



2009 Air Quality Updating and Screening Assessment for New Forest District Council

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

Date (May 2009)

New Forest District Council - England

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Executive Summary

This is the Updating and Screening Assessment of air quality for New Forest District Council.

The conclusions are based on monitoring data collated and ratified over 2008 and following criteria laid out in Technical Guidance¹ produced by Defra.

The Updating and Screening Assessment has concluded that the current Air Quality Management Areas in Totton and Lyndhurst with respect to nitrogen dioxide (annual mean objective) and Fawley for sulphur dioxide (15 minute mean objective) should remain.

It is acknowledged that monitoring in Totton only showed one exceedence using diffusion tubes within the AQMA although not at a site of relevant public exposure, and the automatic monitoring site in Fawley did not show an exceedence of the sulphur dioxide objectives. However further data is required before the Council will consider the process of revoking the Air Quality Management Areas in Totton and Fawley.

Diffusion tube monitoring has shown a likely exceedence of the annual mean objective for nitrogen dioxide at Stoney Cross / A31, therefore the Council will be proceeding to a Detailed Assessment. Furthermore the criteria laid out in the Technical Guidance¹ advises progression to a Detailed Assessment with respect to a narrow and congested street with residential properties close to the kerb in Queen Street, Lymington for nitrogen dioxide and with respect to particulate matter from poultry farms and a waste transfer station in Pitmore Lane, Sway.

The Detailed Assessment will be produced by May 2010.

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1 Introduction

1.1 Description of Local Authority Area

The New Forest District lies to the south-western corner of Hampshire, between the large conurbations of Southampton and Christchurch/Bournemouth and Poole. The District covers 75,100 hectares (290 sq. miles) and has a diverse environment, including the New Forest (and associated New Forest National Park) that covers approximately three quarters of the district comprising of mainly protected heathlands and forests, and a coastline of 64km. Despite the district's largely rural character, it also contains a number of towns and villages. The total population of the District is 169,331².

Along Southampton Water much of the shoreline is influenced by urban and industrial development, including 13 (Part A) permitted processes under the Pollution Prevention and Control (England and Wales) Regulations 2000. The local landscape is dominated by a petrochemical complex, one of the largest in Europe, other processes include an oil fired power station, energy recovery facilities and chemical installations.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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Table 1.1

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

The continuous process of Review and Assessment started in 1998 for New Forest District Council. Table 1.2 outlines reports produced and the outcomes of the reports findings.

Table 1.2
Table Outlining Previous Air Quality Reports

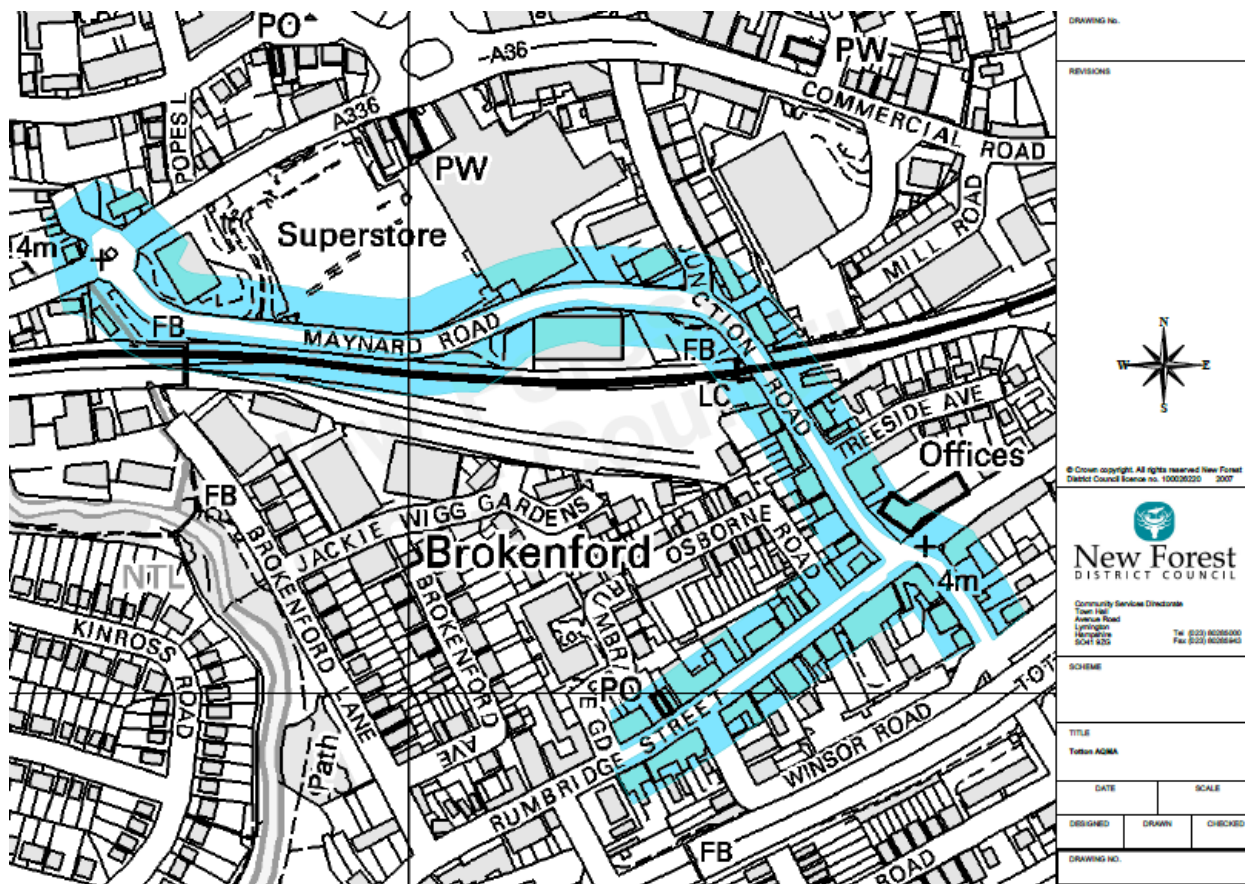
Year	Report	Outcomes
1998	1 st Stage Review & Assessment	Further investigation for CO, benzene, 1,3-butadiene, lead, NO ₂ , PM ₁₀ and SO ₂ . Areas of concern; Marchwood, Hythe, Holbury, Fawley, Totton, Cadnam, Ringwood, New Milton
2000	2 nd & 3 rd Stages Review & Assessment	No predicted exceedences of the objectives for any pollutant, but installation of automatic monitors to be considered in Fawley, Ringwood and Holbury
2002	Review & Assessment	Automatic monitors installed. No predicted exceedences of the objectives for any pollutant.
2003	Updating & Screening Assessment	Detailed Assessment required for benzene (Holbury/Fawley area), NO ₂ (Totton and Lyndhurst) and SO ₂ (Fawley)
2004	Modelling Report (Faber Maunsell)	For benzene and SO ₂ in the Holbury and Fawley area.
2004	Detailed Assessment	No likely exceedence of benzene and SO ₂ objectives. Likely exceedence of the annual mean objective for NO ₂ in Totton and Lyndhurst.
2005	Progress Report	Exceedence of the annual mean objective for NO ₂ in Totton and Lyndhurst. Monitoring shows likely exceedence of the 15 minute mean objective for SO ₂ .
2005	Declaration of AQMA's	Totton – NO ₂ (annual mean) Lyndhurst - NO ₂ (annual mean) Fawley – SO ₂ (15 min mean)
2006	Updating & Screening Assessment	No requirement to proceed to a Detailed Assessment
2006	Further Assessment	Totton and Lyndhurst – main source from traffic Fawley – main source from industry Retain AQMA's
2006	Modelling Report AEA Technology	For predicted NO ₂ concentrations concerning proposed traffic scenarios within AQMA.
2007	Progress Report	Exceedences of NO ₂ annual mean objective in Totton and Lyndhurst
2008	Progress Report	Exceedences of NO ₂ annual mean objective in Totton and Lyndhurst. Detailed Assessment for NO ₂ in Ringwood Rd, Totton (outside current AQMA) for exceedence of annual mean objective.
2008	Formal adoption of Action Plans	Totton – NO ₂ Lyndhurst - NO ₂ Fawley - SO ₂

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As noted in Table 1.2 New Forest District Council has declared three Air Quality Management Areas (AQMA's). These are detailed below;

Totton

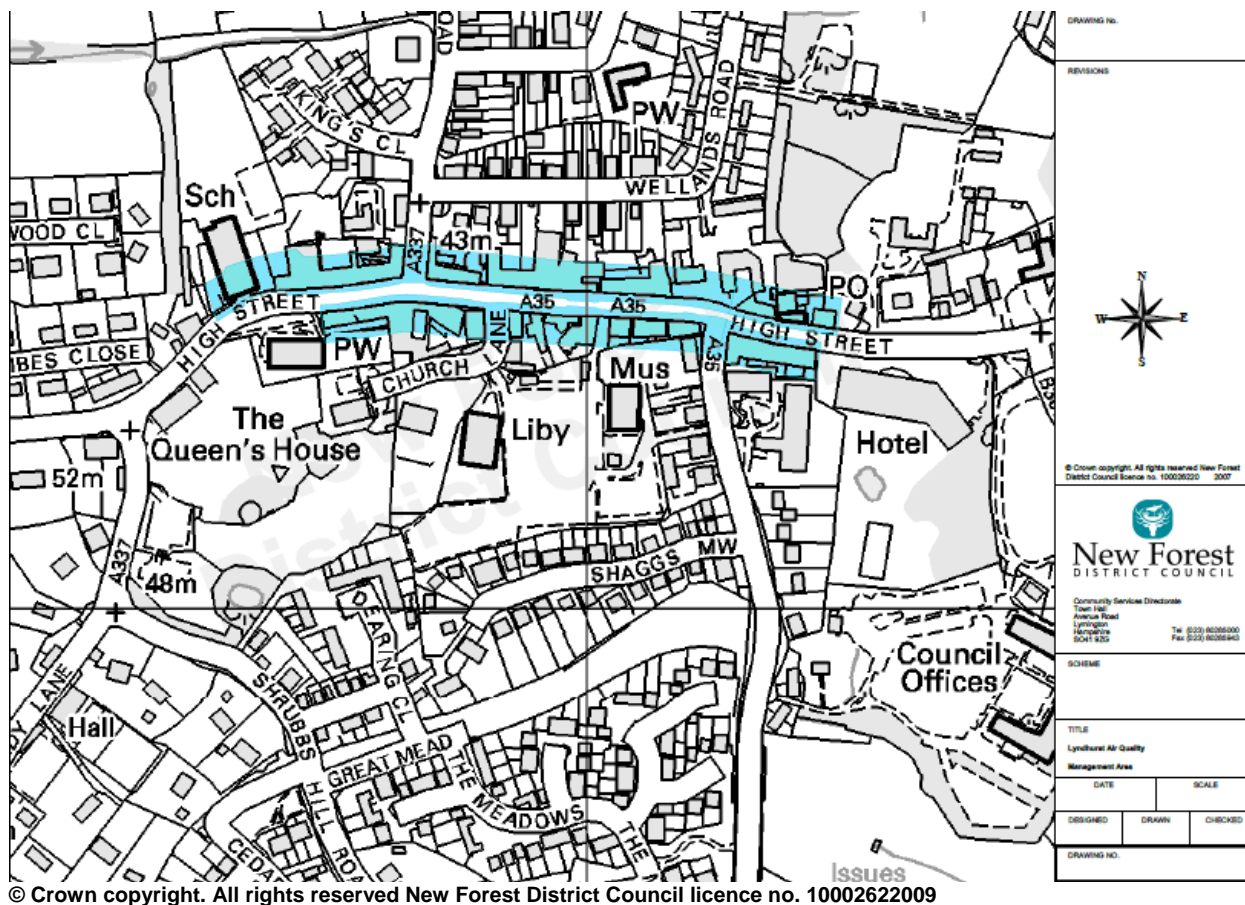
AQMA declared with respect to likely exceedence of the annual mean objective for nitrogen dioxide.



