2011 Air Quality Progress Report for New Forest District Council

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

(August, 2011)

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Executive Summary

This is the Progress Report for air quality for New Forest District Council.

The conclusions are based on monitoring data collated and ratified over 2010 and following criteria laid out in Technical Guidance[1] produced by Defra.

Diffusion tube and automatic monitoring has shown an exceedence of the annual mean objective for nitrogen dioxide at 4 locations within the Lyndhurst Air Quality Management Area, and at a further location outside the Air Quality Management Area in Shrubbs Hill Road, Lyndhurst. Shrubbs Hill Road was identified as an exceedance in 2009 and New forest District Council is currently working towards producing a Detailed Assessment for this location.

The Detailed Assessment for Pitmore Lane, Sway (particulate matter objectives due to poultry farms and a waste transfer station) has been completed and will be submitted to Defra in due course.

Detailed Assessments for Queen Street, Lymington and Gosport Lane, Lyndhurst (nitrogen dioxide annual objective due to traffic) identified in 2009 Progress Report have not been undertaken following advice from the Local Air Quality Management Helpdesk.

The Progress Report has concluded that the current Air Quality Management Areas in Totton and Lyndhurst with respect to nitrogen dioxide (annual mean objective) should remain. The associated Action Plans for the Air Quality Management Areas will continue to be progressed.

The feasibility of a number of transport schemes within the Totton and Lyndhurst Action Plans have been undertaken, however it is acknowledged that the majority of such schemes will not be progressed due to feasibility or funding issues. A number of smarter options require progression.

It is acknowledged that monitoring throughout Totton showed a decrease in nitrogen dioxide concentrations resulting in no exceedences of the nitrogen dioxide annual mean objective within the Air Quality Management Area for a second consecutive year. The current Air Quality Management Area will not be revoked for the time being due to the requirement to collate further monitoring data and the potential development of a large brown field site adjacent to the Air Quality Management Area.

The Action Plan for Fawley has progressed well due mainly to changes in permit conditions for the Esso Refinery. There have been no further exceedances of the 15-min mean objective for sulphur dioxide since 2005. Therefore New Forest District Council will be proceeding to a Detailed Assessment with a view to revoke the Air Quality Management Area. This action is supported by the Environment Agency who regulate the refinery.

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1 Introduction

1.1 Description of Local Authority Area

The New Forest District lies to the south-western corner of Hampshire, between the large conurbations of Southampton and Christchurch/Bournemouth and Poole. The District covers 75,100 hectares (290 sq. miles) and has a diverse environment, including the New Forest (and associated New Forest National Park) that covers approximately three quarters of the district comprising of mainly protected heathlands and forests, and a coastline of 64km. Despite the district's largely rural character, it also contains a number of towns and villages. The total population of the District is 169,331[2].

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

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 Local Air Quality Management (LAQM) in England are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

Table 1.1 Air Quality Objectives

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

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

Table 1.2 Table Outlining Previous Air Quality Reports

Year	Report	Outcomes
1998	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.
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
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

continued . . .

Year	Report	Outcomes
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.

