New Forest
DISTRICT COUNCIL

2013 Air Quality Progress Report for New Forest District Council

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

June 2013

Local Authority Officer	**Rachel Higgins**
Department	**Public Health and Community Safety**
Address	**Appletree Court Lyndhurst Hampshire SO43 7PA**
Telephone	**023 8028 5588**
e-mail	**rachel.higgins@nfdc.gov.uk**
Report Reference number	**NF/01/13**
Date	**June 2013**

Executive Summary

This is the Progress Report 2013 for air quality for New Forest District Council. The conclusions are based on monitoring data collated and ratified over 2012 and following criteria laid out in Technical Guidance (Defra, 2009).

Diffusion tube monitoring has shown an exceedence of the annual mean objective for nitrogen dioxide at 2 locations within the Lyndhurst Air Quality Management Area, and at a further location outside the Air Quality Management Area in Shrubbs Hill Road, Lyndhurst.

New Forest District Council contracted consultants to produce a Detailed Assessment for Shrubbs Hill Road and Gosport Lane following monitored exceedances of the annual mean objective for nitrogen dioxide in 2010 at these locations. Based on the conclusions of the Detailed Assessment (2012) and the Council's monitoring results it is likely an amendment to the current Air Quality Management Area in Lyndhurst will be required. However the Council has decided to maintain the current Air Quality Management Area in Lyndhurst and to continue monitoring at these locations for a further year (2013) to take into account any potential impact on air quality due to a new traffic light system operating in Lyndhurst before deciding on the most appropriate course of action.

The automatic monitoring site within the Air Quality Management Area in Lyndhurst has monitored a significant ($6\mu gm^{-3}$) decrease in the annual mean concentration for nitrogen dioxide between 2010 and 2012, resulting in no monitored exceedance at this site in 2012. The monitored decrease is attributed to the improvements in the traffic light system in Lyndhurst which has improved flow and reduced some congestion.

The Progress Report 2013 has concluded that the Air Quality Management Area in Totton with respect to nitrogen dioxide (annual mean objective) should be considered for revocation based on monitoring results which have not monitored an exceedance at a relevant exposure site since 2004.

The Fawley Air Quality Management Area with respect to sulphur dioxide (15 minute mean objective) was revoked in April 2013.

New Forest District Council will not be declaring an Air Quality Management Area with regards to the annual mean objective for particulate matter from poultry farm emissions in Sway. No further assessment or monitoring is required for this location based on current process operations.

In the meantime the monitoring programme currently in place throughout the district using automatic analysers and diffusion tubes will continue.

New Forest District Council aims to produce an air quality planning guide to assist Local Government officers and developers within the forthcoming year. This is in light of the publication of the Nation Planning Policy Framework published in 2012.

Table of Contents

List of Tables

List of Figures

Appendices

Appendix A: Part A permitted processes within New Forest district

Appendix B: QA/QC data and bias correction factors

Appendix C: Full data set of automatic monitoring shown as hourly mean

Appendix D: Full data set for nitrogen dioxide diffusion tube results

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 heath lands 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 176,800 based on 2011 census data (ONS, 2013).

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

1.2 Purpose of Progress 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

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 μgm^{-3} (milligrammes per cubic metre, mgm^{-3} for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/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 report's findings.

Table 1.2 Previous air quality reports

Year	Report	Outcomes
1998	Ist 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	2nd & 3rd 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 in Fawley
2005	Declaration of Air Quality Management Area's (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 Lyndhurst 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.

Year	Report	Outcomes
2008	Formal adoption of Action Plans	Totton – NO_2 Lyndhurst – NO_2 Fawley – SO_2
2008	Modelling Report (AEA Technology)	For proposed traffic scenarios within Lyndhurst Air Quality Action Plan – recommendation to forward 2 options
2008	Monitoring Report (AEA Technology)	6 month survey of PM_{10} in Totton and Lyndhurst. No requirement for further action.
2009	Updating & Screening Assessment	Detailed Assessments required for NO_2 (A31 and Lymington concerning traffic) and for PM_{10} (Sway concerning poultry farms)
2009	Action Plan Progress Report	Updating progression of actions within Action Plans for the declared AQMA's
2010	Progress Report	Detailed Assessments required for NO_2 (Shrubbs Hill Rd and Gosport Lane, Lyndhurst concerning traffic) Updating progression of actions within Action Plans for the declared AQMA's
2011	Detailed Assessment (poultry farm)	Likely exceedence of the 24hr mean objective for PM_{10} in Sway
2011	Modelling Report (AEA Technology)	For proposed traffic scenarios within Lyndhurst Air Quality Action Plan – some reductions in NO_2 predicted but at the expense of vehicle flow.
2011	Progress Report	Detailed Assessment required for NO_2 (Shrubbs Hill Rd and Gosport Lane, Lyndhurst concerning traffic) Updating progression of actions within Action Plans for the declared AQMA's
2012	Detailed Assessment (AEA Technology)	For Shrubbs Hill Road and Gosport Lane, Lyndhurst – likely exceedance of the annual mean objective for NO_2 in Gosport Lane but not for Shrubbs Hill Road (both locations outside current AQMA)
2012	Updating & Screening Assessment	Revocation recommended for Fawley AQMA (SO_2 15 min mean objective) without the requirement to produce a Detailed Assessment. Requirement to declare an AQMA in Sway (PM_{10} 24hr mean objective)

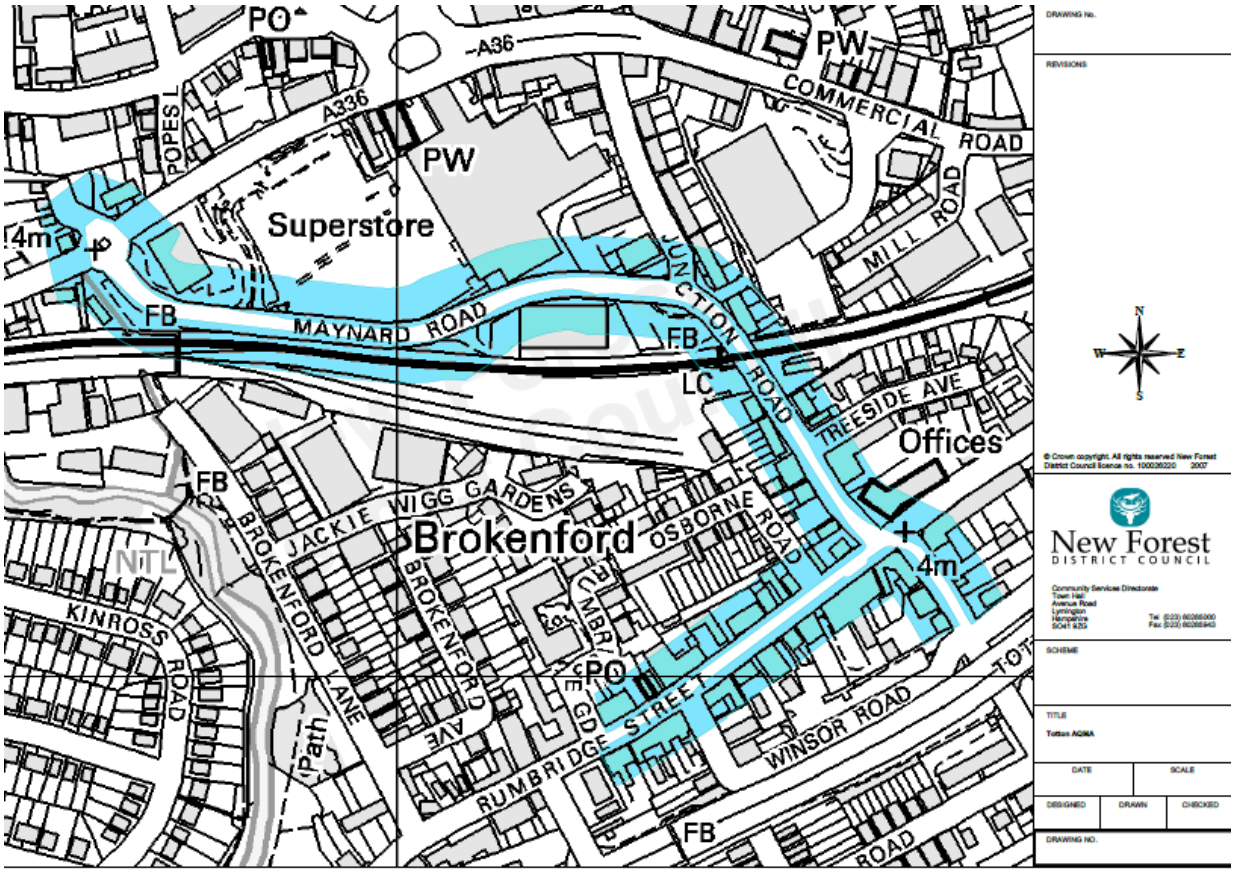
Current Air Quality Management Areas

New Forest District Council has two current Air Quality Management Areas. These are detailed below;

Totton

Air Quality Management Area (Figure 1.1) declared with respect to likely exceedence of the annual mean objective for nitrogen dioxide.

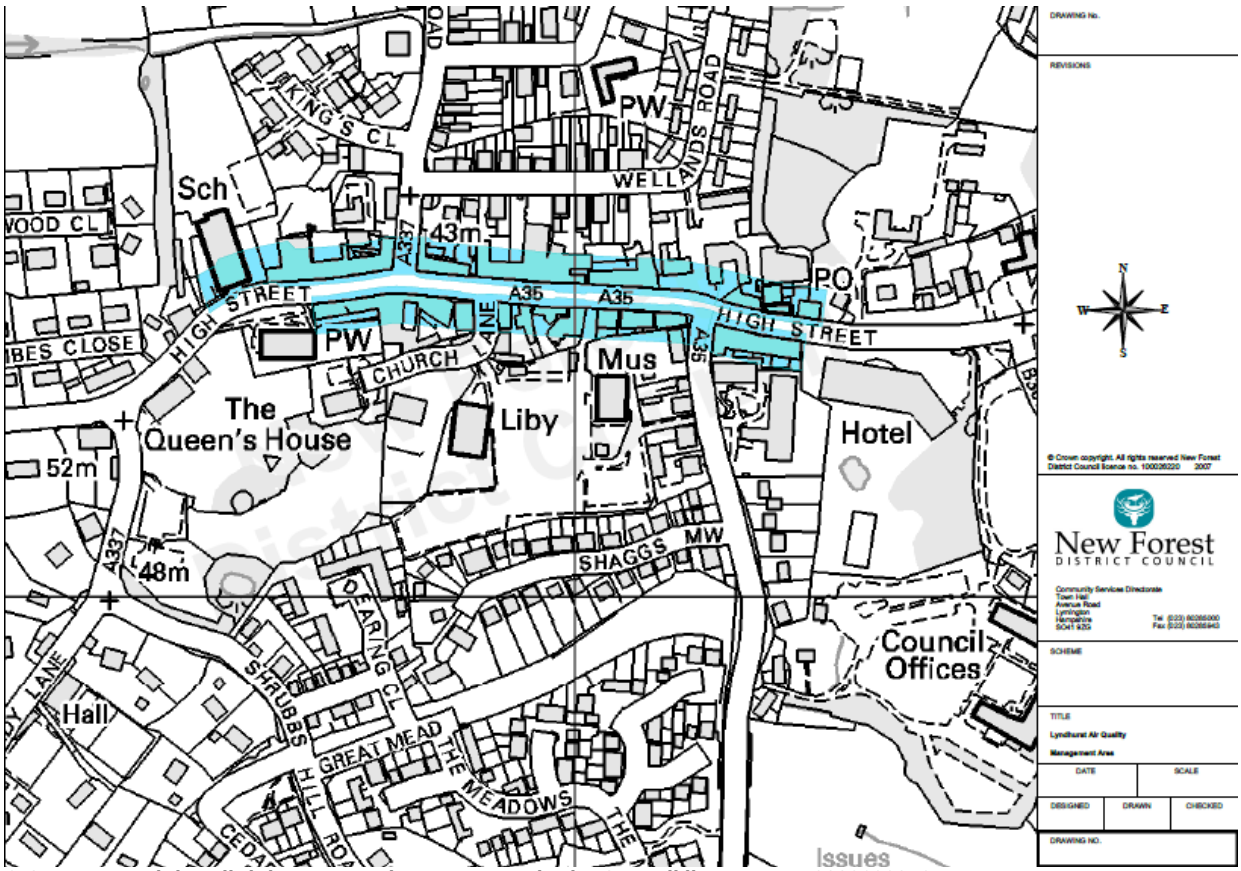
Figure 1.1 Totton Air Quality Management Area



Lyndhurst

Air Quality Management Area (Figure 1.2) declared with respect to likely exceedence of the annual mean objective for nitrogen dioxide.

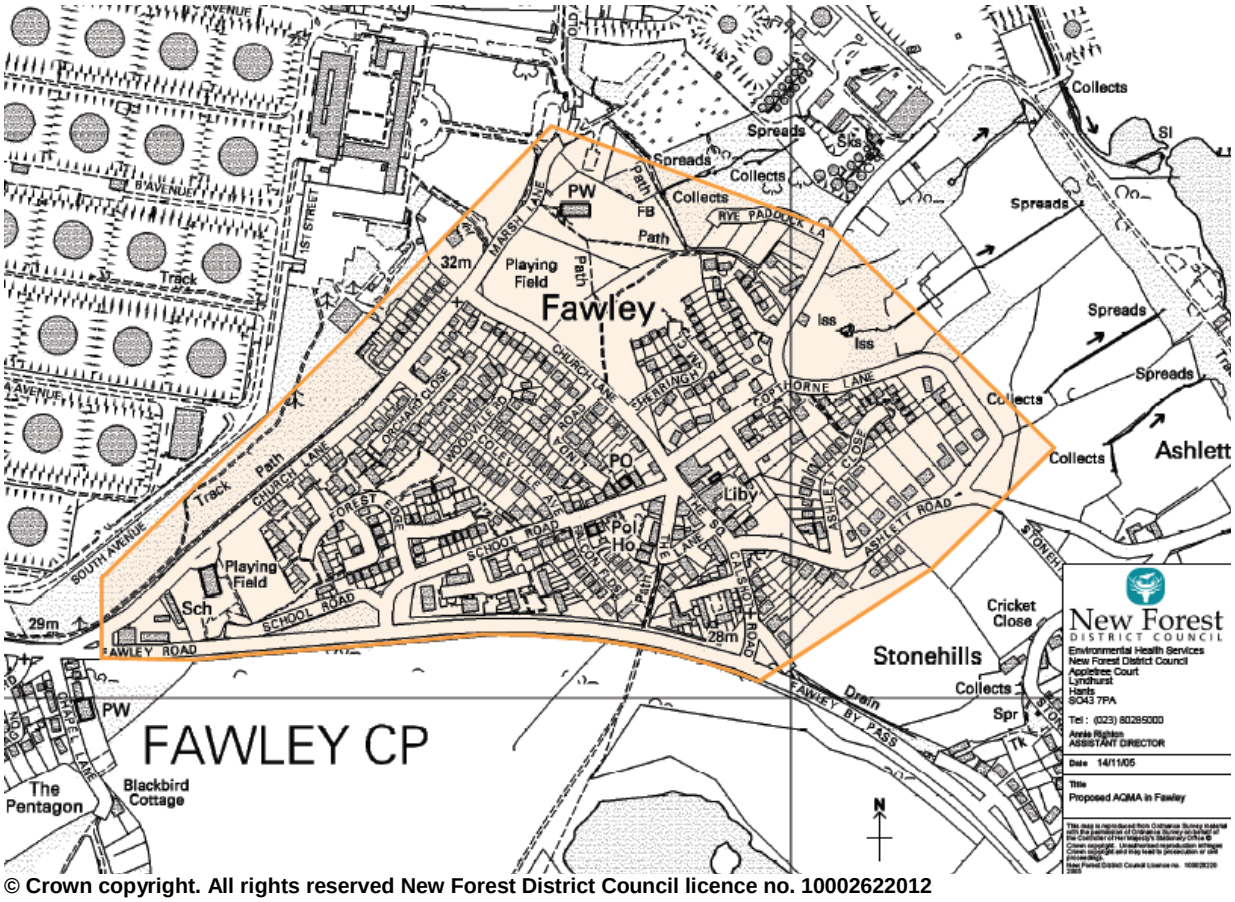
Figure 1.2 Lyndhurst Air Quality Management Area



Revoked Air Quality Management Areas

In April 2013 New Forest District Council formally revoked the Air Quality Management Area in Fawley. The Air Quality Management Area was declared in December 2005 for the likely exceedance of the 15 min mean objective for sulphur dioxide (Figure 1.3 details).

Figure 1.3 Fawley Air Quality Management Area (revoked April 2013)



Current identified locations of Air Quality Objective exceedances

New Forest District Council has identified three locations where either monitoring or modelling has determined a likely exceedance of the Air Quality Objectives, however to date Air Quality Management Areas have not been declared. The details of these locations are shown (Table 1.3).

Table 1.3 Identified locations of Air Quality Objective exceedances

Location	Air Quality Objective Exceeded	Report / Work Identified	Comments
Pitmore Lane, Sway (poultry farms)	PM_{10} 24hr mean	2011 Detailed Assessment through monitoring & modelling	Discussions with air quality helpdesk in 2012 advised the Council not to declare based on changes in assessment criteria for poultry farms. Discussed in Section 3.3
Gosport Lane, Lyndhurst (traffic)	NO_2 annual mean	2010 from monitoring and in 2012 in Detailed Assessment (modelling)	No AQMA declared to date due to a new traffic scheme operating in Lyndhurst which may impact NO_2 results. Discussed in Section 3.3
Shrubbs Hill Road, Lyndhurst (traffic)	NO_2 annual mean	2010 from monitoring and in 2012 in Detailed Assessment (modelling)	No AQMA declared to date due to a new traffic scheme operating in Lyndhurst which may impact NO_2 results. Discussed in Section 8.1

Previously identified locations of Air Quality Objective exceedances

Since the beginning of the Local Air Quality Management process there have been a number of locations which have been identified as possibly exceeding air quality objectives. However further work (including monitoring and modelling) has determined there was no requirement to proceed to an Air Quality Management Area. These locations are shown in Table 1.4.

Table 1.4 Areas of previous interest

Location	Pollutant	Year of Investigation
Holbury and Fawley	Benzene	2004
Lyndhurst and Totton	PM_{10}	2008
Totton (outside AQMA)	NO_2	2009
Stoney Cross (A31)	NO_2	2010
Lymington	NO_2	2011

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

New Forest District Council operated 4 automatic monitoring sites during 2012. The Council also has access to monitoring results from an automatic monitoring site in Marchwood, which was installed as part of a planning condition concerning an industrial premises in the vicinity. Maps showing the locations of the automatic monitoring sites are shown in Figure 2.1, with the site details summarised in Table 2.1.

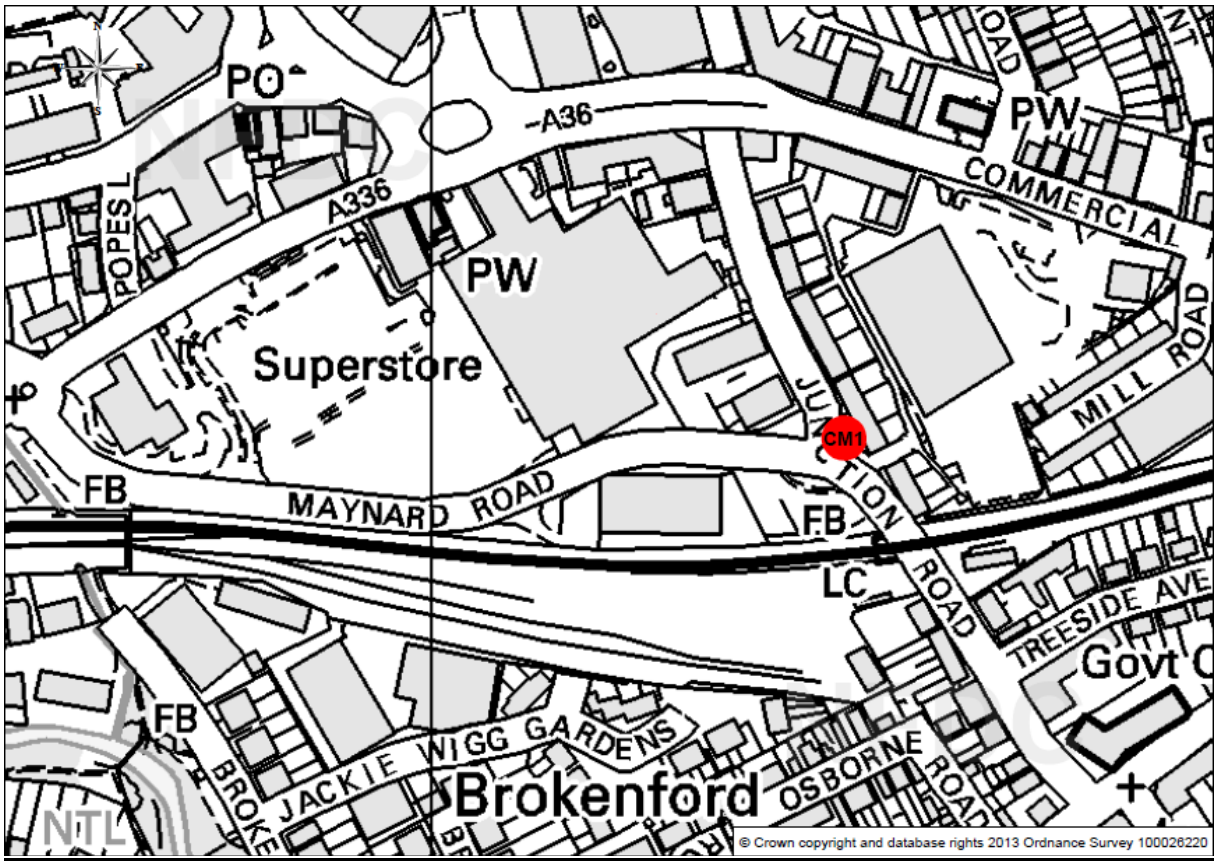
The details of all the automatic monitoring sites which were operational during 2012 are listed in Table 2.1.

Details of the QA/QC for the automatic monitoring are shown in Appendix B.