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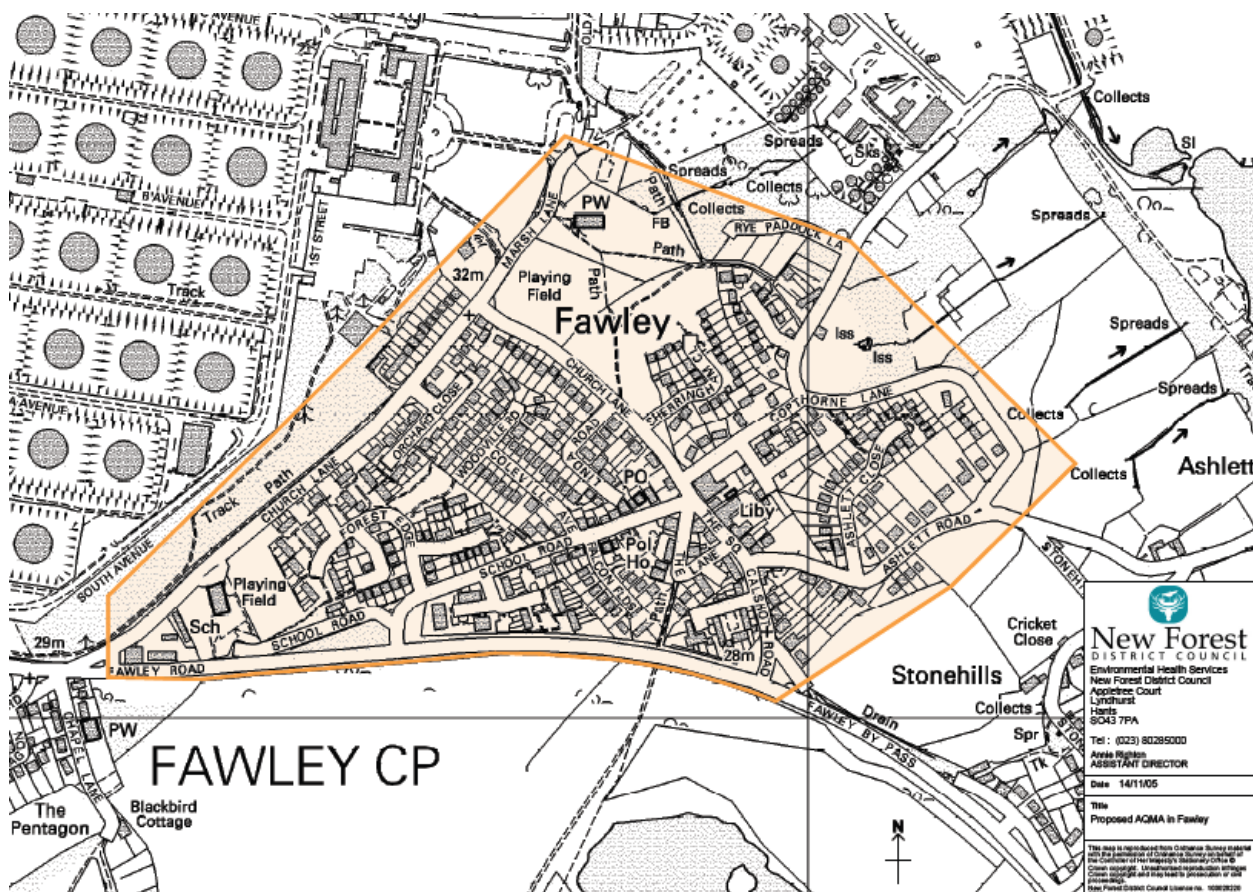
Lyndhurst

AQMA declared with respect to likely exceedance of the annual mean objective for nitrogen dioxide.



Fawley

AQMA declared with respect to likely exceedence of the 15 minute mean objective for sulphur dioxide.



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2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

New Forest District Council has operated 4 automatic monitoring sites throughout 2008 with an additional 2 sites which operated for a 6 month period (March – September 2008). The Council also has access to monitoring results from an automatic monitoring site in Marchwood, which has been installed with regards to a new industrial premises in the vicinity.

The details of all the automatic monitoring sites are given in Table 2.1.

Table 2.1
Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location?
Holbury	Industrial	442948 103932	SO ₂ , PM10	N	Y (8)	N/A	N
Fawley	Industrial	445885 103248	SO ₂	Y	Y (5)	N/A	Y
Totton	Roadside	436188 113237	NO ₂ , PM10	Y	N (5)	1.5	N
Totton*	Roadside	436491 113226	PM10	N	Y (3)	5	Y
Lyndhurst	Kerbside	429859 108204	NO ₂	Y	Y (1)	0.6	Y
Lyndhurst*	Roadside	429845 108212	PM10	Y	Y(2)	3	Y
Marchwood	Industrial	439075 111152	NO ₂	N	Y (15)	N/A	N

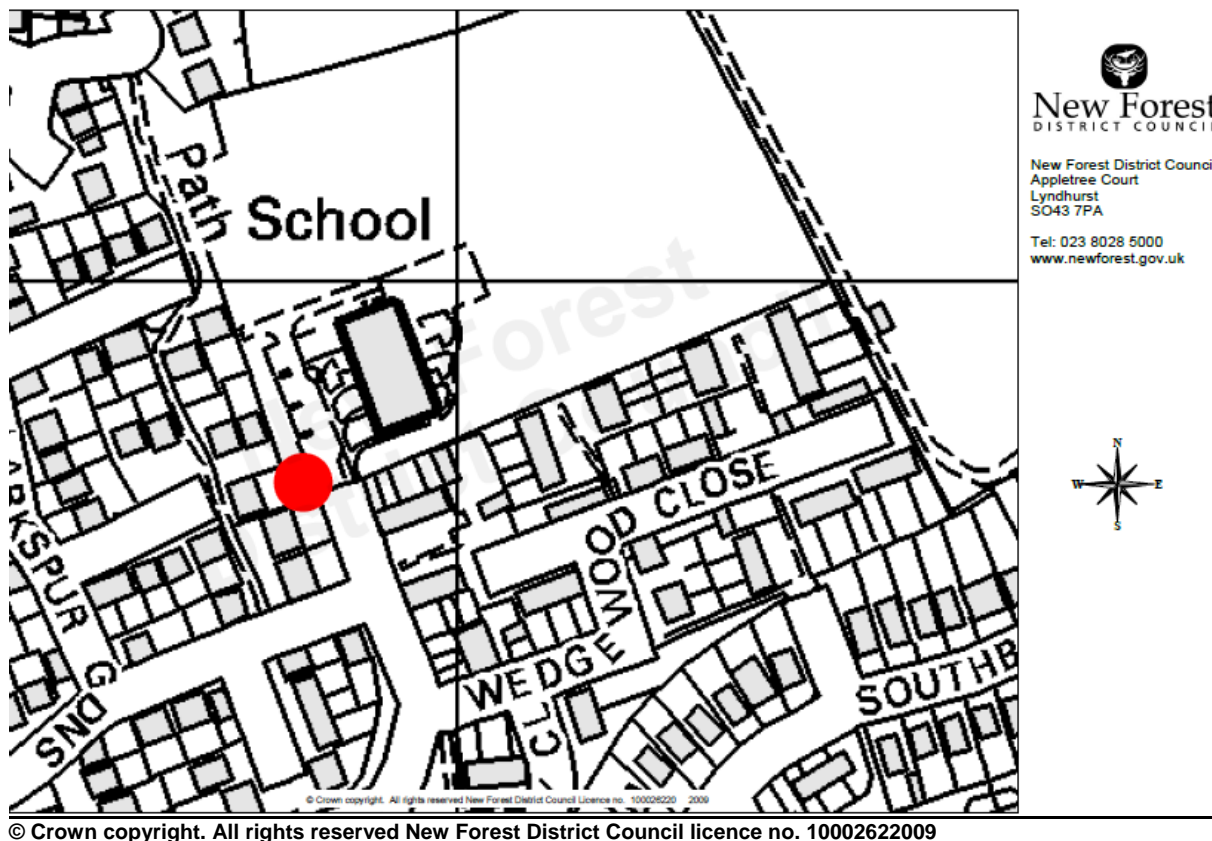
Notes

* denotes sites which were installed for a 6 month survey (March – September 2008) as part of modelling work undertaken by AEA Technology³.

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Holbury

The Holbury site is located in a school grounds (Holbury Manor Infants School) within 1km (to the boundary) of a large industrial site, including a refinery, therefore the site is representative of relevant public exposure.



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Fawley

The Fawley site is located within a village hall, which includes a nursery, at the centre of the village of Fawley. Previous modelling work undertaken by Faber Maunsell⁴ in 2004 identified Fawley village centre as a location for grounding emissions during certain weather conditions. Therefore this site is representative of relevant public exposure.



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Totton

The permanent Totton site is located in a roadside location to monitor for emissions from a road. This site is located between the road and building façade, some 5m from the monitoring site. Therefore the site is not representative of relevant public exposure. A temporary site was located adjacent to residential properties, opposite an entrance onto an industrial site which is used by numerous (unrestricted) heavy goods vehicles. This site representation relevant public exposure.



Note;

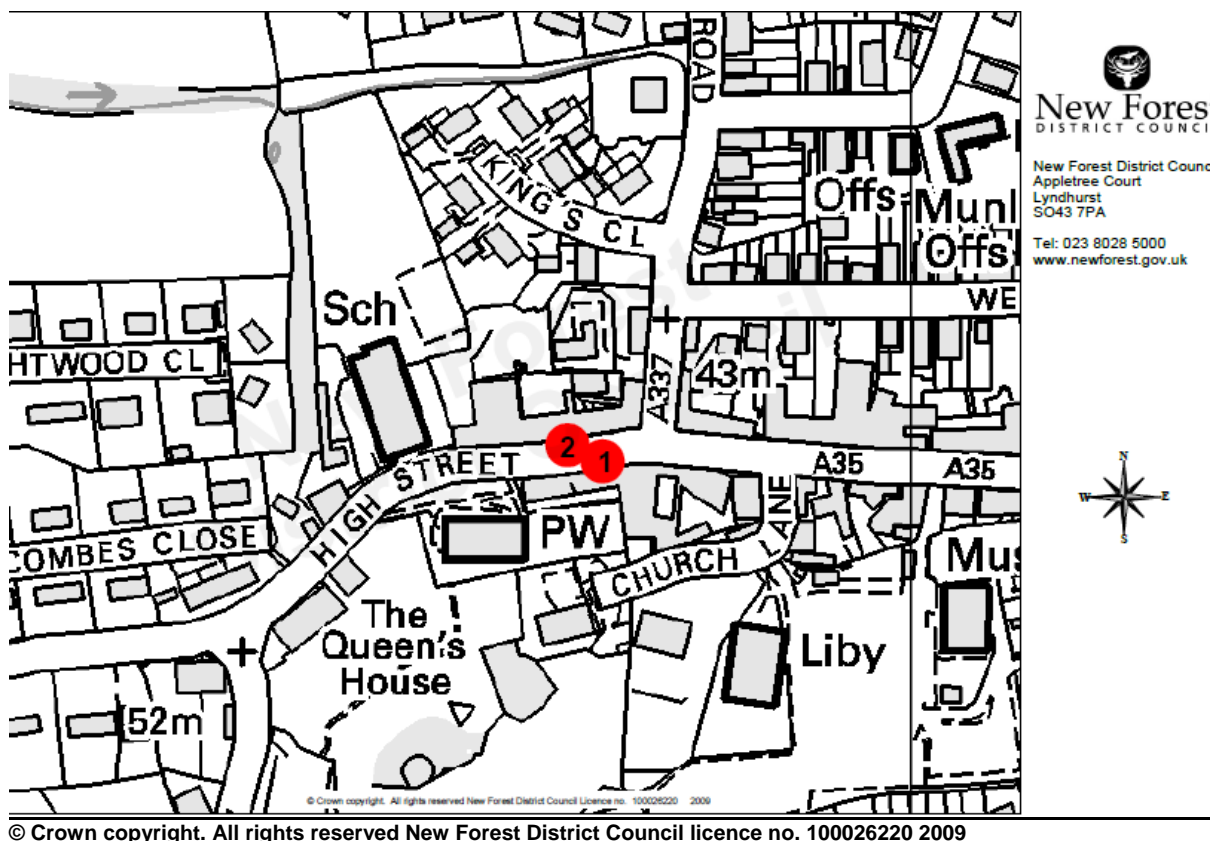
Site 1 is the permanent automatic site monitoring NO₂ and PM₁₀.