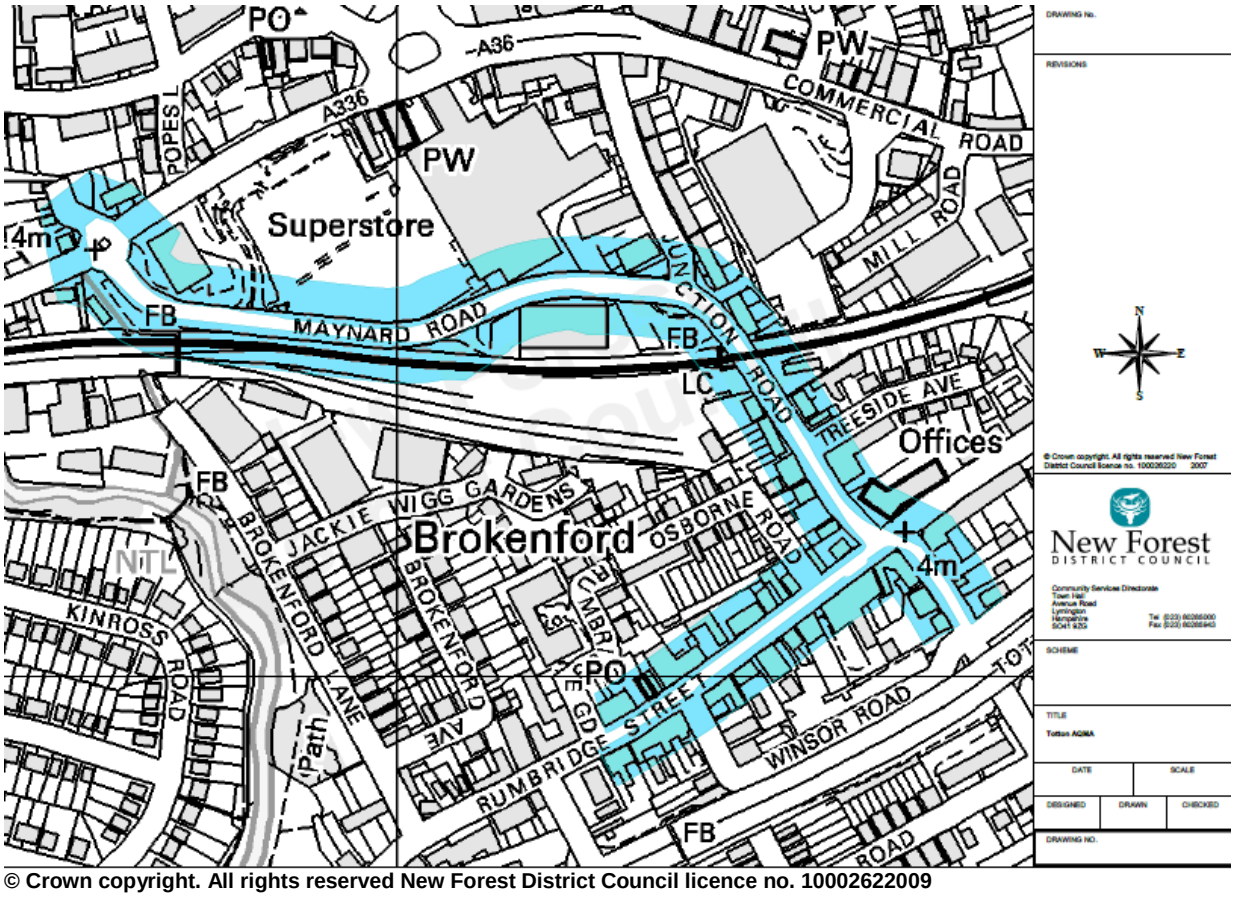
Current Air Quality Management Areas

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

Totton

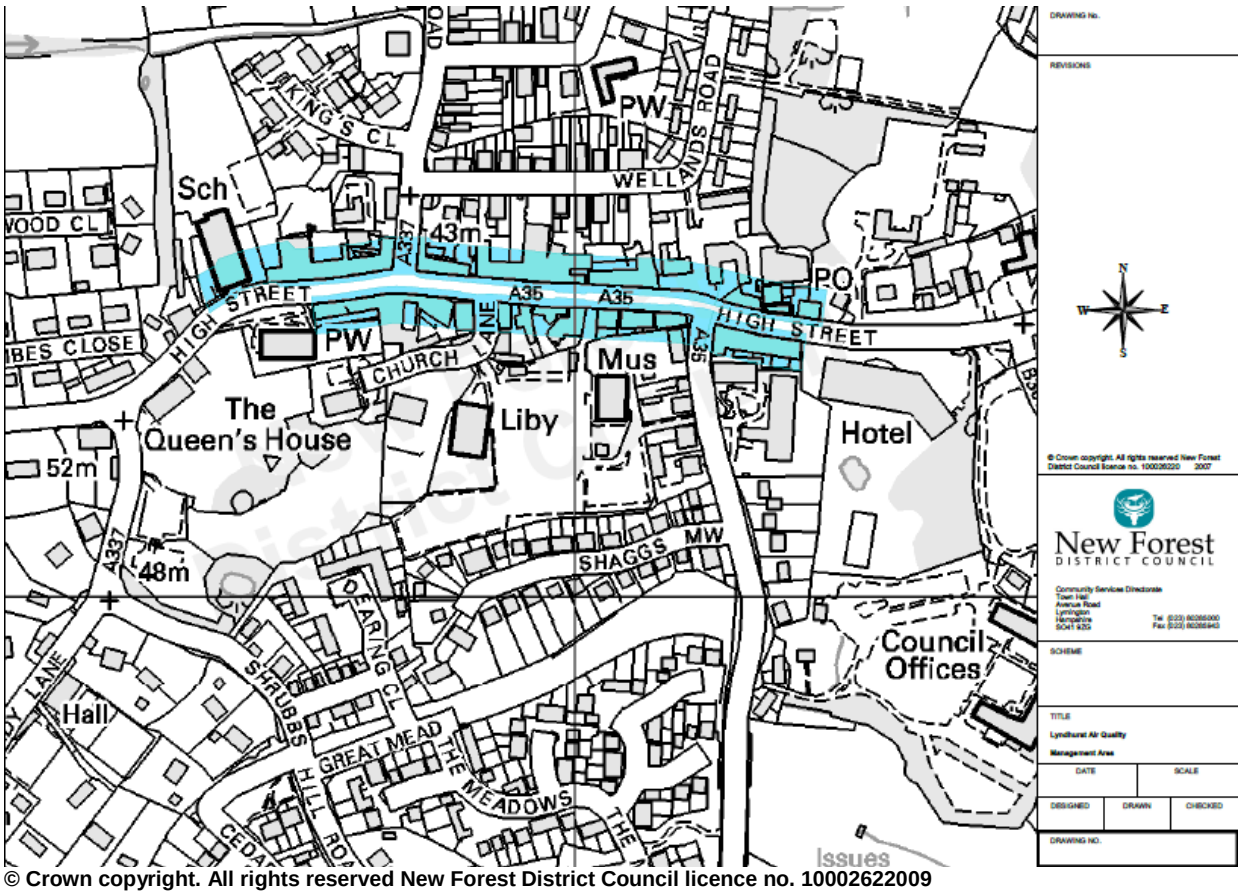
Air Quality Management Area (Figure 1.1) declared with respect to likely exceedence of the annual mean objective for nitrogen dioxide.

Figure 1.1 Totton Air Quality Management Area



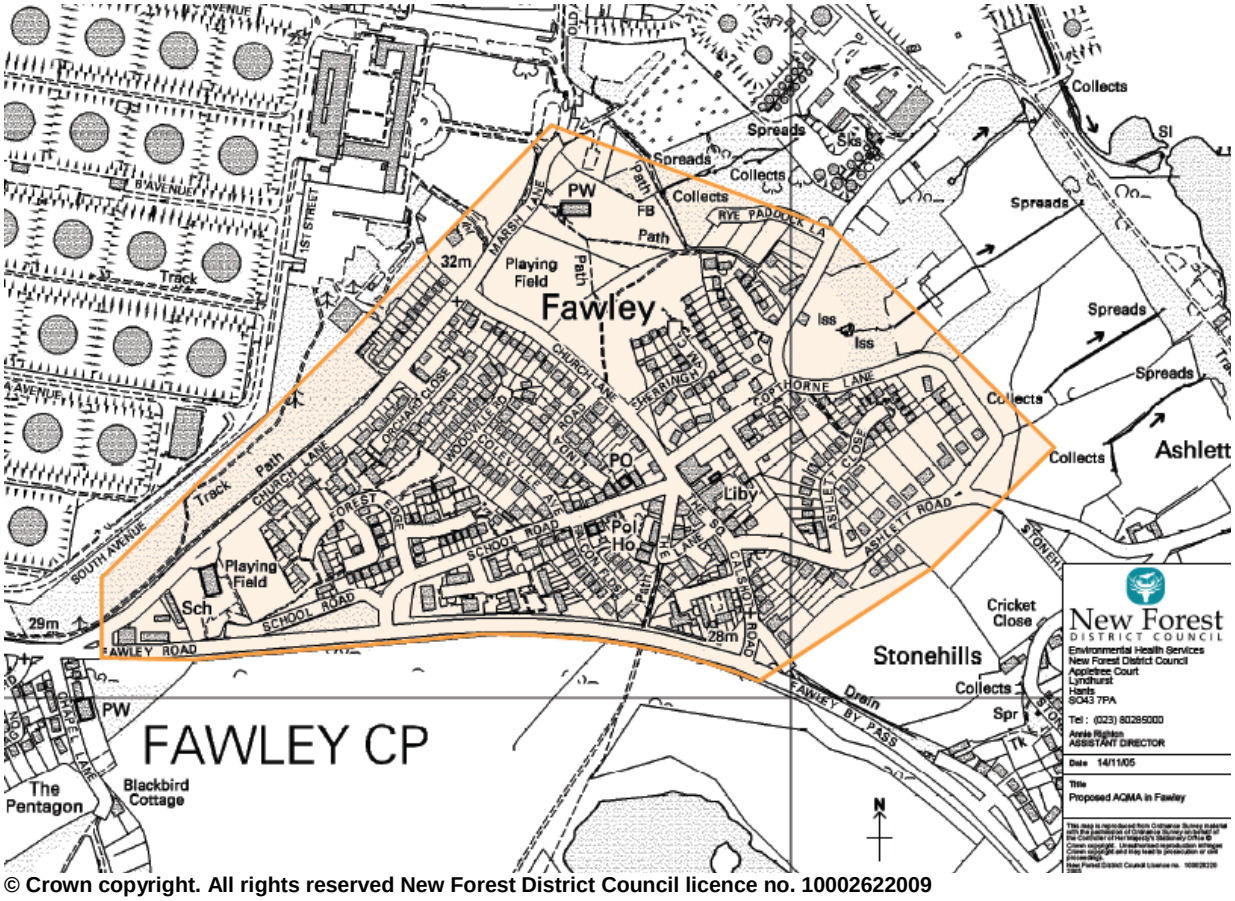
Lyndhurst
Air Quality Management Area (Figure 1.2) declared with respect to likely exceedence of the annual mean objective for nitrogen dioxide.

