KETTERING BOROUGH COUNCIL

Air Quality Review and Assessment
Stage 2

Kettering Borough Council
Environmental Health Unit
Bowling Green Road
KETTERING
Northamptonshire NN15 7QX

June 2001

CONTENTS

1.0 Introduction **3**

2.0 Nitrogen Dioxide (NO_2) **4**

Background Concentrations *4*

3.0 Particulates (PM_{10}) **6**

Industrial Sources *6*

4.0 Conclusion **7**

NO_2 *7*

PM_{10} *7*

1.0 Introduction

The first phase air quality review and assessment was carried out in 1998, in accordance with the existing guidance, as a response to the National Air Quality Strategy (NAQS), first published in 1997. Kettering's first phase assessment is attached to this document.

The first phase study found that the air quality in Kettering was generally good. However, the results did indicate that NO_2 and PM_{10} required further investigation.

As a result of a review of the NAQS, published in January 2000, the standards and objectives were changed. Those changes are detailed in Table 1 below.

1997			
Pollutant	Objective to be achieved by 2005		
	Measured as	Concentration	
Nitrogen Dioxide	1 Hour Mean Annual Mean	200 µg/m^3 40 µg/m^3	
Particulates	Running 24 Hour Mean	50 µg/m^3, 99th Percentile	
2000			
			To be Achieved By
Nitrogen Dioxide	1 Hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year	31.12.2005
	Annual Mean	40 µg/m^3	31.12.2005
Particulates	24 Hour Mean	50 µg/m^3 (gravimetric) not to be exceeded more than 35 times a year	31.12.2004
	Annual Mean	40 µg/m^3 (gravimetric)	31.12.2004

Changes in Objectives for LAQM (Table 1)

2.0 Nitrogen Dioxide (NO_2)

The first phase NO_2 investigation was carried out in 1998 in accordance with the guidance in existence at the time. Although the guidance has been updated, the decision to carry out a Stage 2 Review and Assessment still holds as the A14 Bypass had an Annual Average Daily Traffic (AADT) of 55748 in 1999.

Background Concentrations

The estimated concentration obtained from the UK National Air Quality Information Archive is 15-20 □g/m^3 in the rural areas, increasing to 20-30 □g/m^3 in the built up area of the main town.

Diffusion tube results for background sites throughout the Borough are as indicated in Table 2, with corrected values calculated in accordance with DETR guidance.

Site	**Measured Figure (**µg/m^3**)**	**Projected 2005 Figure (**µg/m^3)
Trent Rd., Kettering	46	37
West Hill Drive, Kettering	42	35
William St., Kettering	36	30
St Peter's Ave., Kettering	42	35
Ennerdale Close, Kettering	31	26
Hill St., Kettering	40	33
Dyson Drive, Kettering	36	30
Tennyson St., Rothwell	15	12
Gladstone Street, Rothwell	19	16
Queen Eleanor Road, Geddington	15	12
Wood Street, Geddington	15	12
North Ave., Burton Latimer	13	11
Finedon Street, Burton Latimer	15	12

Measured and Corrected 2005 NO_2 Diffusion Tubes (Table 2)

The A14 runs through the south of the Borough. Given the level of traffic, the DMRB model was applied at distances of 50, 75 and 100 metres from the centre of the road. The results are shown in Table 3, together with measured diffusion tube results at two sites, one at approximately 100 metres from the road and one at a roundabout on the A14. The DMRB figures were much higher than the measured results.

Site	DMRB Model (µg/m^3)	Corrected Measured Data (µg/m^3)
A14, 50m	49	
A14, 75m	37	
A14, 100m	31	
A14 Roundabout		7 (1999)
Rothwell		8 (1998)

A14 Modelled and Measured Data (Table 3)

The measured data for Kettering town is high but when projected to 2005, all results are below the objective level. Both the rural and the town diffusion tube results correlate well with the estimated background levels.

The DMRB model results do not correlate with the measured levels. This may be partly due to the fact that most of the road is in a cutting.

The measured results are therefore taken as being more representative of the true levels and these have therefore been used in the final assessment.

3.0 Particulates (PM_{10})

Particulates were identified as requiring a second stage assessment, in 1998. Again the guidance has changed but the requirement still stands.

The A14 is the only road with greater than 25000 AADT. However, congestion does occur in the centre of town on roads bordered by domestic properties. Therefore, one site in town was used as a "worst case" to indicate whether further investigation is required.

In accordance with government guidance, the DMRB model was used to predict PM_{10} levels in all cases, the A14 calculations being based on the same figures as the NO_2 modelling.

Background levels of PM_{10} were obtained from the DETR website.

The 90th percentile effectively allows the 35 exceedences per year. The 90th percentile is derived , in accordance with the guidance, by multiplying the predicted annual mean by 1.79

Results are shown in Table 4.

Site	**Predicted Annual Mean 2004 (**µg/m^3**)**	**90th Percentile** (µg/m^3**)**
A14, 50m	27	48
A14, 75m	26	47
A14, 100m	26	47
Northfield Ave., Kettering	27	48

PM_{10} Modelling Results (Table 4)

Industrial Sources

There are no Part A processes within the Borough and none outside which would affect PM_{10} levels in the Borough.

Part B processes are not required to monitor particulate emissions. However, all of the Part B processes operate within the prescribed regime and therefore are assumed not to have a significant effect on air quality.

4.0 Conclusion

NO_2

Diffusion tube results, although high within the town centre, when corrected, predict that there will be no exceedences of the objectives in 2005. These results correlate well with the predicted levels obtained from the UK National Air Quality Information Website.

The DMRB model was used to predict levels at distances from the A14. The predicted levels are high when compared with diffusion tube levels measured at equivalent points, although only the closest distance exceeded the objective. Given the correlation between measured and predicted levels above, the DMRB results are not considered reliable.

In line with the guidance, if the annual mean is not exceeded, it can be assumed that the 24 hour mean is also not exceeded.

Kettering is therefore not required to carry out a Stage Three Review and Assessment of NO_2.

PM_{10}

Predicted levels were again obtained from the UK National Air Quality Information Website and the DMRB model used to predict levels at distances from the A14 and at a "worst case" site in Kettering.

Although high, none of the predicted 2004 levels or the 90^{th} percentile levels exceeded the objective.

Kettering does not therefore need to carry out a Stage Three Review and Assessment of PM_{10}.