Site 2 was the temporary automatic site monitoring PM₁₀.

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Lyndhurst

The permanent Lyndhurst site is located on the first floor of an office. The office is situated within a street canyon and is representative of relevant public exposure as adjacent properties are residential flats. The temporary site was also located within the street canyon but in a street level cabinet. This site represented relevant public exposure.



Note;

Site 1 is the permanent automatic site monitoring NO₂.

Site 2 was the temporary automatic site monitoring PM₁₀.

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Marchwood

The automatic site at Marchwood came into use in October 2007 and is owned and operated by Marchwood Power, a new industrial premises due to become operational in 2009. As part of their planning and IPPC permit conditions nitrogen dioxide and particulate concentrations prior to and during operation have to be monitored, in addition to a submitted air quality assessment.

The Council assisted Marchwood Power in selecting an appropriate automatic monitoring site for nitrogen oxides and particulates in Marchwood and also maintains a number of nitrogen dioxide diffusion tube sites throughout Marchwood for the benefit of Marchwood Power's planning and permit conditions. The monitoring results from these sites are public therefore the automatic site and diffusion tube results are included in the reported monitoring results.



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All of the automatic monitoring sites undertake a daily internal calibration using either on site gases or permeation tubes and scrubbers. The sites are also manually calibrated using a reference span gas once a fortnight. The gas is obtained from Air Liquide and each cylinder is certified.

In addition, the sites are serviced and calibrated every 6 months by engineers from Casella Measurement who hold the service contract for the Council (and EnviroTech in the case of the Marchwood site). The engineer is also available for call outs if the site appears to be malfunctioning.

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Erg, at Kings College, London, validates and ratifies the data from the sites, which is downloaded daily. During the validation process any potential problems are identified and if necessary reported back to the Council and Casella Measurement. The data is ratified every 1-3 months during which the manual calibrations and servicing are taken into account. Full ratification of the data occurs annually when all servicing and auditing reports, calibrations and breakdown information can be applied to the data.

New Forest District Council uses TEOM analysers to monitor PM₁₀. It is noted that this monitoring equipment does not meet the equivalence criteria, however guidance states that it is not necessary to immediately replace the monitoring equipment particularly considering the monitored PM₁₀ concentrations are below the objectives. When the equipment is due for replacement the Council will consider other equipment which meets the equivalence criteria.

The PM₁₀ monitors at the temporary site in Totton and Lyndhurst were BAM which meet the equivalence criteria. In addition the Marchwood site operates two PM₁₀ monitors, a BAM and a SM2000, again both meet the equivalence criteria (with a correction factor applied).

The data given in the Updating and Screening Assessment has been fully ratified. PM₁₀ data has been adjusted using the Volatile Correction Model (VCM) to correct for the use of a TEOM particulate monitor.

The Council contracts National Physical Laboratory to externally audit the automatic monitoring sites, biannually. This process ensures quality assurance and control of the sites.

2.1.2 Non-Automatic Monitoring

Diffusion tubes are used throughout the New Forest district to monitor nitrogen dioxide concentrations. During 2008 the Authority exposed 61 diffusion tubes over 51 sites, which included 3 triplicate and 4 duplicate co-located sites. A number of additional locations were added during 2008 particularly in Lyndhurst, whilst one site in Totton, 83, Ringwood Road, was moved onto a relevant location from a lamp-post (kerbside) site.

Details of the diffusion tube sites are shown in Table 2.2.

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Table 2.2
Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location?
Lyndhurst							
Lyndhurst Rd, Goose Green	Kerbside	429991 107583	NO ₂	N	N (4)	0.4	Y
1, Foxlease Terrace, Shrubbs Hill Rd	Roadside	429928 107687	NO ₂	N	Y(1)	1.5	Y
Shrubbs Hill Rd	Roadside	429934 107698	NO ₂	N	N (9)	2.2	Y
The Orchards, Shrubbs Hill Rd	Roadside	429895 107770	NO ₂	N	Y (1)	3.3	Y
Shrubbs Hill Rd	Roadside	429758 107972	NO ₂	N	N (13)	2	Y
Little Queens, Shrubbs Hill Rd	Roadside	429689 108111	NO ₂	N	Y (1)	6	Y
Queens House	Roadside	429710 108128	NO ₂	N	N (25)	5	Y
School, High St.	Roadside	429767 108205	NO ₂	Y	Y (1)	6	Y
15, High St.	Kerbside	429864 108213	NO ₂	Y	Y (1)	1.25	Y
14, High St. (analyser)	Kerbside	429858 108205	NO ₂	Y	Y (1)	0.9	Y
16, High St.	Kerbside	429875 108207	NO ₂	Y	Y (1)	1.55	Y
2a, Romsey Rd	Roadside	429891 108245	NO ₂	Y	Y (2)	2	Y
12, Romsey Rd	Roadside	429904 108310	NO ₂	N	Y (1)	6	Y
22, Romsey Rd	Roadside	429911 108402	NO ₂	N	N (1)	2.3	Y
28, High St.	Roadside	429933 108200	NO ₂	Y	N (4)	4	Y
65, High St.	Roadside	430026 108206	NO ₂	Y	Y (1)	1.8	Y
2, Gosport Lane	Roadside	430079 108147	NO ₂	N	Y (1)	2.2	Y
Lyndhurst Park Hotel	Roadside	430162 108173	NO ₂	N	N (5)	1.88	Y
Baytree Cottage, Bournem'th Rd	Roadside	429169 108129	NO ₂	N	N (6)	2	N

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Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location?
Totton							
Reymolds Dale (opp 8)	Suburban	434753 112101	NO ₂	N	N (11)	N/A	N
68, Junction Rd	Urban centre	436157 113235	NO ₂	N	N (3)	2	N
Junction Rd (analyser)	Roadside	436189 113235	NO ₂	Y	N (7)	2	Y
30, Junction Rd	Kerbside	436210 113210	NO ₂	Y	N (3)	1	Y
23, Junction Rd	Kerbside	436236 113153	NO ₂	Y	N (3)	1	Y
25, Junction Rd	Roadside	436232 113156	NO ₂	Y	Y (1)	4	Y
26, Rumbidge St.	Roadside	436205 113019	NO ₂	Y	N (8)	1.5	Y
2, Eling Lane	Roadside	436307 113077	NO ₂	Y	Y (1)	2	Y
Elingfield Court, High St.	Roadside	436383 113135	NO ₂	N	N (3)	2	Y
55, High St.	Roadside	436476 113214	NO ₂	N	Y (1)	4	Y
114, Commercial Rd	Kerbside	436364 113322	NO ₂	N	N (25)	1	Y
34, Salisbury Rd	Roadside	435786 113588	NO ₂	N	N (12)	2	Y
7a, Water Lane	Roadside	435915 113392	NO ₂	N	Y (1)	6	N
83, Ringwood Rd	Roadside	435706 113215	NO ₂	N	Y (1)	4	Y
Ringwood Rd / Maynard Rd roundab't	Roadside	435834 113260	NO ₂	Y	N	2	Y
Asda roundab't	Roadside	435927 113226	NO ₂	Y	N	2	Y
1, Rose Rd	Roadside	436374 112929	NO ₂	N	N (3)	2	N
31, Bartrum Rd	Roadside	436168 112815	NO ₂	N	N (14)	2	N
53, Main Rd	Roadside	435321 111869	NO ₂	N	N	3	Y

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Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location?
Other locations							
11, Bilberry Drive, Marchwood	Industrial	438500 110629	NO ₂	N	Y (5)	N/A	N
Shorefield Rd, Marchwood	Industrial	438765 111006	NO ₂	N	Y (6)	N/A	N
3 Magazine Lane, Marchwood (adj to)	Industrial	439075 111152	NO ₂	N	Y (15)	N/A	Y
9, Boardwalk Way, Marchwood	Industrial	439106 111409	NO ₂	N	Y (4)	N/A	Y
Autumn Road, Marchwood	Industrial	439174 110367	NO ₂	N	Y (5)	N/A	N
Marchwood School, Twiggs Lane	Suburban	438363 109694	NO ₂	N	Y (1)	25	N
A31, Stoney Cross	Roadside	425877 111778	NO ₂	N	Y (14)	20	N
Jubilee Hall, The Square, Fawley	Industrial	445881 103247	NO ₂	Y (for SO ₂)	Y(1)	N/A	Y
Teachers Way, Holbury	Industrial	442947 103931	NO ₂	N	Y(1)	N/A	Y
School field, Beaulieu	Rural	438836 102115	NO ₂	N	Y (1)	N/A	N
Chaffey Close, Ringwood	Suburban	416452 105571	NO ₂	N	N (6)	56	N
Parsonage Barn Lane, Ringwood	Suburban	415302 105515	NO ₂	N	Y (1)	14	N
Rockbourne School	Rural	411569 118098	NO ₂	N	Y (1)	N/A	N

The nitrogen dioxide diffusion tubes were supplied and analysed by Gradko International Ltd. The preparation method used for the diffusion tubes was 50% TEA (triethanolamine) in water.

Gradko International Ltd. is a UKAS accredited laboratory and has been rated 'good' through the Workplace Analysis Scheme for Proficiency (WASP) as determined by the health and safety laboratory.

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The diffusion tube results have been bias corrected to allow for the laboratory bias when the tubes are analysed. 4 different bias correction factors have been applied to the data depending on the locations of the sites. For diffusion tube sites located in Totton, Lyndhurst and Marchwood local bias correction factors have been determined and used. These locations all contain an automatic monitoring site with a collocated triplicate diffusion tube site, therefore enabling a local correction factor to be applied.

At all other diffusion tube sites a national bias correction factor was used. This was obtained from the Review and Assessment website⁴ for the year 2008 determined for Gradko using the preparation method previously stated.

It should be noted that from 2009 the diffusion tube preparation method has been changed to 20% TEA in water. This was on advice from our suppliers, Gradko International, who suggested the change to use a more common form of preparation method. This would ultimately enable the Council to use a national bias correction factor determined from a greater number of co-located sites throughout the UK, which should therefore be more representative.

2.2 Comparison of Monitoring Results with AQ Objectives

In order to determine whether the air quality objectives are being met throughout the district, monitoring results are compared with the objectives set by Government as shown in Table 1.1. As previously discussed, during 2008 the pollutants monitored in the New Forest were nitrogen dioxide, sulphur dioxide and particulates (PM₁₀). The results are summarised below.

2.2.1 Nitrogen Dioxide

As stated in Table 1.1 there are two objectives for nitrogen dioxide, an annual mean and an hourly mean. The annual mean is 40µg/m³ and the hourly objective is 200 µg/m³ not to be exceeded more than 18 times a year.

The automatic site at Lyndhurst reported an exceedance of the annual mean objective, whilst 6 diffusion tube sites exceeded the annual mean objective; 4 sites in Lyndhurst, 1 site in Totton and 1 site at Stoney Cross (A31).

The sites at Lyndhurst and Totton are all within Air Quality Management Areas (AQMA) and whilst the sites at Lyndhurst represent public exposure, the site at Totton does not represent public exposure in accordance with the Technical Guidance¹.

The site at Stoney Cross (A31) is not within an AQMA.

No site recorded an exceedance of the 1-hour mean objective for nitrogen dioxide.

The monitoring results are detailed below.

Automatic Monitoring Data

The results from the automatic nitrogen dioxide monitoring sites for the years 2006 - 2008 are shown in Tables 2.3a and 2.3b for the annual and hourly means.