Figure 1.2 Lyndhurst Air Quality Management Area



Fawley
Air Quality Management Area (Figure 1.3) declared with respect to likely exceedence of the 15 minute mean objective for sulphur dioxide.

Figure 1.3 Fawley Air Quality Management Area



Locations not proceeding to an Air Quality Management Area

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) have determined there was no requirement to proceed to an Air Quality Management Area. These locations are shown in Table 1.3.

Table 1.3 Table Outlining Areas of Previous Interest

Location	Pollutant	Year of Investigation
Holbury and Fawley	Benzene	2004
Totton (outside AQMA)	NO_2	2009
Stoney Cross (A31)	NO_2	2010

Revoked Air Quality Management Areas

No Air Quality Management Areas have currently been revoked.

Progress of current local air quality management reports

As outlined in Table 1.2 there are a number of air quality reports currently being undertaken due to the likely exceedances of air quality objectives as determined through monitoring or previous air quality assessments. Table 1.4 summarises the progress of current Detailed Assessment or Further Assessment reports.

Table 1.4 Progress of Current Air Quality Reports

Location	Pollutant	Report	Progress	Comments
Lymington	NO_2	Detailed Assessment (DA)	Further monitoring completed	Conclusions incl. in this Progress Report. No requirement for DA.
Lyndhurst (Gosport Lane)	NO_2	Detailed Assessment (DA)	Further monitoring completed	Conclusions incl. in this Progress Report. No requirement for DA.
Lyndhurst (Shrubbs Hill Rd)	NO_2	Detailed Assessment (DA)	Further monitoring completed	Conclusions incl. in this Progress Report. Submission of DA in 2011.
Sway	PM_{10}	Detailed Assessment (DA)	Completed	Submission of DA in September 2011. Likely exceedance of the 24hr mean objective.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

New Forest District Council operated 5 automatic monitoring sites during 2010. This included a site in Sway which was operational between June 2010 and November 2010 for the purposes of completing a Detailed Assessment following the Updating and Screening Assessment 2008 with regards to particulate matter. The Sway site details have been listed for completeness however the results and conclusions have been reported independently of this Progress Report within a Detailed Assessment (due for submission to Defra).

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.

The details of all the automatic monitoring sites which were operational during 2010 are listed in Table 2.1.

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

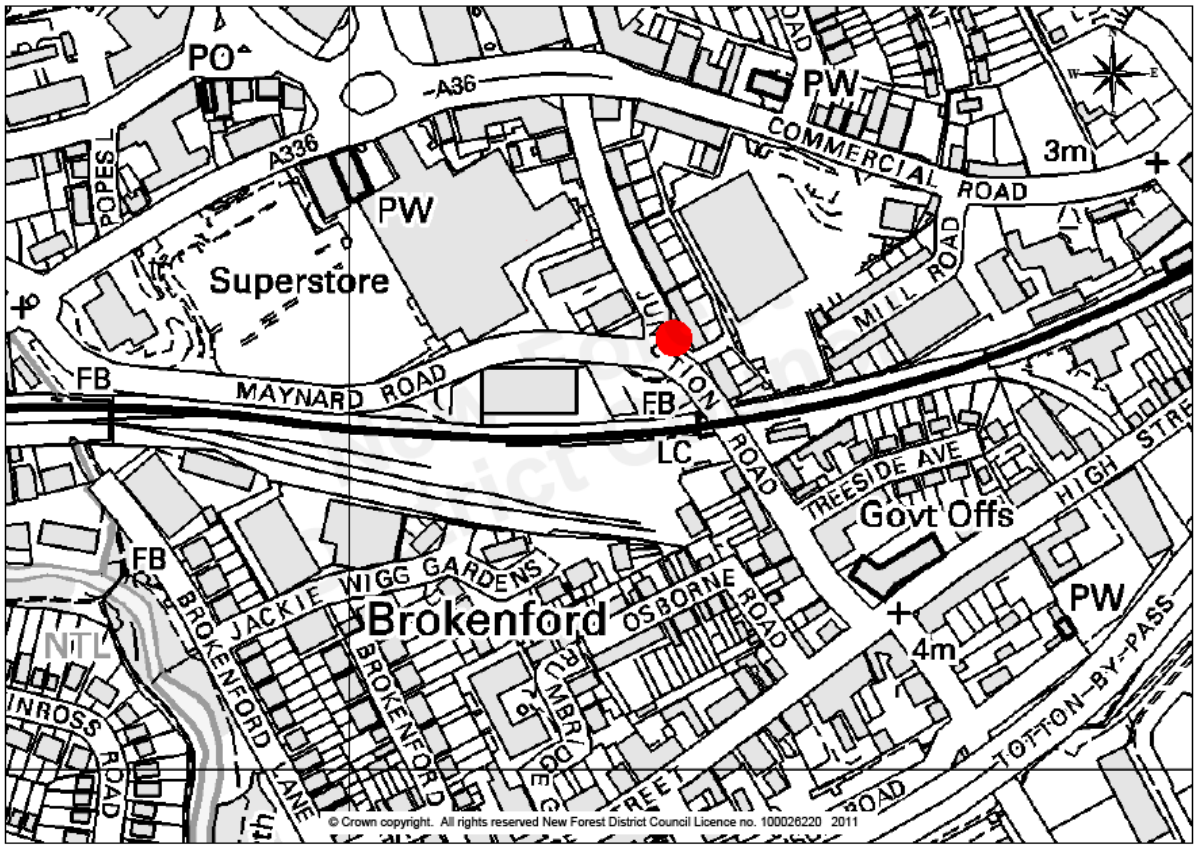
Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m) *(N/A if not applicable)*	Worst-case Location?
Totton	Roadside	436188 113237	NO_2 PM10	Y	N (5)	1.5	N
Lyndhurst	Kerbside	429859 108204	NO_2	Y	Y (1)	0.6	Y
Fawley	Industrial	445885 103248	SO_2	Y	Y (5)	N/A	Y
Holbury	Industrial	442948 103932	SO_2 PM10	N	Y (8)	N/A	N
Marchwood	Industrial	439075 111152	NO_2 PM10	N	Y (15)	N/A	N
Sway	Other	429597 197191	PM10	N	Y (1)	N/A	Y

Totton

The Totton site (Figure 2.1) 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.

