

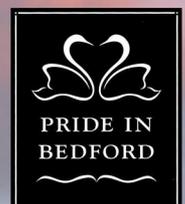


BEDFORD BOROUGH COUNCIL

Air Quality Progress Report

June 2005

- Technical Services Group
- Environmental Health Service
- Pollution Control Section



YOUR AIR QUALITY



Bedford Borough Council

Introduction

Clean air is essential for a good quality of life and progress has been made since the smogs of the 1950s by regulating industry and introducing smoke control areas. However, there are still problems with certain pollutants, particularly from vehicles. In July 1995, the Environment Act 1995 received Royal assent. Part IV of the Act established a new framework for improving air quality, embracing the National Air Quality Strategy, and incorporating health based standards and systems for the management of air quality.

In keeping with the objectives of the Environment Act and as part of a commitment to sustainable development, Bedford Borough Council approved a Local Air Quality Strategy. A corner stone of this Strategy is the Review and Assessment of Bedford's air quality. The objective is to undertake monitoring and evaluation of air quality throughout the borough in a staged process in order to reduce pollution hot spots and integrate air quality into strategic decision making and policies on a local basis. Review and Assessments of local air quality are required every three years and, if necessary, Air Quality Management Areas (AQMA) declared where pollution levels are found likely to exceed national standards. This continual need to review air quality is because of the consequence of changing circumstances including new and expanding industry and increasing vehicular use which could all potentially impact on local air quality.

Air Quality Review & Assessment (2000-2003)

In 2000 during the first round of Review and Assessment Bedford Borough Council concluded that the pollution levels were unlikely to exceed national standards. However, in 2003 during the first part of the second round of Review and Assessment (the Update and Screening Assessment) it was revealed that certain national standards for two air pollutants, sulphur dioxide and nitrogen dioxide, may be exceeded. Consequently Bedford Borough Council was required to carry out more in depth detailed investigations (Detailed Assessments). Given the complexity and resource demands of the Detailed Assessment process, involving the use of both dispersion models and real time monitoring, a decision was made to employ the services of the Environmental Research Group at Kings College London, who specialise in all areas of air quality Review and Assessment.

Detailed Assessment (2004)

The earlier Update and Screening Assessment concluded that emissions of nitrogen dioxide from the traffic within three locations in Bedford (High Street, Prebend Street and the A421

running through the village of Great Barford) could be sufficient to threaten the achievement of the annual mean national standard for nitrogen dioxide by its respective objective date. This therefore necessitated the instigation of a Detailed Assessment into how the traffic could be impacting on the local air quality within these three locations. After consultation with the Department for the Environment, Food and Rural Affairs (DEFRA), the Environmental Research Group at Kings College London concluded, in 2004, that the annual mean national standard for nitrogen dioxide was likely to be exceeded by the objective date of 31st December 2005.

The earlier Update and Screening Assessment concluded that emissions of sulphur dioxide from the brickworks operated by Hanson Building Products in Stewartby, could be sufficient to threaten the achievement of certain national standards for sulphur dioxide by their respective objective dates. This therefore necessitated the instigation of a Detailed Assessment of how the operations at the brickworks could be impacting on local air quality within the area surrounding the brickworks. After consultation with the Department for the Environment, Food and Rural Affairs (DEFRA), the Environmental Research Group at Kings College London concluded, in 2005, that all three national standards for sulphur dioxide were likely to be exceeded by their respective objective dates, the earliest being 31st of December 2004. The actual geographical extent of exceedence is different in respect of each of the three standards, however the standard based on a 15 minute averaging time is most widely exceeded in comparison to the less stringent standards based on 1 hour and 24 hour averaging times, as would be expected.

Progress Report (2005)

In line with the continuing duties of the Environment Act 1995, Bedford Borough Council commissioned the Environmental Research Group at Kings College London to produce a Progress Report to account for any new developments which may have an impact on local air quality as well as to provide updated monitoring data. This report forms the basis of the Progress Report in the Bedford Borough. It has concluded that the air quality in the areas previously investigated via the Detailed Assessments remains in exceedence of the national standards. The report also reiterates the need for further assessments at these locations. Further more, there is a need to continue and expand the nitrogen dioxide passive air quality monitoring resources, particularly for those sites in London Road and Dame Alice Street with high 2004 monitoring results.

Moving Forward - Improving Local Air Quality

Bedford Borough Council has now declared an AQMA as a direct consequence of the determined likelihood that the national standards for sulphur dioxide will not be met by the objective dates. A further three AQMA's are in the process of being declared as a direct consequence of the determined likelihood that the annual mean national standard for nitrogen dioxide will not be met by the objective date.

Once the AQMA's have been declared, the Council is required to carry out Further Assessments and then to formulate Action Plan's which work towards the achievement of the national standards. This will require a multidisciplinary approach and as such an Air Quality Working Group is to be established to oversee their development and progression.

To inform the Further Assessment and Action Plan processes the real time air quality monitoring resources are to be expanded. Further more, the passive nitrogen dioxide monitoring resources are also to be expanded. Should this continued nitrogen dioxide passive monitoring at London Road, Dame Alice Street and any other relevant location indicate an exceedence of the national standard for nitrogen dioxide then additional Detailed Assessments will be carried out, and if appropriate additional AQMA's declared.

Our Commitment to You

Bedford Borough Council's Corporate Plan identifies 6 key priorities to which the Council is fully committed, one of these is to provide a "Clean and Green Borough". As part of this commitment the Council strives for a continuing improvement of air quality within the Borough making it a safe and clean place to live, work, visit and enjoy. With this in mind the Council will use its best endeavours to secure the achievement of the National Standards.

David Logan

Head of Service (Environmental Health, Bedford Borough Council)



**Air Quality Progress Report for the
Bedford Borough Council**

June 2005

This page has been left blank intentionally.

Executive Summary

This is the 2005 Air Quality Progress report for the Bedford Borough Council (“the Council”). This report fulfils this part of the Council’s commitment to this part of the continuing Local Air Quality Management (LAQM) process.

Following the requirements of the LAQM. PRG (03) guidance produced by the Department of Environment, Food and Rural Affairs (DEFRA), the report includes updated monitoring results and relevant new local developments. Progress reports are required when the Council is not out either an Updating and Screening Assessment or a Detailed Assessment of air quality.

The Council’s earlier Review and Assessments of air quality confirmed that there are locations with relevant public exposure where the Government’s air quality objectives for sulphur dioxide and nitrogen dioxide are exceeded.