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

Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean objective ($\mu\text{g}/\text{m}^3$)	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2006	2007	2008
Lyndhurst	Y	99	40	44	43	46
Totton	Y	96	40	32	31	30

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

Location	Within AQMA?	Data Capture 2008 %	Hourly objective number of exceedences of $200 \mu\text{g}/\text{m}^3$	Number of exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$)		
				2006	2007	2008
Lyndhurst	Y	99	18	1	1	4
Totton	Y	96	18	0	0	0

The automatic monitoring sites show an exceedence of the annual mean objective at the Lyndhurst site, but no exceedence at the Totton site. Both sites are within current AQMA's, and the Lyndhurst site represents relevant public exposure.

Neither Lyndhurst or Totton show an exceedence of the hourly objective for nitrogen dioxide.

Diffusion Tube Monitoring Data

The results from the nitrogen dioxide diffusion tube monitoring sites for 2008 are shown in Table 2.4a, whilst Table 2.4b shows the results from 2006 - 2008. The tables report the annual mean results which have been bias adjusted using either locally or nationally derived factors.

Appendix 1 details the full details of the collated results from the diffusion tube sites.

Table 2.4a
Results of Nitrogen Dioxide Diffusion Tubes

Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
			2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
Lyndhurst			
Lyndhurst Rd, Goose Green	N	100	23.97
1, Foxlease Terrace, Shrubbs Hill Rd	N	100	31.56
Shrubbs Hill Rd	N	54	33.78*
The Orchards, Shrubbs Hill Rd	N	54	38.92*
Shrubbs Hill Rd	N	100	32.95
Little Queens, Shrubbs Hill Rd	N	54	19.63*
Queens House	N	100	21.52
School, High St.	Y	100	28.05
15, High St.	Y	92	52.34
14, High St. (analyser)	Y	92	47.02 (triplicate site)
16, High St.	Y	100	45.12
2a, Romsey Rd	Y	100	41.96
12, Romsey Rd	N	100	23.79
22, Romsey Rd	N	92	28.09
28, High St.	Y	100	30.62 (duplicate site)
65, High St.	Y	100	35.46
2, Gosport Lane	N	77	36.46
Lyndhurst Park Hotel	N	31	N/A (insufficient data capture)
Baytree Cottage, Bournem'th Rd	N	92	27.46

Note;

*Bias corrected using a local correction factor of **0.84**.*

Appendix 2 shows the formulation of this correction factor.

** denotes sites that have had an annual mean estimated using Technical Guidance¹ (Box 3.2). Details provided in Appendix 4.*

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Location	Within AQMA ?	Data Capture 2008 %	Annual mean concentrations
			2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
Totton			
Reymolds Dale (opp 8)	N	85	21.81
68, Junction Rd	N	77	25.59
Junction Rd (analyser)	Y	100	30.51 (triplicate site)
30, Junction Rd	Y	92	32.64
23, Junction Rd	Y	100	42.23
25, Junction Rd	Y	54	32.13*
26, Rumbridge St.	Y	100	35.20
2, Eling Lane	Y	100	36.31
Elingfield Court, High St.	N	85	35.29
55, High St.	N	100	36.09
114, Commercial Rd	N	100	37.35
34, Salisbury Rd	N	92	31.20
7a, Water Lane	N	92	24.59
83, Ringwood Rd	N	100	33.16*
Ringwood Rd / Maynard Rd roundab't	Y	92	35.09
Asda roundab't	Y	100	36.63
1, Rose Rd	N	100	31.19
31, Bartrum Rd	N	100	29.37
53, Main Rd	N	92	29.24

Note;

*Bias corrected using a local correction factor of **0.90**.*

Appendix 2 shows the formulation of this correction factor.

** denotes sites that have had an annual mean estimated using Technical Guidance¹ (Box 3.2). Details provided in Appendix 4.*

New Forest District Council - England

Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
			2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
Other locations			
11, Bilberry Drive, Marchwood	N	85	19.49
Shorefield Rd, Marchwood	N	100	26.65
3 Magazine Lane, Marchwood (adj to)	N	85	23.31 (triplicate site)
9, Boardwalk Way, Marchwood	N	54	25.46*
Autumn Road, Marchwood	N	92	21.58
Marchwood School, Twiggs Lane	N	100	23.68

Note;

Bias corrected using a local correction factor of **1.00**.

Appendix 2 shows the formulation of this correction factor.

* denotes sites that have had an annual mean estimated using Technical Guidance¹ (Box 3.2). Details provided in Appendix 4.

Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
			2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
Other locations			
A31, Stoney Cross	N	100	42.82 (duplicate site)
Jubilee Hall, The Square, Fawley	Y (for SO ₂)	100	20.45
Teachers Way, Holbury	N	100	15.99 (duplicate site)
School field, Beaulieu	N	100	11.81
Chaffey Close, Ringwood	N	100	30.76
Parsonage Barn Lane, Ringwood	N	100	25.49 (duplicate site)
Rockbourne School	N	100	9.51

Note;

Bias corrected using a national correction factor of **1.05** derived from 2008 national monitoring data.

This was obtained from the Review and Assessment website⁴ and shown in Appendix 3.

New Forest District Council - England

Table 2.4b
Results of Nitrogen Dioxide Diffusion Tubes

Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
		2006	2007	2008
Lyndhurst				
Lyndhurst Rd, Goose Green	N	22.98	23.43	23.97
1, Foxlease Terrace, Shrubbs Hill Rd	N	36.61	34.19	31.56
Shrubbs Hill Rd	N	28.46	32.35	32.95
Queens House	N	22.07	21.27	21.52
School, High St.	Y	24.60	27.05	28.05
15, High St.	Y	50.51	51.95	52.34
14, High St.	Y	43.35	43.46	47.02
16, High St.	Y	42.71	43.55	45.12
2a, Romsey Rd	Y	38.86	39.08	41.96
12, Romsey Rd	N	23.91	22.81	23.79
22, Romsey Rd	N	22.57	30.81	28.09
28, High St.	Y	28.56	28.09	30.62
65, High St.	Y	34.76	35.36	35.46
2, Gosport Lane	N	35.04	33.63	36.46
Lyndhurst Park Hotel	N	31.54	28.22	N/A
Baytree Cottage, Bournem'th Rd	N	27.24	29.07	27.46

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Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
		2006	2007	2008
Totton				
Reymolds Dale (opp 8)	N	22.05	22.60	21.81
68, Junction Rd	N	27.83	30.71	25.59
Junction Rd (analyser)	Y	31.67	31.35	30.51
30, Junction Rd	Y	34.85	37.92	32.64
23, Junction Rd	Y	44.27	45.18	42.23
26, Rumbridge St.	Y	34.12	37.10	35.20
2, Eling Lane	Y	38.06	37.38	36.31
Elingfield Court, High St.	N	35.69	36.05	35.29
114, Commercial Rd	N	38.23	39.59	37.35
34, Salisbury Rd	N	29.10	32.60	31.20
7a, Water Lane	N	25.73	26.28	24.59
83, Ringwood Rd	N	39.96	41.06	36.85
Ringwood Rd / Maynard Rd roundab't	Y	35.40	37.14	35.09
Asda roundab't	Y	36.78	36.79	36.63
1, Rose Rd	N	29.45	32.84	31.19
53, Main Rd	N	26.40	28.04	29.24
Other locations				
Marchwood School, Twiggs Lane	N	18.91	22.51	23.21
A31, Stoney Cross	N	33.62	38.32	42.82
Jubilee Hall, The Square, Fawley	N	16.68	19.44	20.45
Teachers Way, Holbury	N	13.35	15.48	15.99
School field, Beaulieu	N	9.74	11.72	11.81
Chaffey Close, Ringwood	N	25.78	25.41	30.76
Parsonage Barn Lane, Ringwood	N	20.49	22.39	25.49
Rockbourne School	N	8.36	9.19	9.51

The diffusion tube monitoring sites show 6 sites that have exceeded the nitrogen dioxide annual mean objective; 4 in Lyndhurst, 1 in Totton and 1 at Stoney Cross.

The 4 sites in Lyndhurst; 14, 15 and 16 High Street and 2a Romsey Road are all within the current AQMA and are sites of relevant public exposure. These sites have all shown an increase in annual mean concentrations over the period 2006 – 2008.

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The site in Totton, 23 Junction Road is within the current AQMA, however it is not a site representing relevant exposure as it is located on a lamp-post in a roadside location. This site has shown a decrease in the annual mean concentration for nitrogen dioxide over the monitoring period 2006 – 2008.

During 2008 a further site was located behind this site on a building façade at 25 Junction Road, therefore it was not considered necessary to determine a relevant exposure value for the 23, Junction Road site. Using the Technical Guidance¹ to determine an annual mean figure for the new site, the result would suggest at relevant exposure the annual mean objective for nitrogen dioxide is not exceeded at this location.

The site at Stoney Cross on the A31 is not within an AQMA.

Further sites which are considered borderline are as follows;

- | | | |
|-----|--|--------------------------|
| (a) | The Orchards, Shrubbs Hill Road, Lyndhurst | (relevant exposure). |
| (b) | 114 Commercial Road, Totton | (not relevant exposure). |

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2.2.2 PM₁₀

New Forest District Council monitors for PM₁₀ automatically at two permanent sites; Holbury and Totton. A further 6 month survey was undertaken in 2008 at two temporary sites in Totton and Lyndhurst following concerns from local residents.

As stated in Table 1.1 there are two objectives for PM₁₀, an annual mean and a 24-hour mean. The annual mean is set at 40µg/m³ and the 24-hour objective is set at 50µg/m³ not to be exceeded more than 35 times a year.

There were no exceedences of the PM₁₀ objectives at any of the monitoring sites during 2008.

The monitoring results are detailed below. The results from the automatic PM₁₀ monitoring sites for the years 2006 - 2008 are shown in Tables 2.5a and 2.5b for the annual and 24-hour means. Table 2.5c details results from the temporary monitoring sites in Totton and Lyndhurst over a 6month monitoring period.

The reported monitored PM₁₀ data has been corrected by erg at Kings College, London using the Volatile Correction Model (VCM) for 2008. Data reported from 2006 and 2007 has been corrected by a factor of 1.3 which was an accepted correction method previous to 2008.

Table 2.5a
Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA ?	Data Capture 2008 %	Annual mean objective (µg/m ³)	Annual mean concentrations (µg/m ³)		
				2006	2007	2008
Holbury	N	95	40	22	20	19
Totton	N	94	40	29	26	27

Table 2.5b
Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2008 %	24 hour objective number of exceedences of 50 µg/m ³	Number of Exceedences of daily mean objective (50 µg/m ³) <i>If data capture < 90%, include the 90th %ile of daily means in brackets.</i>		
				2006	2007	2008
Holbury	N	95	35	2	2	2
Totton	N	94	35	18	13(42)	16

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Table 2.5c
Results of 6 month PM₁₀ Automatic Monitoring

Location	Within AQMA?	Data Capture %	24 hour objective number of exceedences of 50 µg/m³	Average µg/m³
Totton	N	94	6	26
Lyndhurst	Y (for NO2)	91	0	22

None of the monitoring sites exceeded the objectives set for PM₁₀. The Holbury, Lyndhurst and temporary Totton sites all represent relevant exposure, however the permanent Totton site is at a roadside location and not considered relevant public exposure.

2.2.3 Sulphur Dioxide

New Forest District Council monitors for sulphur dioxide automatically at two sites; Holbury and Fawley.

As stated in Table 1.1 there are three objectives for sulphur dioxide, a 24-hour mean, an hourly mean and a 15-minute mean. The 24-hour objective is set at $125\mu\text{g}/\text{m}^3$ not to be exceeded more than 3 times in a year, the hourly objective is set at $350\mu\text{g}/\text{m}^3$ not to be exceeded more than 24-times a year and the 15-minute objective is set at $266\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times in a year.

There were no exceedences of the sulphur dioxide objectives at any of the monitoring sites during 2008.

The results from the automatic sulphur dioxide monitoring sites for the years 2006 - 2008 are shown in Tables 2.6a, 2.6b and 2.6c for the 24 hour, hourly and 15 minute means and are detailed below.