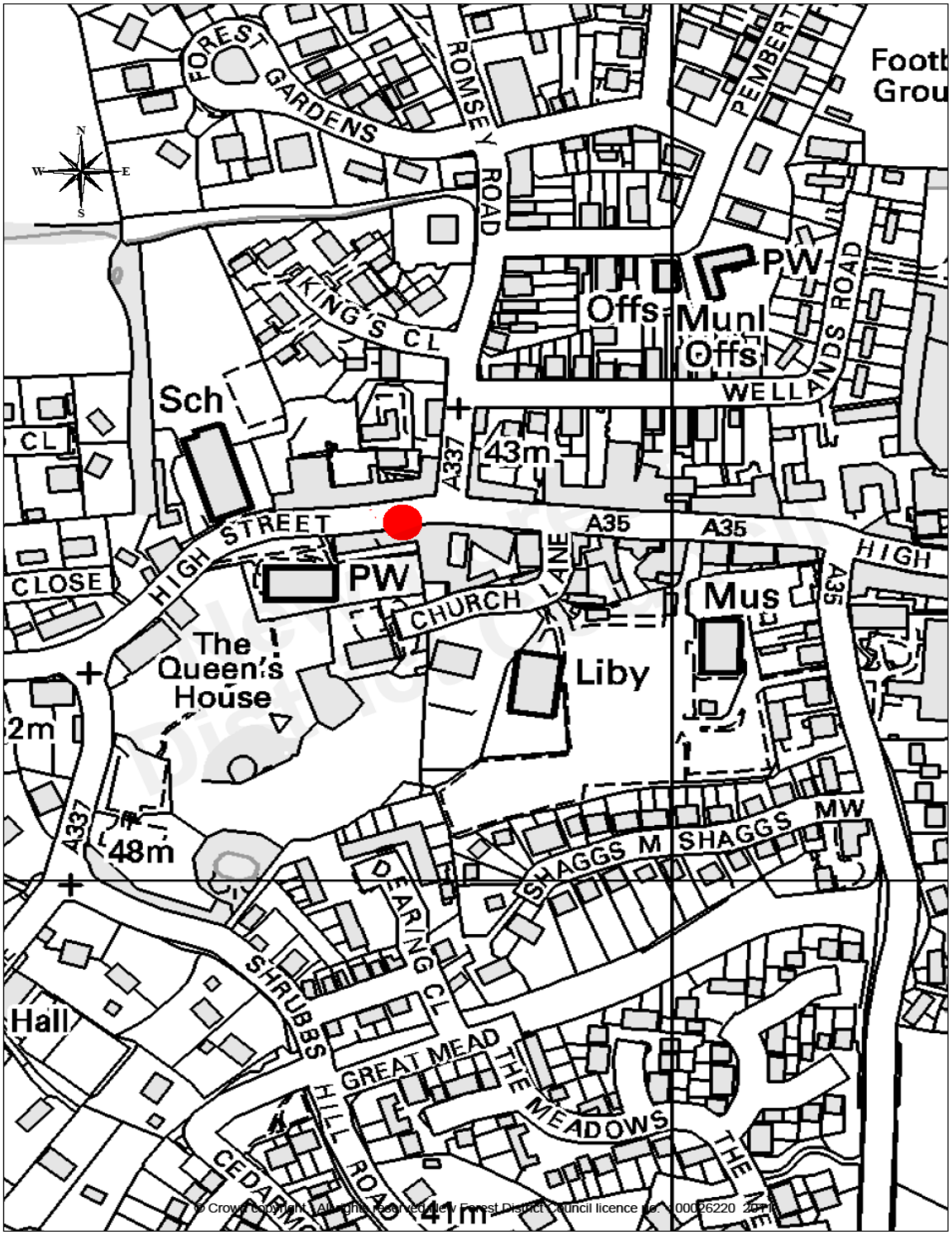
Figure 2.1 Totton Automatic Monitoring Location



Lyndhurst

The Lyndhurst site (Figure 2.2) 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.

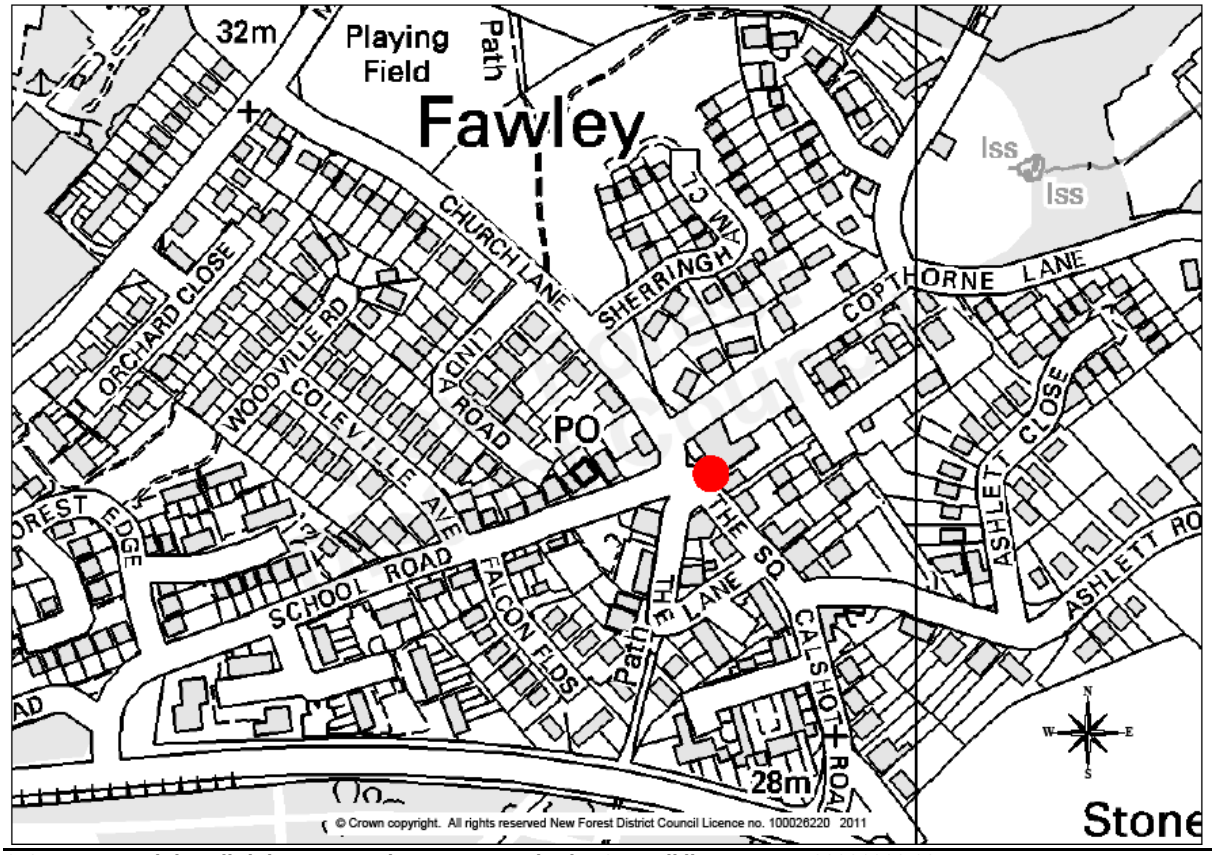
Figure 2.2 Lyndhurst Automatic Monitoring Location



Fawley

The Fawley site (Figure 2.3) 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.