Figure 2.1 Maps of Automatic Monitoring Sites

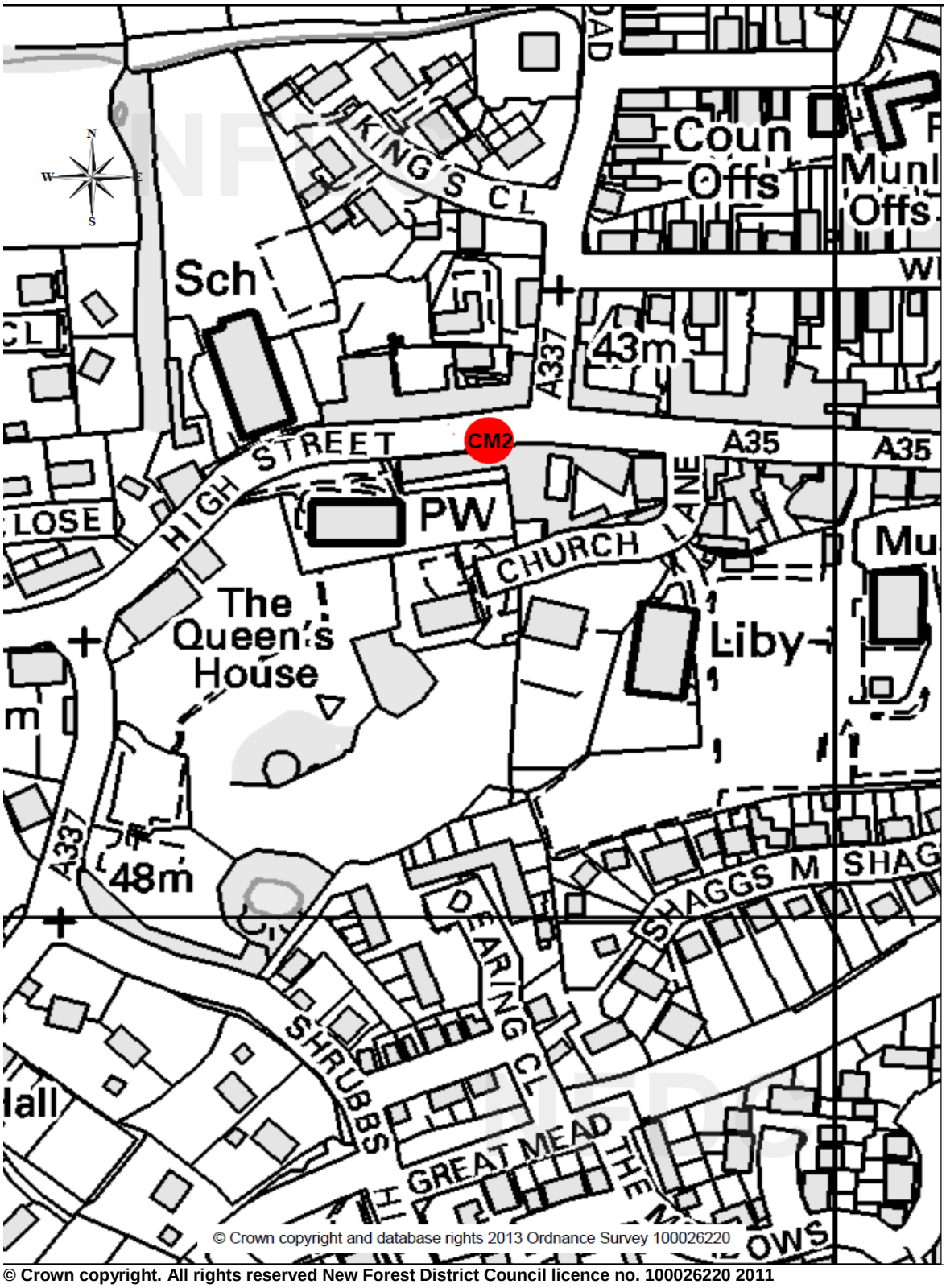
Totton

The Totton site is located in a roadside location to monitor for emissions from a road. This site is located between the road and residential properties, some 5m from the building façade. Therefore the site is not representative of relevant public exposure.



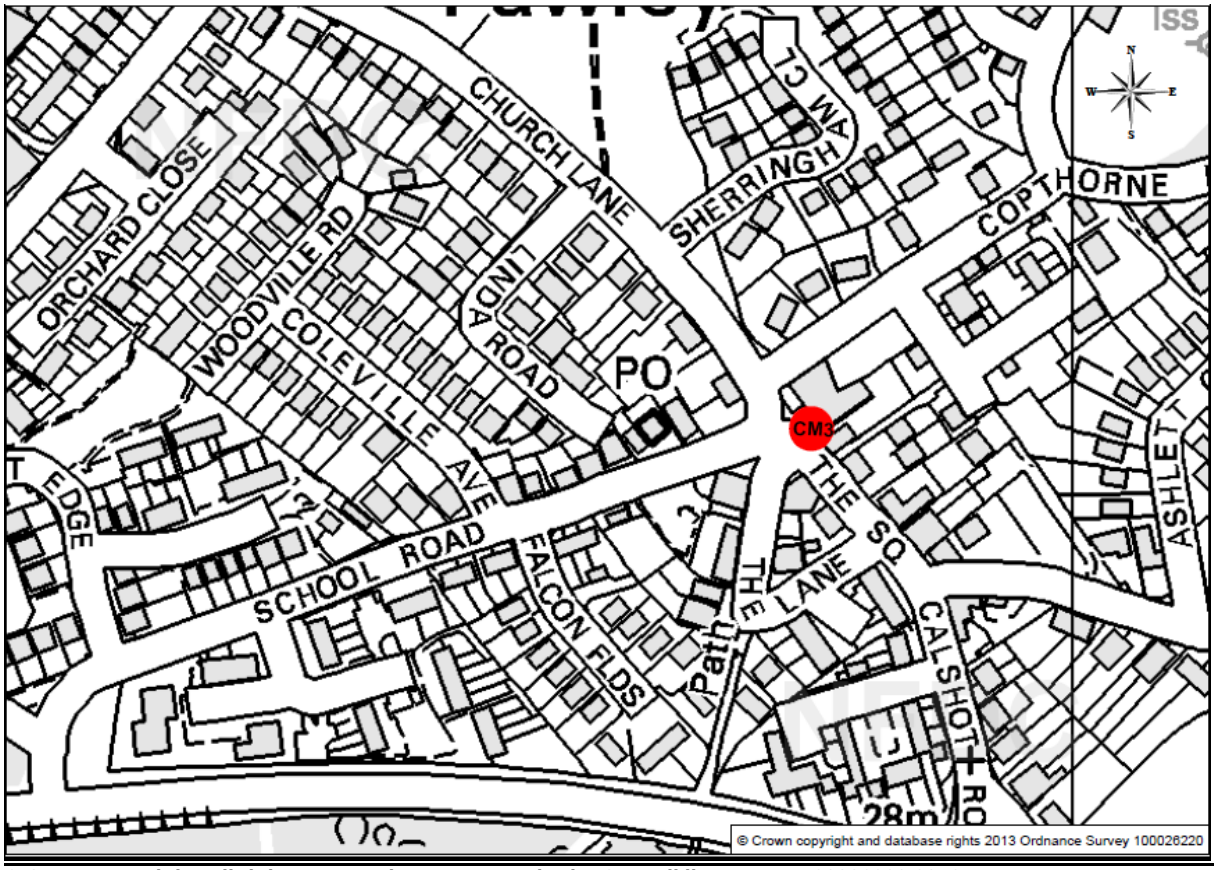
Lyndhurst

The 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.



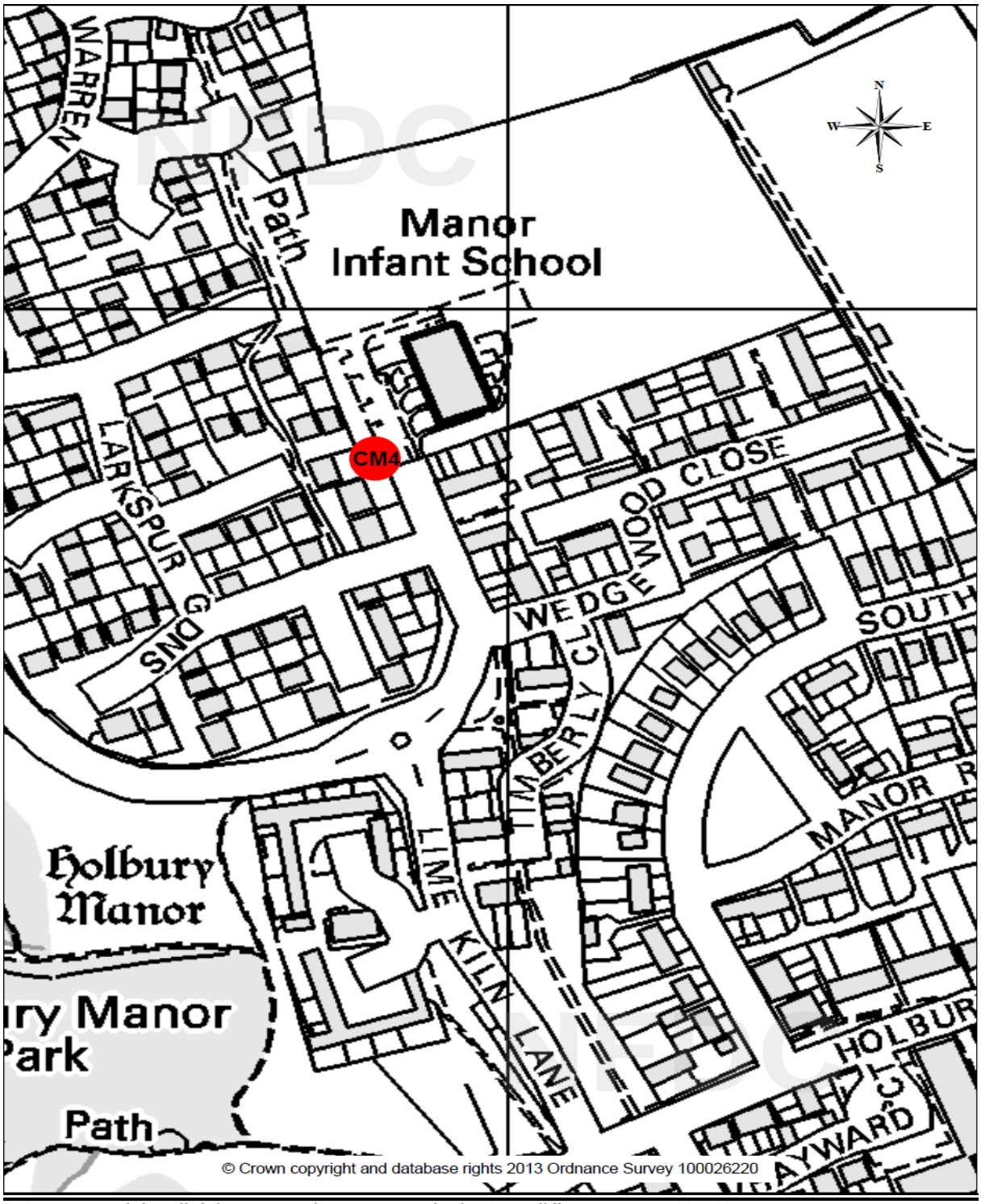
Fawley

The Fawley site is located within a village hall, which includes a children's nursery, at the centre of the village of Fawley. This site is representative of relevant public exposure.



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.



Marchwood

The automatic site at Marchwood came into use in October 2007 and is owned and operated by Marchwood Power. Marchwood Power is an industrial (Part A) premises which became operational in December 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.

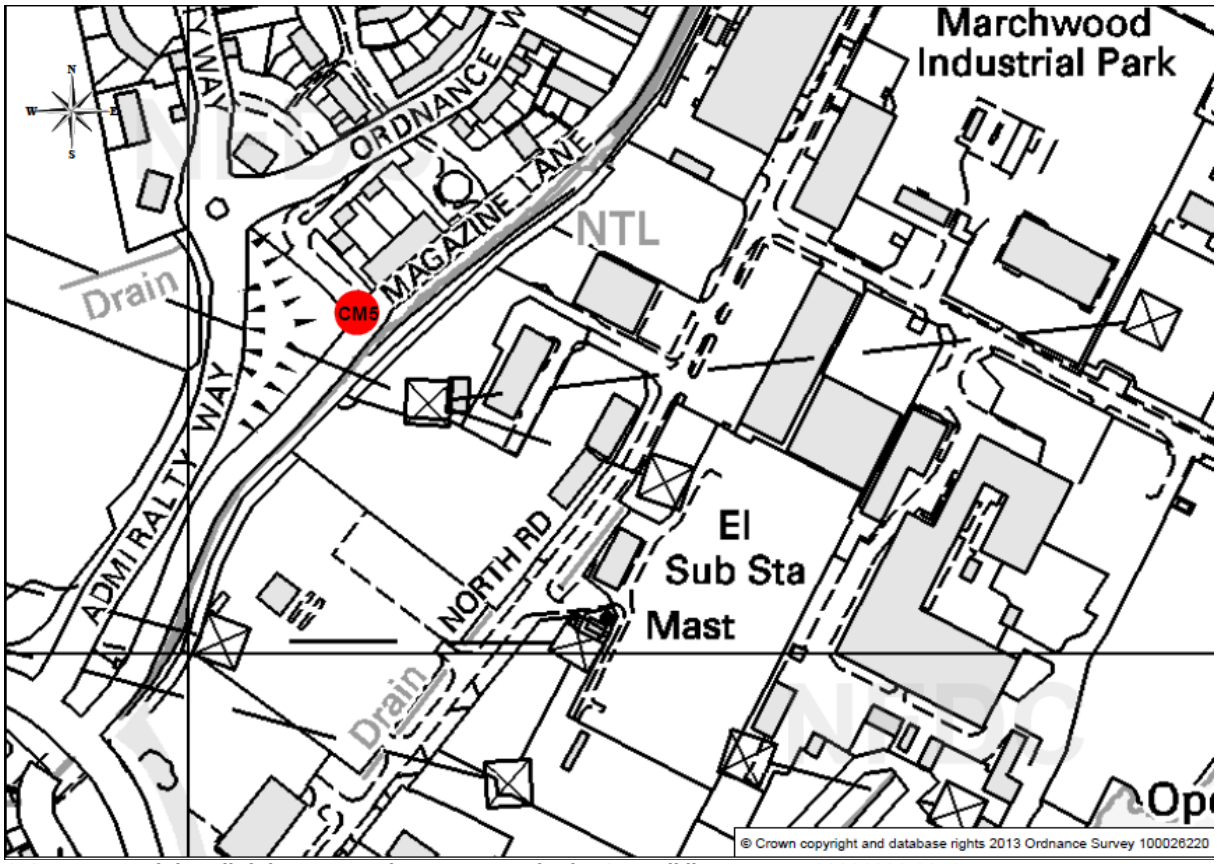


Table 2.1 Details of Automatic Monitoring Sites Operating in 2012

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Inlet Height (m)	Pollutants Monitored	In AQMA?	Particulate Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) from monitoring site to relevant exposure)*	Distance to Kerb of Nearest Road (m) *(N/A if not applicable)*	Worst-Case Exposure?
Totton	CM1	Roadside	436188	113237	**1.75**	NO_2 PM_{10}	Y	TEOM	N (5m)	1.5	N
Lyndhurst	CM2	Kerbside	429859	108204	**3.00**	NO_2	Y	-	Y (1m)	0.6	Y
Fawley	CM3	Industrial	445885	103248	**5.00**	SO_2	Y	-	Y (5m)	N/A	Y
Holbury	CM4	Industrial	442948	103932	**3.00**	SO_2 PM_{10}	N	TEOM	Y (8m)	N/A	N
Marchwood	CM5	Industrial	439075	111152	**2.00**	NO_2 PM_{10}	N	Partisol and BAM	Y (15m)	N/A	N

2.1.2 Non-Automatic Monitoring Sites

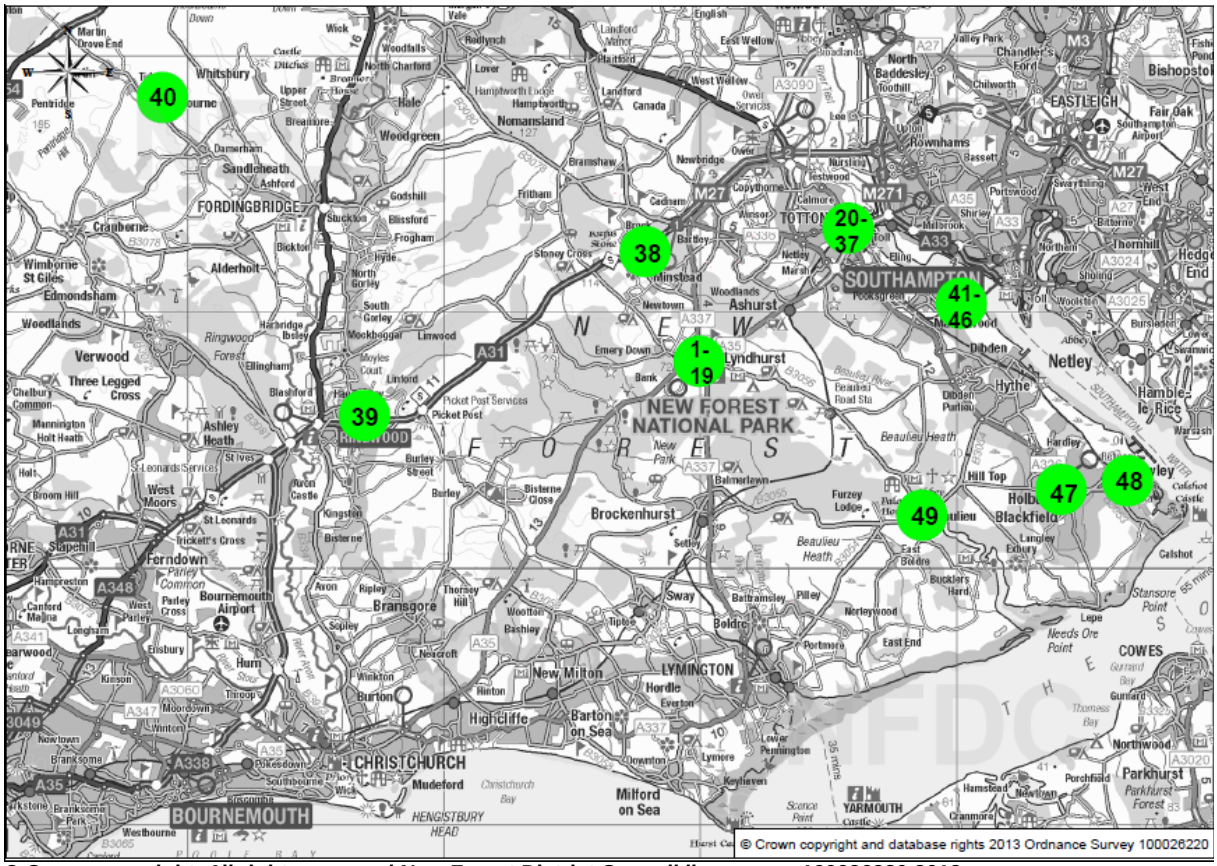
Diffusion tubes are used throughout the New Forest district to monitor nitrogen dioxide concentrations. During 2012 the Council exposed 58 diffusion tubes over 49 sites, which included 3 triplicate and 3 duplicate co-located sites.

Maps showing the nitrogen dioxide diffusion tube locations in the New Forest district are shown in Figure 2.2. The numbers stated on the maps correlate to the diffusion tube site numbers listed in Table 2.2.