Following the production of its Detailed Assessment for sulphur dioxide, the Council has declared an Air Quality Management Area (AQMA) in the area that is predicted to exceed the 15-minute objective in the south west of the borough near the Stewartby brickworks. The Council will also be shortly declaring three further AQMAs for nitrogen dioxide in Bedford town centre and Great Barford. Additional air quality monitoring stations are being installed (one for sulphur dioxide and two for nitrogen dioxide) to aid the Council’s Further Assessment of air quality in these areas.

The up to date monitoring of sulphur dioxide and nitrogen dioxide in this report also confirms that the Government’s air quality objectives are being exceeded at locations with relevant public exposure.

The report also provides the results of the Council’s ozone monitoring and these indicate that the Government’s air quality objective is being exceeded.

The Council will continue to undertake its local air quality management actions to meet its statutory duties, including undertaking further assessments of air quality and preparing its Air Quality Action Plans.

This page has been left blank intentionally.

Table of Contents

1. INTRODUCTION TO AIR QUALITY PROGRESS REPORT	7
2. NEW MONITORING RESULTS IN THE BOROUGH OF BEDFORD.....	9
3. NEW LOCAL DEVELOPMENTS.....	15
4. CONCLUSION.....	17
5. APPENDIX 1.....	18
6. APPENDIX 2.....	20

List of Figures

Figure 1 NO ₂ diffusion tube monitoring locations for sites listed in Table 2 in the town of Bedford	11
Figure 2 NO ₂ diffusion tube monitoring locations for sites listed in Table 2 in rural monitoring locations	12
Figure 3 Sulphur dioxide – plots of 15-minute mean concentrations (ppb)	20
Figure 4 Sulphur dioxide – plots of one-hour mean concentrations (ppb)	21
Figure 5 Sulphur dioxide – plots of 24-hour mean concentrations (ppb)	22
Figure 6 Ozone – plots of running 8-mean concentrations (ppb)	23

List of Tables

Table 1 Air quality objectives (from Air Quality (England) Regulations 2000 and Amendment Regulations 2002)	9
Table 2 Annual mean NO ₂ concentrations in Bedford B.C area (2000 – 2004) (µgm ⁻³).....	10
Table 3 Estimated annual mean concentrations of new sites established in 2004 (µgm ⁻³)	13
Table 4 Number of periods exceeding SO ₂ objective standard (2001 – 2002).....	14
Table 5 Number of daily maxima exceeding 100 µgm ⁻³ based on 8-hour running mean (2001-2004)	14
Table 6 New local developments	15
Table 7 Locations of diffusion tube sites in Bedford B.C area for Table 2 and number of months data capture	18
Table 8 Data capture rate (%) of 15minute averages for the SO ₂ continuous monitoring site	18
Table 9 Data capture rate (%) of the ozone continuous monitoring site	19

1. Introduction to Air Quality Progress Report

1.1 Overview

This is the 2005 Air Quality Progress report for the Bedford Borough Council. This report is intended to fulfil the Council's continuing commitment towards the Local Air Quality Management (LAQM) process.

1.2 Background

The LAQM process forms a key part of the Government's Air Quality Strategy to achieve the air quality objectives in the Air Quality (England) Regulations 2000 and the 2002 amendment regulations. Air quality progress reports were introduced following a detailed evaluation of the first round of local authority review and assessment (R&A). This evaluation identified a need both to develop a longer-term vision for both LAQM and encourage the integration of air quality into the routine work of local authorities.

Local authorities are required by section 88(2) of the Environment Act 1995 to have regard to the Government's guidance documents when carrying out their LAQM duties. To assist local authorities and provide guidance for the overall LAQM process, the Department of Environment, Food and Rural Affairs (DEFRA) issued the following policy and technical guidance documents: LAQM PG (03), LAQM PG (S) (03) and LAQM TG (03).

LAQM PRG (03) supplemented this guidance to assist in the production of air quality progress reports. Based on this guidance local authorities are required to produce progress reports in those years when they are not carrying out an Updating and Screening Assessment (USA) or a Detailed Assessment (DA) of air quality.

As part of its earlier duties, the Council completed its USA of the seven LAQM air pollutants in 2003. The conclusion of that work was that the Council needed to undertake a DA for both sulphur dioxide (SO₂) (in the Stewartby area) and nitrogen dioxide (NO₂) in the Bedford town centre and Great Barford areas.

The aim of the Council's DA was to determine with reasonable certainty whether or not there is likelihood of the AQ objectives being achieved. The assumptions in the DA were therefore in depth and the data used were quality assured to a high standard. This allowed the Council to have confidence in reaching a decision whether to declare an Air Quality Management Area (AQMA) or not. When carrying out its DA the Council applied its best estimates to all components used to produce future concentrations.

The SO₂ modelling predictions indicated that concentrations exceeded the AQ objectives where there was relevant exposure. The NO₂ modelling predictions also indicated that annual mean concentrations exceeded the AQ objective where there was relevant exposure. Following the production of its Detailed Assessment for sulphur dioxide, the Council has declared an Air Quality Management Area (AQMA) in the area that is predicted to exceed the 15-minute objective in the south west of the borough near the Stewartby brickworks. The Council will also be shortly declaring three further AQMAs for nitrogen dioxide in Bedford town centre and Great Barford.

The guidance advises that the Progress report is not designed to represent a further USA, although it also states that, if at any time a risk is identified that an AQ objective might be exceeded, it should proceed to a DA without delay.

The overall aim of the Progress report is to report on progress in implementing LAQM and report on progress in achieving, or maintaining concentrations below the AQ objectives. The guidance considers that this aim can best be achieved by reporting on new results and new developments that might affect local air quality.

The guidance also suggests that those local authorities monitoring ozone use this report to outline the results. (Note – ozone is not one of the identified seven LAQM pollutants, although it is included within the Government's Air Quality Strategy).

2. New monitoring results in the Borough of Bedford

2.1 Outline of monitoring undertaken

The Council undertook monitoring of NO₂, SO₂ and ozone only during 2003/4. The Government's air quality objectives for each of these pollutants are given in Table 1.

