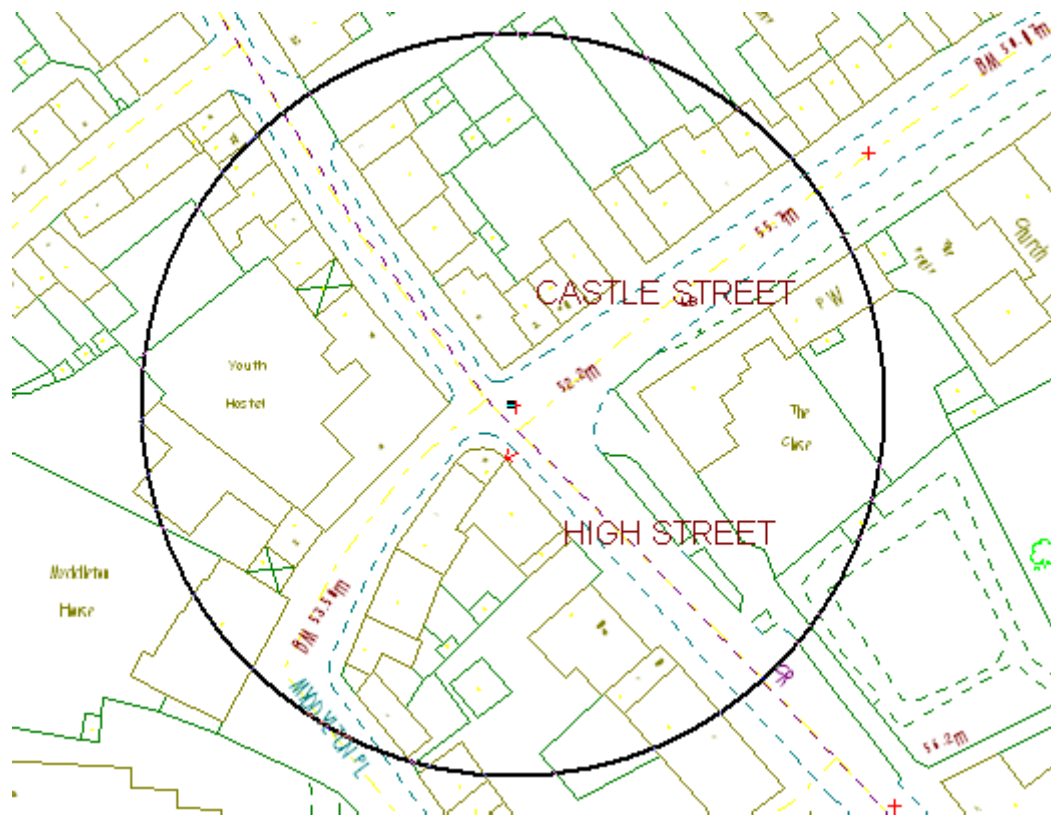
Area 1

Centred on the junction of the High Street and George Street and extending some 75 metres from that junction



Area 2

Centred on the junction of High Street and Castle Street and extending 50 metres from that junction



Area 3

Centred on the junction of Thaxted Road and East Street and Radwinter Road and extending 50 metres from that junction