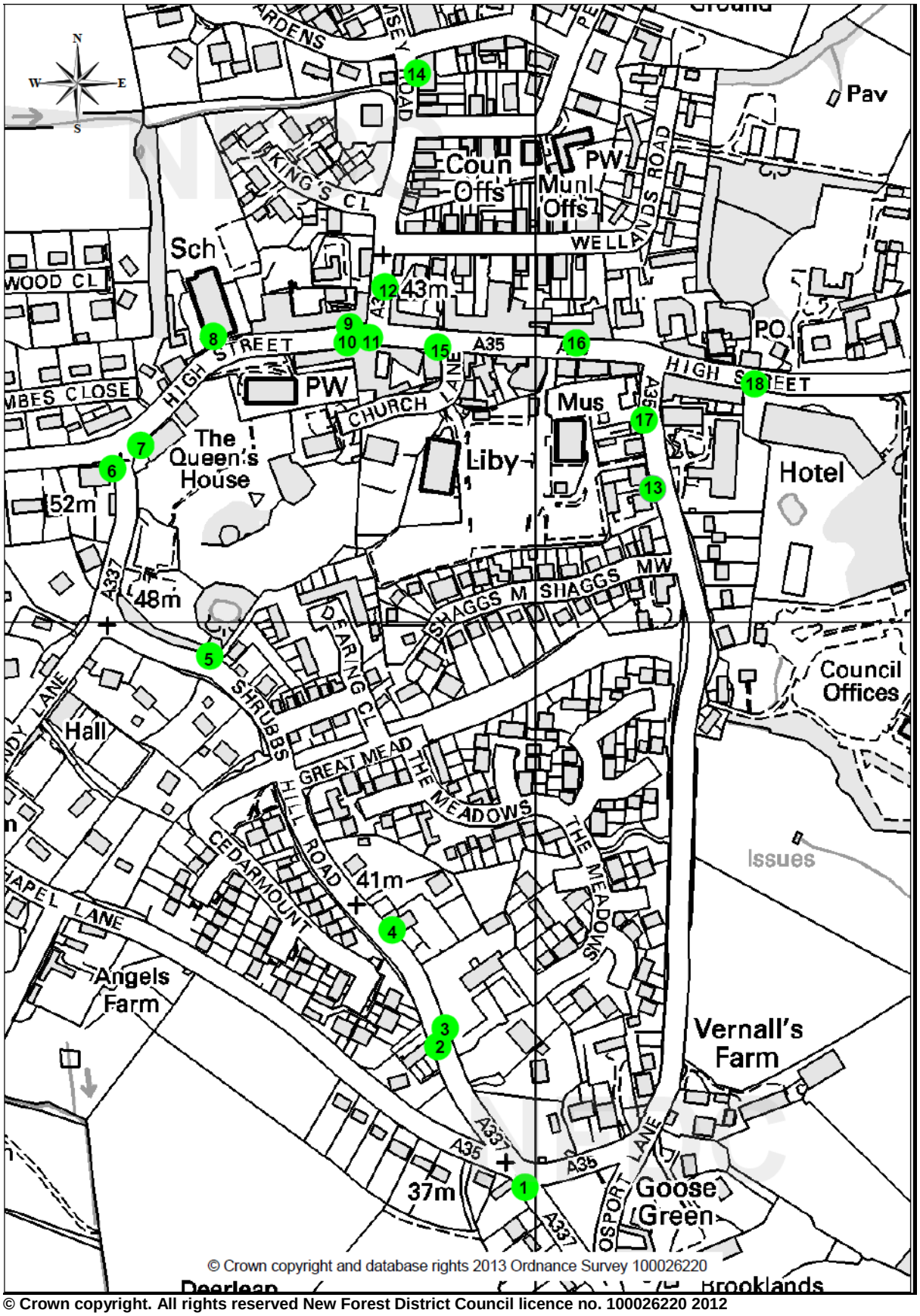
Details of the diffusion tube sites are shown in Table 2.2. Details of the QA/QC for the non-automatic monitoring are shown in Appendix B

Figure 2.2 Maps of Non-Automatic Monitoring Sites

Nitrogen dioxide diffusion tube sites in New Forest district



Nitrogen dioxide diffusion tube sites in Lyndhurst



Nitrogen dioxide diffusion tube sites in Totton

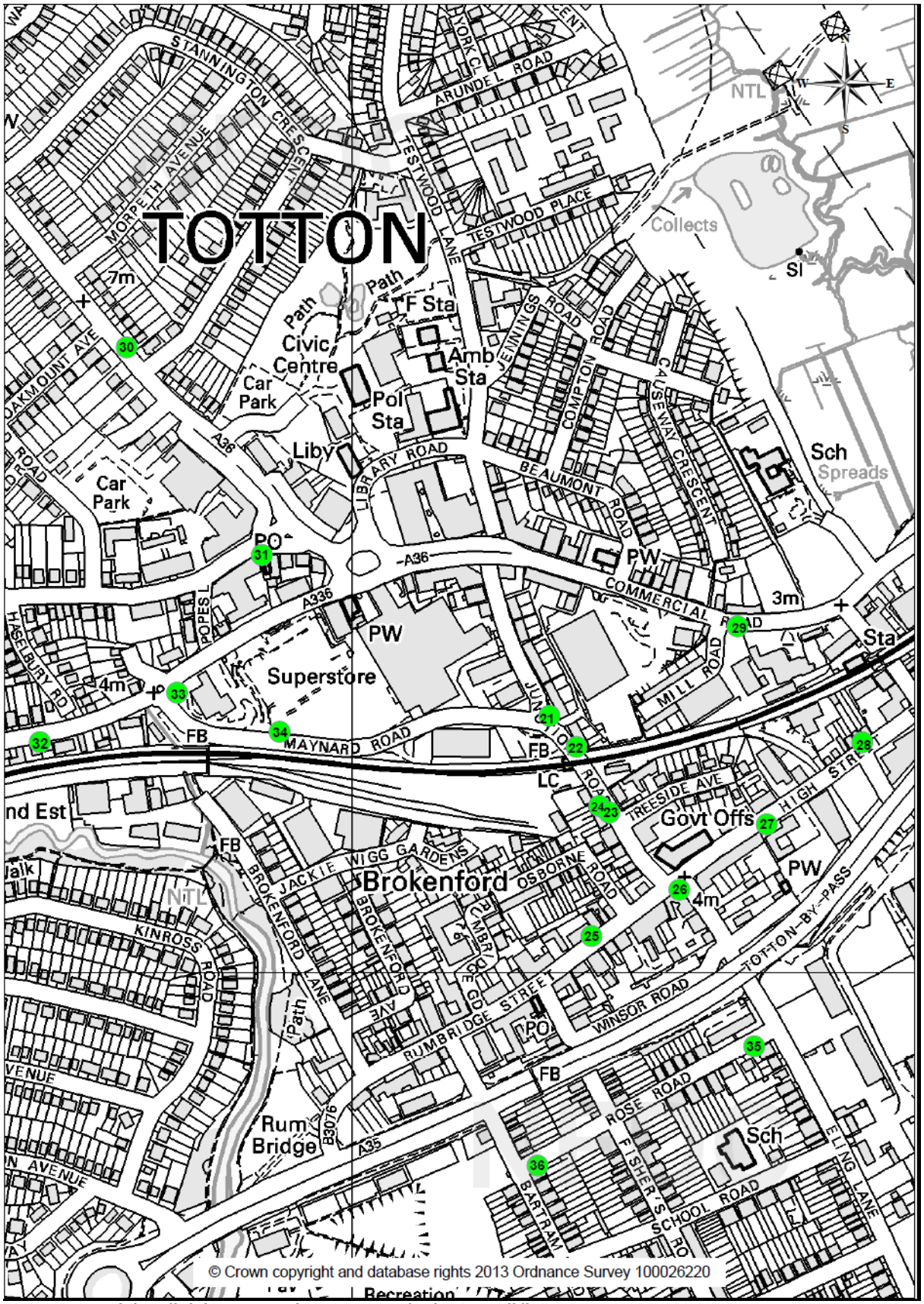


Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a continuous analyser (Y/N)	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	1	Kerbside	429991	107583	NO_2	N	N	N (4m)	0.4	Y
1, Foxlease Terrace, Shrubbs Hill Rd	2	Roadside	429928	107687	NO_2	N	N	Y(1m)	1.5	Y
Shrubbs Hill Rd	3	Roadside	429934	107698	NO_2	N	N	N (9m)	2.2	Y
The Orchards, Shrubbs Hill Rd	4	Roadside	429895	107770	NO_2	N	N	Y (1m)	3.3	Y
Shrubbs Hill Rd	5	Roadside	429758	107972	NO_2	N	N	N (13m)	2	Y
Little Queens, Shrubbs Hill Rd	6	Roadside	429689	108111	NO_2	N	N	Y (1m)	6	Y
Queens House	7	Roadside	429710	108128	NO_2	N	N	N (25m)	5	Y
School, High St.	8	Roadside	429767	108205	NO_2	Y	N	Y (1m)	6	Y
15, High St.	9	Kerbside	429864	108213	NO_2	Y	N	Y (1m)	1.25	Y
14, High St. (analyser)	10	Kerbside	429858	108205	NO_2	Y	Y	Y (1m)	0.9	Y
16, High St.	11	Kerbside	429875	108207	NO_2	Y	N	Y (1m)	1.55	Y

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a continuous analyser (Y/N)	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										
2a, Romsey Rd	12	Roadside	429891	108245	NO_2	Y	N	Y (2m)	2	Y
South View, Gosport Lane	13	Roadside	430092	108077	NO_2	N	N	N	2	Y
22, Romsey Rd	14	Roadside	429911	108402	NO_2	N	N	N (1m)	2.3	Y
28, High St.	15	Roadside	429933	108200	NO_2	Y	N	N (4m)	4	Y
65, High St.	16	Roadside	430026	108206	NO_2	Y	N	Y (1m)	1.8	Y
2, Gosport Lane	17	Roadside	430079	108147	NO_2	N	N	Y (1m)	2.2	Y
Lyndhurst Park Hotel	18	Roadside	430162	108173	NO_2	N	N	N (5m)	1.88	Y
Baytree Cottage, Bournem'th Rd	19	Roadside	429169	108129	NO_2	N	N	N (6m)	2	N

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Is monitoring collocated with a continuous analyser (Y/N	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)	20	Suburban	434753	112101	NO_2	N	N	N (11m)	N/A	N
Junction Rd (analyser)	21	Roadside	436189	113235	NO_2	Y	Y	N (7m)	2	Y
30, Junction Rd	22	Kerbside	436210	113210	NO_2	Y	N	N (3m)	1	Y
23, Junction Rd	23	Kerbside	436236	113153	NO_2	Y	N	N (3m)	1	Y
25, Junction Rd	24	Roadside	436232	113156	NO_2	Y	N	Y (1m)	4	Y
26, Rumbridge St.	25	Roadside	436205	113019	NO_2	Y	N	N (8m)	1.5	Y
2, Eling Lane	26	Roadside	436307	113077	NO_2	Y	N	Y (1m)	2	Y
Elingfield Court, High St.	27	Roadside	436383	113135	NO_2	N	N	N (3m)	2	Y
55, High St.	28	Roadside	436476	113214	NO_2	N	N	Y (1m)	4	Y
114, Commercial Rd	29	Kerbside	436364	113322	NO_2	N	N	N (25m)	1	Y

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Is monitoring collocated with a continuous analyser (Y/N)	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										
34, Salisbury Rd	30	Roadside	435786	113588	NO_2	N	N	N (12m)	2	Y
7a, Water Lane	31	Roadside	435915	113392	NO_2	N	N	Y (1m)	6	N
83, Ringwood Rd	32	Roadside	435706	113215	NO_2	N	N	Y (1m)	4	Y
Ringwood Rd / Maynard Rd roundab't	33	Roadside	435834	113260	NO_2	Y	N	N	2	Y
Asda roundab't	34	Roadside	435927	113226	NO_2	Y	N	N	2	Y
1, Rose Rd	35	Roadside	436374	112929	NO_2	N	N	N (3m)	2	N
31, Bartrum Rd	36	Roadside	436168	112815	NO_2	N	N	N (14m)	2	N
53, Main Rd	37	Roadside	435321	111869	NO_2	N	N	N	3	Y
Other locations										
A31, Stoney Cross	38	Roadside	425877	111778	NO_2	N	N	Y (14m)	20	N
Chaffey Close, Ringwood	39	Suburban	416452	105571	NO_2	N	N	N (6m)	56	N
Rockbourne School	40	Rural	411569	118098	NO_2	N	N	Y (1m)	N/A	N

Site Name	Site ID	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a continuous analyser (Y/N)	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	41	Industrial	438500	110629	NO_2	N	N	Y (5m)	N/A	N
Shorefield Rd, Marchwood	42	Industrial	438765	111006	NO_2	N	N	Y (6m)	N/A	N
3 Magazine Lane, Marchwood (adj to)	43	Industrial	439075	111152	NO_2	N	Y	Y (15m)	N/A	Y
9, Boardwalk Way, Marchwood	44	Industrial	439106	111409	NO_2	N	N	Y (4m)	N/A	Y
Autumn Road, Marchwood	45	Industrial	439174	110367	NO_2	N	N	Y (5m)	N/A	N
Marchwood School, Twiggs Lane	46	Suburban	438363	109694	NO_2	N	N	Y (1m)	25	N
Teachers Way, Holbury	47	Industrial	442947	103931	NO_2	N	N	Y(1m)	N/A	Y
Jubilee Hall, The Square, Fawley	48	Industrial	445881	103247	NO_2	Y (for SO2)	N	Y(1m)	N/A	Y
School field, Beaulieu	49	Rural	438836	102115	NO_2	N	N	Y (1m)	N/A	N

Note:

All diffusion tubes are located at a height between 2.5m and 3m

2.2 Comparison of Monitoring Results with Air Quality 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 2012 the pollutants monitored in the New Forest were nitrogen dioxide, particulates (PM_{10}) and sulphur dioxide. The results are summarised below.

2.2.1 Nitrogen Dioxide (NO_2)

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/m^3 and the hourly objective is 200μg/m^3 not to be exceeded more than 18 times a year.

During 2012 neither automatic monitoring sites at Totton or Lyndhurst monitored an exceedance of the annual mean objective. However 3 diffusion tube sites in Lyndhurst exceeded the annual mean objective.

2 of the exceeding sites at Lyndhurst are within an Air Quality Management Area and represent relevant public exposure. The additional exceeding sites in Lyndhurst; Shrubbs Hill Road is not within the current Air Quality Management Area for Lyndhurst and represent relevant public exposure.

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

The monitoring results are detailed below.

Automatic Monitoring Data

New Forest District Council monitors for nitrogen dioxide automatically at two sites; Totton and Lyndhurst. A further site at Marchwood is operated by Marchwood Power however the results are publically available and therefore included.

The results from the automatic nitrogen dioxide monitoring sites for the years 2007 – 2012 are shown in Tables 2.3 and 2.4, and Figures 2.3 and 2.4 for the monitored trends. A graphical data set for the full year (2012) is shown in Appendix C for each site as an hourly mean.

Table 2.3 Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture 2012 % [a]	Annual mean objective ($\mu g/m^3$)	Annual Mean Concentration ($\mu g/m^3$)				
						2008[b]	2009[b]	2010[b]	2011[b]	2012[b]
CM1	Totton	Roadside	Y	94	40	30	28	29	28	28
CM2	Lyndhurst	Kerbside	Y	95	40	**46**	**46**	**46**	**43**	40
CM5	Marchwood	Industrial	N	93	40	23	19	21	17	19

Notes:

1. ***[a] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)***
2. ***[b] means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%***

Figure 2.3 Trends in Annual Mean Objective for NO_2 (automatic monitoring sites)

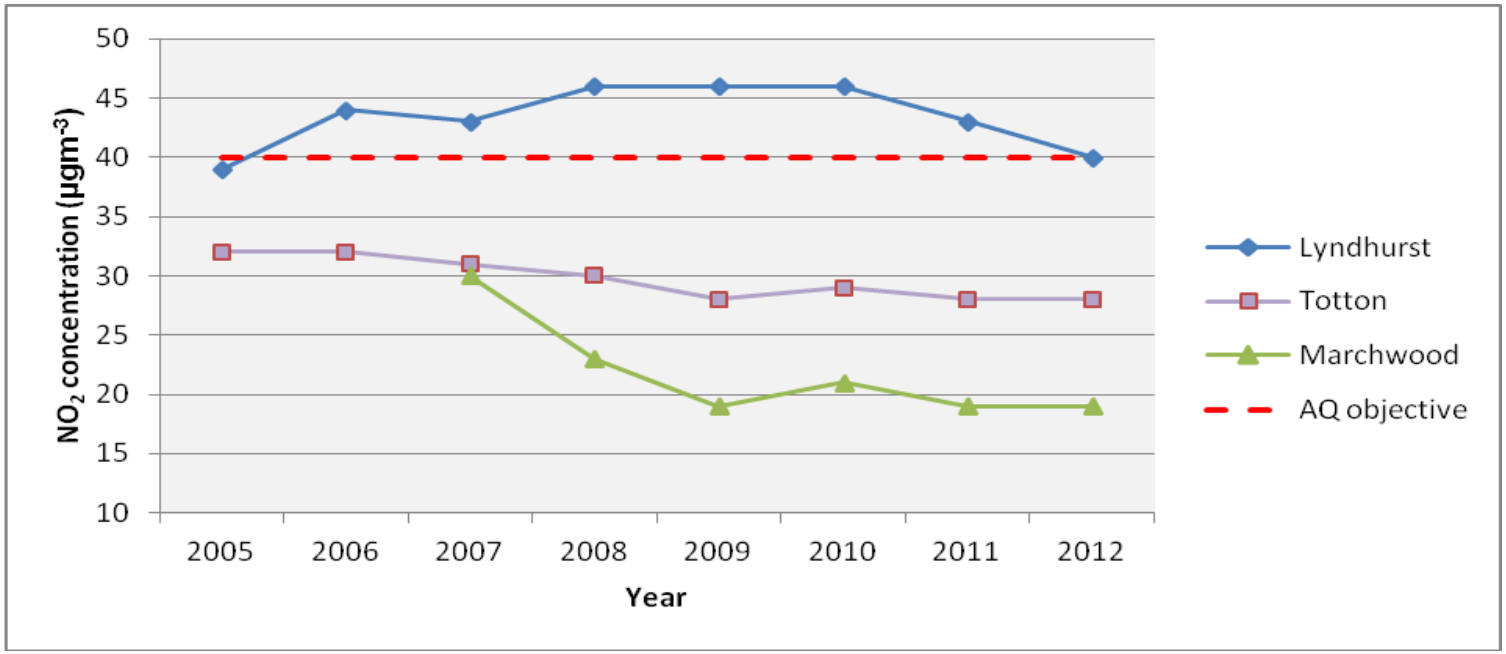


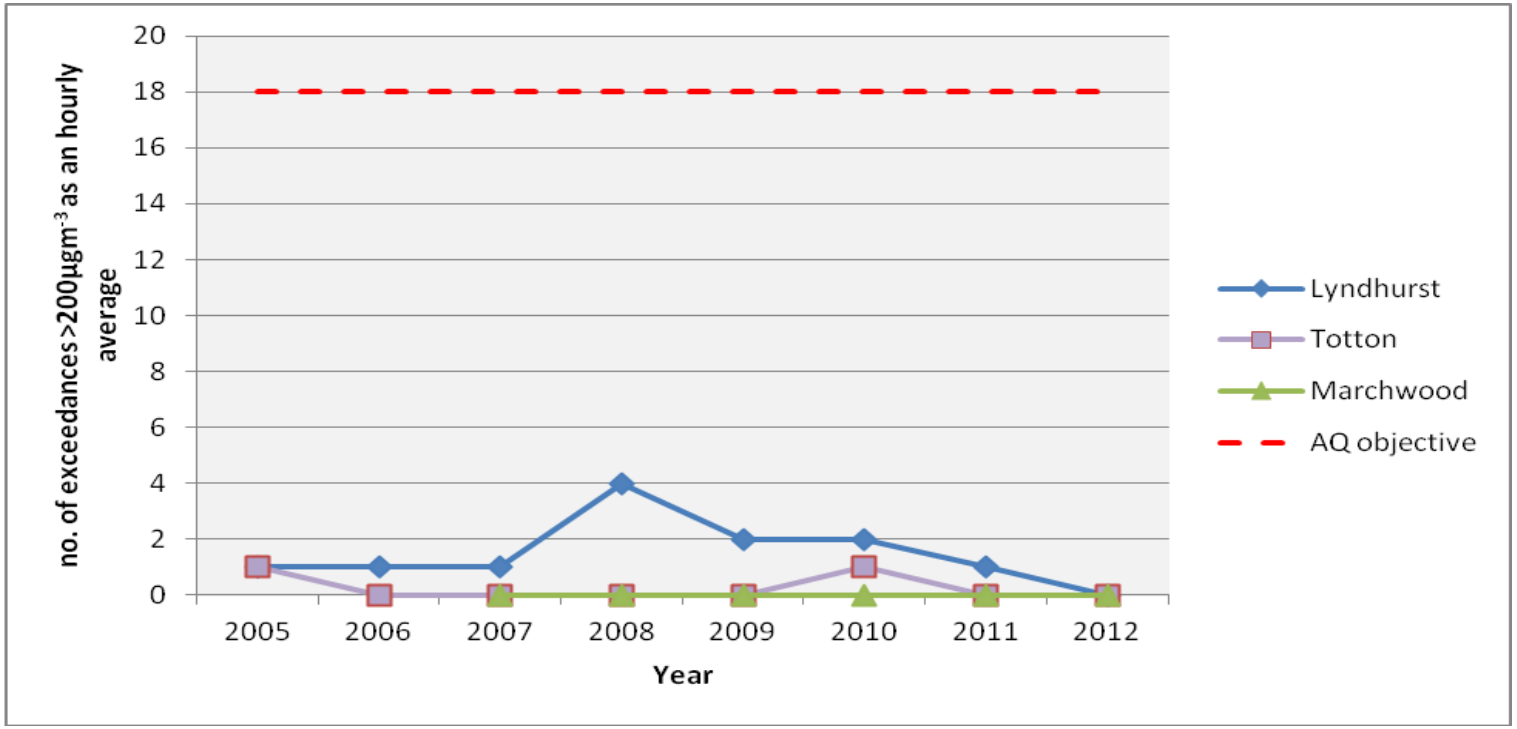
Table 2.4 Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture 2012 % [a]	Hourly objective (number of exceedences > 200 µg/m^3)	Number of Hourly Means > 200µg/m^3				
						2008[b]	2009[b]	2010[b]	2011[b]	2012[b]
CM1	Totton	Roadside	Y	94	18	0	0	1	0	0
CM2	Lyndhurst	Kerbside	Y	95	18	4	2	2	1	0
CM5	Marchwood	Industrial	N	93	18	0	0	0	0	0

Notes:

1. *[a] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)*
2. *[b] If the data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets*

Figure 2.4 Trends in Hourly Mean Objective for NO_2 (automatic monitoring sites)



The automatic monitoring sites do not show an exceedence of the annual mean objective at Totton, Lyndhurst or Marchwood. It is noted that the automatic monitoring site at Lyndhurst monitored an annual mean concentration for nitrogen dioxide of 40µg/m^3 in 2012 which is the objective limit, but not classified as an exceedance of the annual mean objective.

Lyndhurst and Totton sites are within current Air Quality Management Areas, and the Lyndhurst site represents relevant public exposure.

The trend data for the automatic monitoring site at Lyndhurst shows consistent exceedances of the annual mean objective between 2006-2011. In 2011 following 3 years (2008-2010) of a consistent exceedance of 46µg/m^3, a decrease in the nitrogen dioxide annual mean was monitored at 43µg/m^3 with a further decrease monitored in 2012 of 3µg/m^3 to an annual mean concentration of 40µg/m^3.

The trend data for Totton shows a slight decrease in the annual mean concentration for nitrogen dioxide since monitoring started in 2005 with a result of 28µg/m^3 monitored in 2012. It should be noted that the declaration of the Air Quality Management Area for Totton was based on diffusion tube data (2004 and 2005) and not the data collated from the automatic monitoring site.

Neither Lyndhurst, Totton nor Marchwood monitored an exceedence of the hourly objective for nitrogen dioxide. There have been 0 exceedances greater than 200µg/m^3 over an hourly average at Lyndhurst, Totton and Marchwood in 2012. Previous monitoring years which have recorded nitrogen dioxide concentrations greater than 200µgm^{-3} over an hourly average, have been well below the objective of 18 exceedances greater than 200µgm^{-3}.

Diffusion Tube Monitoring Data

The results from the nitrogen dioxide diffusion tube monitoring sites for 2012 are shown in Table 2.5, while Table 2.6 shows the results from 2008 - 2012. Figure 2.5 show the trends from the diffusion tubes for sites in Lyndhurst which have regularly shown exceedances of the annual mean objective for nitrogen dioxide. The data set for the full year (2012) is shown in Appendix D for each site.

It should be noted that on advice from the Defra Air Quality Helpdesk, the results from July 2012 were removed from the data set. This is because some of the results were suspect from a number of diffusion tubes supplied by Gradko International using the 20% TEA in water preparation method that affected some Local Authorities. Whilst New Forest District Council did not appear to be affected, the advice was to remove the data from July 2012.

The tables report the annual mean results which have been bias adjusted using either locally or nationally derived factors. Details of the use and selection of bias correction factors are given in Appendix B.