Table 2.6a
Results of Sulphur Dioxide Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2008 %	24-hour objective number of exceedences of $125\mu\text{g}/\text{m}^3$	Number of Exceedences of daily mean objective ($50\mu\text{g}/\text{m}^3$) <i>If data capture < 90%, include the 99th %ile of daily means in brackets.</i>		
				2006	2007	2008
Holbury	N	98	3	0	0	0
Fawley	Y	96	3	0	0	0

Table 2.6b
Results of Sulphur Dioxide Automatic Monitoring: Comparison with Hourly Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Hourly objective number of exceedences of $350\mu\text{g}/\text{m}^3$	Number of Exceedences of daily mean objective ($50\mu\text{g}/\text{m}^3$) <i>If data capture < 90%, include the 99.7th %ile of daily means in brackets.</i>		
				2006	2007	2008
Holbury	N	98	24	0	0	0
Fawley	Y	96	24	0	0	0

Table 2.6c
Results of Sulphur Dioxide Automatic Monitoring: Comparison with 15-minute Mean Objective

Location	Within AQMA?	Data Capture 2008 %	15-min objective number of exceedences of 266 µg/m ³	Number of Exceedences of daily mean objective (50 µg/m ³) <i>If data capture < 90%, include the 99.9th %ile of daily means in brackets.</i>		
				2006	2007	2008
Holbury	N	98	35	0	1	8
Fawley	Y	96	35	10	13	12

None of the monitoring sites exceeded the objectives set for sulphur dioxide. The objective of interest is the 15 minute mean objective, and it is worth noting the increase in the number of exceedences monitored at the Holbury site during 2008. The monitoring sites all represent relevant public exposure.

2.2.4 Other pollutants monitored

New Forest District Council has not monitored any other pollutants in it's district during 2008.

New Forest District Council has measured concentrations of nitrogen dioxide above the annual mean objective at relevant locations outside of the AQMA, and **will need to proceed to a Detailed Assessment**, for Stoney Cross and the A31.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

New Forest District Council has identified Queen Street, Lymington as a narrow congested street with residential properties (flats) close to the kerb. Queen Street is an A road taking both local traffic and traffic travelling between the towns of Lymington and Christchurch and includes buses and heavy goods vehicles.

The area of the street of concern forms part of a one way system with the carriageway measuring 5m wide. There is no accurate daily traffic flows for this part of the road, however a five minute count at the site at 12.20hrs gave a count of 79 vehicles. Therefore, it is assumed that the traffic flow is greater than 5,000 vehicles per day.

Considering this road has not been adequately assessed in previous rounds of review and assessment, the anticipated traffic flow and residential properties close to the kerb an assessment of nitrogen dioxide at this location is required.

New Forest District Council has identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, not adequately considered in previous rounds of Review and Assessment, and **will need to proceed to a Detailed Assessment.**

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

New Forest District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs

New Forest District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

New Forest District Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

New Forest District Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

New Forest District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

New Forest District Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

New Forest District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

New Forest District Council does have the Weymouth to London, Waterloo main line operating through it's district. This rail line operates close to properties in a few locations, for example through Totton and New Milton. However it is noted that assessment of air quality is based on the criteria given in the Technical Guidance¹.

4.2.1 Stationary Trains

Despite a main line running through the district, there are no locations which support the criteria for stationary trains.

New Forest District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Despite a main line running through the district, there are no locations which support the criteria for moving trains.

New Forest District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Southampton Water forms part of the eastern boundary of the New Forest district. This is a busy shipping route for ships entering the port of Southampton, including a cargo berth at Eling within New Forest district (south of Totton) and shipping accessing industrial processes such as the ExxonMobil petroleum refinery in Fawley.

There are areas of relevant exposure within 1km of the port of Southampton at Hythe, Marchwood, Totton and Eling however the number of shipping movements for large vessels are reported as approximately 12,000 per year (2005 figures), which is within the criteria laid out in the technical Guidance¹. Furthermore monitoring undertaken by Southampton City Council, which is in the direction of the prevailing wind does not report a likely exceedance of any of the sulphur dioxide objectives.

In addition, the Detailed Assessment 2004, concerning the likely exceedance of the 15 minute sulphur dioxide objective in Fawley, included modelling⁴ with regards to the contribution of shipping to local sulphur dioxide emissions. The modelling concluded that the contributions to sulphur dioxide concentrations from shipping increased at locations further up Southampton Water towards the port, however the sulphur dioxide concentrations were below the objectives set.

New Forest District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

New Forest District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

New Forest District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

New Forest District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are major fuel (petrol) storage depots within the Local Authority area, but these have been considered in previous reports.

5.3 Petrol Stations

New Forest District Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

The New Forest district contains a number of poultry farms of various sizes. The Integrated Pollution and Prevention (IPPC) public register contains details of two farms in Pitmore Lane in Sway with less than 400,000 birds in each premises, but the premises are within 250m of each other.

The premises details are given in Table 5.1.

Table 5.1
Details of Poultry Farms

Farm	OS Grid Ref	Authorised number of birds	Types of birds	Ventilation method	Relevant exposure? (Y/N with distance (m) to relevant exposure)
Matford Farm	429787 97102	322,875	broilers	mechanical	Y(30)
Pitmore Farm	429477 97076	285,000	broilers	mechanical	Y(100)

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The Updating and Screening helpdesk advises that considering there is relevant exposure, the combined impact of both premises has to be considered further particularly considering that this is a new area of emissions being assessed.

It should also be noted that a waste transfer station is also located within 100m to the north of Matford Farm. The waste transfer station has not been adequately assessed for PM₁₀ emissions, therefore the combined impact of the poultry farms and waste transfer station will be assessed for this location as a Detailed Assessment.

New Forest District Council has identified the combined impact of Matford Farm, Sway and Pitmore Farm, Sway as meeting the specified criteria, and **will need to proceed to a Detailed Assessment for PM₁₀.**

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Currently the Council has not identified any individual installations that are operating or have recent planning permission. It is likely that planning applications will be submitted to either New Forest District Council or the New Forest National Park planning authority in the near future, in such circumstances the Council is mindful to adequately assess such applications including commenting on the installation with regards to potential emissions to air.

New Forest District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

The Technical Guidance¹ advises that locations should be identified with high densities of residential and commercial properties which use biomass combustion. New Forest district is a mainly rural authority however the majority of rural properties are typically heated by domestic solid fuel burning, for example open fires and wood burners. Therefore in order to assess the impact of biomass combustion it was decided to select a village within the New Forest to act as a 'worst case' scenario, in this case the village of Beaulieu was selected.

Recent guidance from the Review and Assessment website⁵ advises a screening process using a worst case scenario approach. This process advises use of the background PM₁₀ figures and data to determine the number of properties that would be required to possibly cause an issue of PM₁₀ from biomass combustion within an area of 500m².

The reported background PM₁₀ from background maps gives a concentration of 16.3µg/m³ for Beaulieu, therefore following the Review and Assessment advice there is a requirement for 375 households in 500m² for a potential issue with PM₁₀ from domestic biomass burning. Using GIS mapping there are approximately 120 households within 500m² covering the centre of Beaulieu.

Therefore on this basis there is no requirement for a Detailed Assessment with regards to domestic biomass combustion in the New Forest at this time.

New Forest District Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

This section concerns coal burning and the associated sulphur dioxide emissions.

New Forest District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

As previously noted a waste transfer station located in Pitmore Lane, Sway has not been adequately assessed despite being operational for a number of years. This site is relatively small, however the background concentration of PM₁₀ in this rural location is 19µg/m³ and there are residential properties within 150m of the site. In addition there have been recent dust complaints associated with the site. Therefore this site requires further consideration in a Detailed Assessment.

It is hoped that the Detailed Assessment will be combined with the work previously noted concerning the two poultry farms in Pitmore Lane which are to the south and southwest of the waste transfer site. The Council has applied for Defra funding with regards to the completion of the Detailed Assessment.

New Forest district has a number of quarry sites, predominately in the western part of the district which have been assessed throughout previous Review and Assessments. One site has recently been granted planning permission for expansion (Plumley Wood), owned by Tarmac. However the site has been adequately assessed through the planning process and as such there is no requirement to proceed to a Detailed Assessment for this site.

New Forest District Council has identified potential sources of fugitive particulate matter that meet specified criteria, and **will need to proceed to a Detailed Assessment for PM₁₀.**

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Nitrogen Dioxide

The automatic monitoring results show an exceedence of the annual mean at Lyndhurst, which has exceeded the annual mean objective for all the reported monitoring years. This site is within the AQMA and represents relevant exposure. The site at Totton is also within an AQMA but does not represent relevant exposure being located in a roadside site, 5m from residential properties. Totton does not show an exceedence of the annual mean objective.

Neither site shows an exceedence of the hourly mean objective. It is noted that the automatic monitoring site at Lyndhurst site has shown an increase in the number of exceedences of the hourly objective from 1 in 2006 and 2007 to 4 in 2008. This figure is however well below the objective of 18 exceedences of $200\mu\text{g}/\text{m}^3$.

The diffusion tube results show exceedences of the annual mean objective at 4 sites in Lyndhurst, 1 site in Totton and a further site at Stoney Cross.

Lyndhurst

The 4 exceeding sites in Lyndhurst are 14, 15 and 16 High Street and 2a Romsey Road. All these sites are within the Lyndhurst AQMA and are representative of relevant public exposure.

A new site at The Orchards, Shrubbs Hill Road has only been exposed for 54% of the year due to its inclusion into the monitoring programme in June 2008, and therefore the result of $38.92\mu\text{g}/\text{m}^3$ has been determined using guidance from the Technical Guidance⁵. This result is below the annual mean objective, however it is borderline. Therefore considering the site is a relevant exposure the Council will assess this site further once a full year of data using the new diffusion tube preparation method is obtained, i.e. the results for 2009.

Following the Progress Report produced in June 2008 reporting 2007 data (comments received February 2009), Defra advised the Council should consider progressing to a Detailed Assessment for two sites at 1 Foxlease Terrace and 2a Gosport Lane. The Council has decided not to proceed to a Detailed Assessment for these sites at this time because the results for 2008 do not show an exceedence of the annual mean objective at $31.56\mu\text{g}/\text{m}^3$ and $36.46\mu\text{g}/\text{m}^3$ respectively. These sites will be maintained and assessed accordingly, particularly considering a new diffusion tube preparation method has been in use for 2009.

Totton

The main source of the nitrogen dioxide emissions within the declared AQMA in Totton is from traffic. The exceeding site in Totton is located at 23, Junction Road within the Totton AQMA. This site is on a lamp-post on a busy pavement close to where people wait for railway crossing barriers to open. These barriers are closed for between 20 – 25 minutes every hour, which causes traffic to queue with idling engines. However in accordance with the Technical Guidance¹ this site is not located at relevant exposure.

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A new diffusion tube site has been placed behind this site at 25, Junction Road on a building façade, therefore representing relevant exposure. This site has only been exposed for 54% of the year due to its inclusion into the monitoring programme in June 2008, and the result has been determined using guidance from the Technical Guidance¹. This result is below the annual mean objective.

Therefore the Council will continue to assess this site and others within the declared AQMA for Totton in order to obtain further monitoring data before deciding to progress through the process of a possible revocation of the AQMA.

It should be noted that the declaration of the AQMA in Totton during 2005 was determined following exceedences at 3 diffusion tube sites and a further 2 sites being marginal in Totton (all of which are now within the AQMA) and despite limited traffic measures to reduce nitrogen dioxide concentrations, only one of these sites in 2008 (23, Junction Road) exceeded the annual mean objective for nitrogen dioxide. Therefore progression of the current Action Plan in a location of frequent idling traffic would still be advantageous for residents in Totton on the grounds of improving air quality and as such, public health.

Following the Progress Report produced in June 2008 reporting 2007 data (comments received February 2009), Defra advised the Council should consider progressing to a Detailed Assessment for two sites at 55 High Street and 114 Commercial Road (originally reported as opposite 95, Commercial Road). The Council has decided not to proceed to a Detailed Assessment for these sites at this time because the results for 2008 do not show an exceedence of the annual mean objective at $36.09\mu\text{g}/\text{m}^3$ and $37.35\mu\text{g}/\text{m}^3$ respectively. These sites will be maintained and assessed accordingly, particularly considering a new diffusion tube preparation method has been in use for 2009.