Table 1 Air quality objectives (from Air Quality (England) Regulations 2000 and Amendment Regulations 2002)

Pollutant	Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide (NO₂) (provisional)	200 µgm ⁻³ not to be exceeded more than 18 times a year	1 hour mean	31 Dec 2005
	40 µgm ⁻³	Annual Mean	31 Dec 2005
Sulphur Dioxide (SO₂)	350 µgm ⁻³ not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 µgm ⁻³ not to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004
	266 µgm ⁻³ not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
Ozone (O₃)	100 µgm ⁻³ not to be exceeded more than 10 times a year	Daily maximum of 8 hour running mean	31 Dec 2005

2.2 Nitrogen Dioxide (NO₂)

The Council has undertaken NO₂ monitoring by diffusion tube only. In addition to this the Council plans to undertake continuous monitoring of NO₂ in the Borough during 2005 within two of the proposed AQMA's (High Street and Prebend Street).

The results given in the Table 2 represent the most recent years (i.e. from 2000 to 2004) for the sites monitored in the Council's area (the exact locations of the sites are given in Appendix 1). The locations of the sites are shown in

Figure 1 and Figure 2 with Table 7 providing details of the number of months of data capture.

The monitoring is undertaken by diffusion tube, with the analysis undertaken by Gradko International Ltd. The method of preparation is 50% TEA in acetone. The Council does not currently operate a continuous monitoring site and therefore it has not undertaken a co-

location study. The LAQM. TG03 guidance however recommends use of a bias correction factor to produce data that are comparable to reference methods wherever possible. The adjustment is made through a comparison of results from a continuous analyser relative to those from diffusion tubes over a period of a year in accordance with LAQM. TG03. The default factors applied in Table 2 are consistent with factors previously used by the Council in its earlier R&A reports. A default bias adjustment factor of 1.03 has been applied in this instance for 2002 and 2003 results (as used in the Council's 2004 Detailed Assessment of nitrogen dioxide). This factor was obtained from a neighbouring local authority.

For the 2004 results an overall factor of 1.10 (as derived from DEFRA's R & A website – see *diffusiontube100505_biasfactors.xls*) has been used. This indicates that the tubes underestimate concentrations by 10%. The 2004 results have also been corrected to 2005 using correction factors from the TG03 guidance.

(Note –italics represent less than 9 months results available to determine the annual mean concentration.)

Table 2 Annual mean NO₂ concentrations in Bedford B.C area (2002 – 2004) (µgm⁻³)

Site Code	Class.	Address	2002	2003	2004	Corrected 2005
BF06	R	20 High St, Bedford	33.9	42.7	44.7	43.6
BF07	UB	135 George St, Bedford	21.7	24.8	25.4	24.7
BF08	S	Arrowleys, Bedford	18.9	20.1	22.8	22.2
BF09	S	61 The Links, Kempston	18.0	20.8	23.3	22.7
BF10	R	Bromham Road, Bedford	25.7	31.2	35.7	34.8
BF11	R	Goldington Road, Bedford	26.9	32.9	34.5	33.6
BF12	R/UB	Bunyan Road, Kempston	25.9	31.4	31.5	30.7
BF28	UB	Churchville Road	18.3	26.7	27.0	26.3
BF14	UB	Riverfield Drive, Bedford	21.9	26.6	27.9	27.2
BF29	R/UB	Kirkstall Close	23.9	30.5	30.1	29.3
BF16	S	Great Barford	36.8	47.3	47.9	46.7
BF17	S	The Lane, Wyboston	19.4	28.8	26.8	26.1
BF22	S	Gt Nth Road, Wyboston (A1) South	23.0	30.8	29.5	28.8
BF30	R	River Street	30.7	39.0	36.5	35.6
BF23	R/UB	Woburn Road, Kempston	23.7	35.2	30.8	30.0
BF24	R	Kempston Road, Bedford	29.8	39.4	31.6	30.9
BF25	R	Amphill Road, Bedford	28.4	43.4	41.6	40.6
BF28	UB	Castle Road, Bedford	26.9	33.7	32.6	31.8
BF29	R	Kimbolton Road, Bedford	25.8	31.7	34.2	33.3
BF30	K	Prebend Street, Bedford	35.1	55.9	50.3	49.0
BF18	R	Gt Nth Road, Wyboston (A1) North	28.2	44.7	44.4	43.3
BF20	R	Gt Nth Road, Wyboston (A1) North	30.6	47.0	44.2	43.1
BF21	R	Gt Nth Road, Wyboston (A1) North	29.7	44.3	39.6	38.6

(K: indicates kerbside, UB: background, R: roadside)

The highest concentrations in 2004 include the kerbside locations in Prebend Street and the High Street in Bedford, and also the site in Great Barford. A Detailed Assessment was

undertaken for these sites in 2004 and as a result the Council are resolved to designate the areas as AQMA's. Similarly the sites along the Great North Road near Wyboston were investigated in the first round of review and assessment, although in that instance they were not found to exceed the NO₂ objective where there was relevant exposure. The roadside site in Amphill Road also exceeded the objective in 2003 and 2004. The location of the monitoring point is close to the road and therefore a new site was established closer to the façade of houses. Early measurements for 2005 suggest that concentrations are in compliance with the 40 µg m⁻³ standard.

Figure 1 NO₂ diffusion tube monitoring locations for sites listed in Table 2 in the town of Bedford