Table 2.5 Results of NO_2 Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate (T) or Co-located (C) Tube	Full Calendar Year Data Capture 2012 *(%)* [a]	2012 Annual Mean Concentration (µg/m^3) *(Bias Adjusted)* [b]
Lyndhurst						
1	Lyndhurst Rd, Goose Green	Kerbside	N	-	92	27.78
2	1, Foxlease Tr, Shrubbs Hill Rd	Roadside	N	-	92	33.05
3	Shrubbs Hill Rd	Roadside	N	-	75	30.53
4	The Orchards, Shrubbs Hill Rd	Roadside	N	-	92	**43.58**
5	Shrubbs Hill Rd	Roadside	N	-	83	33.01
6	Little Queens, Shrubbs Hill Rd	Roadside	N	-	92	21.76
7	Queens House	Roadside	N	-	83	21.88
8	School, High St.	Roadside	Y	-	92	29.12
9	15, High St.	Kerbside	Y	-	92	**48.55***
10	14, High St. (analyser)	Kerbside	Y	T	92	39.67*
11	16, High St.	Kerbside	Y	-	92	**43.30***
12	2a, Romsey Rd	Roadside	Y	-	92	36.94*
13	South View, Gosport Lane	Roadside	N	-	92	33.64
14	22, Romsey Rd	Roadside	N	-	75	29.51
15	28, High St.	Roadside	Y	C	67	29.46

Site ID	Location	Site Type	Within AQMA?	Triplicate (T) or Co-located (C) Tube	Full Calendar Year Data Capture 2012 *(%)* [a]	2012 Annual Mean Concentration (µg/m^3) *(Bias Adjusted)* [b]
Lyndhurst						
16	65, High St.	Roadside	Y	-	83	35.13*
17	2, Gosport Lane	Roadside	N	-	83	39.58
18	Lyndhurst Park Hotel	Roadside	N	-	83	28.11
19	Bournem'th Rd	Roadside	N	-	92	30.49
Totton						
20	Reymolds Dale (opp 8)	Suburban	N	-	92	20.35
21	Junction Rd (analyser)	Roadside	Y	T	92	29.27
22	30, Junction Rd	Kerbside	Y	-	92	30.55
23	23, Junction Rd	Kerbside	Y	-	92	38.59
24	25, Junction Rd	Roadside	Y	-	92	27.63
25	26, Rumbridge St.	Roadside	Y	-	83	33.51
26	2, Eling Lane	Roadside	Y	-	83	33.49
27	Elingfield Court, High St.	Roadside	N	-	92	31.25
28	55, High St.	Roadside	N	-	92	29.46
29	114, Commercial Rd	Kerbside	N	-	92	29.74
30	34, Salisbury Rd	Roadside	N	-	83	24.60

Site ID	Location	Site Type	Within AQMA?	Triplicate (T) or Co-located (C) Tube	Full Calendar Year Data Capture 2012 *(%)* [a]	2012 Annual Mean Concentration (µg/m^3) *(Bias Adjusted)* [b]
Totton						
31	7a, Water Lane	Roadside	N	-	92	21.40
32	83 Ringwood Rd	Roadside	N	-	75	31.27
33	Maynard Rd roundab't	Roadside	Y	-	67	34.73
34	Asda roundab't	Roadside	Y	-	92	32.83
35	1, Rose Rd	Roadside	N	-	58	21.00
36	31, Bartrum Rd	Roadside	N	-	92	27.77
37	53, Main Rd	Roadside	N	-	92	24.64
Other Locations						
38	A31, Stoney Cross	Roadside	N	C	92	36.24
39	Chaffey Close, Ringwood	Suburban	N	-	75	25.44
40	Rockbourne School	Rural	N	-	92	9.08
41	11, Bilberry Drive, Marchw'd	Industrial	N	-	92	16.74
42	Shorefield Rd, Marchwood	Industrial	N	-	92	22.15
43	3 Magazine Lane, Marchw'd	Industrial	N	T	92	20.72
44	9, Boardwalk Way, Marchw'd	Industrial	N	-	92	21.28
45	Autumn Road, Marchwood	Industrial	N	-	92	19.85

Site ID	Location	Site Type	Within AQMA?	Triplicate (T) or Co-located (C) Tube	Full Calendar Year Data Capture 2012 *(%)* [a]	2012 Annual Mean Concentration (µg/m^3) *(Bias Adjusted)* [b]
Other Locations						
46	School, Twiggs Lane	Suburban	N	-	92	21.38
47	Teachers Way, Holbury	Industrial	N	C	92	13.31
48	Jubilee Hall, The Square, Fawley	Industrial	N	-	83	16.42
49	School field, Beaulieu	Rural	N	-	92	12.24

Notes:

1. ***Results in red and bold = exceedence of the NO_2 annual mean AQS objective of 40µg/m^3***
2. ***Results underlined are close to the NO_2 annual mean objective***
3. ***Results in red, bold and underlined = annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective***
4. ***The air quality helpdesk advised the data for July 2012 throughout the whole district should not be included in any assessment due to the diffusion tubes for July 2012 being suspect. This was dependant on the supplier of the diffusion tubes and analyser method used***
5. ****denotes sites in Lyndhurst which were locally bias adjusted due to locations (including analyser) being within a street canyon***
6. ***[a] Means results should be "annualised" as in Box 3.2 of TG(09) if full calendar year data capture is less than 75%***
7. ***[b] Diffusion tube sites have been locally or nationally bias adjusted depending on the location as shown below :***

   (further explanation given in Appendix B)

Year	*Lyndhurst local bias adjustment factor (street canyon)*	*Totton local bias adjustment factor*	*Marchwood local bias adjustment factor*	*National bias adjustment factor*
2012	***0.88***	***0.89***	***1.03***	***0.97***

Table 2.6 Results of NO_2 Diffusion Tubes 2008 to 2012

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2008 Bias Adjusted (see note)	2009 Bias Adjusted (see note)	2010 Bias Adjusted (see note)	2011 Bias Adjusted (see note)	2012 Bias Adjusted (see note)
Lyndhurst								
1	Lyndhurst Rd, Goose Green	Kerbside	N	23.97	22.56	24.83	25.59	27.78
2	1, Foxlease Tr, Shrubbs Hill Rd	Roadside	N	31.56	32.79	33.07	30.93	33.05
3	Shrubbs Hill Rd	Roadside	N	33.78	35.26	33.80	28.49	30.53
4	The Orchards, Shrubbs Hill Rd	Roadside	N	38.92	**40.33**	**42.62**	37.92	**43.58**
5	Shrubbs Hill Rd	Roadside	N	32.95	34.21	34.29	32.47	33.01
6	Little Queens, Shrubbs Hill Rd	Roadside	N	19.63	22.56	23.26	21.38	21.76
7	Queens House	Roadside	N	21.52	22.98	23.76	20.88	21.88
8	School, High St.	Roadside	Y	28.05	27.67	26.90	26.10	29.12
9	15, High St.	Kerbside	Y	**52.34***	**48.92***	**53.67***	**45.03***	**48.55***
10	14, High St. (analyser)	Kerbside	Y	**47.02***	**46.42***	**46.36***	**43.89***	39.67*
11	16, High St.	Kerbside	Y	**45.12***	**46.83***	**44.55***	**44.23***	**43.30***
12	2a, Romsey Rd	Roadside	Y	**41.96***	**42.34***	**43.63***	39.83*	36.94*
13	South View, Gosport Lane	Roadside	N	-	-	-	29.49	33.64
14	22, Romsey Rd	Roadside	N	28.09	29.06	25.98	27.64	29.51
15	28, High St.	Roadside	Y	30.62	30.95	29.83	28.47	29.46

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2008 Bias Adjusted (see note)	2009 Bias Adjusted (see note)	2010 Bias Adjusted (see note)	2011 Bias Adjusted (see note)	2012 Bias Adjusted (see note)
Lyndhurst								
16	65, High St.	Roadside	Y	35.46*	34.00*	36.54*	34.26*	35.13*
17	2, Gosport Lane	Roadside	N	36.46	**42.12**	39.14	**43.81**	39.58
18	Lyndhurst Park Hotel	Roadside	N	-	25.00	27.20	25.30	28.11
19	Bournem'th Rd	Roadside	N	27.46	29.41	31.33	27.98	30.49
Totton								
20	Reymolds Dale (opp 8)	Suburban	N	21.81	18.01	19.94	20.74	20.35
21	Junction Rd (analyser)	Roadside	Y	30.51	27.00	27.38	27.85	29.27
22	30, Junction Rd	Kerbside	Y	32.64	27.16	27.13	26.01	30.55
23	23, Junction Rd	Kerbside	Y	**42.23**	33.23	32.72	34.47	38.59
24	25, Junction Rd	Roadside	Y	-	24.54	26.83	26.73	27.63
25	26, Rumbridge St.	Roadside	Y	35.20	26.43	29.82	29.02	33.51
26	2, Eling Lane	Roadside	Y	36.31	28.62	29.18	30.94	33.49
27	Elingfield Court, High St.	Roadside	N	35.29	26.67	27.63	29.41	31.25
28	55, High St.	Roadside	N	-	26.46	29.27	27.94	29.46
29	114, Commercial Rd	Kerbside	N	37.35	28.51	27.71	27.39	29.74
30	34, Salisbury Rd	Roadside	N	31.20	24.33	26.71	25.68	24.60

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2008 Bias Adjusted (see note)	2009 Bias Adjusted (see note)	2010 Bias Adjusted (see note)	2011 Bias Adjusted (see note)	2012 Bias Adjusted (see note)
Totton								
31	7a, Water Lane	Roadside	N	24.59	19.13	21.94	20.57	21.40
32	83 Ringwood Rd	Roadside	N	36.85	25.68	27.90	26.74	31.27
33	Maynard Rd roundab't	Roadside	Y	35.09	28.85	28.56	32.65	34.73
34	Asda roundab't	Roadside	Y	36.63	29.18	28.86	32.22	32.83
35	1, Rose Rd	Roadside	N	31.19	23.55	25.45	22.50	21.00
36	31, Bartrum Rd	Roadside	N	-	21.64	24.72	24.39	27.77
37	53, Main Rd	Roadside	N	29.24	21.91	25.95	24.15	24.64
Other								
38	A31, Stoney Cross	Roadside	N	**42.82**	33.62	33.97	34.71	36.24
39	Chaffey Close, Ringwood	Suburban	N	30.76	25.69	24.87	23.02	25.44
40	Rockbourne School	Rural	N	9.51	8.41	10.55	8.15	9.08
41	11, Bilberry Drive, Marchw'd	Industrial	N	19.10	15.92	17.99	15.09	16.74
42	Shorefield Rd, Marchwood	Industrial	N	26.12	21.60	25.41	19.38	22.15
43	3 Magazine Lane, Marchw'd	Industrial	N	22.84	17.46	20.92	16.58	20.72
44	9, Boardwalk Way, Marchw'd	Industrial	N	24.46	17.71	22.75	17.66	21.28
45	Autumn Road, Marchwood	Industrial	N	20.96	18.33	19.43	18.07	19.85
46	School, Twiggs Lane	Suburban	N	23.21	20.71	20.95	18.81	21.38
47	Teachers Way, Holbury	Industrial	N	15.99	12.68	14.96	12.31	13.31

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2008 Bias Adjusted (see note)	2009 Bias Adjusted (see note)	2010 Bias Adjusted (see note)	2011 Bias Adjusted (see note)	2012 Bias Adjusted (see note)
Other								
48	Jubilee Hall, The Square, Fawley	Industrial	N	20.45	16.68	17.71	15.50	16.42
49	School field, Beaulieu	Rural	N	11.81	9.58	12.88	12.01	12.24

Note:

1 **** denotes sites in Lyndhurst which were locally bias adjusted due to locations (including analyser) being within a street canyon***

2 ***In red and bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3***

3 ***Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective***

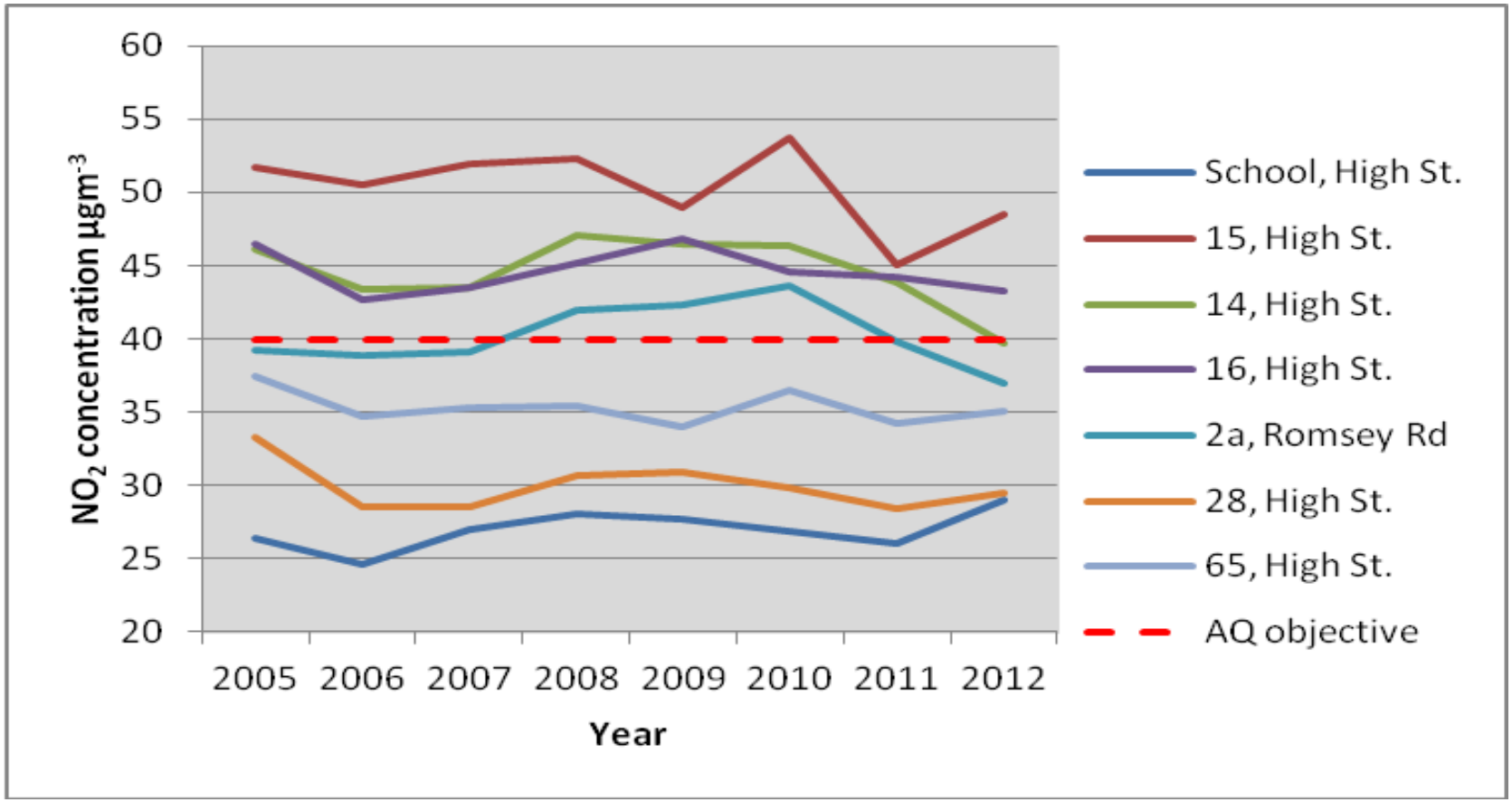
4 ***[a] Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%***

.

5 ***diffusion tube sites have been locally or nationally bias adjusted depending on the location as shown below (further explanation given in Appendix B):***

Year	**National** bias adjustment factor	**Lyndhurst** local bias adjustment factor (locations within street canyon)	**Totton** local bias adjustment factor	**Marchwood** local bias adjustment factor
2008	1.05	0.84	0.90	0.98
2009	0.90	0.86	0.73	0.87
2010	0.92	0.92	0.76	0.89
2011	0.89	0.90	0.81	0.91
2012	0.97	0.88	0.89	1.03

Figure 2.5 Trends in Annual Mean Objectives for Nitrogen Dioxide (Diffusion Tube Monitoring Sites)



The diffusion tube monitoring sites show 3 sites that have exceeded the nitrogen dioxide annual mean objective in 2012. All these sites are located in Lyndhurst. This is a reduction from the 5 sites that reported an exceedance in 2010, and the 4 reported in 2011.

The exceeding sites at 15 and 16 High Street are within the current Air Quality Management Area and are sites of relevant public exposure. The site exceeding in Shrubbs Hill Road is not currently within the Lyndhurst Air Quality Management Area but is a site of relevant public exposure. This site also monitored an exceedance during 2010 (as stated in the Progress Report 2011) and has been included in a recent Detailed Assessment.

It is noted that there are a number of sites which have monitored an annual mean concentration for nitrogen dioxide below the objective, but above 36µg/m^3. In Lyndhurst these sites are: 14 High Street (analyser), 2a Romsey Road and 2 Gosport Lane, in Totton there is one site at 23 Junction Road, with a further site on the A31 at Stoney Cross.

The sites at 14 High Street and 2a Romsey Road are within the current Air Quality Management Area for Lyndhurst, and the site at Gosport Lane has been recently included in a Detailed Assessment for the likely exceedance of the annual mean objective for nitrogen dioxide. All of these sites are regarded as relevant public exposure sites.

The site at 23 Junction Road is not regarded as being a relevant public exposure location. This is a historic kerbside site however there is a relevant exposure site behind 23 Junction Road, located at 25 Junction Road. This site is not close to the objective, with a result in 2012 of 27.63µg/m^3 some 11µg/m^3 less than the site at 23 Junction Road.

The site on the A31 Stoney Cross is a relevant public exposure location. This site has monitored high or borderline results in the past however the result in 2012 was the highest monitored annual mean concentration since 2008.

The overall trends for the Lyndhurst sites presented in Figure 2.5 show general increases and decreases between 2005 – 2012. Some sites seem to show similar trends over this time period, for example the school and 28 High Street, and 15, 65 High Street and 2a Romsey Road. Interestingly those sites which are close in location and within the street canyon: 14, 15 and 16 High Street, have shown the least similarities in the monitored trend over the 2005-2012 period.

2.2.2 Particulate Matter (PM_{10})

New Forest District Council monitored for particulate matter (PM_{10}) automatically at two sites; Holbury and Totton during 2012. A further site at Marchwood is operated by Marchwood Power however the results are publically available and therefore the results are also included.

There are two objectives for PM_{10} (as stated in Table 1.1), an annual mean and a 24-hour mean. The annual mean is set at 40$\mu g/m^3$ and the 24-hour objective is set at 50$\mu g/m^3$ not to be exceeded more than 35 times a year.

There were no exceedences of the PM_{10} objectives at Holbury, Totton or Marchwood during 2012.

The monitoring results are detailed below. The results from the automatic PM_{10} monitoring sites for the years 2007 - 2012 are shown in Tables 2.7 and 2.8 for the annual and 24-hour means with the trends shown in Figures 2.6 and 2.7.

Details of the QA/QC for the automatic monitoring and the data correction method are shown in Appendix B.