A further site at 83, Ringwood Road was previously not at a relevant exposure site, and the results had suggested the requirement to progress to a Detailed Assessment. During 2008 this site was moved onto a relevant exposure location and the results have decreased significantly to below the annual mean objective, using the estimation technique detailed in the Technical Guidance¹ considering only 54% of data was collected from the site during 2008 due to the site being relocated in June 2008.

Therefore the Council will not be proceeding to a Detailed Assessment at this site, at this time. The site will be maintained and assessed accordingly, particularly considering a new diffusion tube preparation method has been in use for 2009.

Stoney Cross

This site is located adjacent to the A31, a dual carriageway running through the New Forest. The result for 2008 was bias corrected using the national correction factor, and has been determined as $42.82\mu\text{g}/\text{m}^3$.

This site is not a relevant exposure however it is actually located behind the couple of properties on the edge of the carriageway. Therefore it is likely that the annual mean concentration at the residential properties will be above those reported for this site and as a result the Council will be proceeding to a Detailed Assessment for this location.

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Table 2.4b shows comparison data for a number of diffusion tube sites. On the whole most sites have shown an increase in concentrations between 2006 – 2008 however the diffusion tube sites in Totton have shown similar results or a slight decrease over the reporting period.

PM10

The monitored results for 2008 do not show an exceedence of either the annual or 24-hour mean objective for PM10 at the Holbury and Totton monitoring sites.

Table 2.5c shows the results for a 6 month monitoring scheme for two sites which were installed due to local concerns. The project was run by AEA Technology³ and it was concluded that both these sites in Totton and Lyndhurst were unlikely to exceed either the annual or 24-hour mean objectives for PM10. The results from these temporary sites are shown in Appendix 5.

Sulphur Dioxide

The monitored results for 2008 do not show an exceedence of the 24-hour, hourly or 15-min mean for sulphur dioxide at the Holbury and Fawley monitoring sites.

The Fawley site is within an AQMA with respect to the 15 minute mean objective. At this time the Council will not be proceeding through the process to revoke the AQMA in Fawley despite results showing no exceedence of the objectives (in particular the 15 minute mean objective).

Exceedences of the 15 minute mean objective mainly occur during periods of strong northwest winds which are not common across the New Forest district. Such winds line up emission stacks on the refinery site, grounding the emissions in Fawley village. Whilst measures have been put in place by the refinery to reduce the likelihood of exceedences from occurring, such as switching from oil to gas during certain weather conditions, there still needs to be certainty that should prolonged episodes of strong north-westerly winds occur, as in 2005 resulting in 63 exceedences of the 15 minute mean, an exceedence of the 15 minute mean objective will not recur.

8.2 Conclusions from Assessment of Sources

The Updating and Screening Assessment has identified a number of areas which require further consideration.

With regards to road transport a location not previously assessed has been identified; a narrow congested street with residential properties close to the kerb. This location in Queen Street, Lymington has no traffic data and as such requires a Detailed Assessment due to a possible exceedence of the nitrogen dioxide annual mean objective.

No other impacts have been identified from other traffic sources within the New Forest district.

With regards to other transport, it is acknowledged that there are possible impacts from a railway line and shipping associated with Southampton Port. However both of these transport areas do not fulfil the criteria laid out in the Technical Guidance⁵ and as a result the Council will not be proceeding to a Detailed Assessment at this time.

New Forest District Council - England

Despite the industrial nature of some areas within New Forest district there are no new impacts from industrial processes except from the possible impact from poultry farms. This is a new area of consideration within the Review and Assessment process and due to the current limited information available New Forest has decided to include the possible combined impact of two neighbouring poultry farms on residential properties in Pitmore Lane, Sway. As a result the Council will be proceeding to a Detailed Assessment due to a possible exceedence of the PM₁₀ objectives.

Commercial and domestic sources include the assessment for biomass sources. Whilst no individual sources have been currently identified, it is likely that such sources will be installed in the near future and therefore the Council needs to ensure appropriate assessment concerning emissions is undertaken.

It was noted that due to its rural nature, the combined impacts from small domestic biomass installations such as wood burners and fires may present an issue in the New Forest. However despite the daunting task of assessing the whole district for these installations, recent guidance from the Review and Assessment helpdesk⁵ was applied to a worst case scenario which determined that domestic installations burning wood should not be an issue in the New Forest. One reason is due to the rural nature of the area and therefore low background concentration for PM₁₀. It is noted that guidance concerning this area of assessment may alter in the future resulting in possible further assessments.

With regards to fugitive emissions, a waste transfer site not previously assessed for PM₁₀ was identified in Pitmore Lane, Sway. It is hoped that the Detailed Assessment for this site could be combined with the assessment for the previously noted poultry farms considering these sites are adjacent.

It was also noted that due to the extensive quarrying activities within the New Forest, the Council needs to ensure adequate air quality assessments are completed for new sites and sites which are being extended. The air quality assessments should be included as part of the planning permission required for such activities.

8.3 Proposed Actions

The Updating and Screening Assessment has identified the requirement to proceed to a Detailed Assessment. The locations, pollutants and objective requiring a Detailed Assessment are shown in Table 8.1.

Table 8.1
Table Outlining Detailed Assessment Requirements

Location	Pollutant	Objective
A31, Stoney Cross	NO ₂	Annual mean
Queen Street, Lymington	NO ₂	Annual mean
Pitmore Lane, Sway	PM ₁₀	24-hour mean Annual mean

The automatic monitoring sites will be maintained at their current locations. There is no requirement to add to the current number of automatic monitoring sites.

It is acknowledged that a number of diffusion tubes have been monitoring concentrations of nitrogen dioxide well below the annual mean objective, in particular in locations outside current AQMAs. However considering the preparation method for the diffusion tubes has been changed for 2009, a review of the current nitrogen dioxide diffusion tube location will be made at the being of 2010 once a full year of data is obtained using the 'new' tubes. It is however likely that some of the current sites will be removed.

There will be no revocation of current AQMAs within the New Forest district. It is acknowledged that Fawley has not monitored an exceedence of the 15 minute mean, and that the one exceeding site in Totton is not representative of relevant exposure. However the Council has concluded the need to collate further monitoring data, in particular taking into account worse case scenarios when considering Fawley, before revoking an AQMA is considered further.

Therefore the Council will be submitting the reports detailed in Table 8.2 as required and in response to the conclusions from this Updating and Screening Assessment.

Table 8.2
Table Detailing Subsequent Reports

Report	Submission Date
Action Plan Progress Report	2009
Progress Report	April 2010
Detailed Assessment*	April 2010

Note;

** pollutants noted in Table 8.1*

9 References

1. **DEFRA.** Local Air Quality Management. Technical Guidance LAQM.TG(09)
2. www.newforest.gov.uk/index.cfm?articleid=6372
3. **AEA.** Air Quality Review and Assessment. Detailed Assessment 2008. March 2009. AEA/ENV/R/2763
4. **Faber Maunsell.** Detailed Modelling Study. June 2004
5. www.uwe.ac.uk/aqm/review/

Appendices

Appendix 1: Diffusion Tube Results

Appendix 2: Local Bias Correction Calculations

Appendix 3: National Local Bias Correction

Appendix 4: Short-term to Long-term Data adjustment

Appendix 5: Short-term PM10 Monitoring Results

New Forest District Council - England

Appendix 1: Diffusion Tube Results

Monitoring data prior to bias correction

Site	Goose Green, Lyndhurst Rd	Foxlease Ter, Shrubbs Hill Rd	Opp Foxlease Terr	The Orchards, Shrubbs Hill Rd	Hillmead Lodge, Shrubbs Hill Rd	Little Queens
Exposure dates						
14/01/08 - 07/02/08	21.80	32.33			32.74	
07/02/08 - 07/03/08	38.24	44.75			42.29	
07/03/08 - 31/03/08	25.29	39.57			31.78	
31/03/08 - 28/04/08	32.07	49.65			39.97	
28/04/08 - 27/05/08	32.61	49.43			26.10	
27/05/08 - 27/06/08	30.10	40.94			42.15	
27/06/08 - 24/07/08	21.82	26.60	34.23	46.58	41.03	17.26
24/07/08 - 20/08/08	24.21	28.14	33.36	46.38	45.13	23.48
20/08/08 - 15/09/08	21.57	15.92	36.37	43.88	41.55	19.54
15/09/08 - 16/10/08	29.52	38.22	42.55	49.54	43.18	24.71
16/10/08 - 19/11/08	26.62	36.33	43.00	41.96	38.79	22.38
19/11/08- 15/12/08	30.93	44.55	41.53	44.10	44.08	22.87
15/12/08 - 13/01/09	36.19	42.00	40.99	40.85	41.18	27.80
Average	28.54	37.57	38.86	44.76	39.23	22.58

New Forest District Council - England

Site	Queens House	Lyndhurst School	15 High Street	14 High Street (Analyser)	(Analyser)	(Analyser)
Exposure dates						
14/01/08 - 07/02/08	17.97	31.03	56.25	38.68	42.24	43.47
07/02/08 - 07/03/08	33.70	40.76	68.05	62.80	73.96	63.02
07/03/08 - 31/03/08	21.32	25.22				
31/03/08 - 28/04/08	28.58	64.35	70.19	64.11	60.36	58.58
28/04/08 - 27/05/08	27.53	31.00	66.82	67.81	56.21	56.01
27/05/08 - 27/06/08	34.69	24.81	70.88	46.60	60.32	59.88
27/06/08 - 24/07/08	18.68	28.49	55.92	62.74	50.56	54.03
24/07/08 - 20/08/08	20.05	30.94	52.84	53.59	56.27	56.59
20/08/08 - 15/09/08	19.89	29.76	57.40	53.49	57.94	50.04
15/09/08 - 16/10/08	26.46	31.48	65.17	59.30	59.25	52.17
16/10/08 - 19/11/08	23.58	30.39	63.60	51.36	47.79	52.55
19/11/08- 15/12/08	30.90	32.46	58.01	59.11	51.59	57.68
15/12/08 - 13/01/09	29.64	33.40	62.56	50.67	68.12	56.44
Average	25.61	33.39	62.31	55.98		

New Forest District Council - England

Site	16 High Street	2a, Romsey Rd I	12, Romsey Rd	22, Romsey Rd	28 High St.	28 High St.	65, High St
Exposure dates							
14/01/08 - 07/02/08	47.43	46.61	27.61	31.98	39.91	35.54	35.67
07/02/08 - 07/03/08	57.33	55.36	35.94	47.37	43.87	50.00	47.65
07/03/08 - 31/03/08	41.35	49.25	23.17	26.93	35.67	34.79	40.39
31/03/08 - 28/04/08	66.40	59.70	34.13	41.57	40.35	43.08	47.73
28/04/08 - 27/05/08	55.82	55.18	33.44	41.92	29.31	31.04	49.53
27/05/08 - 27/06/08	58.78	50.57	27.08		33.53	32.97	43.85
27/06/08 - 24/07/08	54.24	45.17	23.65	20.48	31.32	29.99	34.40
24/07/08 - 20/08/08	55.42	48.06	24.33	28.93	30.59	31.13	32.40
20/08/08 - 15/09/08	53.58	45.52	25.96	29.03	29.67	32.87	36.26
15/09/08 - 16/10/08	55.70	49.38	28.24	35.25	36.91	36.53	46.86
16/10/08 - 19/11/08	53.67	44.36	25.25	30.32	34.12	37.84	40.18
19/11/08- 15/12/08	50.99	49.65	25.29	30.28	41.64	39.39	44.12
15/12/08 - 13/01/09	47.65	50.63	34.12	37.16	43.56	42.11	49.76
Average	53.72	49.96	28.32	33.44	36.45		42.22