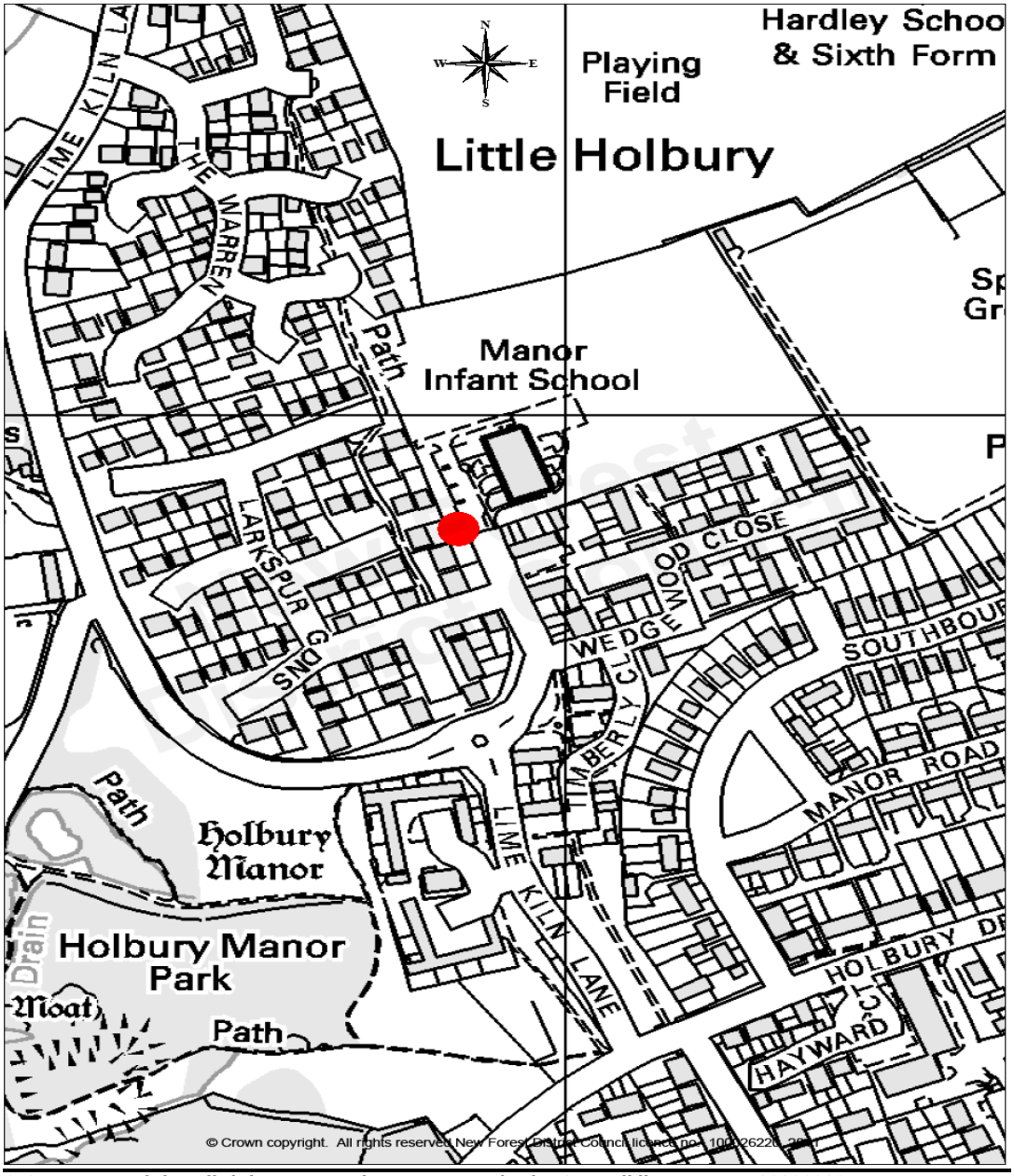
Figure 2.3 Fawley Automatic Monitoring Location



Holbury

The Holbury site (Figure 2.4) 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.