Table 2.7 Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture 2012 % [a]	Confirm Gravimetric Equivalent (Y or N/A)	Annual mean objective ($\mu g/m^3$)	Annual Mean Concentration ($\mu g/m^3$)					
							2007	2008	2009	2010	2011	2012
CM1	Totton	Roadside	Y (for NO_2)	87	N/A	40	23	23	22	23	26	23
CM4	Holbury	Industrial	N	98	N/A	40	18	17	16	18	20	17
CM5	Marchwood	Industrial	N	84	Y	40	-	25	24	30	28	20

Notes:

1. *[a] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)*

2. *All PM_{10} data has been adjusted to gravimetric equivalent using the volatile correction method (VCM) as described in Appendix B.*

Figure 2.6 Trends in Annual Mean Objective for PM_{10}

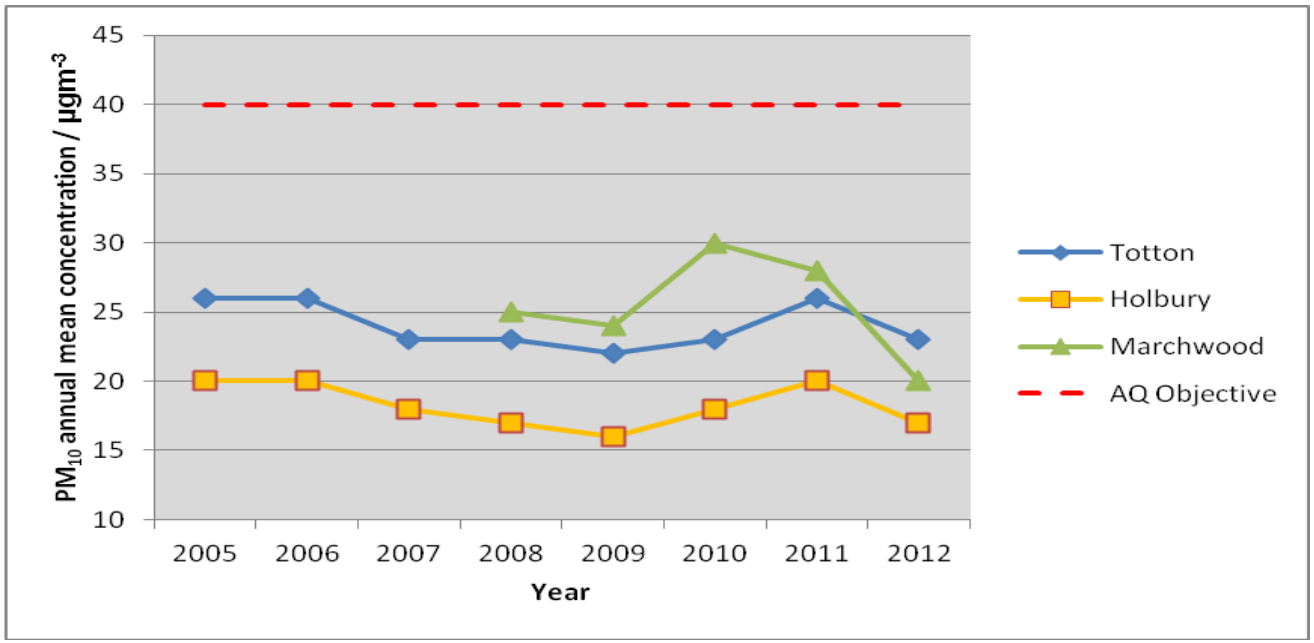


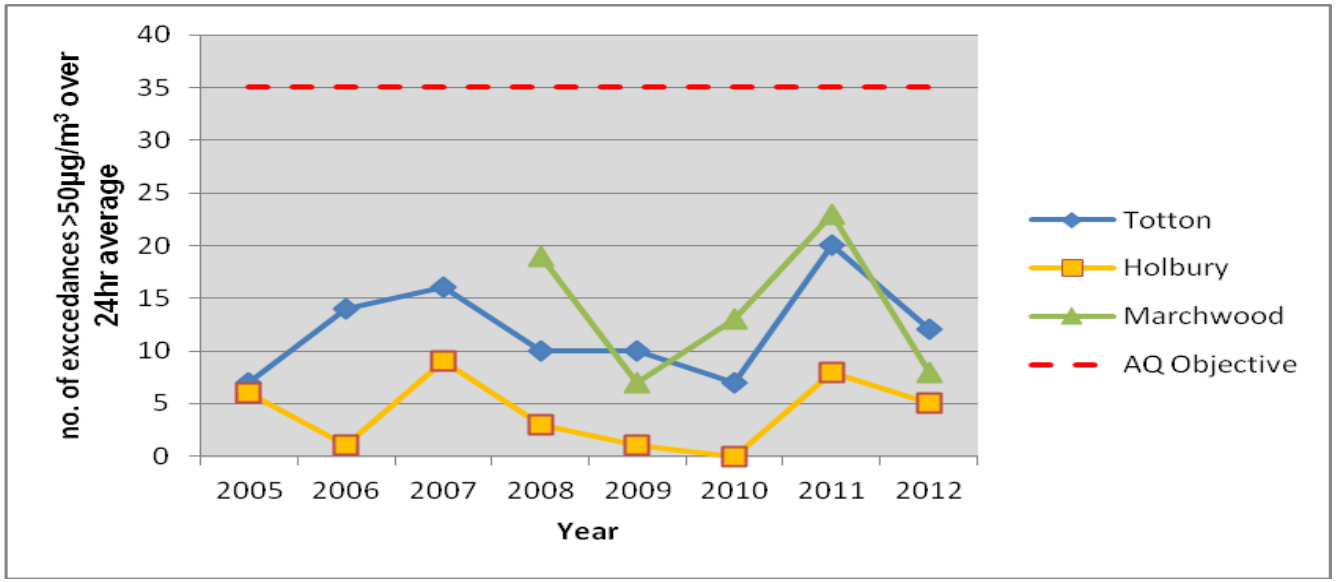
Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture 2012 % [a]	Confirm Gravimetric Equivalent (Y or N/A)	24 hour objective number of exceedences > 50 µg/m³	Annual Mean Concentration (µg/m³)					
							2007[b]	2008[b]	2009[b]	2010[b]	2011[b]	2012[b]
CM1	Totton	Roadside	Y (for NO_2)	87	N/A	35	16	10	10	7	20	12
CM4	Holbury	Industrial	N	98	N/A	35	9	3	1	0	8	5
CM5	Marchwood	Industrial	N	84	Y	35	-	19	7 (38)	13	23	8

Notes:

1. *[a] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)*
2. *[b] if data capture for full calendar year is less than 90%, include the 90.4th percentile of 24-hour means in brackets*
3. *All PM_{10} data has been adjusted to gravimetric equivalent using the volatile correction method (VCM) as described in Appendix B.*

Figure 2.7 Trends in 24 hour Mean Objective for PM_{10}



2.2.3 Sulphur Dioxide (SO_2)

New Forest District Council monitored sulphur dioxide automatically at two sites during 2012; 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 125μg/m^3 not to be exceeded more than 3 times in a year, the hourly objective is set at 350μg/m^3 not to be exceeded more than 24-times a year and the 15-minute objective is set at 266μg/m^3 not to be exceeded more than 35 times in a year.

The results from the two automatic monitoring sites for 2012 against the 3 sulphur dioxide objectives are shown in Table 2.9. Figure 2.8 shows the trends in the 15-min mean objective for sulphur dioxide between 2005 and 2012.

There were no exceedences of the sulphur dioxide objectives at the monitoring sites during 2012.

Details of the QA/QC for the automatic monitoring are shown in Appendix B.

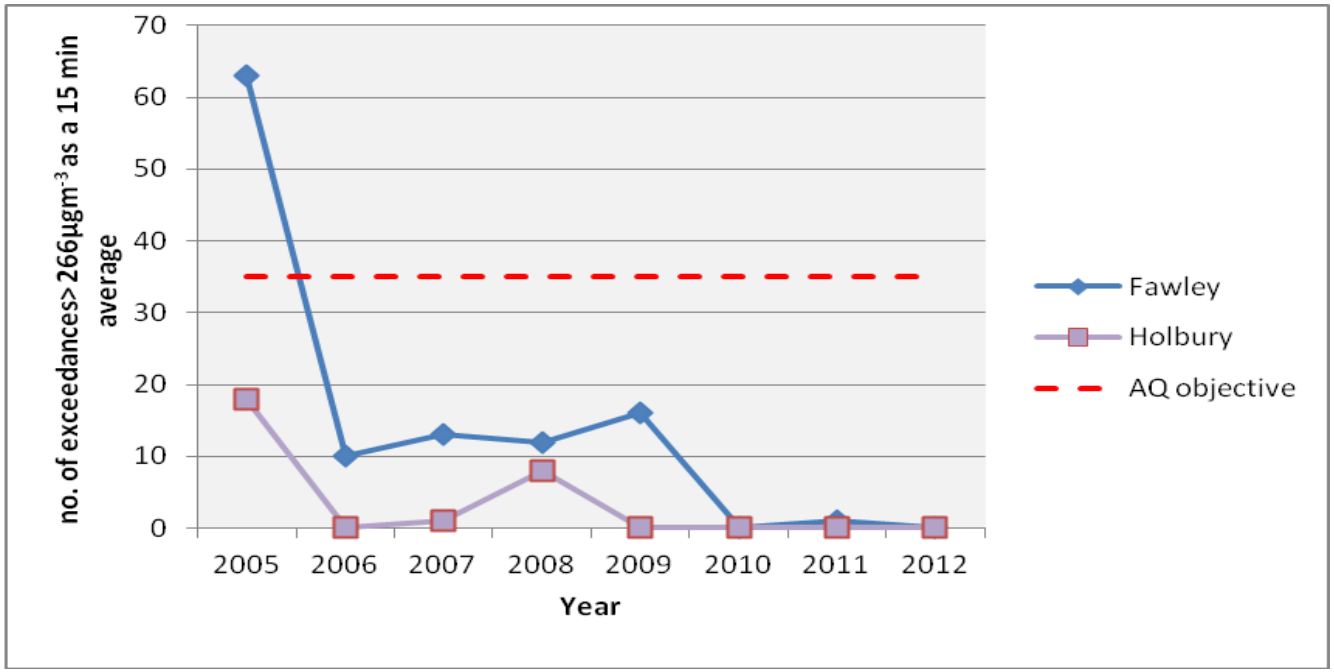
Table 2.9 Results of Automatic Monitoring for SO_2: Comparison with Objectives

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture 2012 % [a]	Number of: [b]		
					15-minute Means > 266µg/m^3	1-hour Means > 350µg/m^3	24-hour Means > 125µg/m^3
CM3	Fawley	Industrial	Y*	92	0	0	0
CM4	Holbury	Industrial	N	96	0	0	0

Notes:

1. ***In bold, exceedence of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)***
2. ****During 2012 Fawley automatic monitoring site was within an AQMA. The AQMA was revoked in April 2013.***
3. ***[a] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)***
4. ***[b] if data capture for full calendar year is less than 90%, include the relevant percentile in bracket (in µg/m^3): 15-min mean = 99.9th ; 1-hour mean = 99.7th ; 24-hour mean = 99.2th percentile***

Figure 2.8 Trends in SO_2 Concentrations – 15min Mean Objective



None of the monitoring sites exceeded the objectives set for sulphur dioxide during 2012. The monitoring sites both represent relevant public exposure.

The trend data clearly shows the exceedance of the 15minute mean objective for sulphur dioxide at Fawley in 2005 which resulted in the declaration of the Air Quality Management Area. However the graph also shows how the number of exceedances of the 15minute mean objective has significantly decreased since 2005, with all subsequent results being well below the objective of 35 exceedances per year.

There are no trend graphs presented for the 1-hour and 24-hour sulphur dioxide objectives. The monitoring results for Fawley and Holbury recorded zero for each objective since the sites became operational in 2005, with one exception at Fawley in 2005 when 4 exceedances of the hourly objective were monitored. The hourly objective is set at 350μg/m^3, not to be exceeded more than 24 times a year therefore this objective was not exceeded in 2005.

2.2.4 Benzene

New Forest District Council has not monitored benzene within its district during 2012.

2.2.5 Other Pollutants Monitored

New Forest District Council has not monitored any other pollutants within its district during 2012.

2.2.6 Summary of Compliance with AQS Objectives

New Forest District Council has measured concentrations of nitrogen dioxide above the annual mean objective at a relevant location outside of an AQMA, and **will need to proceed to a Detailed Assessment**, for Shrubbs Hill Road, Lyndhurst.

The Detailed Assessment was completed in 2012 by AEA Technology and determined no exceedance of the annual mean objective for nitrogen dioxide at this location. Please refer to Section 10 (Conclusions and Proposed Actions)

3 New Local Developments

3.1 Road Traffic Sources

New Forest District Council confirms there have been no newly identified road traffic sources which require consideration in terms of air quality within its District.

3.2 Other Transport Sources

New Forest District Council confirms there have been no newly identified transport sources which require consideration in terms of air quality within its District.

3.3 Industrial Sources

New Forest District Council previously identified the likely exceedance of the 24hr mean for PM_{10} from poultry farms in Sway through a Detailed Assessment using monitoring and modelling in 2011. In October 2012 New Forest District Council discussed its concerns to declare an Air Quality Management Area in response to the conclusions of the Detailed Assessment. These concerns were due to the small area of exceedance (covering the operator's property only) particularly if the regulator for the site, the Environment Agency who permitted the farm, may have been better placed to reduce particulate matter which was potentially only impacting on the operator's property.

The Defra Air Quality Helpdesk (operated by Bureauveritas) advised that Local Air Quality Management guidance concerning poultry farms was currently being updated and waiting for Defra approval. New Forest District Council was advised that if the new poultry farm assessment criteria was applied to the poultry farms in Sway, there would be no requirement to progress to a Detailed Assessment. Based on the figures, locations and Detailed Assessment undertaken, the helpdesk advised there was no requirement to declare an Air Quality Management Area for poultry farms in Sway or to undertake any further monitoring at this time. As such New Forest District Council will not be taking any further action concerning particulate matter from the identified poultry farms in Sway (Pitmore Farm and Matford Farm) unless Local Air Quality Management guidance changes or the numbers of birds processed on site increase significantly.

3.4 Commercial and Domestic Sources

New Forest District Council confirms there have been no new commercial or domestic sources which require consideration in terms of air quality within its District.

3.5 New Developments with Fugitive or Uncontrolled Sources

New Forest District Council confirms there have been no new developments with fugitive or uncontrolled sources which require consideration in terms of air quality within its District.

New Forest District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

New Forest District Council confirms that all the following have been considered –

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Planning Applications

Bridge Road, Lymington (Lymington Shores)

This site had been identified in previous air quality reports as a 23,000m^2 brownfield site earmarked for development. During 2012 a revised planning application was submitted to New Forest District Council which included an air quality assessment for the likely impacts of the proposed development from an increase in traffic (nitrogen oxides / particulate matter) during construction and post development, and dust (particulate matter) during construction.

Whilst the likely impact from the increase in traffic generation from the construction and post development was scoped out of consideration, it was concluded that the development was high risk for the likely generation of dust and particulate matter during the construction phase. The development includes 168 residential properties, a gallery, boat club and commercial premises. It is anticipated that the build will continue until 2016, and the nearest residential premise is ~ 25m from the site boundary.

As such planning permission was granted with conditions which included an agreed monitoring and mitigation scheme to control dust and particulate emissions from the construction phase. These measures include continuous monitoring on site using a real time analyser and Frisbee gauges, plus daily inspections off and on site.

Construction work has started and been continuing for approximately 6 months. To date the mitigation measures have been in place and working sufficiently with no complaints received regarding the site.

Sulphur Pastillation Plant, Southampton

Planning permission was granted in May 2013 by Southampton City Council for a sulphur pastillation plant in Southampton docks. The application was submitted by Oxbow Sulphur and Fertiliser (UK) Ltd and included an air quality assessment due to the potential for the process to emit hydrogen sulphide and sulphur dioxide.

The air quality assessment assessed the potential impact of the development on locations within the New Forest district, including Marchwood (residential premises ~1.5km SW of development) and Fawley (recently revoked AQMA for sulphur dioxide ~10km SE of development). The assessment concluded, and New Forest District Council accepted, that the impact of the development on the New Forest district was negligible when mitigation measures were in place.

Eling Wharf, Totton

Eling Wharf is a 150,000m^2 brown field site adjacent to Totton and Southampton Water, 150m southeast of the Totton Air Quality Management Area. It is currently used for variety of industrial processes, but there is the prospect that the site may be developed for housing, industrial and commercial use.

This would be a large development, potentially impacting on local traffic and the Air Quality Management Area. The main air quality impacts from such a development would be due to an increase in traffic (nitrogen oxides / particulate matter) during construction and post development, and dust and particulate matter during construction. The access routes onto the site would be of particular interest. There is potential for vehicles to access the site through either existing residential areas or directly from the A35 avoiding the residential areas.

To date a planning application has not been submitted for the site.

5 Air Quality Planning Policies

It should be noted that Environmental Protection, the department within New Forest District Council charged with the review and assessment of local air quality, has to work with two different planning authorities; New Forest District Council and New Forest National Park Authority. Both planning authorities will receive applications depending on the location of the site of concern.

As a result planning procedures and policies, whilst similar, are different and involve working with different planning authorities and officers. Both planning authorities have adopted planning policy documents which note the relationship between planning and air quality;

<u>New Forest District Council planning authority</u>

- Covers the area outside the National Park, 29% of the New Forest district – including the towns and industrial areas on the New Forest boundary.

- Includes the Totton AQMA.

- Under the Local Development Framework the authority adopted its Core Strategy in October 2009 replacing the Local Plan (although some policies within the Local Plan were retained).

- CS5 refers to air quality;
  "Development should not result in pollution or hazards which prejudice the health and safety of communities and their environments . . . . Appropriate mitigation measures may be required to enable development.

  Development in the vicinity of hazardous sites and uses, known to present risks to public health and safety, will be restricted to ensure that there are no unacceptable risks to people . . . .

When the opportunity arises, particularly through development proposals, remedial measures will be taken to address existing problems of . . . air quality "

- Some planning policies are retained from the Local Plan affecting specific area and developments, for example TE-23 development of a railway station at Bartley Park, Totton which may impact on the Air Quality Action Plan for Totton.

New Forest National Park planning authority

- Covers the area of the National Park, 71% of the New Forest district– some towns but essentially the more rural areas of the New Forest

- Includes the Lyndhurst AQMA

- Adopted its Core Strategy and Management Development Policies within the Local Development Framework in February 2010

- CP6 relates to pollution (air quality);

"Opportunities** should be taken to control and reduce the impacts of noise, visual intrusion, nuisance and other unacceptable environmental impacts on the National Park and its special qualities. . . . **"

Following the publication of the National Planning Policy Framework in 2012, the framework for air quality in planning has changed (EMAQ, 2013). The aim is to simplify planning policy but to also protect the environment, and promote sustainable growth and development (EMAQ, 2013).

It is acknowledged that existing guidance concerning air quality and planning is considered out of date however there is a continuing need for guidance to assist Local Government officers in determining whether there is a requirement for an air quality assessment in relation to a proposed developed, and whether a submitted air quality assessment is fit for purpose. Therefore it is considered appropriate for Local Authorities to produce their own local air quality planning guidance to provide clarity to Local Government officers and developers to help them fulfil their individual roles with regards developments and the impacts on air quality.

It is the aim of Environmental Protection to work towards producing such a guide that will work both for the District Council and National Park planning departments.

6 Local Transport Plans and Strategies

Hampshire County Council's most recent Local Transport Plan (LTP) 2011 – 2031 (HCC, 2013(a)) was formally approved by the County Council in February 2011. The LTP (HCC, 2013(a)) is comprised of two parts:

- 20 year Strategy, which sets out a long-term vision for how the transport network of Hampshire will be developed over the next 20 years, and
- 3 year Implementation Plan which has recently been revised covering the period 2013 – 2016. The Plan sets out local strategies through Approved Transport Statements for each district and borough in Hampshire, the New Forest Transport Statement (HCC, 2013(b)) was finalised in September 2012.

The Hampshire LTP (HCC, 2013(a)) does not refer to specific air quality issues in the New Forest however the Plan does aim to:

- 'Promote . . . the installation of transport technologies . . . including electric vehicle charging points' (policy objective 3)
- Improve public transport (policy objectives 3 and 4)
- Contribute to achieving local targets for improving air quality through transport measures and implementation of smarter choices (policy objectives 10 and 11)
- 'Invest in sustainable transport measures . . . to provide a healthy alternative to the car' (policy objective 12)

The New Forest Transport Statement (HCC, 2013(b)) was developed by Hampshire County Council with the District Council and National Park and covers the period 2012 – 2026. The Statement includes the aims:

- 'to maintain and improve the area's distinctive character whilst improving opportunities for sustainable travel . . . . through appropriate transport investment and greater integration . . . '
- Reduce congestion
- Improve accessibility by non-car modes
- Encourage use of public transport and cycling

- Encourage travel plans with schools and employers (currently 83% of schools within the New Forest have a travel plan)
- Implement measures to support Air Quality Action Plan objectives

Some of the plans and schemes noted in the New Forest Transport Statement (HCC, 2013(b)) are listed within the Implementation of Action Plans (section 7) within this document due to their possible link with air quality.

It is noted that large scale funding initially allocated to the Totton and Lyndhurst Air Quality Action Plans through a previous LTP (2003-2006) was not ring fenced and any funding for schemes is unlikely to be available due to cost savings. It is noted that the Statement (HCC, 2013(b)) does recognise the desire to identify funding for £300,000 to implement any feasible Air Quality Action Plan options for Totton, however this funding is not immediately available.

New Forest District Council continues to work well with Hampshire County Council at a local level, looking specifically at the Air Quality Management Areas in Totton and Lyndhurst and other local transport issues, and at a regional level through membership of steering groups and committees. The work with Hampshire County Council includes traffic counts, feasibility studies and small scale funding of projects.

7 Implementation of Action Plans

A summary of the two current Air Quality Management Areas within the New Forest district are given in Section 1.4. The Action Plans were formally adopted by the Council in 2008 following the declaration of the Air Quality Management Areas.

Since 2008 the Council has been working with stakeholders to progress the options listed within each Action Plan. The options are dependent on the pollutant of interest and objective being exceeded, as well as the location of the area of concern. A summary of the progress of the Action Plans for Totton and Lyndhurst is shown in Table 7.1.

Table 7.1 Update on Air Quality Action Plans

Totton *NO_2 annual mean objective*

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
1	Pedestrianisation	Removes vehicles from part of AQMA	County Council	n/a	n/a	Closure of road. Monitoring NO_2.	> 5 µgm-3	Option originally discounted by local members and through Urban Design Framework. Option included in feasibility study by HCC	Feasibility study indicated the option was potentially favourable within the AQMA but would have a negative impact on NO_2 outside the AQMA (High St.).	**Option discounted** (social exclusion) No further progression of modelling work.	Assessed as a theoretical scenario, unlikely to obtain public support as a viable option and socially exclusive.
2	Road bridge over railway crossing	Reduces idling and slow moving traffic	County Council	n/a	n/a	n/a	< 1 µgm^{-3}	n/a	n/a	**Option discounted** (cost)	Option too costly, intrusive and socially exclusive

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
3	Installation of variable messaging system (VMS)	Reduce traffic through AQMA. Encourage motorists to turn off engines	County Council	n/a	n/a	n/a	2–4µgm^{-3}	Feasibility study indicated the option was potentially favourable but would require detailed transport and AQ modelling.	n/a	**Option discounted** (cost)	Feasibility study advised that the use of static signs were favoured over VMS due to costs to achieve the resulting reduction in NO_2
4	Review static signs	Encourage motorists to turn off engines	County Council / District Council	Signs in use, annual review	n/a	Traffic surveys to assess no. of switched off engines. Monitoring NO_2.	2µgm^{-3}	Feasibility study indicated the option was potentially favourable compare with VMS.	Continuous surveys (~22%) of drivers switching off engines	**Completed** Review signs and replace if necessary.	Feasibility study advised static signs were favoured over VMS due to costs for the resulting reduction in NO_2. Impact on NO_2 would be a slight improvement.
5	Enforcement of HGV restrictions	Reduce number of unauthorised HGV's travelling through AQMA	Police	2010	2011	Traffic surveys to assess number of unauthorised HGV's	< 1 µgm^{-3}	Restrictions in place	LA traffic surveys have not indicated unauthorised HGV movements	**Continuous**	

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
6	Consultation on Urban Design Framework (UDF) for Totton	Improved working between departments	District Council	Immediate effect	Phased implementation	n/a	< 1 µgm-3	Works undertaken outside AQMA	UDF replaced by different schemes to improve transport	**Continuous** -works due on World Store roundabout (outside AQMA)	Schemes of interest – (i) Local Development Scheme (ii) New Forest Transport Statement
7	Improvements to pedestrian routes	Encourage walking and reduce number of trips in cars	County Council	Completed	Completed	Travel surveys	< 1 µgm^{-3}	Works completed in Rumbridge Street. Feasibility study indicates no further improvements could be made within AQMA.	Feasibility schemes identified a scheme for (i) World Stores roundabout (outside AQMA) - will improve pedestrian access, pedestrian routes and reduce traffic speeds (ii) Upgrading existing routes – eg railway footbridge at Brokenford Ln, outside AQMA, but will give an alternative route for pedestrians	>10years	Schemes identified through New Forest transport Statement

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
8	Improvements to cycle routes	Encourage cycling and reduce number of trips in cars	County Council	Completed	Continuing	Travel surveys	< 1 μgm^{-3}	Initially no further cycle routes agreed thr' AQMA	New cycle route through AQMA agreed by district council	>10 years	Identified in New Forest Transport Statement. Prefeasibility stage
9	Increase use and awareness of public transport	Reduce number of cars in Totton	County Council	2010	2011-2012	Travel surveys to assess use of public transport	< 1 μgm^{-3}	Waterside bus quality partnership completed	Production of New Forest Transport Statement	>10 years	Many schemes identified to improve bus use and community transport
10	Review car parking in Totton	Reduce journeys through AQMA	County Council / District Council	Completed	Completed	Car parking surveys	< 1 μgm^{-3}	Feasibility study advised the use of new static signs directing to lesser used car parks should be considered, however local residents are unlikely to change their current parking preferences	Option will not be progressed in current format	2015	District Council will work with Asda to discuss the use of their free car park situated in the centre of Totton.