New Forest District Council - England

Site	Gosport St.	Lyndhurst Park Hotel	A35	Stoney Cross	Stoney Cross	Chaffey Close	Ringwood School	Ringwood School
Exposure dates								
14/01/08 - 07/02/08	33.56	39.50	31.16	45.75	40.65	37.26	21.85	23.78
07/02/08 - 07/03/08	49.78	45.62	34.22	54.51	45.5	37.88	37.31	38.52
07/03/08 - 31/03/08	32.87	36.50	33.97	44.83	47.51	24.97	21.93	19.68
31/03/08 - 28/04/08	46.72		32.87	41.53	37.56	32.49	23.6	22.36
28/04/08 - 27/05/08	51.02		39.77	37.81	27.91	31.09	23.66	24.31
27/05/08 - 27/06/08	44.25		35.33	43.14	46.97	21.92	19.43	19.81
27/06/08 - 24/07/08	42.05		28.36	38.92	39.18	21.76	13.54	12.31
24/07/08 - 20/08/08	43.73		31.34	32.05	26.14	27.1	14.58	12.39
20/08/08 - 15/09/08	43.99		27.79	35.35	34.93	23.44	15.4	15.96
15/09/08 - 16/10/08				39.87	42.47	25.29	25.62	26.5
16/10/08 - 19/11/08			27.81	44.64	40.99	28.71	23.44	24.28
19/11/08- 15/12/08	46.04	33.02	38.38	32.87	37.44	29.8	25.21	25.75
15/12/08 - 13/01/09				59.13	42.76	39.26	39.15	36.61
Average	43.40	38.66	32.69	40.78		29.3	24.28	

New Forest District Council - England

Site	Rockbourne	Bilberry Drive	Shorefield Road	Magazine Lane (Analyser)	(Analyser)	(Analyser)
Exposure dates						
14/01/08 - 07/02/08	9.33	18.81	22.25	20.96	21.02	21.02
07/02/08 - 07/03/08	15.1	27.79	34.58	32.74	35.98	33.57
07/03/08 - 31/03/08	7.65	21.8	25.01	22.69	24.54	25.63
31/03/08 - 28/04/08	9.08	19.6	28.37	27.12	29.37	26.63
28/04/08 - 27/05/08	9.32		37.08	30.17	29.24	30.19
27/05/08 - 27/06/08	5.9		24.92	19.2	19.7	18.72
27/06/08 - 24/07/08	5.49	9.04		11.89	13.06	12.35
24/07/08 - 20/08/08	4.68	8.36	12.22	13.13		
20/08/08 - 15/09/08	5.74	12.65	16.48	15.58	16.06	15.8
15/09/08 - 16/10/08	8.37	21.61	28.82			
16/10/08 - 19/11/08	9.25	16.8	24.58	21.64	21.3	22.46
19/11/08- 15/12/08	11.15	25.81	34.23	33.71	32.25	28.16
15/12/08 - 13/01/09	16.76	32.11	31.24	32.86	24.23	29.97
Average	9.06	19.49	26.65	23.31		

New Forest District Council - England

Site	Broadwalk Way	Autumn Road	Marchwood School	Holbury School	Holbury School	Jubilee Hall, Fawley	Beaulieu
Exposure dates							
14/01/08 - 07/02/08	22.91	20.71	22.4	14.35	15.22	14.37	10.3
07/02/08 - 07/03/08	28.05	31.28	26.91	20.68	20.62	28.22	14.49
07/03/08 - 31/03/08	20.57	23.1	18.18	12.78	12.52	18.65	9.32
31/03/08 - 28/04/08	23.26	24.07	26.3	15.87	13.18	20.4	11.01
28/04/08 - 27/05/08	30.59	28.75	28.73	20.23	20.23	23.45	13.98
27/05/08 - 27/06/08		18.96	19.09	11.27	11.77	15.55	9.18
27/06/08 - 24/07/08	12.46	10.63	16.08	7.36	6.61	10.05	5.17
24/07/08 - 20/08/08		11.64	17.23	9.05	8.64	11.36	6.46
20/08/08 - 15/09/08		14.48	23.5	9.99	9.61	14.08	6.26
15/09/08 - 16/10/08			24.96	15.9	17.17	20.63	12.08
16/10/08 - 19/11/08		21.03	22.3	13.03	14.91	19.5	11.21
19/11/08- 15/12/08	36.90	32.69	29.40	20.53	21.99	24.97	15.65
15/12/08 - 13/01/09			32.82	25.21	27.28	31.96	21.11
Average	24.96	21.58	23.68	15.23		19.48	11.25

New Forest District Council - England

Site	Reynolds Dale	68, Junction Rd	Junction Rd (Analyser)	(Analyser)	(Analyser)	30, Junction Rd
Exposure dates						
14/01/08 - 07/02/08	26.79	25.56	33.01	33.35	31.44	36.08
07/02/08 - 07/03/08	34.55	41.01	47.53	43.66	43.25	45.77
07/03/08 - 31/03/08	22.67	24.78	29.23	28.65	28.59	38.66
31/03/08 - 28/04/08	25	24.98	33.09	33.83	33.92	36.36
28/04/08 - 27/05/08	29.82		48.47	44.88	45.62	50.78
27/05/08 - 27/06/08	19.17	23.86	26.71	28.38	27.61	35.86
27/06/08 - 24/07/08	19.71	19.51	24.3	25.75	27.39	31.26
24/07/08 - 20/08/08	20.05		28.68	28.51	28.87	31.63
20/08/08 - 15/09/08	22.61	25.93	33.63	33.77	32.34	33.32
15/09/08 - 16/10/08	21.75	28.15	31.75	34.14	32.6	37.95
16/10/08 - 19/11/08	24.45	27.55	30.1	32.44	32.79	40.75
19/11/08- 15/12/08			42.05	40.41	36.48	
15/12/08 - 13/01/09		43.03	32.80	32.74	39.31	46.86
Average	24.23	28.44	33.90			38.77

New Forest District Council - England

Site	23, Junction Rd	25, Junction Road	26, Rumbridge St.	2, Eling Lane	Elingfield Court, High St.	55, High St.	114, Commercial Rd (op 95)
Exposure dates							
14/01/08 - 07/02/08	55.56		39.3	40.73	42.3	41.55	39.02
07/02/08 - 07/03/08	61.7		50.88	47.77	31.14	48.12	48.24
07/03/08 - 31/03/08	43.52		35.91	33.16	32.51	34.62	37.37
31/03/08 - 28/04/08	48.93		38.96	41.34	45.11	39	46.43
28/04/08 - 27/05/08	54.49		49.03	49.99	50.84	55.79	43.76
27/05/08 - 27/06/08	43.14		33.13	36.66	32.57	34.03	40.81
27/06/08 - 24/07/08	40.81	23.64	32.33	36.78	34.23	30.42	30.78
24/07/08 - 20/08/08	42.78	26.1	33.36	38.56		32.19	28.95
20/08/08 - 15/09/08	45.9	28.74	35.19	40.22		35.77	38.54
15/09/08 - 16/10/08	41.17	35.28	35.52	35.63	39.41	40.77	42.69
16/10/08 - 19/11/08	43.12	31.48	35.73	37.54	37.36	37.09	41.34
19/11/08- 15/12/08	49.39	41.28	44.40	43.37	40.54	44.38	47.39
15/12/08 - 13/01/09	39.4	54.89	44.65	42.73	45.27	47.61	54.19
Average	46.92	34.49	39.11	40.35	39.21	40.10	41.50

New Forest District Council - England

Site	34,Salisbury Rd	7a, Water Lane	83, Ringwood Rd	Ringwood Rd / Maynard Rd	Asda roundab't	1, Rose Rd	31, Bartrum Rd	53, Main Rd
Exposure dates								
14/01/08 - 07/02/08	31.03	23.78		39.37	42.58	30.69	23.03	34.17
07/02/08 - 07/03/08	43.3	39.01		46.83	46.71	42.72	41.25	41.01
07/03/08 - 31/03/08	30.4	21.67		34.85	42.82	29.47	29.93	30.81
31/03/08 - 28/04/08	36.73	25.21		40.49	39.73	36.25	28.75	32.14
28/04/08 - 27/05/08	38.38	40.13			48.81	53.22	45.78	34.09
27/05/08 - 27/06/08		22.1		34.75	35.21	29.52	27.09	
27/06/08 - 24/07/08	25.43	17.45	28.4	34.83	36.9	23.46	22.04	21.96
24/07/08 - 20/08/08	27.2	18.92	28.82	33.5	36.06	21.3	19.69	22.71
20/08/08 - 15/09/08	28.3	24.23	33.11	40.2	37.45	26.54	26.74	27.95
15/09/08 - 16/10/08	27.8	27.8	33.56	39.16	38.85	35.07	34.7	29.42
16/10/08 - 19/11/08	35.63		35.04	35.92	38.92	32.7	36.14	33.99
19/11/08- 15/12/08	45.30	32.61	42.94	43.12	41.78	43.15	41.15	39.08
15/12/08 - 13/01/09	46.49	34.97	47.34	44.88	43.33	46.57	47.96	42.5
Average	34.67	27.32	35.60	38.99	40.70	34.66	32.63	32.48

Appendix 2: Local Bias Correction Calculation

Lyndhurst

Kerbside site

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	14/01/2008	07/02/2008	38.68	42.24	43.47	41	2.5	6	6.2	34.00	100	Good	Good
2	07/02/2008	07/03/2008	62.8	73.96	63.02	67	6.4	10	15.9	66.00	85	Good	Good
3	07/03/2008	31/03/2008								38.90	99		Good
4	31/03/2008	28/04/2008	64.11	60.36	58.58	61	2.8	5	7.0	44.50	100	Good	Good
5	28/04/2008	27/05/2008	67.81	56.21	56.01	60	6.8	11	16.8	52.70	100	Good	Good
6	27/05/2008	27/06/2008	46.6	60.32	59.88	56	7.8	14	19.4	49.80	100	Good	Good
7	27/06/2008	24/07/2008	62.74	50.56	54.03	56	6.3	11	15.6	39.10	100	Good	Good
8	24/07/2008	20/08/2008	53.59	56.27	56.59	55	1.6	3	4.1	46.50	100	Good	Good
9	20/08/2008	15/09/2008	53.49	57.94	50.04	54	4.0	7	9.8	43.10	100	Good	Good
10	15/09/2008	16/10/2008	59.3	59.25	52.17	57	4.1	7	10.2	50.40	100	Good	Good
11	16/10/2008	19/11/2008	51.36	47.79	52.55	51	2.5	5	6.2	42.10	99	Good	Good
12	19/11/2008	15/12/2008	59.11	51.59	57.68	56	4.0	7	9.9	46.70	100	Good	Good
13	15/12/2008	13/01/2009	50.67	68.12	56.44	58	8.9	15	22.1	50.9	100	Good	Good
Overall survey -->												Good precision	Good Overall DC

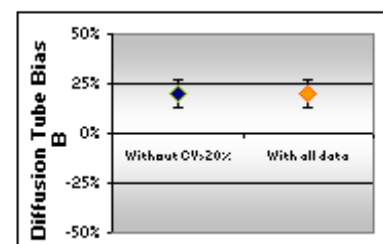
It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID: Lyndhurst, New Forest

Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.84 (0.79 - 0.9)
Bias B	19% (11% - 26%)
Diffusion Tubes Mean:	56 μgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	47 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	47 (44 - 50) μgm^{-3}

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.84 (0.79 - 0.9)
Bias B	19% (11% - 26%)
Diffusion Tubes Mean:	56 μgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	47 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	47 (44 - 50) μgm^{-3}