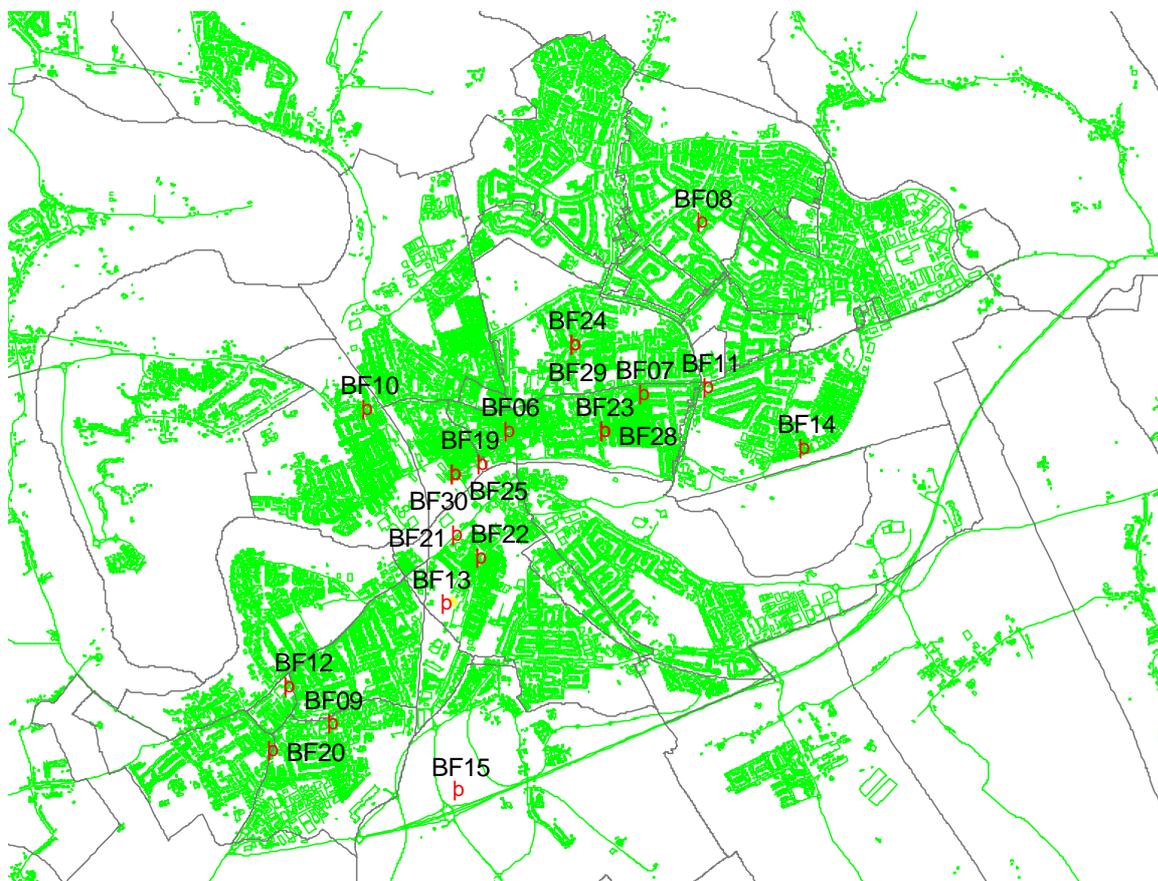
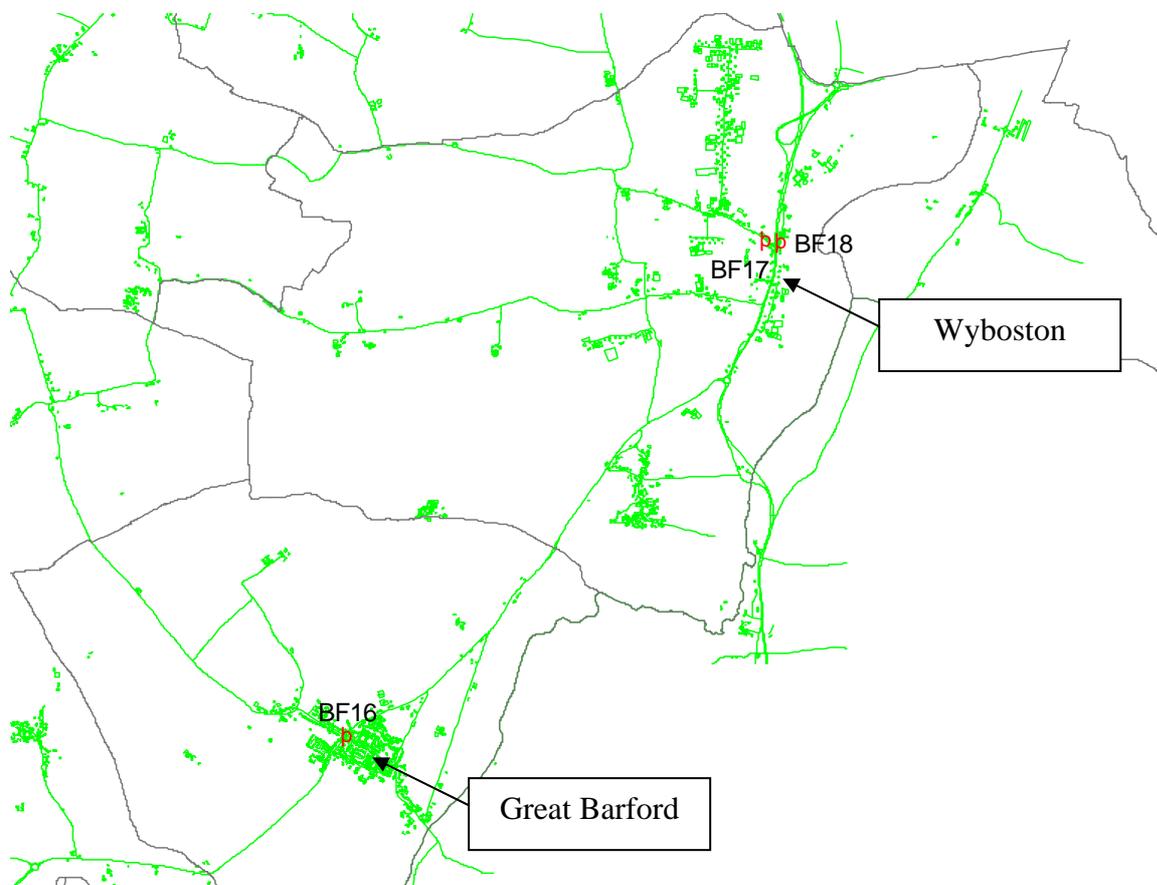


Figure 2 NO₂ diffusion tube monitoring locations for sites listed in Table 2 in rural monitoring locations



The Council has supplemented the above monitoring, with new sites at additional locations. These sites were started in late 2004 and therefore a maximum of only four months of monitoring were possible at most sites. The sites are all kerbside or roadside sites mostly sited close to Bedford town centre and within Great Barford. (The sites are not shown in the above figures).

The short-term monitoring results from these sites have been adjusted using LAQM. TG03 guidance to estimate annual mean concentrations. The adjustment is based on the fact that patterns in pollutant concentrations usually affect a wide region. Thus if the monitoring for a short period is above average at one location then it will almost certainly be above average at other locations in the region. The method requires the assessment of an average value of nearby background sites; this is to avoid any specific local effects. Each site value is then derived from the ratio of annual mean monitoring compared to the value for the equivalent period of the diffusion tube monitoring.