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
11	Reducing congestion in Totton (AQMA)	Reduce journeys through AQMA	County Council	n/a	n/a	Travel surveys to assess travel movement through Totton	< 1 μgm^{-3}	Feasibility study advised the BATs corner junction is not suitable for alterations in layout and any changes would not improve NO_2 $conc^{ns}$ in AQMA. The current signposted routes are the shortest plus residents are unlikely to change their current behaviour.	New Forest Transport Statement advises of schemes to install CCTV and number plate recognition around Totton to assist in overall traffic management	**Option to improve BATs corner discounted corner** (no reduction in NO_2 $conc^{ns}$) >10years for traffic managem-ent scheme	Traffic management scheme will depend on funding from developers contributions. The scheme is not proposed as a 'vehicle charging' scheme.
12	Areas for planned developments	Assess impact of develop-ents on air quality	District Council	Continuous	Continuous	None	< 1 μgm^{-3}	Planning assessed for air quality impacts, including provision of air quality GIS maps to planning	To continually assess method of working is appropriate	**Continuous**	

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
13	Development of Asda travel plan	Reduce journeys through AQMA	Asda / District Council	2009 - 2011	2012	Travel surveys	< 1 μgm^{-3}	Updating of travel plan. Planning approval given to extend store and car park by 32 spaces and produce a staff travel plan to reduce the need to drive to work.	Development currently on hold, impacting on progression of travel plan	2015	To discuss the use of the free Asda car park (in Totton centre) with the store and the way they manage users
14	New Forest District Council fleet management	Reduce emissions from Council vehicles	District Council	Completed	2008 - 2012	n/a	< 1 μgm^{-3}	Assessment of council fleet. Staff using Council vehicles trained in ecodriving. Tracker equipment installed into vehicles Assessment of remaining Council fleet. Review methods of working of council workers.	New vehicles purchased have latest spec / fuel efficient engines Optimisation of vehicle routes and council officer driving. Link created between air quality and 'eCO_2' group	**Continuous** – to review	'eCO2 champions' group set up to manage climate change and sustainability responsibilities for the Council.
15	Vehicle emission testing	Emission test vehicles travelling through AQMA	District Council	2011	2012	n/a	< 1 μgm^{-3}	None	No procedure for VOSA testing outside low emission zones specifically within AQMA's	**Option discounted**	

No.	Option	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
16	Investigate use of absorbing paving surface	Reduce NO_2 concentrations	District Council	n/a	n/a	Monitoring using diffusion tubes and continuous analyser	Unknown	Option discounted due to lack of positive outcomes from trials with other LA's		**Option discounted** (technology not viable)	
17	Increase public awareness of air quality	Publicise air quality throughout district	District Council	Continuous	Continuous	n/a	< 1 μgm^{-3}		Updated website	**Continuous**	
18	Review air quality monitoring	Ensure correct locations are being monitored	District Council	Continuous	Continuous	n/a	n/a	Additional monitoring completed	Continuous assessment of monitoring locations.	**Continuous** Review every January	

Lyndhurst *NO_2 annual mean objective*

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
1	Bypass	Reduce number of stationary vehicles in High St.	County Council	n/a	n/a	n/a	Unknown	Scrutiny review at County Council in 2008	None	**Option discounted** (cost and environment-tal impacts)	Option not feasible after scrutiny review
2	Improvements to A337 and High St. junction	Improve flow of traffic through junction	County Council	n/a	n/a	Traffic surveys to assess traffic movements and monitoring NO_2	3-4 μgm^{-3}	No physical junction alterations. Installation of long vehicle detection technology in High Street on approach to junction with Romsey Road.	'MOVA' system installed to work in conjunction with long vehicle detection.	**Option to alter junction layout discounted** (cost) **Option to install long vehicle detection completed** **Option to install 'MOVA' completed**	System allows the use of a left hand filter from the High St. into Romsey Rd improving traffic flow in AQMA. System operates continually, but green filter turns off when long vehicles approach the junction, or when pedestrians use the automatic crossings.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
3	Additional road traffic management scheme	Improve flow of traffic through street canyon	County Council	n/a	n/a	Traffic surveys to assess traffic movements and monitoring NO_2	1-5 μgm^{-3}	Air quality and traffic modelling work completed. Additional traffic gating systems discounted due to impacts on vehicle flows.	New Forest Transport Statement advises of schemes to install CCTV and number plate recognition around Lyndhurst to assist in overall traffic management	**Traffic gating option discounted** (impact on traffic flows) >10years for traffic managem-ent scheme	Traffic management scheme will depend on funding from developers contributions. The scheme is not proposed as a 'vehicle charging' scheme.
4	Enforcement of heavy goods vehicle restriction	Reduce number of HGV's travelling illegally down High St.	Police	2011	Continuous	Traffic surveys to assess no's. of illegal HGV's and monitoring NO_2	1–2 μgm^{-3}	County Council traffic survey	Some police enforcement work completed – awaiting results	**Continuous**	HCC traffic survey showed a low percentage of illegal HGV's (~7% of all HGV's) travelling down High St.
5	Installation of variable messaging system	Reduce traffic from travelling through Lyndhurst	County Council	Completed	Completed	Traffic surveys to assess traffic flows and monitoring NO_2	1–2 μgm^{-3}	System installed	System utilised during 2011	**Completed**	System is only used when traffic is congested on A337 and the traffic signs are available for use.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
6	Enforcing current parking restrictions	Improve flow of traffic through Lyndhurst	District Council	Continuous	Continuous	Enforcem-ent figures and monitoring NO_2	< 1µgm^{-3}	None	Meeting with traffic enforcem-ent	**Continuous**	Requirement to regularly meet (~ every 4 months) with traffic wardens to discuss issues / progress
7	Review signage around Lyndhurst	Ensure vehicles reach their destination quickly	County Council	2011	2012	Visitor surveys	< 1µgm^{-3}	7.5t restriction signage reviewed	None	April 2014	Further work required
8	Review and support New Forest District Council's travel plan	Reduce traffic from travelling through Lyndhurst	District Council	Continuous	Continuous	Travel surveys of Council staff and monitoring NO_2	< 1µgm^{-3}	Incentives to car share, use alternative transport. Pool cars and bikes available at work	Continue involvement in travel plan. Link between air quality and 'eCO_2' group	**Continuous**	'eCO2 champions' group set up to manage climate change and sustainability responsibiliti es for the Council.
9	Development of school travel plan	Reduce traffic from travelling through Lyndhurst	County Council	Continuous	Continuous	Travel surveys of school travel and monitoring NO_2	< 1µgm^{-3}	School travel plan approved 2006	Travel plan reviewed, improved pathway to school via church avoiding High Street completed	**Continuous**	To link the school travel plan with air quality work at the district council

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
10	Areas of planned developments	Assess impact of developments on air quality	District Council	Continuous	Continuous	None	< 1 μgm^{-3}	Planning assessed for air quality impacts, including provision of air quality GIS maps to planning	To continually assess method of working is appropriate	**Continuous**	
11	Review bus routes (incl. green transport)	Reduce congestion	County Council	Continuous	Continuous	Travel surveys to assess use of public transport and monitoring NO_2	< 1 μgm^{-3}	Bus priority lane installed in Shrubbs Hill Road. Free bus for tourists travelling into New Forest on train during summer season. Operation of New Forest Tour bus	Continued operation of bus lane and bus schemes Use of fleet of electric cars for visitors throughout New Forest (18 charge points – free to charge) New Forest Transport Statement identifies a high frequency bus route (Ashurst – Lyndhurst – Lymington)	**Bus priority lane** (Shrubbs Hill Road) **completed** **Electric fleet completed** >10yrs for additional bus route	Option unlikely to reduce NO_2 emissions greatly, but encourages use of public and green transport into and through Lyndhurst Tour buses extended to 3 routes covering Forest
12	Review cycle routes	Encourage cycling and reduce number of trips in cars	County Council	Completed	Completed	Travel surveys to assess use of cycle routes and monitoring NO_2	< 1 μgm^{-3}	Installation of additional cycle parking in Lyndhurst	New Forest Transport Statement identifies Lyndhurst for additional cycle schemes	**Cycle parking completed** >10yrs for additional schemes	Additional schemes currently at prefeasibility stage

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
13	Review car parking	Assess parking requirements	District Council	6 months	1 year	Travel surveys and monitoring NO_2	< 1 μgm^{-3}	Car parking reviewed by County Council		April 2014 to review car park usage	County Council review determined no agreeable alterations to current car parking arrangement. Car park usage should be reviewed for air quality purposes.
14	New Forest District Council vehicle fleet management	Reduce emissions from Council vehicles	District Council	Completed		n/a	< 1 μgm^{-3}	Assessment of council fleet. Staff using Council vehicles trained in ecodriving. Tracker equipment installed into vehicles Assessment of remaining Council fleet. Review methods of working of council workers.	New vehicles purchased have latest spec / fuel efficient engines Optimisation of vehicle routes and council officer driving. Link created between air quality and 'eCO_2' group	**Continuous** – to review	'eCO2 champions' group set up to manage climate change and sustainability responsibilities for the Council.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
15	Vehicle emission testing	Emission test vehicles travelling through AQMA	District Council	2012	2013	n/a	< 1 µgm^{-3}	None	No procedure for VOSA testing outside low emission zones specifically within AQMA's	**Option discounted**	
16	Investigate use of absorbing paving surface	Reduce NO_2 concentrations	District Council	n/a	n/a	n/a		Option discounted due to lack of positive outcomes from trials with other LA's		**Option discounted** (technology not viable)	
17	Increase public awareness of air quality	Publicise air quality throughout district	District Council	Continuous	Continuous	n/a	< 1 µgm^{-3}	Update website	Improved website	**Continuous**	
18	Review air quality monitoring	Ensure correct locations are being monitored	District Council	Continuous	Continuous	n/a	n/a	Additional monitoring completed	Continuous assessment of monitoring locations.	**Continuous** Review every January	

The Totton and Lyndhurst Actions Plans are transport related and therefore rely heavily on the involvement of the highway authority; Hampshire County Council.

The Air Quality Action Plan update acknowledges the New Forest Transport Statement which was produced in September 2012 by Hampshire County Council. This transport statement identifies a number of schemes and aspirations with regards to transport in the region, and those relevant to the Air Quality Action Plans have been incorporated into the update. It is noted that the time scales for many of the transport schemes are very long, with no identified funding currently available. However such schemes should be noted as a transport need has been identified and the air quality issues may influence such schemes progressing in the future.

It is noted that throughout the review and assessment of air quality within the New Forest district Hampshire County Council has worked well with New Forest District Council, providing support, technical advice and funding for a number of schemes and studies.

Totton Action Plan

In Totton the transport related options have either been completed or discounted. The feasibility study commissioned by Hampshire County Council was accepted however it was acknowledged that the study lacked detail with regards to the option assessments. The feasibility study recommendations are noted in Table 7.1.

Considering the monitoring results have been significantly below the annual mean objective for nitrogen dioxide for the past 8 years at locations of relevant public exposure, it has been agreed with Hampshire County Council that no further transport studies or works will be undertaken at this time. The reductions in monitored nitrogen dioxide concentrations within the Air Quality Monitoring Area have been to a large extent unexplained considering there has been limited progression of implementing the transport related options (with the exception of the installation of static signs at the railway crossing). It is therefore unlikely at this time that other transport related options whose only aim is to reduce nitrogen dioxide concentrations will be progressed.

Previous Air Quality reports have advised that despite monitoring showing no exceedances of the annual mean objective for nitrogen dioxide at locations of relevant public exposure, the Air Quality Management Area in Totton should be maintained due to a potential large development on land (Eling Wharf) just outside the Air Quality Management Area. This type of development would increase the number of vehicles entering Totton through the current Air Quality Management Area.

However despite expectations that a planning application would be submitted for the development of Eling Wharf, to date no application has been received by New Forest District Council. Furthermore it has been concluded that even if a planning application was received for the site, the impact from the development on local air quality would be considered through the planning system. It is also noted that it would still take a number of years before vehicle numbers from the development would have an impact in Totton even if a planning application was submitted in 2013.

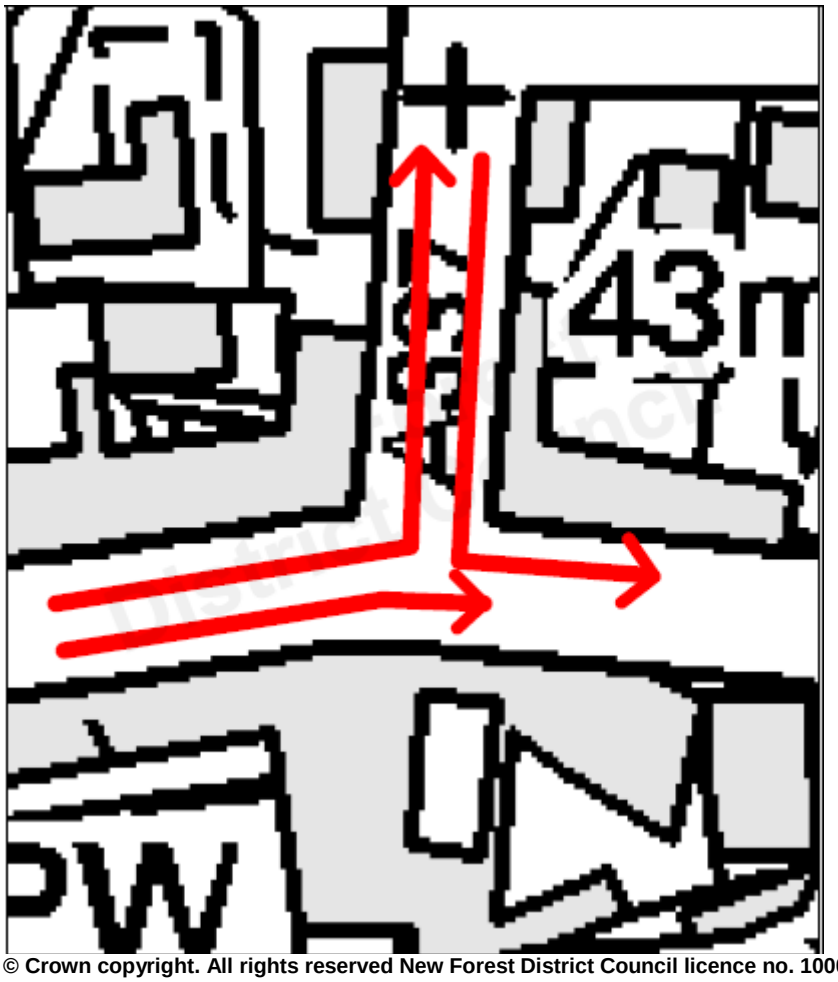
Therefore it has been concluded consideration will be now given to revoking the current Air Quality Management Area in Totton. This decision has been agreed with the Air Quality Helpdesk which advised there was no evidence to support an Air Quality Management Area in Totton.

Lyndhurst Action Plan

The Lyndhurst Action Plan has been progressing slowly. The major transport related options have all been exhausted and concluded as not feasible for Lyndhurst due to a variety of factors including potential increases in traffic congestion, unacceptable environmental impacts, cost and negligible air quality benefits.

The remaining transport option which is progressing well concerns the long vehicle detection system and the green traffic light filter. The long vehicle detection system is located at the top of the High Street before the street canyon and the junction with the A337 (Romsey Road). This system enables the left hand green filter on the traffic lights to be utilised more therefore allowing traffic to flow through the canyon and turn left (north) into the A337 as shown in Figure 7.1.

Figure 7.1 Details of traffic flow through junction of High Street and A337 (Lyndhurst)



This system reduces the time traffic in the left hand lane queues in the street canyon. However when a long vehicle (heavy goods vehicles are permitted on this route) is detected approaching the junction the green filter is turned off and the traffic lights revert to their normal sequencing. This ensures the long vehicle (which has to cross both carriageways on the A337 in order to turn the corner) does not collide with traffic travelling southbound on the A337 (and then eastbound onto the High Street).

In 2012 a ‘MOVA’ (Microprocessor Optimised Vehicle Actuation) system was installed at the traffic lights. This system uses a computer to optimise the signal timings using data from all the approaches to the junction. MOVA is able to vary the maximum cycle time in response to actual traffic flows, rather than the flows assumed for that time of day (HCC, 2013(c)). It can also adjust the individual timings for one approach in response to conditions all round the junction (HCC, 2013(c)). Therefore the system is more intelligent than other traffic light sequencing systems.

As a result the flow of traffic along the High Street has improved which has been noted by residents and commuters accessing Lyndhurst. It is acknowledged that during periods of very high vehicle numbers there still may be significant queuing on the approach routes into Lyndhurst, although it is hoped these instances are reduced in number. Monitoring and assessment during the visitor period in 2013 will provide further data on how the MOVA system is operating.

It is acknowledged that the few smaller transport options (VMS routing and a bus lane in Shrubbs Hill Road) and improvements in green transport (tour bus and availability of electric vehicles) which have been implemented are unlikely to reduce nitrogen dioxide concentrations significantly and certainly not below the annual mean objective in the Lyndhurst Air Quality Management Area. However the current aim for Lyndhurst is to put into place all feasible transport and smarter options with the assistance of the transport planners, enforcement officers and the local community in order to pursue the nitrogen dioxide annual mean objective.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Throughout 2012 monitoring for nitrogen dioxide, particulate matter (PM_{10}) and sulphur dioxide has been undertaken throughout the New Forest district. The only pollutant monitored as exceeding air quality objectives was nitrogen dioxide for the annual mean objective.

The majority of monitoring for nitrogen dioxide concentrations was undertaken using diffusion tubes located throughout the District. The annual mean results for each diffusion tube site was biased corrected either using a locally determined bias correction factor as detailed in Appendix B or using the national bias correction factor (Defra, 2013).

It is noted that the local bias correction factors for Lyndhurst and Totton were similar for 2012; Lyndhurst 0.88 and Totton 0.89 (national bias correction factor 0.97). The local bias correction factors were used for diffusion tube sites in similar monitoring locations and conditions to the automatic analysers.

Following advice from the Defra Air Quality Helpdesk, the monitoring results for July 2012 were removed from the data. This was due to a possible issue with the diffusion tubes provided by Gradko International using a 20% TEA preparation method. Whilst the data for New Forest District Council appeared normal for July 2012, the Council was advised to remove it. The full data set is given in Appendix D.

The exceedances for the nitrogen dioxide annual mean objective were monitored using diffusion tubes at locations in Lyndhurst. Within the Air Quality Management Area in Lyndhurst 2 diffusion tube locations monitored exceedances at 15 and 16 High Street.

These sites have consistently exceeded the annual mean objective since 2006, although a decrease in the annual mean for nitrogen dioxide was monitored at 16 High Street (of ~1μgm^{-3}), whilst an increase (of ~3.5μgm^{-3}) was monitored at 15 High Street between 2011 and 2012.

The diffusion tube site at 15 High Street, Lyndhurst monitored the highest annual mean concentration for nitrogen dioxide within the district, with a result in 2012 of 48.55µgm^{-3}. It was noted from the raw data (attached in Appendix D) that this site recorded high monthly averages of between 61µgm^{-3} and 73µgm^{-3} over 3 consecutive months (September – November) compared to the typical results for this site which were in the mid 50's.

It was also noted that whilst the neighbouring diffusion tube sites at 14 and 16 High Street did monitor increased concentrations during this period, the increases were not as significant as those monitored in the raw diffusion tube data at 15 High Street. However the data for 15 High Street has been included in the calculations as it appears genuine, but it is unclear why this site monitored such an increase in nitrogen dioxide concentrations.

A previously exceeding monitoring site (14 High Street) monitored a significant decrease in nitrogen dioxide concentrations using the automatic analyser (and diffusion tubes). The automatic site monitored a decrease of 3µgm^{-3} from 43µgm^{-3} to 40µgm^{-3} which is determined as a concentration meeting the annual mean objective for nitrogen dioxide.

This monitored decrease follows a previous 3µgm^{-3} decrease between 2010 and 2011. Therefore since the reported monitoring results for 2010, the annual mean concentration for nitrogen dioxide at 14 High Street has decreased by 6µgm^{-3}.

Colleagues in Hampshire County Council have advised that vehicle numbers using the routes into Lyndhurst have not decreased in 2012. Therefore the reduction in nitrogen dioxide monitored at 14 High Street has not been as a result of a reduction in vehicle numbers entering Lyndhurst.

Therefore it is presumed that the increase use of a green filter (since 2011) and subsequent installation of a MOVA system (end of 2012) at the traffic lights of Romsey Road and the High Street may have resulted in this monitored reduction in nitrogen dioxide concentrations. This is because the traffic within the street canyon part of the High Street is less congested with improved flow.

However it would be expected that the nitrogen dioxide concentrations at 15 High Street would have also shown a decrease in nitrogen dioxide concentrations and not an increase, particularly since this site is adjacent to the vehicle lane with the improved flow. Continued monitoring within this area will help determine whether the new traffic light system has resulted in decreases in nitrogen dioxide concentrations, although it is acknowledged that the monitored reduction at the automatic monitoring site has been significant which has been maintained over the previous 2 years on monitoring.

A further location (Shrubbs Hill Road) outside the current Lyndhurst Air Quality Management Area also monitored an exceedance of the nitrogen dioxide annual mean objective. This location represents relevant public exposure on the façade of a residential building.

This site had monitored previous exceedances in 2009 and 2010, but not in 2011. It is unclear why this site has exceeded the annual mean objective for nitrogen dioxide because:

- whilst on a one way system approaching the more congested parts of Lyndhurst, this road system is free flowing for the majority of the time
- the traffic is only heavy during peak hours and is only slow at this location on occasions
- diffusion tube monitoring sites either side of the site have not monitored an exceedance
- the site is relatively open

As a result of the monitoring results at Shrubbs Hill Road, this site and a further site at Gosport Lane formed the basis of a Detailed Assessment undertaken by AEA in 2011 / 2012. Gosport Lane did not monitor an exceedance in 2012 although the result was borderline (39.58μgm^{-3}) and the site had exceeded in previous years (2009 and 2011).