Figure 2.4 Holbury Automatic Monitoring Location

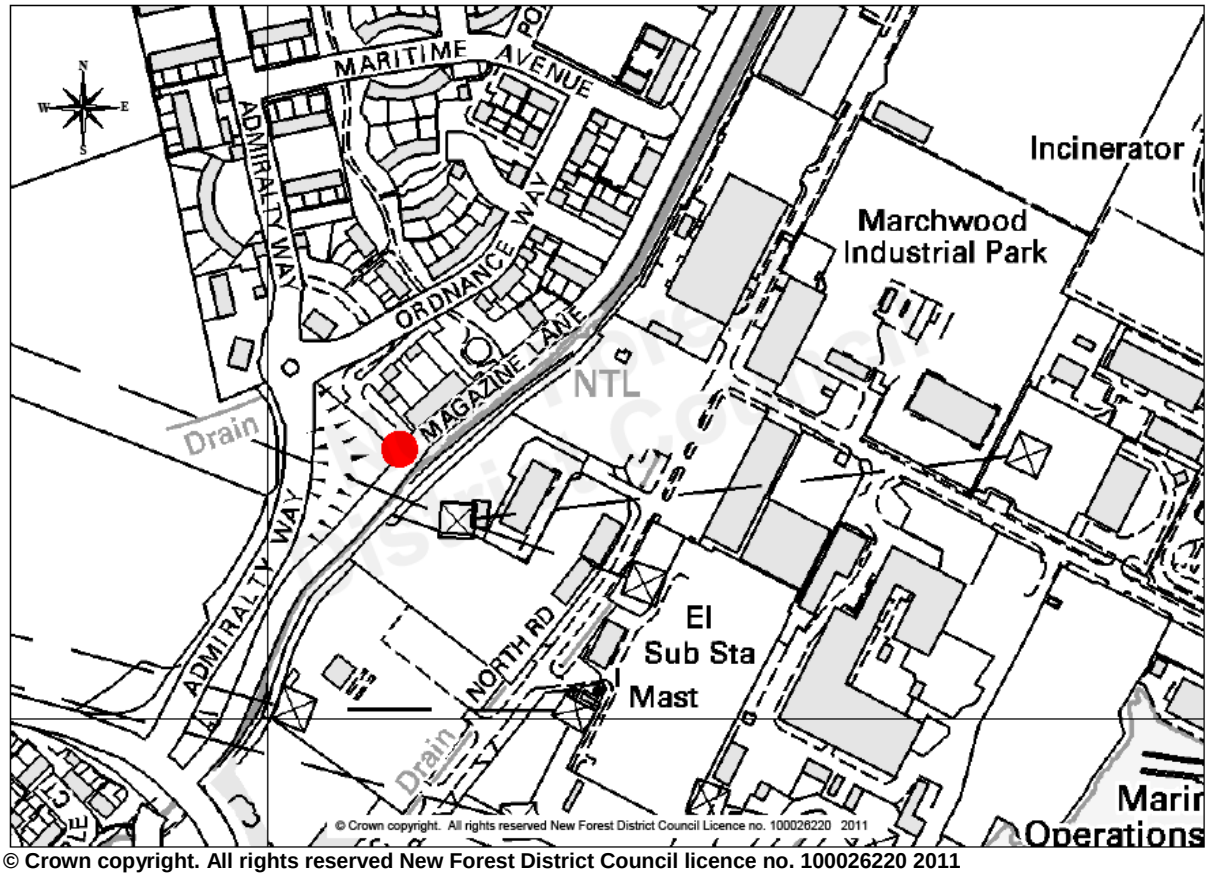


Marchwood

The automatic site at Marchwood (Figure 2.5) 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.

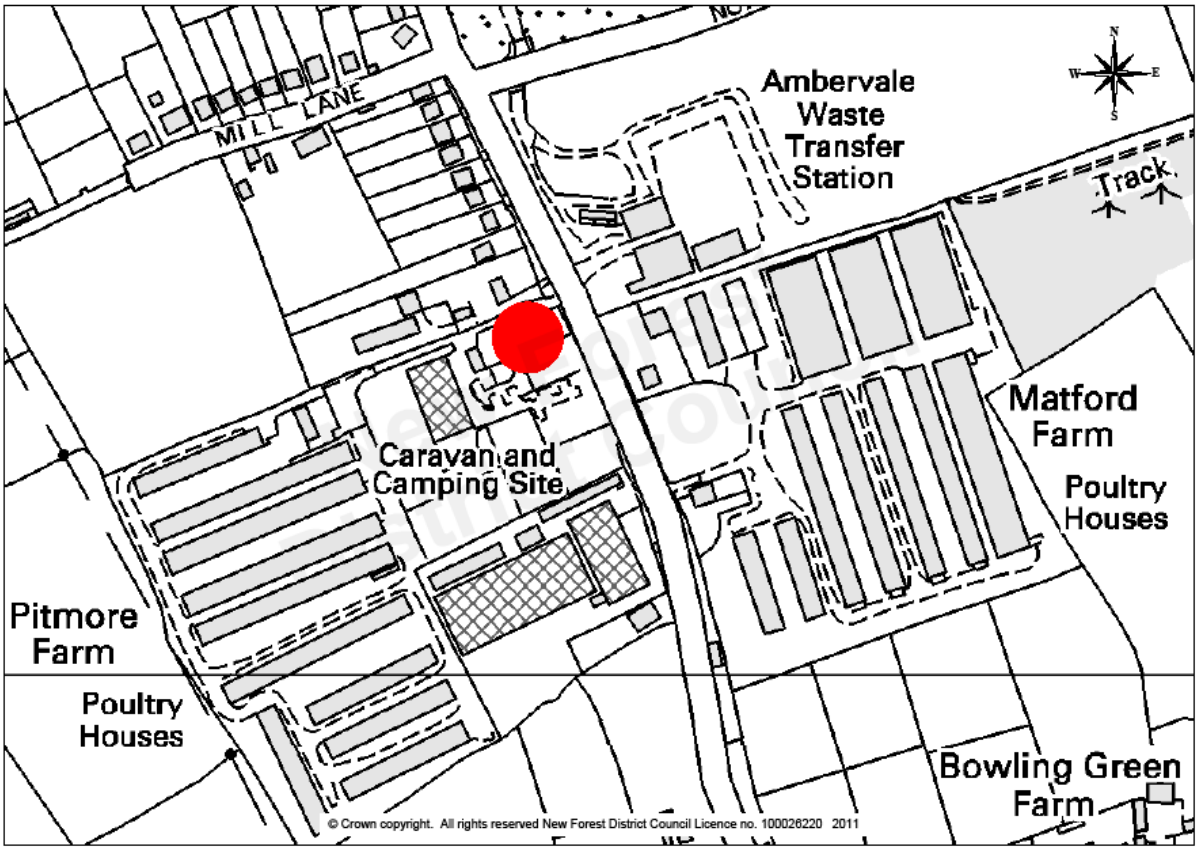
Figure 2.5 Marchwood Automatic Monitoring Location



Sway

The site at Sway (Figure 2.6) was installed for the purposes of obtaining monitoring data for a Detailed Assessment. The site was operational between June 2010 and November 2010 and was located at a residential property close to two poultry farms and a waste transfer station. The site was representative of relevant public exposure.

Figure 2.6 Sway Automatic Monitoring Location



2.1.2 Non-Automatic Monitoring Sites

Diffusion tubes are used throughout the New Forest district to monitor nitrogen dioxide concentrations. During 2010 the Authority exposed 61 diffusion tubes over 52 sites, which included 3 triplicate and 3 duplicate co-located sites.