The background sites used are all part of the Herts and Beds Air Pollution Monitoring Network (HBAPMN) and thus meet the requirements for QA/QC of the LAQM. TG03 guidance. In addition the background sites used: South Beds D.C; Welwyn Hatfield D.C and St. Albans City and District Council all have greater than 90% data capture for both the year and period of diffusion tube monitoring. The average ratio for these sites was 0.861 and the

short term results have been adjusted by this factor and also adjusted using the above bias adjustment factor. The estimated results for the new sites are presented in Table 3 along with the results corrected to 2005 using the correction factors for roadside sites from Box 6.6 of the TG03 guidance.

Table 3 Estimated annual mean concentrations of new sites established in 2004 ($\mu\text{g m}^{-3}$)

Site code	Class.	Address	2004	Corrected 2005
BF34	K	Great Barford no. 10	42.8	41.7
BF35	R	London Road crossroad	43.6	42.5
BF36	R	Great Barford opposite restaurant	37.4	36.5
BF37	R	High St Ladbroke	46.6	45.4
BF38	R	Prebend St corner of Commercial Road	36.8	35.9
BF39	R	Goldington Road opposite university	36.0	35.1
BF40	K	High St Collins Jewellers	51.7	50.4
BF41	R	High St Luddingtons	44.1	43.0
BF42	R	Prebend St opposite no. 8	43.0	41.9
BF43	R	Shakespeare Road	43.3	42.2
BF44	R	High St Kings Arms PH	42.5	41.4
BF45	R	Prebend St new residential	41.8	40.7
BF46	R	Ashburnham Road	31.7	30.9
BF47	R	Amphill Road	34.1	33.3
BF48	R	Prebend St opposite no. 35	46.4	45.2
BF49	K	Great Barford no. 37	39.8	38.8
BF50	R	Tavistock St	28.4	27.7
BF51	R	Great Barford 6-10 Roxton Road	26.2	25.5
BF52	R	High St opposite old BT building	34.9	34.1
BF53	R	Dame Alice St	42.7	41.6

(K: indicates kerbside, R: roadside)

The above estimations indicate that there are additional sites, in and close to the High Street and Prebend Street that exceed the annual mean objective. This includes the sites in London Road and Dame Alice Street. In both these instances diffusion tubes are located at the façade of residential houses. Of the sites above, the only site in Great Barford to exceed was BF34.

The monitoring will be continued for these sites to confirm that there is a risk of exceeding the objective at these sites and if necessary, a Detailed Assessment will be undertaken.

2.3 Sulphur Dioxide

The Council has identified in its previous air quality R & A reports that the area surrounding Stewartby in the southwest of the Council's area exceeds the Government's air quality objectives for SO₂.

The Council is maintaining its continuous monitoring of SO₂ at the BF1 rural monitoring site in the village of Stewartby. The site is part of the HBAPMN and as such it meets the QA/QC requirements of the LAQM. TG03 guidance.

The monitoring site was originally positioned in late 2000 to monitor the effects of a nearby industrial process at a site representative of relevant public exposure. The industrial site is the Hansons Brickworks in Stewartby, which is a Part A process, 0.5km to the west of the monitoring station.

The following table provides the results for the period 2001 – 2004 at the Council's monitoring site. The data capture for each year exceeded 85% (full details for the site are given in Table 8 in Appendix 1).

Table 4 Number of periods exceeding SO₂ objective standards (2001 – 2004)

Objective	2001	2002	2003	2004
15min mean	25	26	118	133
Hourly mean	1	2	4	8
24hr mean	0	0	0	0

(NB 2004 results are provisional)

The results show that the 15-minute objective of not more than 35 periods with concentrations greater than 50 µg m⁻³ was easily exceeded for both 2003 and 2004. The other objectives for the one-hour and 24-hour mean were not exceeded.

The large increase in periods exceeding the 15-minute objective between 2001/ 2002 and 2003/ 2004 is not fully understood, although it does strongly relate to meteorological conditions and possibly also to process changes. The influence of meteorology and the conditions during 2003 were discussed in the Council's previous reports. Graphs of the results for 2003 and 2004 are provided in Appendix 2.

2.4 Ozone

The Council undertakes the continuous monitoring of ozone at its BF1 monitoring site in the village of Stewartby. The site is part of the HBAPMN and as such the BF1 rural site meets the QA/QC requirements of the LAQM. TG03 guidance.

The results for the period 2001 – 2004 are given in Table 5. The data capture for each year exceeded 85% (full details for the site are given in Table 9 in Appendix 1).

Table 5 Number of daily maxima exceeding 100 µg m⁻³ based on 8-hour running mean (2001-2004)

Objective	2001	2002	2003	2004
Number of periods	25	24	57	18

(NB 2004 results are provisional)

The Government's air quality objective, not to exceed 10 periods in a calendar year, has been exceeded at the monitoring site during every year of monitoring to date, with the peak number of periods arising during 2003, which had a very hot dry summer conducive to the formation of ozone. Other sites in the HBAPMN also monitored periods that exceeded the

Government's objective from 2001 to 2004. Graphs of the results for 2003 and 2004 are provided in Appendix 2.

3. New local developments

3.1 Relevant new developments

This section outlines those developments that have taken place and may affect air quality. These are not for consideration here but are listed for a more thorough assessment for the next round of Review and Assessment. The guidance identifies the following developments that should be considered:

- New industrial processes included in Appendix 2 of LAQM. TG03.
- New developments with an impact on air quality, especially those with significantly changed traffic flows. Only those with planning permission are included.
- New road schemes.
- New landfill sites, quarries, etc with planning permission granted and nearby relevant exposure.

Table 6 New local developments

Development	Location
New Part A or B industrial processes	See below
New retail or mixed residential/ commercial development	See below
New road scheme	See below
New mineral or landfill development	None

3.2 New Part A and B processes

The following installations and changes to installations have taken place since the Council's Updating and Screening assessment was produced.

- New combustion line at the Part A incinerator – Ancillary Components Ltd
- New Part B mobile crusher – Jackson and Sons
- New Part B roadstone coating plant at existing site – Lafarge Aggregates Ltd

3.3 Local Development Scheme

The Council has produced its Local Development Scheme (LDS) as part of the Bedford Development Framework (BDF) in April 2005. The BDF introduces a new system of plan making and replaces the previous Structure and Local Plans for the Council. The LDS is a public statement that sets a programme and provides a timetable for action, including producing new documents and replacing "saved" plans. The Council is to include a Development Plan document called the Bedford Town Centre Area Action Plan to regenerate the town centre. This sets out a spatial vision and is intended to enhance retail, cultural and leisure facilities in the town to meet the growth identified in the Milton Keynes South

Midlands Regional Strategy. It is anticipated that the document will be submitted in July 2006 to the Secretary of State.