The Gosport Lane diffusion tube site is 23m outside the current Lyndhurst Air Quality Management Area. The site is adjacent to a two lane one-way system leading out of Lyndhurst. At the monitoring site two single lane roads enter Gosport Lane, both after 90 degree corners, before vehicles can change lanes or enter the Lyndhurst village car park.

It is believed the road layout of tight turns and the entrance into the car park results in variable vehicle speeds over short distances. This may be the reason the site often monitors an exceedance of the nitrogen dioxide annual mean objective.

The Detailed Assessment was received in 2012 and accepted by Defra. The report concluded that Shrubbs Hill Road should not monitor an exceedance of the annual mean objective for nitrogen dioxide however Gosport Lane was likely to monitor an exceedance. This did not concur with the monitoring results for 2012, however the Detailed Assessment did acknowledge the uncertainty in the model, particularly highlighting the issues at Shrubbs Hill Road, that theoretically the site should not be monitoring an exceedance based on road layout and vehicle figures.

Therefore the Council has concluded that monitoring in 2013 using diffusion tubes will continue at Shrubbs Hill Road and Gosport Lane. This is to obtain a further year of monitoring results and to take into account whether these sites may be affected by the newly operating MOVA system in the High Street. Should monitoring results still determine exceedances of the annual mean objective for nitrogen dioxide or results close to the objective, the Council will either declare further Air Quality Management Areas or amend the current Air Quality Management Area in Lyndhurst to take into account these sites after a full consultation exercise.

Nitrogen dioxide monitoring using the automatic analyser and diffusion tubes will continue in Lyndhurst during 2013.

Monitoring in Totton has not shown an exceedance of the annual mean objective for nitrogen dioxide either inside (or outside) the Air Quality Management Area since 2008 at any site or since 2004 for sites of relevant exposure. The Council had decided to maintain the Air Quality Management Area to obtain further monitoring data due to the potential development of a large brownfield site in Totton (Eling Wharf). However to date a planning application has not been received for the site, and if an application was received (as is expected) the Council is confident any potential air quality impacts from the development can be successfully dealt with through the planning process.

Therefore the Council, on advice from the Defra Air Quality Helpdesk, will be considering revoking the Air Quality Management Area in Totton. The Council has also been advised by the Helpdesk that due to the monitoring data collated for Totton there is no requirement to proceed to a Detailed Assessment before revoking the Air Quality Management Area. However it is acknowledged that the Council will undertake a full consultation exercise prior to finalising a decision whether to revoke the Air Quality Management Area for Totton.

Nitrogen dioxide monitoring using the automatic analyser and diffusion tubes will continue in Totton during 2013.

It is noted that a number of diffusion tube monitoring sites were determined as a borderline result, ie close to the objective. These locations were:

- 2a Romsey Road (with Lyndhurst Air Quality Management Area)
- A31, Stoney Cross

2a Romsey Road has shown a decrease since 2011 from 39.83µgm^{-3} to 36.94µgm^{-3} in 2012. Therefore this site is showing an encouraging decrease and will continue to be monitored.

The site on the A31 at Stoney Cross has also shown an increase in monitored results from 34.71µgm^{-3} (2011) to 36.24µgm^{-3} (2012). Whilst this is still below the objective, the site is considered relevant exposure and is adjacent to a main route through the district (A31). This site has always been a borderline site, due to its location close to the busiest road in the District, therefore monitoring will continue at this location.

The trend data shown for nitrogen dioxide monitoring using diffusion tubes at sites within the Lyndhurst Air Quality Management Area has not shown similar increases and decreases across all sites. However similar trends are noted within different groups of sites, although not at adjacent or similar sites. For example the sites within the street canyon (14, 15, 16 and 65 High Street) do not necessarily follow a similar pattern.

It is also noted that throughout all the diffusion tube sites, the majority of sites have monitored slight increases in nitrogen dioxide concentrations between 2011 and 2012, with only 7 sites (out of 49) monitoring a decrease, although 4 of these were in Lyndhurst. This gives an overall District wide picture of the monitoring in 2012 compared to 2011 although it is not a reason to raise concerns. Such increases (or decreases) are difficult to explain, it may be the influence of weather conditions or subtle changes in fleet configurations. Whilst it is worth keeping a note of such patterns, overall it is monitored exceedances of the air quality objectives which would result in action being taken to reduce pollution concentrations.

Following monitoring in 2012, it is recommended that some diffusion tube sites are removed. The sites being removed have a number of years of monitoring data, but have not monitored concentrations of concern. These sites include:

- Chaffey Close, Ringwood
- Water Lane, Totton
- Salisbury Road, Totton
- Reynolds Dale, Totton
- Main Road, Totton
- Rose Road / Bartram Road, Totton

The Council will continue to review its monitoring sites throughout the District and locate or remove sites as required.

It is noted that there are no monitored exceedances of the particulate matter (PM_{10}) objectives at any of the monitoring sites during 2012. The sites monitoring PM_{10} at Holbury and Totton are still relevant and will continue to monitor for particulate matter. It is noted that the Council uses TEOM monitors which do not meet the equivalence criteria, however the annual results are corrected using the Defra accepted volatile correction method (VCM) as detailed in Appendix B. Should the Council determine the PM_{10} concentrations are likely to exceed the objectives or that the particulate monitoring equipment requires replacement, then equipment that meets the equivalence criteria will be installed to replace the existing TEOM's.

Monitoring of PM_{10} at Totton and Holbury will continue in 2013.

Monitoring results for sulphur dioxide from Fawley and Holbury have not shown an exceedance of the any of the sulphur dioxide objectives. Indeed there have been no monitored exceedances of the sulphur dioxide objective since the monitored exceedance of the 15 minute mean objective at Fawley in 2005. As a result the Air Quality Management Area for Fawley for the likely exceedance of the 15 minute mean objective was revoked in April 2013.

Monitoring of sulphur dioxide at Fawley and Holbury will continue in 2013.

8.2 Conclusions relating to New Local Developments

The assessment of sources within the New Forest district has concluded that to the best of our knowledge there will be no impacts on air quality from local developments: road transport, other transport, industrial installations, commercial or domestic sources and fugitive emissions. Therefore there is no need to proceed to a Detailed Assessment.

A Detailed Assessment produced by AEA in 2011 advised the Council to declare an Air Quality Management Area in Sway with regards to particulate emissions from local poultry farms. The modelled area of exceedance was small, and therefore the Council took advice from the Defra Air Quality Helpdesk in 2012. The Helpdesk advised that further research into poultry farms was recommending to Defra a new screening criteria to be applied to poultry farms, prior to proceeding to a Detailed Assessment. When this criteria was applied to the poultry farms in Sway, there was no requirement to proceed to a Detailed Assessment.

Therefore the Council has decided not to proceed to declare an Air Quality Management Area with regards to particulate emissions from poultry farms in Sway. The Defra Air Quality Helpdesk has agreed with this course of action.

8.3 Other Conclusions

The Air Quality Action Plans for Totton and Lyndhurst are transport related. It has been concluded that all the transport options have been assessed for feasibility by the transport authority (Hampshire County Council), and a number of transport schemes progressed. It is unlikely at this time, that further transport schemes will be implemented in Lyndhurst and Totton, and therefore the focus of the Air Quality Action Plans is to progress the smarter options.

Due to a continuation of monitoring results in Totton showing no exceedances of the annual mean objective for nitrogen dioxide at sites of relevant exposure between 2004-2012, it has been concluded that the Council will consider revoking the Air Quality Management Area in Totton.

However nitrogen dioxide monitoring in Totton would continue following a revocation of the Air Quality Management Area, and officers would continue to be involved in the implementation of smarter options and general transport schemes aimed to reduce congestion and improve air quality in Totton. This proposed course of action was put to the Defra Air Quality Helpdesk who advised the Totton Air Quality Management Area should be revoked based on the monitoring results, without a requirement to proceed to a Detailed Assessment.

In Lyndhurst it has been concluded that the feasibility of all transport schemes has been exhausted and the major transport related schemes cannot be progressed due to issues relating to costs, increased congestion and environmental impacts. However the implementation of the MOVA system at the traffic lights of the High Street and Romsey Road has been a success showing improvements traffic flow and a reduction in monitored nitrogen dioxide concentrations at the automatic analyser.

Some smaller transport related schemes (including green schemes) have either been implemented or are progressing. It has been concluded that these schemes will not significantly reduce nitrogen dioxide concentrations to below the annual mean objective, however all options should be forwarded to obtain even a slight improvement in nitrogen dioxide concentrations. It is acknowledged that the smarter (and non-transport related) options in Lyndhurst requires further work to forward their progression.

It is noted that the Air Quality Management Area for Fawley was revoked in April 2013.

In 2012 a planning application was received and approved for the development of a large brown field site for housing and commercial premises in Bridge Road, Lymington. This site is currently being developed.

It was determined that the site may generate dust and particulate matter during the construction period (2012 – 2016) which may impact on local air quality. Therefore appropriate conditions were agreed to monitor dust and particulate matter, and to mitigate its production.

There are no current approved planning applications which may impact upon air quality in the District. However it is anticipated that a planning application will be submitted in due course for a mixed development on a brown field site in Totton (Eling Wharf). This development will require an air quality assessment as part of the planning application.

It is acknowledged that officers undertaking air quality work within New Forest District Council have to work within two different planning authorities due to the New Forest National Park. Both planning authorities have adopted planning policies which identify the requirements to assess planning applications for likely impacts concerning air quality, and it is the aim of Environmental Protection to work with both planning authorities to produce a relevant local guide concerning air quality and planning.

New Forest District Council will continue to work with Hampshire County Council with regards to transport issues, air quality and the production of Local Transport Plans within its District. A New Forest Transport Statement produced by Hampshire County Council pulls together an extensive list of transport schemes and aspirations. Whilst it is acknowledged that many of these schemes are in the prefeasibility stages, with no available funding and long term timescales, such schemes may have a positive impact on air quality. Therefore those schemes of air quality significance have been noted within the Air Quality Action Plan update with the hope that air quality may assist in developing some of these transport schemes in the future.

8.4 Proposed Actions

The Progress Report 2013 has not identified the requirement for additional monitoring however some diffusion tube sites will be removed. There are no further changes to the existing monitoring programme which will continue during 2013.

The Progress Report 2013 has identified a monitored exceedance of the annual mean objective for nitrogen dioxide outside the current Air Quality Management Area in Lyndhurst in a small area of Shrubbs Hill Road. A recently submitted Detailed Assessment did not identify this location as an exceeding site, but advised a location in Gosport Lane, Lyndhurst was likely to exceed the annual mean objective for nitrogen dioxide. This site has monitored exceedances of the annual mean objectives in the recent past.

Whilst it is likely the Council will have to proceed to amending the current Air Quality Management Area in Lyndhurst (or declaring additional Air Quality Management Areas) to include (part of) Shrubbs Hill Road and Gosport Lane, the Council has decided to review the situation following monitoring in 2013. This monitoring will take into account any potential influence of the newly installed MOVA system operating in Lyndhurst. Therefore the current Air Quality Management Area in Lyndhurst will remain.

The Council will be considering revoking the Totton Air Quality Management Area. This follows no monitored exceedances of the nitrogen dioxide annual mean objective since 2008 at any location in Totton or since 2004 at any relevant exposure location.

Therefore in conclusion, further work to be completed or progressed by New Forest District Council is as follows:

- Continue the current air quality monitoring programme in New Forest district
- Start consultation process to revoke the Totton Air Quality Management Area by December 2013
    - *Subject to agreement on process by Defra*
- Produce an air quality planning guide for the New Forest District Council and New Forest National Park Authority by June 2014
- Produce a district wide Progress Report by April 2014

9 References

Defra (2009). *Part IV of the Environment Act 1995. Local Air Quality Management. Technical Guidance LAQM.TG(09). February 2009*. Defra.

Defra (2013). *Diffusion Tubes.* [Online]. Available from: http://laqm.defra.gov.uk/diffusion-tubes/diffusion-tubes.html [Accessed 22 May 2013].

EMAQ (2013). *AQ Advanced (II): Development Control and Air Quality Impact Assessment.* Training Course CIEH, Ricardo-AEA, IAQM. January 2013

Erg (2013). *Air Quality in the New Forest.* [Online]. Available from: http://www.hantsair.org.uk/hampshire/asp/home.asp?la=NFDC [Accessed 22 May 2013].

Hampshire County Council (2013(a)). *Local Transport Plan.* [Online]. Available from: http://www3.hants.gov.uk/transport/local-transport-plan.htm [Accessed 19 June 2013].

Hampshire County Council (2013(b)). *Transport Statements for Hampshire.* [Online]. Available from: http://www3.hants.gov.uk/transport-planning/transport-statements.htm [Accessed 19 June 2013].

Hampshire County Council (2013(c)). *Traffic Signal Control (MOVA system)* [Online]. Available from: http://www3.hants.gov.uk/search?cx=009988739743092233991%3A4hx6rzq-jqg&cof=FORID%3A11&q=MOVA&sa=Search [Accessed 19 June 2013].

Office for National Statistics (2013).*Neighbourhood Statistics.* [Online]. Available from: http://www.neighbourhood.statistics.gov.uk/dissemination/ [Accessed 22 May 2013].

Appendices

Appendix A: Part A permitted processes within New Forest district

Appendix B: QA/QC Data
Local bias correction factor spreadsheets

Appendix C: Graphs of hourly data from automatic monitoring sites

Appendix D: Full details of nitrogen dioxide diffusion tube results

Appendix A: Part A Permitted Processes within New Forest district

Operator/Site Name	Current Environmental Permit Number
Esso, Fawley Refinery	BR6996IC
ExxonMobil Chemical Limited	ZP3839MG
Npower Cogen/Fawley Refinery CHP	QP3536LT
Cognis UK Ltd	BR8271IC
Tradebe Fawley (High Temperature Incinerator)	HP3835UZ
Tradebe Fawley (MBM Plant)	TP3935UL
Nalco	BS5827IX
Polimeri Europa UK Ltd	BR8263IE
Veolia/Marchwood Treatment Works	NP3833UE
Veolia/Marchwood Energy Recovery Facility	BJ7093IY
Marchwood Power Station	BL6217IM
RWE npower/Fawley Power Station	WP3536LZ
BH (CHP) UK Ltd/ Hythe CHP plant	BK1732IQ

Appendix B:

QA/QC of automatic monitoring

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 EnviroTech who hold the service contract for the Council. The engineer is also available for call outs if the site appears to be malfunctioning.

Erg, at Kings College, London, validates and ratifies the data from the sites, which is downloaded twice a day and hourly from the Fawley site. During the validation process any potential problems are identified and if necessary reported back to the Council and EnviroTech. 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.

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

The data given in the Progress Report 2013 has been fully ratified.

QA/QC of diffusion tube monitoring

The determination of nitrogen dioxide diffusion tube precision is obtained from duplicate and triplicate co-located sites. The results from triplicate diffusion tube sites operated by New Forest District Council at Totton, Lyndhurst and Marchwood can be seen in the spreadsheet calculation used to determine local bias correction and shown in Appendix C. All the triplicate diffusion tube sites throughout 2012 showed good precision.

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. Gradko International Ltd. also follows procedures set out in the Technical Guidance LAQM.TG(09) (Defra, 2009).

Diffusion Tube Bias Adjustment Factors

The nitrogen dioxide diffusion tubes were supplied and analysed by Gradko International Ltd. The preparation method used for the diffusion tubes was 20% TEA (triethanolamine) in water.

The national bias adjustment factor for Gradko using the preparation method of 20% TEA in water (2012) was 0.97. This was obtained from the Local Air Quality Management website (Defra, 2013) from database version 03/13.

Factor from Local Co-location Studies

Three different local bias correction factors were determined for the data for 2012. These were as follows;

Details of Bias Correction Factors

Location	Bias Correction Factor
Totton	**0.89**
Lyndhurst (street canyon)	**0.88**
Marchwood	**1.03**

The local bias correction factors have been determined using calculations supplied by the Local Air Quality Management website (Defra, 2013) and are shown below for Totton and Lyndhurst.

Totton – Local Bias Correction Factor Spreadsheet

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

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	06/01/2012	03/02/2012	31.02	37.51	38.68	36	4.1	12	10.3
2	03/02/2012	27/02/2012	38.24	37.69	39.72	39	1.0	3	2.6
3	27/02/2012	28/03/2012	38.03	38.07	38.72	38	0.4	1	1.0
4	28/03/2012	24/04/2012	28.98	28.64	30.24	29	0.8	3	2.1
5	24/04/2012	30/05/2012	27.3	25.26	27.23	27	1.2	4	2.9
6	30/05/2012	28/06/2012	24.43	29.22	21.31	25	4.0	16	9.9
7									
8	01/08/2012	29/08/2012	29.3	30.81	28.42	30	1.2	4	3.0
9	29/08/2012	28/09/2012	30.95	28.38	28.51	29	1.4	5	3.6
10	28/09/2012	02/11/2012	34.54	33.35	36.61	35	1.6	5	4.1
11	01/11/2012	29/11/2012	39.19	38.47	39.54	39	0.5	1	1.4
12	29/11/2012	03/01/2013	37.8	25.65	32.61	32	6.1	19	15.1
13									

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
32.4	100	Good	Good
32.5	99	Good	Good
34.2	100	Good	Good
29.8	100	Good	Good
23.6	100	Good	Good
18	100	Good	Good
19.4	100		Good
23	81	Good	Good
29.1	60	Good	r Data Capture
28.7	100	Good	Good
36.5	100	Good	Good
35.4	77	Good	Good
Overall survey -->		Good precision	Good Overall

(Check average CV & DC from Accuracy calculations)

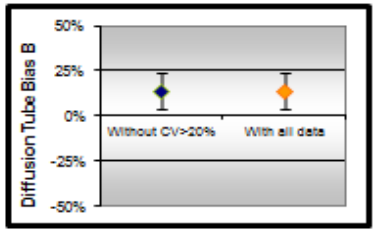
It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID: Totton

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 10 periods of data	
Bias factor A	0.89 (0.82 - 0.98)
Bias B	12% (2% - 22%)
Diffusion Tubes Mean:	33 µgm^{-3}
Mean CV (Precision):	7
Automatic Mean:	29 µgm^{-3}
Data Capture for periods used:	96%
Adjusted Tubes Mean:	29 (27 - 32) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 10 periods of data	
Bias factor A	0.89 (0.82 - 0.98)
Bias B	12% (2% - 22%)
Diffusion Tubes Mean:	33 µgm^{-3}
Mean CV (Precision):	7
Automatic Mean:	29 µgm^{-3}
Data Capture for periods used:	96%
Adjusted Tubes Mean:	29 (27 - 32) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Lyndhurst - Local Bias Correction Factor Spreadsheet

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

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	05/01/2012	03/02/2012	42.58	44.38	43.99	44	0.9	2	2.4
2	03/02/2012	02/03/2012	49.45	48.83	43.26	47	3.4	7	8.5
3	02/03/2012	29/03/2012	38.43	49.13	46.25	45	5.5	12	13.8
4	29/03/2012	27/04/2012	42.19	40.05	41.4	41	1.1	3	2.7
5	27/04/2012	30/05/2012	44.39	45.24	46.96	46	1.3	3	3.3
6	30/05/2012	28/06/2012	45.63	32.48	38.96	39	6.6	17	16.3
7									
8	03/08/2012	31/08/2012	54.14	50.04	69.82	58	10.4	18	25.9
9	31/08/2012	27/09/2012	50.87	51.85	55.97	53	2.7	5	6.7
10	27/09/2012	02/11/2012	45.66	47.28	53.77	49	4.3	9	10.7
11	02/11/2012	28/11/2012	52.33	52.84	55.47	54	1.7	3	4.2
12	28/11/2012	02/01/2013	35.27	37.17	34.77	36	1.3	4	3.1
13									

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
36.4	100	Good	Good
43.6	99	Good	Good
49.1	99	Good	Good
38.4	99	Good	Good
38.9	95	Good	Good
38.1	100	Good	Good
40.9	100		Good
41.9	99	Good	Good
38	79	Good	Good
42.4	99	Good	Good
44.4	64	Good	r Data Capture
35.8	100	Good	Good
	Overall survey -->	Good precision	Good Overall

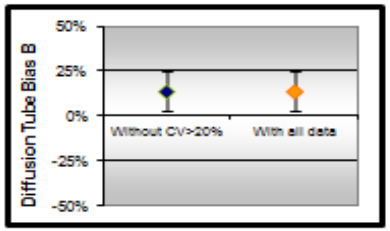
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Lyndhurst

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 10 periods of data	
Bias factor A	0.88 (0.8 - 0.98)
Bias B	13% (2% - 25%)
Diffusion Tubes Mean:	46 μgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	40 μgm^{-3}
Data Capture for periods used:	97%
Adjusted Tubes Mean:	40 (37 - 45) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 10 periods of data	
Bias factor A	0.88 (0.8 - 0.98)
Bias B	13% (2% - 25%)
Diffusion Tubes Mean:	46 μgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	40 μgm^{-3}
Data Capture for periods used:	97%
Adjusted Tubes Mean:	40 (37 - 45) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Discussion of Choice of Factor to Use

The diffusion tube results have been bias corrected to allow for laboratory bias. Bias correction factors can either be determined from local or national data sets, and factors influencing the decision on which bias correction factors to use include local conditions and the location of automatic nitrogen oxides analysers. 4 different bias correction factors have been applied to the 2012 diffusion tube data for New Forest.

Local bias correction factors were determined and used for diffusion tube sites located in Totton and Marchwood. These locations contain an automatic monitoring site with a co-located triplicate diffusion tube site, therefore enabling a local correction factor to be applied.

In Lyndhurst 5 diffusion tube sites have been locally biased corrected. These 5 diffusion tube sites and the automatic monitoring site are located within the street canyon of the High Street. The remaining 14 diffusion tube sites in Lyndhurst have been bias corrected using the national bias correction factor, as these sites are located outside the effects of the street canyon in the High Street, Lyndhurst.

The bias correction factors used on the 2012 diffusion tube data are shown below;

Details of Bias Correction Factors

Location	Bias Correction Factor	Local / National
Totton	**0.89**	Local
Lyndhurst (street canyon)	**0.88**	Local
Lyndhurst	**0.97**	National
Marchwood	**1.03**	Local
Remaining sites	**0.97**	National

It is noted that bias correction factors less than 1 will reduce the raw annual mean result for each diffusion tube, whilst factors greater than 1 will increase the raw annual mean result. The degree of adjustment will depend on the bias correction factor, with larger adjustments noted the further the correction factor is from 1.