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.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site ID	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m) *(N/A if not applicable)*	Worst-case Location?
Lyndhurst								
Lyndhurst Rd, Goose Green	1	Kerbside	429991 107583	NO_2	N	N (4)	0.4	Y
1, Foxlease Terrace, Shrubbs Hill Rd	2	Roadside	429928 107687	NO_2	N	Y(1)	1.5	Y
Shrubbs Hill Rd	3	Roadside	429934 107698	NO_2	N	N (9)	2.2	Y
The Orchards, Shrubbs Hill Rd	4	Roadside	429895 107770	NO_2	N	Y (1)	3.3	Y
Shrubbs Hill Rd	5	Roadside	429758 107972	NO_2	N	N (13)	2	Y
Little Queens, Shrubbs Hill Rd	6	Roadside	429689 108111	NO_2	N	Y (1)	6	Y
Queens House	7	Roadside	429710 108128	NO_2	N	N (25)	5	Y
School, High St.	8	Roadside	429767 108205	NO_2	Y	Y (1)	6	Y
15, High St.	9	Kerbside	429864 108213	NO_2	Y	Y (1)	1.25	Y
14, High St. (analyser)	10-12	Kerbside	429858 108205	NO_2	Y	Y (1)	0.9	Y
16, High St.	13	Kerbside	429875 108207	NO_2	Y	Y (1)	1.55	Y
2a, Romsey Rd	14	Roadside	429891 108245	NO_2	Y	Y (2)	2	Y
12, Romsey Rd (site removed 2011)	15	Roadside	429904 108310	NO_2	N	Y (1)	6	Y
22, Romsey Rd	16	Roadside	429911 108402	NO_2	N	N (1)	2.3	Y
28, High St.	17-18	Roadside	429933 108200	NO_2	Y	N (4)	4	Y
65, High St.	19	Roadside	430026 108206	NO_2	Y	Y (1)	1.8	Y
2, Gosport Lane	20	Roadside	430079 108147	NO_2	N	Y (1)	2.2	Y
South View, Gosport Lane (from 2011)	15	Roadside	430092 108077	NO_2	N	N	2	Y
Lyndhurst Park Hotel	21	Roadside	430162 108173	NO_2	N	N (5)	1.88	Y
Baytree Cottage, Bournem'th Rd	22	Roadside	429169 108129	NO_2	N	N (6)	2	N

Site Name	Site ID	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m) *(N/A if not applicable)*	Worst-case Location?
Totton								
Reymolds Dale (opp 8)	41	Suburban	434753 112101	NO_2	N	N (11)	N/A	N
68, Junction Rd	42	Urban centre	436157 113235	NO_2	N	N (3)	2	N
Junction Rd (analyser)	43-45	Roadside	436189 113235	NO_2	Y	N (7)	2	Y
30, Junction Rd	46	Kerbside	436210 113210	NO_2	Y	N (3)	1	Y
23, Junction Rd	47	Kerbside	436236 113153	NO_2	Y	N (3)	1	Y
25, Junction Rd	48	Roadside	436232 113156	NO_2	Y	Y (1)	4	Y
26, Rumbridge St.	49	Roadside	436205 113019	NO_2	Y	N (8)	1.5	Y
2, Eling Lane	50	Roadside	436307 113077	NO_2	Y	Y (1)	2	Y
Elingfield Court, High St.	51	Roadside	436383 113135	NO_2	N	N (3)	2	Y
55, High St.	52	Roadside	436476 113214	NO_2	N	Y (1)	4	Y
114, Commercial Rd	53	Kerbside	436364 113322	NO_2	N	N (25)	1	Y
34, Salisbury Rd	54	Roadside	435786 113588	NO_2	N	N (12)	2	Y
7a, Water Lane	55	Roadside	435915 113392	NO_2	N	Y (1)	6	N
83, Ringwood Rd	56	Roadside	435706 113215	NO_2	N	Y (1)	4	Y
Ringwood Rd / Maynard Rd roundab't	57	Roadside	435834 113260	NO_2	Y	N	2	Y
Asda roundab't	58	Roadside	435927 113226	NO_2	Y	N	2	Y
1, Rose Rd	59	Roadside	436374 112929	NO_2	N	N (3)	2	N
31, Bartrum Rd	60	Roadside	436168 112815	NO_2	N	N (14)	2	N
53, Main Rd	61	Roadside	435321 111869	NO_2	N	N	3	Y

Site Name	Site ID	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m) *(N/A if not applicable)*	Worst-case Location?
Other locations								
A31, Stoney Cross	23-24	Roadside	425877 111778	NO_2	N	Y (14)	20	N
Chaffey Close, Ringwood	25	Suburban	416452 105571	NO_2	N	N (6)	56	N
26, Queen Street, Lymington	26	Kerbside	431920 195413	NO_2	N	Y (1)	1	Y
Queen Street, Lymington	27	Kerbside	431926 195379	NO_2	N	Y (1)	1	Y
Rockbourne School	28	Rural	411569 118098	NO_2	N	Y (1)	N/A	N
11, Bilberry Drive, Marchwood	29	Industrial	438500 110629	NO_2	N	Y (5)	N/A	N
Shorefield Rd, Marchwood	30	Industrial	438765 111006	NO_2	N	Y (6)	N/A	N
3 Magazine Lane, Marchwood (adj to)	31-33	Industrial	439075 111152	NO_2	N	Y (15)	N/A	Y
9, Boardwalk Way, Marchwood	34	Industrial	439106 111409	NO_2	N	Y (4)	N/A	Y
Autumn Road, Marchwood	35	Industrial	439174 110367	NO_2	N	Y (5)	N/A	N
Marchwood School, Twiggs Lane	36	Suburban	438363 109694	NO_2	N	Y (1)	25	N
Teachers Way, Holbury	37-38	Industrial	442947 103931	NO_2	N	Y(1)	N/A	Y
Jubilee Hall, The Square, Fawley	39	Industrial	445881 103247	NO_2	Y (for SO2)	Y(1)	N/A	Y
School field, Beaulieu	40	Rural	438836 102115	NO_2	N	Y (1)	N/A	N

A map showing the nitrogen dioxide diffusion tube locations in the New Forest district is shown in Figure 2.7. Figures 2.8 and 2.9 show the locations of the nitrogen dioxide diffusion tubes in Lyndhurst and Totton respectively. The numbers correlate to the diffusion tube site numbers listed in Table 2.2.