3.4 New road schemes

The A421 Great Barford by pass is currently under construction and is programmed to finish within the next two years. This road will greatly reduce traffic flows within Great Barford.

A separate Bedford – Kempston Western By pass is also proposed within the Bedfordshire Local Transport Plan produced by the County Council, to improve road transport arrangements in this area.

4. Conclusion

This 2005 Air Quality Progress Report fulfils the requirements of LAQM. PRG03 and has updated the monitoring results in the Borough and noted new relevant local developments and other initiatives.

The updated monitoring results continue to indicate that the Government's current air quality objectives are being exceeded for the three pollutants monitored: nitrogen dioxide, sulphur dioxide and ozone.

Based on these findings the Council will continue its LAQM actions as follows:

- 1) Prepare a further assessment of air quality in respect of its AQMA's for sulphur dioxide and nitrogen dioxide as required by s.84 (1) of the Environment Act 1995
- 2) Produce an Air Quality Action Plan for sulphur dioxide.
- 3) Produce an Air Quality Action Plan for nitrogen dioxide and integrate this within the Local Transport Plan (LTP) that is produced by the Bedfordshire County Council.
- 4) Continue and expand its passive air quality monitoring resources, particularly for those sites in London Road and Dame Alice Street with high 2004 monitoring results (as determined in Table 3). Detailed Assessments will be carried out if necessary as determined by this continued monitoring.
- 5) Continue and expand its real time air quality monitoring resources.
- 6) To prepare for the next round of air quality review and assessment in 2006.

5. Appendix 1

Table 7 Locations of diffusion tube sites in Bedford B.C area from Table 2 and the number of months data capture

Site Code	Class.	Easting	Northing	Address	2000	2001	2002	2003	2004
BF06	R	505030	249870	20 High St, Bedford	7	6	12	10	12
BF07	UB	506170	250190	135 George St, Bedford	10	8	12	12	11
BF08	S	506660	251660	Arrowleys, Bedford	11	8	12	10	3
BF09	S	503530	247380	61 The Links, Kempston	11	8	12	12	12
BF10	R	503830	250070	Bromham Road, Bedford	10	8	12	11	9
BF11	R	506720	250260	Goldington Road, Bedford	8	7	12	10	12
BF12	R/UB	503160	247690	Bunyan Road, Kempston	10	7	12	12	11
BF28	UB	504500	248400	Churchville Road	7	7	9	10	10
BF14	UB	507530	249740	Riverfield Drive, Bedford	9	7	11	11	11
BF29	R/UB	504600	246800	Kirkstall Close	11	8	12	12	12
BF16	S	512770	252410	Great Barford	10	7	12	9	10
BF17	S	516320	256640	The Lane, Wyboston Gt Nth Road, Wyboston	11	7	10	11	12
BF22	S	504790	248790	(A1) South	11	7	11	12	12
BF30	R	504800	249600	River Street	9	6	11	7	9
BF23	R/UB	505840	249870	Woburn Road, Kempston	11	6	11	12	12
BF24	R	505590	250620	Kempston Road, Bedford	11	5	12	8	5
BF25	R	504570	249510	Amphill Road, Bedford	9	5	12	12	12
BF28	UB	505840	249870	Castle Road, Bedford	8	4	12	11	12
BF29	R	505590	250620	Kimbolton Road, Bedford	11	3	12	12	10
BF30	K	504570	249510	Prebend Street, Bedford Gt Nth Road, Wyboston	10	3	12	12	12
BF18	R	516450	256630	(A1) North Gt Nth Road, Wyboston	N/o	2	11	11	11
BF20	R	503020	247150	(A1) North Gt Nth Road, Wyboston	N/o	2	11	12	12
BF21	R	504590	248980	(A1) North	N/o	1	11	12	11

Table 8 Data capture rate (%) of 15-minute averages for the SO₂ continuous monitoring site

% Data capture	2001	2002	2003	2004
Bedford Rural BF1	90	97	89	88

(N.B 2004 data are provisional)

Table 9 Data capture rate (%) of the ozone continuous monitoring site

% Data capture	2001	2002	2003	2004
Bedford Rural BF1	85	99	98	96

(N.B 2004 data are provisional)

6. Appendix 2

Figure 3 Sulphur dioxide – plots of 15-minute mean concentrations (ppb)

(Note – 1ppb is equivalent to $2.66\mu\text{g}\text{m}^{-3}$ at 20°C and 101.3 kPa)