The choice of bias correction factor is important. For example the exceeding site in Shrubbs Hill Road has a raw data annual mean result of 44.93µgm^{-3}. This site is not within the street canyon in Lyndhurst, therefore it was corrected with the national bias correction factor (0.97) resulting in an exceedance of 43.58µgm^{-3}. However if the local bias correction factor was used (0.88) the site would be below the exceedance concentration at 39.54µgm^{-3} (although due to the site history similar conclusions would be drawn from the results).

It is also noted that the local bias correction factors have been influenced slightly by the advice from the Air Quality Helpdesk to remove the data set for July 2012 due to suspect results in a number of the diffusion tubes supplied by Gradko International using the 20% TEA in water preparation method.

However, in conclusion, I am confident in the determination and selection of the bias correction factors used to adjust raw diffusion tube data. The correct methods have been followed using the data available, although it is clear how influential the correction factors can be to the overall conclusion made.

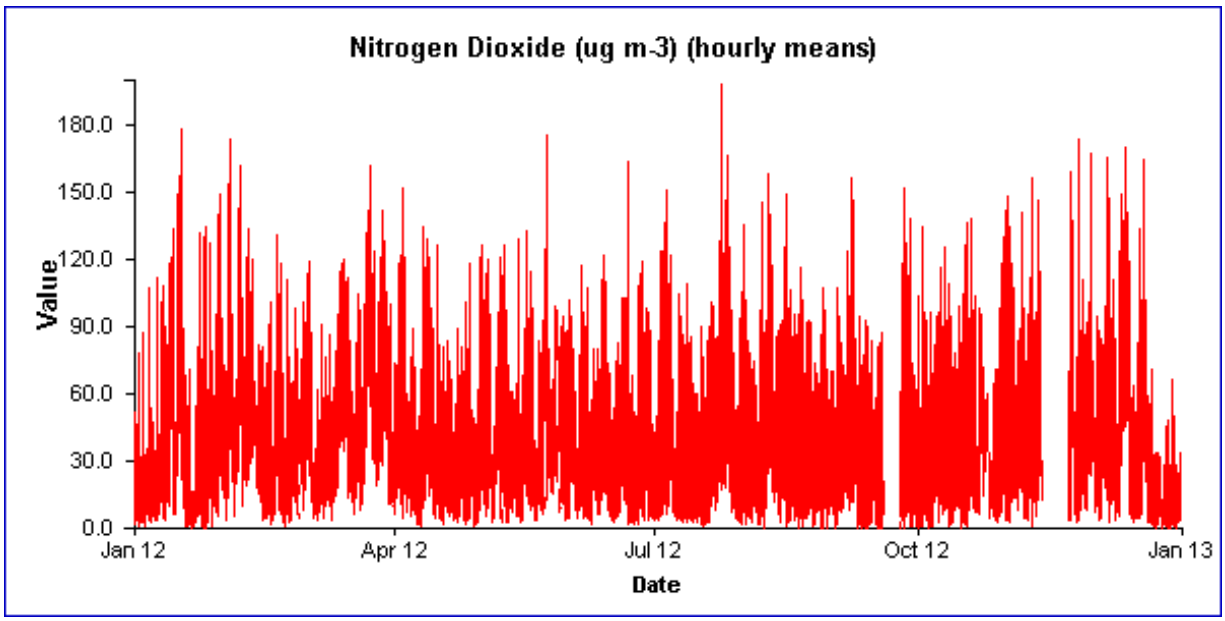
PM Monitoring Adjustment

New Forest District Council uses TEOM analysers to monitor PM_{10}. 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 PM_{10} concentrations are below the objectives. When the equipment is due for replacement the Council will consider other equipment which meets the equivalence criteria.

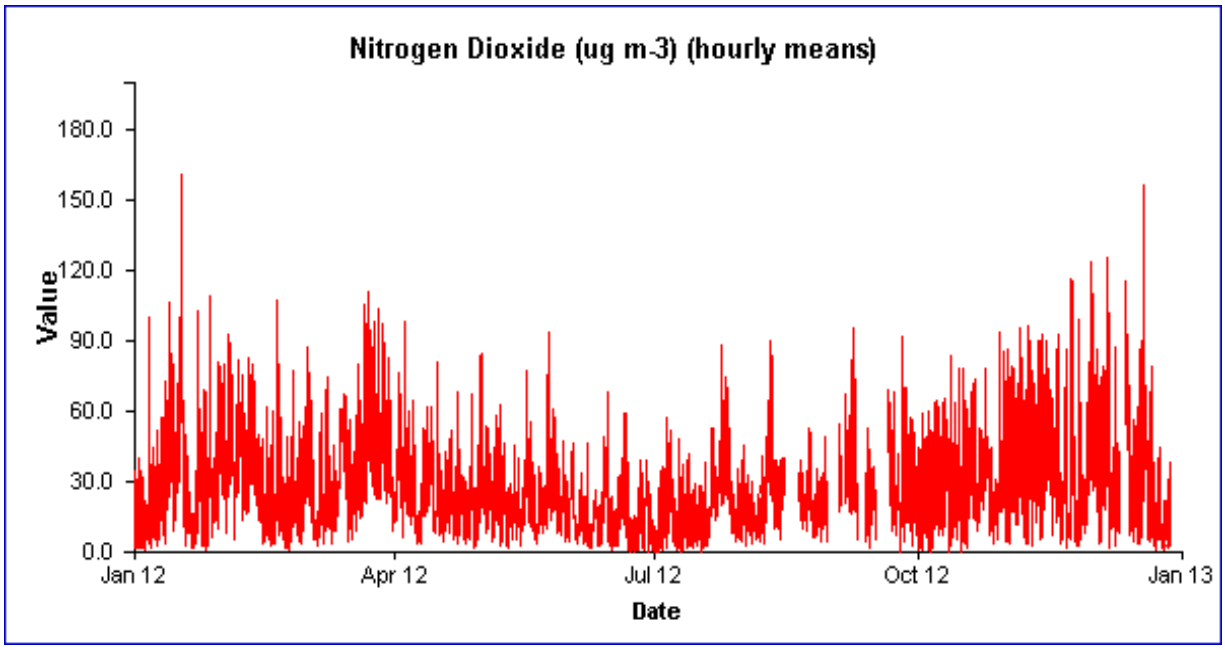
PM_{10} data has been adjusted using the Volatile Correction Model (VCM) to correct for the use of a TEOM particulate monitor.

Appendix C: Full data set of automatic monitoring shown as hourly mean

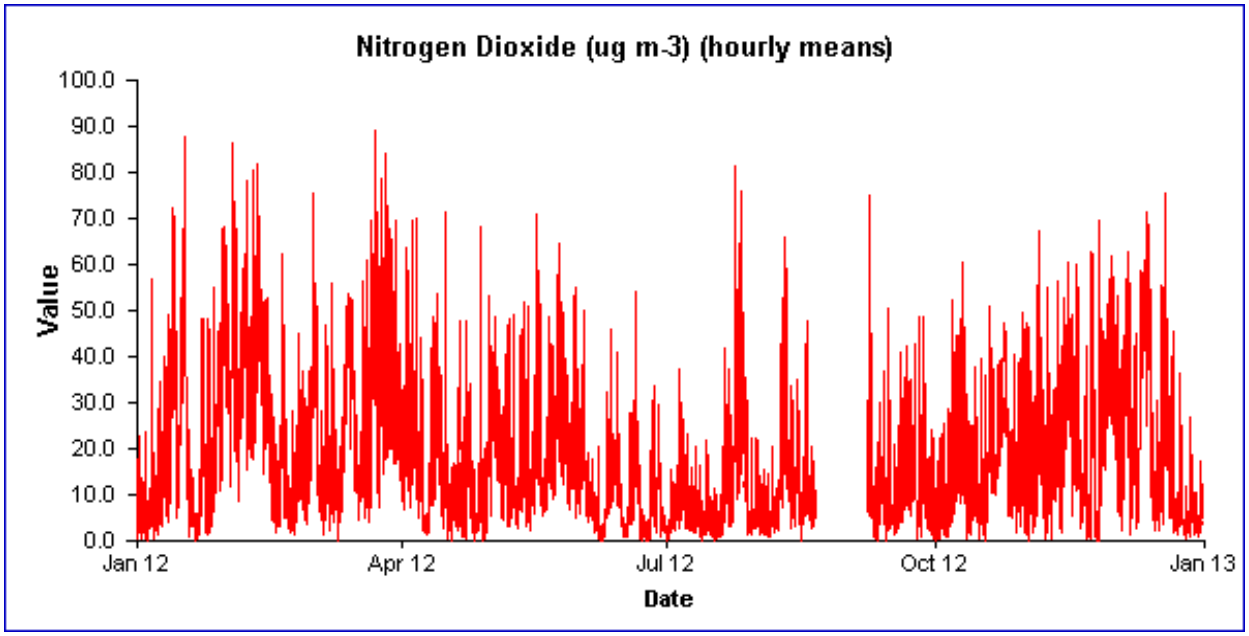
Lyndhurst



Totton



Marchwood



Data produced by erg, Kings College (Erg, 2013)

Appendix D: Full data set of diffusion tube monitoring results

Lyndhurst

Exposure dates		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
05/01/2012	03/02/2012	32.93	41.61		49.26	40.6	26.43
03/02/2012	02/03/2012	33.13	40.60	41.07	53.13	38.37	26.6
03/03/2012	29/03/2012	34.65	35.33	35.76	42.3	33.63	20.38
29/03/2012	27/04/2012	29.79	32.10	30.70	45.47	30.29	19.71
27/04/2012	30/05/2012	25.57	34.40	31.04	43.27	29.13	18.68
30/05/2012	28/06/2012	21.15	27.08	27.10	38.02	35.82	*0.61
28/06/2012	03/08/2012	22.49	27.71	29.19	41.01	44.73	19.76
03/08/2012	31/08/2012	27.27	28.32	31.74	44.08	40.77	23.89
31/08/2012	27/09/2012	27.13	33.50	31.10	45.04	41.37	21.24
27/09/2012	02/11/2012	29.44	31.08	25.11	41.72		24.47
02/11/2012	28/11/2012	29.00	37.20		52.51	30.52	23.91
28/11/2012	02/01/2013	25.03	33.50	29.65	39.39	19.79	19.26
Uncorrected average		28.64	34.07	28.01	44.93	34.03	22.43

Note:
****Unusual result not included in calculation***

Exposure dates		Site							
		Queens House	Lyndhurst School	15 High Street	14 High Street (Analyser)	(Analyser)	(Analyser)	Analyser average	16 High Street
05/01/2012	03/02/2012	26.55	35.64	56.28	42.58	44.38	43.99	43.65	47.70
03/02/2012	02/03/2012	28.83	34.7	54.59	49.45	48.83	43.26	47.18	50.59
03/03/2012	29/03/2012	22.46	27.99	53.97	38.43	49.13	46.25	44.60	53.59
29/03/2012	27/04/2012	20.4	25.15	48.69	42.19	40.05	41.40	41.21	43.77
27/04/2012	30/05/2012	19.09	*6.17	49.32	44.39	45.24	46.96	45.53	43.90
30/05/2012	28/06/2012	*6.94	22.32	44.12	45.63	32.48	38.96	39.02	44.80
28/06/2012	03/08/2012	18.2	23.71	42.63	44.65	44.18	43.04	43.96	44.37
03/08/2012	31/08/2012	24.08	30.47	49.81	54.14	50.04	69.82	52.09	54.67
31/08/2012	27/09/2012	23.85	30.68	73.19	50.87	51.85	55.97	52.90	52.65
27/09/2012	02/11/2012	*3.88	30.77	68.31	45.66	47.28	53.77	48.90	45.74
02/11/2012	28/11/2012	22.51	35.48	61.24	52.33	52.84	55.47	result not used as automatic monitor data poor	56.49
28/11/2012	02/01/2013	15.28	27.06	47.31	35.27	37.17	34.77	35.74	47.41
Uncorrected average		22.56	30.03	55.17				45.08	49.21

Note;
****Unusual result - not included in calculations***

Exposure dates		Site									
		2a, Romsey Rd	22 Romsey Rd	28 High St.	28 High St.	28 High St. average	65, High St	2 Gosport Lane	South View Gosport Lane	Park Hotel	A35 Baytree Cottage
05/01/2012	03/02/2012	51.02	32.72	37.64	39.18	38.41	47.25	44.04	13.62	32.14	35.45
03/02/2012	02/03/2012	46.87	32.78				46.66	47.36	45.74	33.15	38.51
03/03/2012	29/03/2012	39.62	31.13	26.92	42.04	No precision	43.36	47.73	26.41	37.12	23.27
29/03/2012	27/04/2012	42.54	28.84	28.41	32.56	30.48	38.27	43.71	43.99	26.59	29.14
27/04/2012	30/05/2012	43.48	26.94	26.65	24.43	25.54		41.19	36.1	22.65	28.89
30/05/2012	28/06/2012	31.55		23.94	24.06	24.00	26.75	38.65	26.75		26.31
28/06/2012	03/08/2012	39.25		23.62	24.92	24.27	26.61		32.88	20.69	27.37
03/08/2012	31/08/2012	41.87	31.78	27.58	29.69	28.63	31.65	40.49	38.16	21.5	29.48
31/08/2012	27/09/2012	45.21	30.97				41.69	40.14	45.7	26.31	35.04
27/09/2012	02/11/2012	40.43	33.42	30.43	33.3	31.86	38.32	38.26	22.52	30.04	29.15
02/11/2012	28/11/2012	46.02	29.73	31.44	32.33	31.88	43.06	41.18	44.22	30.89	36.38
28/11/2012	02/01/2013	33.16	25.88	24.92	27.63	26.27	42.23	26.08	38.25	29.44	34.15
Uncorrected average		41.98	30.42			30.37 (annualised)	39.92	40.80	36.75	28.98	31.43

Note;
****Unusual result - not included in calculations***

Totton

Exposure dates		Site					
		Reynolds Dale	Junction Rd (Analyser)	(Analyser)	(Analyser)	Analyser average	30, Junction Rd
06/01/2012	03/02/2012	28.09	31.02	37.51	38.68	35.74	42.46
03/02/2012	27/02/2012	24.87	38.24	37.69	39.72	38.55	45.70
27/02/2012	28/03/2012	24.22	38.03	38.07	38.72	38.27	37.61
28/03/2012	24/04/2012	20.38	28.98	28.64	30.24	29.29	32.47
24/04/2012	30/05/2012	16.77	27.3	25.26	27.23	26.60	28.89
30/05/2012	28/06/2012	16.40	24.43	29.22	21.31	24.99	24.57
28/06/2012	01/08/2012	17.95	26.03	25.81	27.12	26.32	23.16
01/08/2012	29/08/2012	20.25	29.3	30.81	28.42	29.51	26.92
29/08/2012	28/09/2012	23.51	30.95	28.38	28.51	not used poor automatic monitor result	32.40
28/09/2012	02/11/2012	23.72	34.54	33.35	36.61	34.83	34.56
01/11/2012	29/11/2012	28.02	39.19	38.47	39.54	39.07	39.30
29/11/2012	03/01/2013	25.31	37.80	25.65	32.61	32.02	32.75
Uncorrected average		**22.87**				**32.89**	**34.33**

Exposure dates		Site						
		23, Junction Rd	25, Junction Road	26, Rumbridge St.	2, Eling Lane	Elingfield Court, High St.	55, High St.	114, Commercial Rd
06/01/2012	03/02/2012	48.55	29.48	42.98	39.88	40.46	37.92	40.60
03/02/2012	27/02/2012	48.66	41.49	45.65	44.26	39.20	38.74	41.87
27/02/2012	28/03/2012	45.90	32.75	39.74		40.28	41.00	36.50
28/03/2012	24/04/2012	39.54	27.92	34.16	34.35	34.27	34.99	35.65
24/04/2012	30/05/2012	36.17	25.56	30.86	35.69	27.17	25.16	26.90
30/05/2012	28/06/2012	41.01	23.83	26.45	32.25	29.18	20.97	24.18
28/06/2012	01/08/2012	32.64	24.86	26.11	31.81	29.21	23.72	23.08
01/08/2012	29/08/2012	42.85	27.23	25.51	37.92	35.18	29.57	29.05
29/08/2012	28/09/2012	43.68	30.08	34.55	34.32	33.49	25.86	26.28
28/09/2012	02/11/2012	40.10	31.05	39.72	38.48	32.84	35.91	36.26
01/11/2012	29/11/2012	51.68	39.20	*0.21	42.70	40.44	40.60	42.84
29/11/2012	03/01/2013	38.92	32.96	56.93	36.40	33.69	33.40	27.49
Uncorrected average		**43.36**	**31.04**	**37.65**	**37.63**	**35.11**	**33.1**	**33.42**

Note;
****Unusual result - not included in calculations***

Exposure dates		Sites							
		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
06/01/2012	03/02/2012	35.42	25.78	42.18	42.49	44.06	34.6	40.29	35.52
03/02/2012	27/02/2012	38.1	31.65	44.29		45.05		39.17	40.23
27/02/2012	28/03/2012		32.56	40.86	42.5	46.59	32.87	39.52	24.96
28/03/2012	24/04/2012	27.79	21.17	32.76		34.36	29.94	31.49	30.66
24/04/2012	30/05/2012	20.89	19.51		27.09	27.12	22.04	20.16	11.98
30/05/2012	28/06/2012	19	18.26		31.51	27.07		19.08	20.68
28/06/2012	01/08/2012	21.08	16.63	25.52	12.69	28.63	18.28	19.49	21.9
01/08/2012	29/08/2012	23.42	19.39	27.56	34.81	34.77		19.72	21.5
29/08/2012	28/09/2012	23.94	19.45	24.36		33.45		28.18	28.33
28/09/2012	02/11/2012	28.95	25.1	35.93	36.51	34.36	31.3	33.19	26.31
01/11/2012	29/11/2012	39.73	30.2	39.39	38.26	42.79	32.48	38.51	31.92
29/11/2012	03/01/2013	19.09	21.36	28.96	42.71	36.11	25.76	33.94	32.43
Uncorrected average		27.64	24.04	35.14	39.02 (annualised)	36.89	23.59 (annualised)	31.21	29.19

Note;
**Unusual result - not included in calculations*

Other Sites

Exposure dates		Site					
		Bilberry Drive	Shorefield Road	Magazine Lane (Analyser)	(Analyser)	(Analyser)	Analyser average
04/01/12	02/02/2012	21.67	26.25	22.38	22.91	20.94	22.08
02/02/12	27/02/2012	23.55	30.64	28.83	27.52	30.71	29.02
22/02/12	26/03/2012	19.57	23.67	22.24	22.42	21.46	22.04
26/03/12	24/04/2012	18.2	23.61	20.6	18.26	20.46	19.77
24/04/12	29/05/2012	12.79	16.9	16.59	14.15	15.76	15.5
29/05/12	27/06/2012	9.55	14.65	11.25	11.43	11.8	11.49
27/06/12	01/08/2012	8.32	12.12	9.57	10.55	10.84	10.32
01/08/12	29/08/2012	9.11	14.68	12.08	13.04	11.85	not used automatic monitor data poor
29/08/12	28/09/2012	11.57	18.02	10.65	14.73	14.06	not used automatic monitor data poor
28/09/12	01/11/2012	18.67	21.18	20.39	19.95	18.77	19.7
01/11/12	29/11/2012	15.26	28.73	24.31	24.45	22.55	23.77
29/11/12	02/01/2013	18.86	18.3	16.28	16.56	20.36	17.73
Uncorrected average		16.25	21.51				20.12

Exposure dates		Sites								
		Broadwalk Way	Autumn Road	Marchwood School	Holbury School	Holbury School	Holbury School average	Jubilee Hall, Fawley	Beaulieu	Rockbourne
04/01/12	02/02/2012	23.76	22.73	24.93	17.16	16.45	16.8	20.01	16.03	13.17
02/02/12	27/02/2012	31.67	28.94	25.59	20.57	20.5	20.53	24.17	16.99	12.06
22/02/12	26/03/2012	26.62	21.97	23.03	19.06	20.09	19.57	23.96	17.57	13.11
26/03/12	24/04/2012	20.54	20.68	22.15	13.41	13.44	13.42	17.28	11.66	8.05
24/04/12	29/05/2012	18.9	15.28	14.73	9.98	9.76	9.87		1.21	7.36
29/05/12	27/06/2012	12.85	12.26	15.54	8.71	8.52	8.61	8.99	8.12	5.65
27/06/12	01/08/2012	10.78	9.65	15.87	6.44	6.4	6.42	9.42	6.47	7.42
01/08/12	29/08/2012	13.37	11.12	18.45	9.09	9.32	9.2	10.81	8.68	4.86
29/08/12	28/09/2012	16.02	12.39	17.69	10.08	10.19	10.13	12.57	9.81	7.2
28/09/12	01/11/2012	19.62	20.28	22.23	14.13	13.74	13.93	16.84	12.23	10.48
01/11/12	29/11/2012	25.89	24.04	26.03	16.59	15.26	15.92	19.17	12.61	11.16
29/11/12	02/01/2013	18.08	22.29	17.96	12.59	13.19	12.89	15.53	12.51	9.82
Uncorrected average		20.66	19.27	20.75			13.72	16.93	12.57	9.66

Exposure dates		Sites			
		Stoney Cross	Stoney Cross	Stoney cross average	Chaffey Close
06/01/12	03/02/2012	42.59	40.25	41.42	32.36
03/02/12	29/02/2012	43.09	42.51	42.80	30.34
29/02/12	28/03/212	40.29	35.42	37.85	33.21
28/03/12	25/04/2012	38.84	40.56	39.70	24.67
25/04/12	30/05/2012	29.48	30.35	29.91	20.62
30/05/12	26/06/2012	31.28	30.21	30.74	
26/06/12	01/08/2012	33.38	34.14	33.76	
01/08/12	29/08/2012	32.60	32.68	32.64	22.73
29/08/12	24/09/2012	46.38	45.72	46.05	21.81
24/09/12	02/11/2012	*18.36	40.31	40.31	21.8
02/11/12	29/11/2012	35.09	32.70	33.89	31.72
29/11/12	04/01/2013	33.78	37.43	35.60	23.06
Uncorrected average				37.36	26.23

Note;
****Unusual result - not included in calculations***

Data highlighted in yellow was removed from calculations on the advice of the Defra Air Quality Helpdesk, due to suspect results from other Local Authorities using Gradko International diffusion tubes 20% TEA in water preparation method.