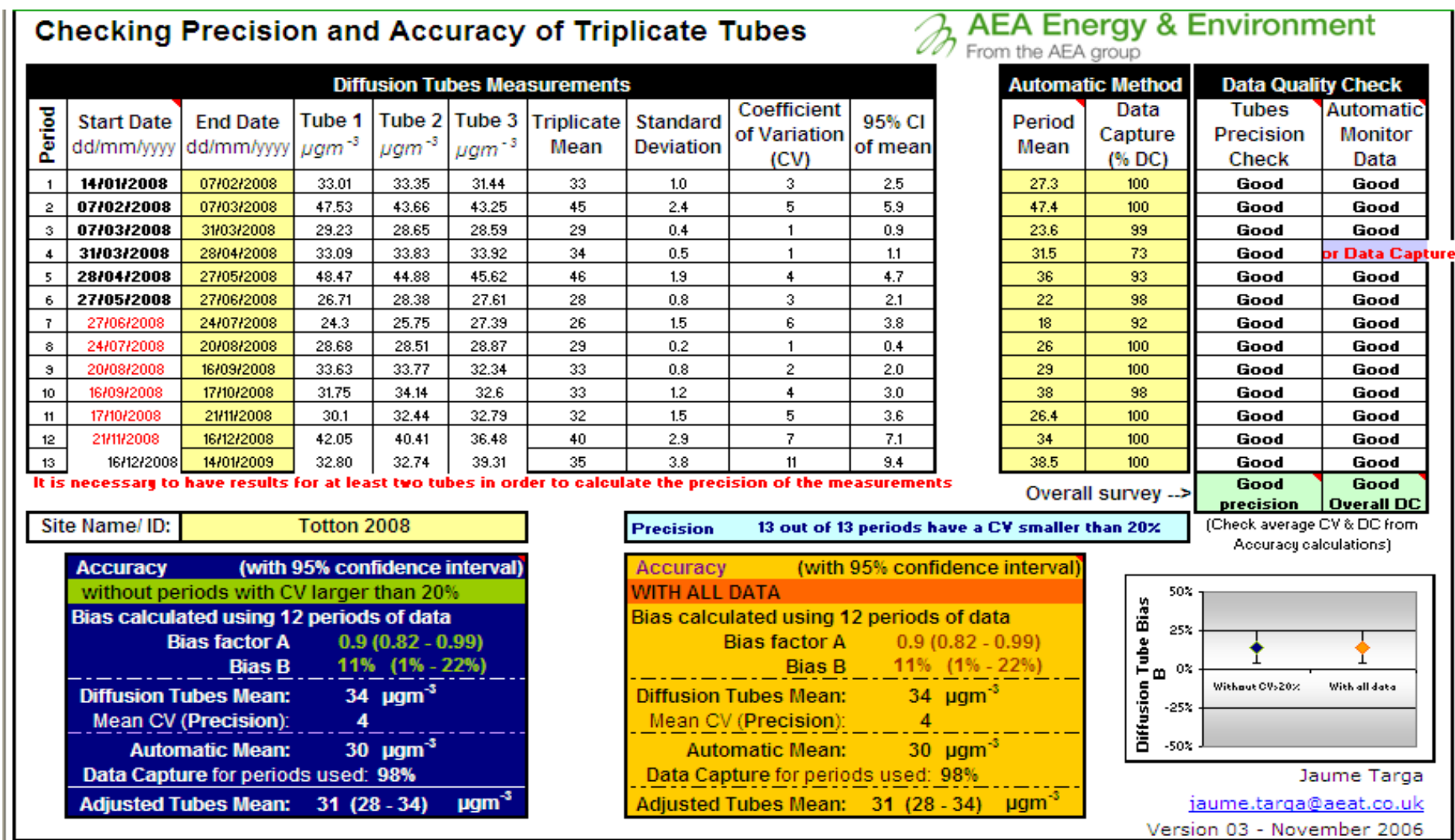
Jaume Targa

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Version 03 - November 2006

Totton

Roadside site



Marchwood

Industrial

Checking Precision and Accuracy of Triplicate Tubes

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	10/01/2008	11/02/2008	20.96	21.02	21.02	21	0.0	0	0.1
2	11/02/2008	07/03/2008	32.74	35.98	33.57	34	1.7	5	4.2
3	07/03/2008	31/03/2008	22.69	24.54	25.63	24	1.5	6	3.7
4	31/03/2008	30/04/2008	27.12	29.37	26.63	28	1.5	5	3.6
5	30/04/2008	29/05/2008	30.17	29.24	30.19	30	0.5	2	1.3
6	29/05/2008	24/06/2008	19.2	19.7	18.72	19	0.5	3	1.2
7	24/06/2008	24/07/2008	11.89	13.06	12.35	12	0.6	5	1.5
8	24/07/2008	19/08/2008	13.13						
9	19/08/2008	16/09/2008	15.58	16.06	15.8	16	0.2	2	0.6
10	16/09/2008	17/10/2008							
11	17/10/2008	21/11/2008	21.64	21.3	22.46	22	0.6	3	1.5
12	21/11/2008	19/12/2008	33.71	32.25	28.16	31	2.9	9	7.1
13	19/12/2008	15/01/2009	32.86	24.23	29.97	29	4.4	15	10.9

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
20.80	100	Good	Good
41.50	100	Good	Good
20.60	100	Good	Good
28.10	100	Good	Good
30.60	99	Good	Good
17.60	100	Good	Good
10.00	98	Good	Good
12.50	100		Good
14.00	100	Good	Good
24.80	100		Good
19.40	100	Good	Good
31.80	100	Good	Good
32.4	100	Good	Good
Overall survey -->		Good precision	Good Overall DC

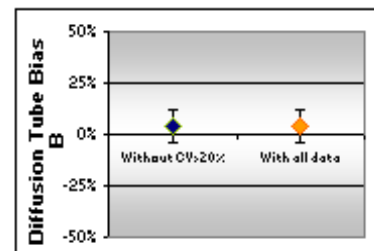
(Check average CV & DC from
Accuracy calculations)

Site Name/ ID: Marchwood, New Forest

Precision 11 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	1 (0.92 - 1.09)
Bias B	0% (-9% - 8%)
Diffusion Tubes Mean:	24 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	24 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	24 (22 - 26) μgm^{-3}

Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 11 periods of data	
Bias factor A	1 (0.92 - 1.09)
Bias B	0% (-9% - 8%)
Diffusion Tubes Mean:	24 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	24 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	24 (22 - 26) μgm^{-3}



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Appendix 3: National Bias Correction Factor

Follow the steps below in the correct order to show the results of relevant co-location studies								This spreadsheet will be updated in late September 2009 on the R&A website		
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used										
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ²	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.							
Analysed By¹	Method To undo your selection, choose (All) from the pop-up list	Year⁵ To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision⁶	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Water	2008	R	Winchester	11	46	48	-2.2%	G	1.02
Gradko	50% TEA in Water	2008	R	South Norfolk	10	28	34	-19.8%	S	1.25
Gradko	50% TEA in Water	2008	K	AEA Tech Intercomparison	12	109	116	-6.2%	G	1.07
Gradko	50% TEA in Water	2008	R	Thurrock Council	12	40	36	12.3%	G	0.89
Gradko	50% TEA in Water	2008		Overall Factor ³ (4 studies)					Use	1.05

Discussion of Choice of Factor to Use

New Forest District Council has determined 3 separate local bias correction factors, applying to nitrogen dioxide diffusion tubes in Lyndhurst, Totton and Marchwood, as shown in Appendix 2. These factors were determined from triplicate diffusion tubes co-located at automatic nitrogen dioxide analysers and range between 0.84 – 1.00, therefore diffusion tube results to which these factors have been applied have remained the same or decreased.

Sites not within Lyndhurst, Totton and Marchwood have been bias corrected using the national bias correction factor as shown in Appendix 3. This bias correction factor is 1.05 which has increased the monitored diffusion tube nitrogen dioxide annual mean results.

Lyndhurst is the 'lowest' factor at 0.84 which has historically always been in the range of 0.8 – 0.9 and the sites in Totton have had a correction factor of 0.9 applied. These factors have resulted in some sites within Lyndhurst and Totton which were exceeding the annual mean objective for nitrogen dioxide for the monitored data being reported as below the objective following bias correction.

Furthermore, the application of a national bias correction factor of 1.05, which unlike the local bias correction factors increases the monitored diffusion tube results has determined that one site in the New Forest, Stoney Cross, has exceeded the annual mean objective for nitrogen dioxide and the Council is to proceed to a Detailed Assessment for this location.

Therefore it is evident that the choice of factors applied to the data has a significant effect on the reported results and conclusions drawn. As such the Council will always attempt to ensure the most appropriate bias correction factors are applied to the monitoring data considering the implications of the reported results.

Appendix 4: Short-term to Long-term Data Adjustment

A number of diffusion monitoring sites were only in use from July 2008, resulting in incomplete data sets for 2008. These sites were as follows;

Lyndhurst

Shrubbs Hill Road
The Orchards, Shrubbs Hill Road
Little Queens, Shrubbs Hill Road

Totton

25 Junction Road
83, Ringwood Road (this site was moved from a lamp-post onto a building façade from July 2008).

A further site is noted due to stolen monitoring tubes resulting in only 54% of data being collated over 2008. This site is as follows;

Marchwood

Boardwalk Way

Guidance⁵ (Box 3.2) advises on a procedure to estimate the annual mean concentration from such short-term monitoring data. The table below details results from long term monitoring AURN sites, which have been used to determine a ratio of 1.035 for the Lyndhurst and Totton sites.

Site	Site Type	Annual Mean / μgm^{-3}	Period Mean / μgm^{-3}	Ratio (Am/Pm)
Southampton	Urban background (AURN)	36.1	34.2	1.05
Portsmouth	Urban background (AURN)	24.1	23.6	1.02
			Average	1.035

The table below details results from long term monitoring AURN sites, which have been used to determine a ratio of 1.02 for the Marchwood site.

Site	Site Type	Annual Mean / μgm^{-3}	Period Mean / μgm^{-3}	Ratio (Am/Pm)
Southampton	Urban background (AURN)	36.1	36.3	0.99
Portsmouth	Urban background (AURN)	24.1	22.9	1.05
			Average	1.02

It should be noted that the data from the AURN sites has not been fully ratified since July 2008, however the data is used in the absence of any other appropriate sites.

New Forest District Council - England

The determined ratio is then applied to the average monitored data, the results are then bias corrected, in this case using the local bias correction factors. The results are as follows;

Site	Monitored mean / μgm^{-3}	Monitored mean x ratio	Bias correction factor	Reported result / μgm^{-3}
Shrubbs Hill Rd	38.86	40.22	0.84	33.78
The Orchards	44.76	46.33	0.84	38.92
Little Queen	22.58	23.37	0.84	19.63
25 Junction Rd	34.49	35.70	0.90	32.13
83, Ringwood Rd	35.60	36.85	0.90	33.16
Boardwalk Way	24.96	25.46	1.00	25.46

Appendix 5: Short-term PM₁₀ Monitoring Results

Produced by AEA Energy & Environment on behalf of New Forest DC

NEW FOREST LYNDHURST 2 14 March to 24 September 2008

These data have been fully ratified by AEA Energy & Environment

POLLUTANT	PM ₁₀
Number Very High	0
Number High	0
Number Moderate	0
Number Low	4220
Maximum 15-minute mean	113 µg m ⁻³
Maximum hourly mean	113 µg m ⁻³
Maximum running 8-hour mean	68 µg m ⁻³
Maximum running 24-hour mean	56 µg m ⁻³
Maximum daily mean	49 µg m ⁻³
Average	22 µg m ⁻³
Data capture	91.3 %

PM₁₀: as measured by a BAM with a factor of 0.83333 applied to give gravimetric equivalent concentrations

All mass units are at 20°C and 1013mb

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	0	0
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg m ⁻³	-	-

Produced by AEA Energy & Environment on behalf of New Forest DC

NEW FOREST TOTTON
14 March to 24 September 2008

These data have been fully ratified by AEA Energy & Environment

POLLUTANT	PM ₁₀ ⁺⁺
Number Very High	0
Number High	0
Number Moderate	6
Number Low	4325
Maximum 15-minute mean	182 µg m ⁻³
Maximum hourly mean	182 µg m ⁻³
Maximum running 8-hour mean	85 µg m ⁻³
Maximum running 24-hour mean	74 µg m ⁻³
Maximum daily mean	60 µg m ⁻³
Average	26 µg m ⁻³
Data capture	94.4 %

PM10: as measured by a BAM with a factor of 0.83333 applied to give gravimetric equivalent concentrations

All mass units are at 20°C and 1013mb

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	6	6
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg m ⁻³	-	-