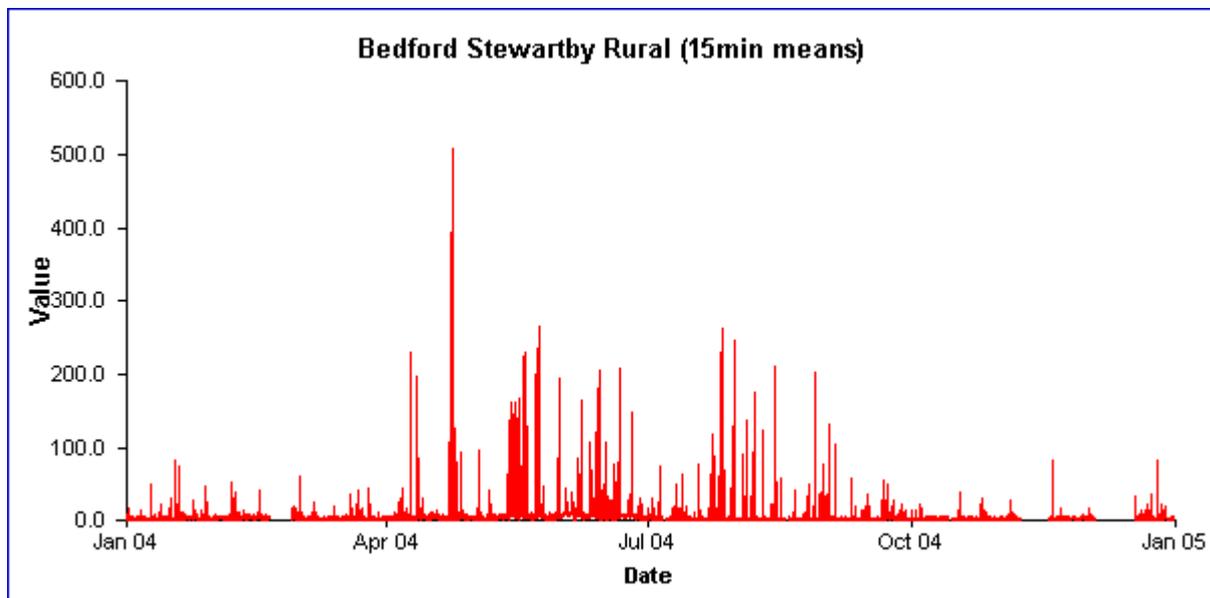
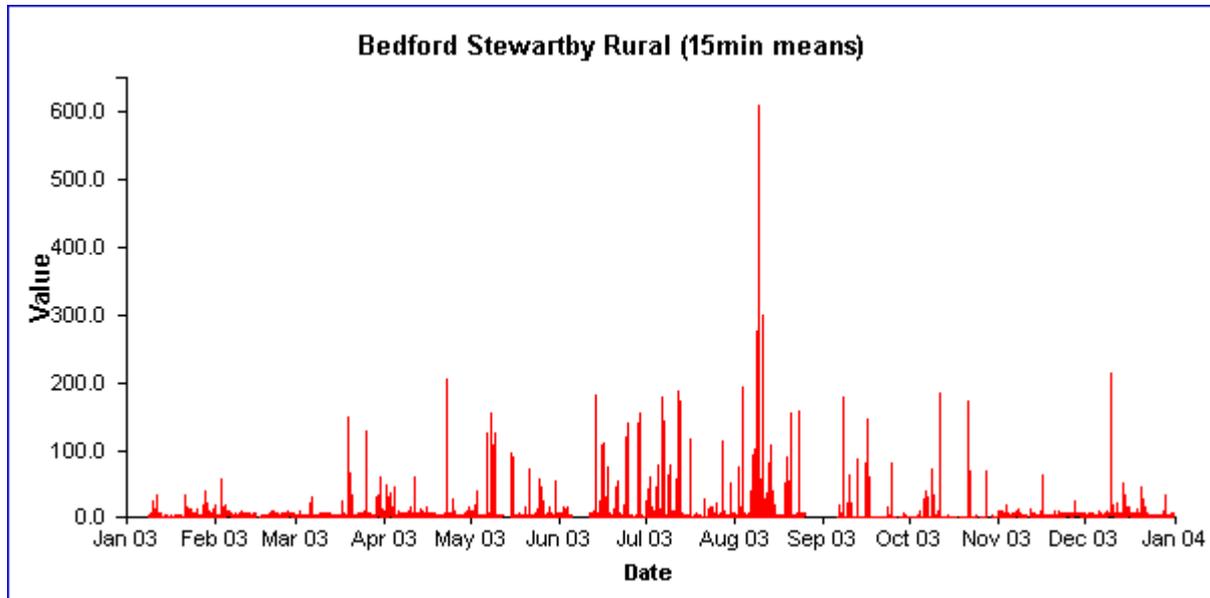


Figure 4 Sulphur dioxide – plots of one-hour mean concentrations (ppb)

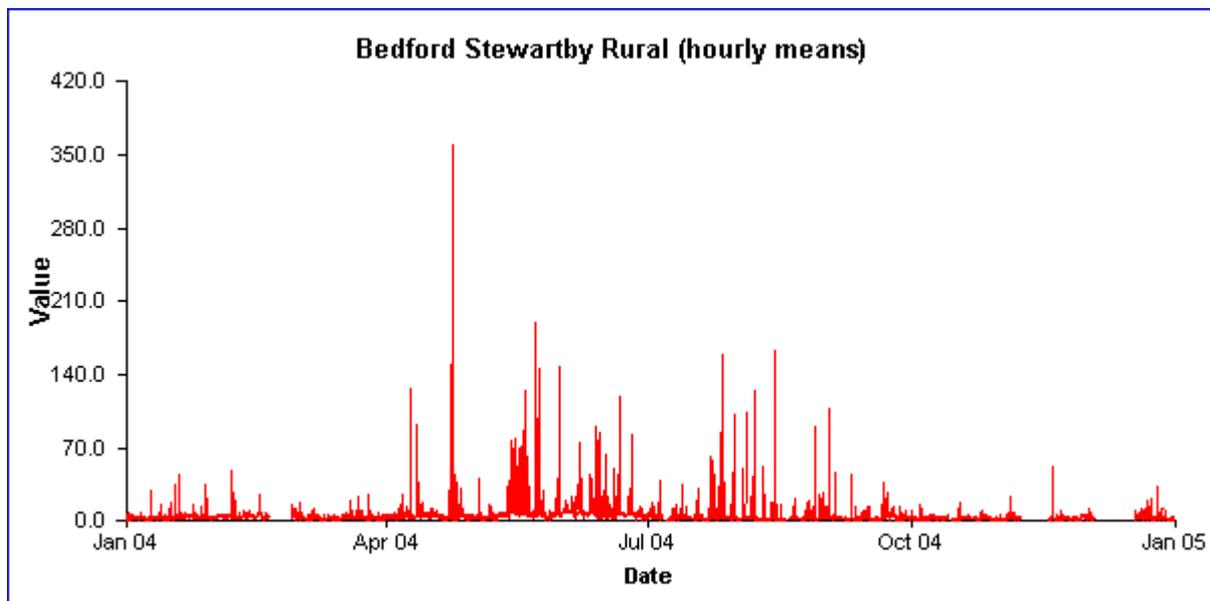
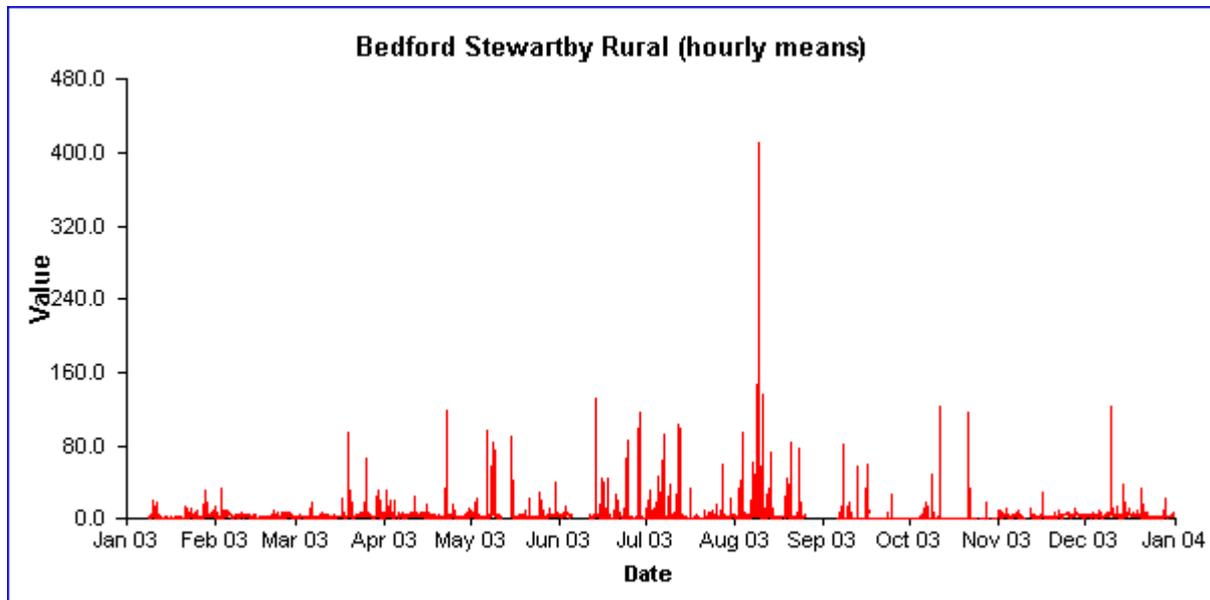


Figure 5 Sulphur dioxide – plots of 24-hour mean concentrations (ppb)

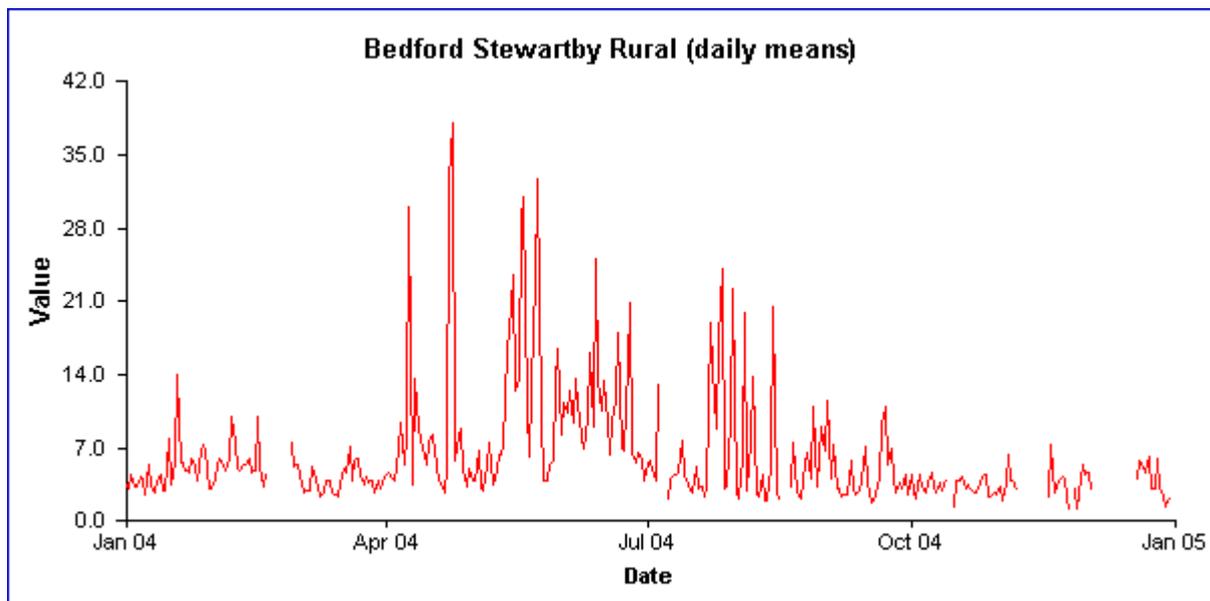
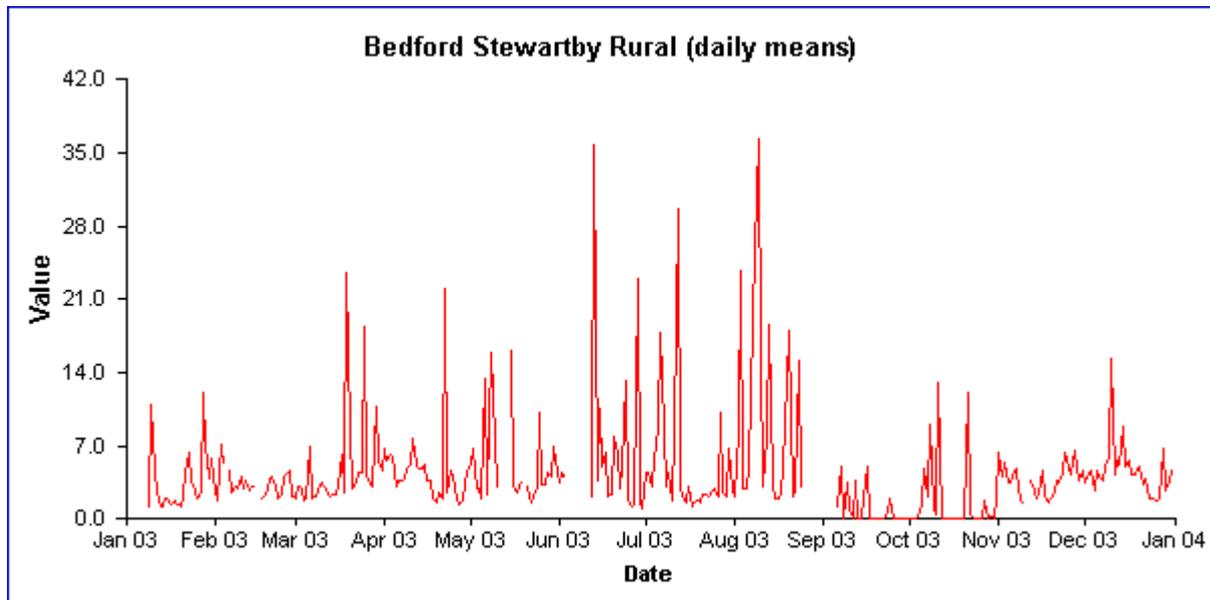


Figure 6 Ozone – plots of running 8-mean concentrations (ppb)

(Note – 1ppb is equivalent to $2\mu\text{g}\text{m}^{-3}$ at 20°C and 101.3 kPa)