Figure 2.7 Nitrogen dioxide diffusion tubes in New Forest district

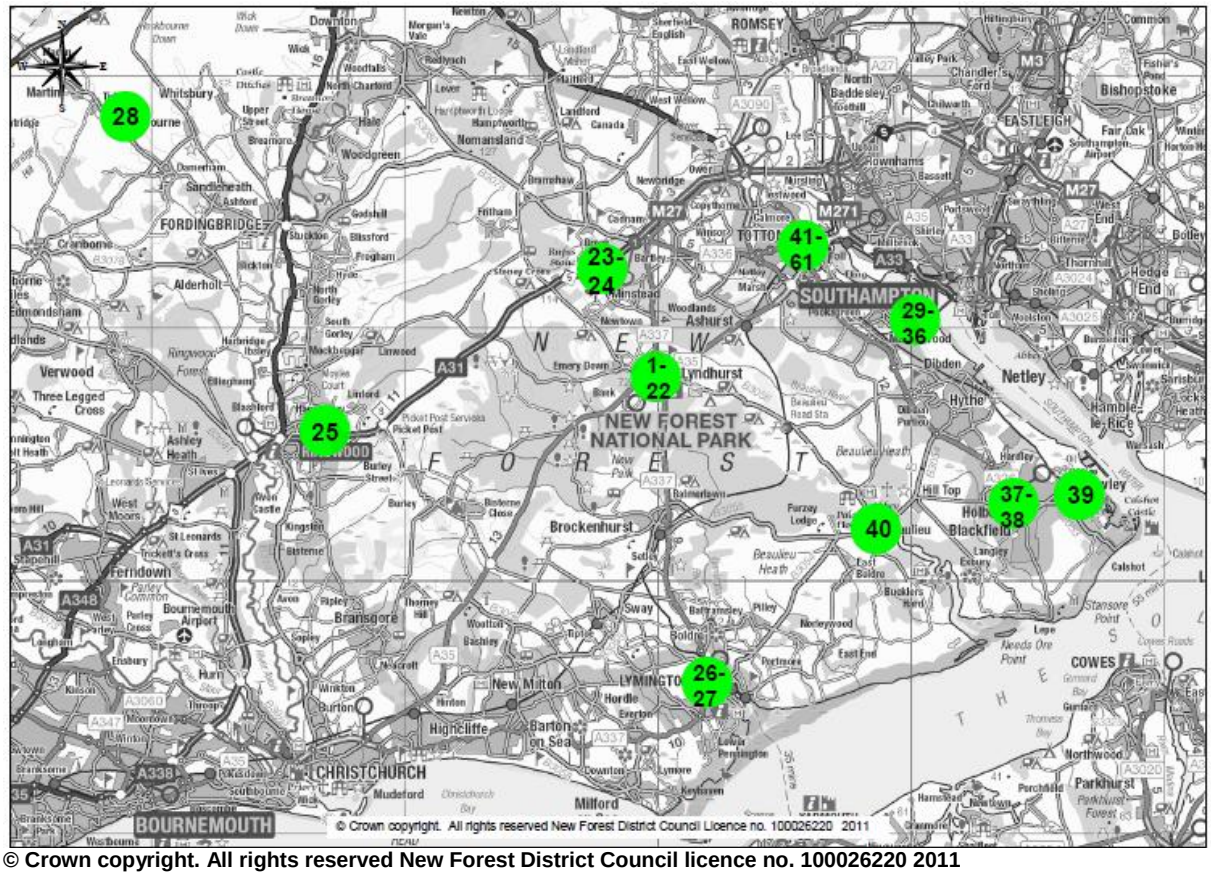
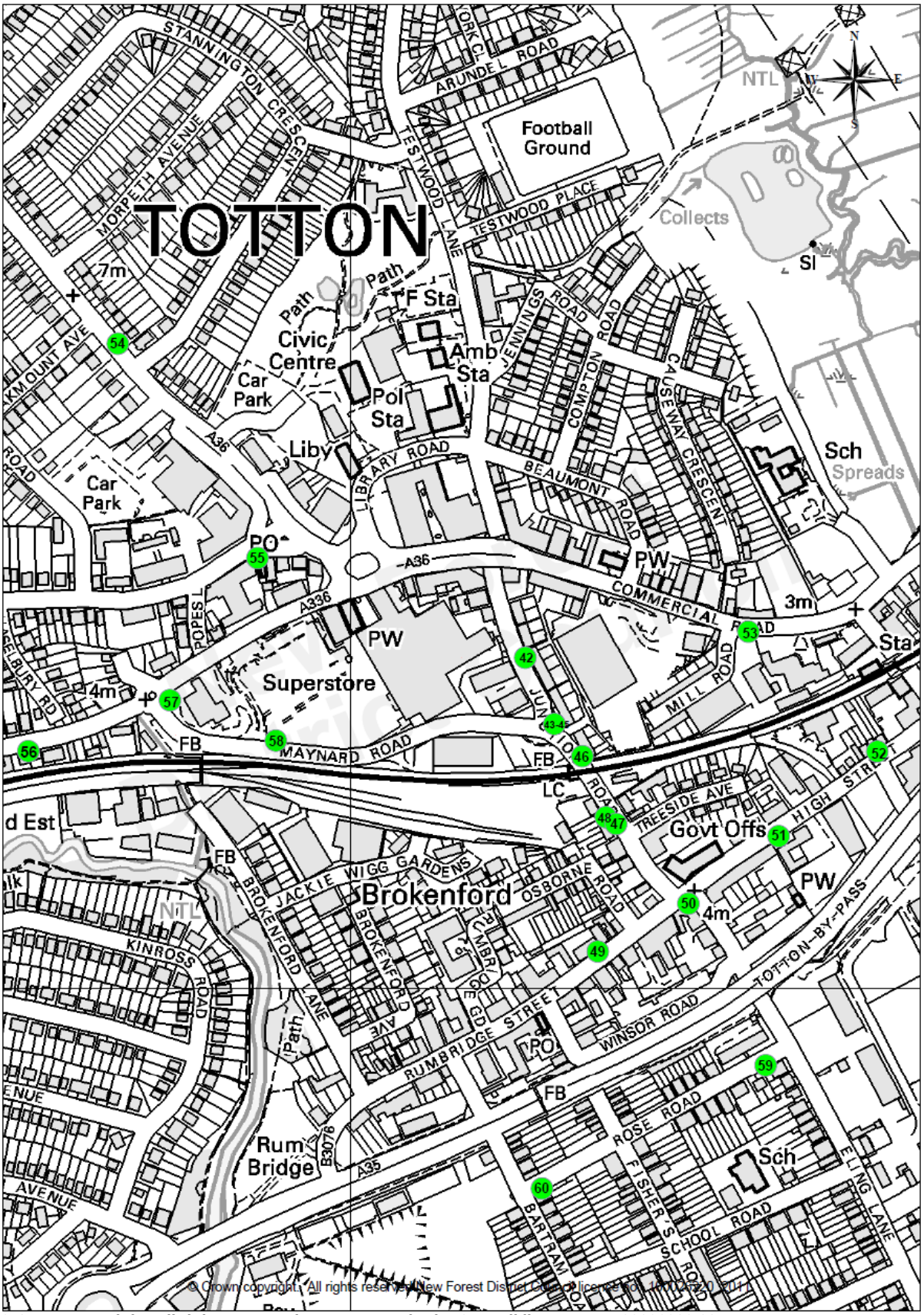


Figure 2.8 Nitrogen dioxide diffusion tubes in Lyndhurst

Figure 2.9 Nitrogen dioxide diffusion tubes in Totton



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 2010 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

As stated in Table 1.1 there are two objectives for nitrogen dioxide, an annual mean and an hourly mean. The annual mean is 40$\mu g/m^3$ and the hourly objective is 200 $\mu g/m^3$ not to be exceeded more than 18 times a year.

During 2010 the automatic site at Lyndhurst monitored an exceedance of the annual mean objective**,** whilst 5 diffusion tube sites in Lyndhurst exceeded the annual mean objective.

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

The results from the automatic nitrogen dioxide monitoring sites for the years 2008 – 2010 are shown in Tables 2.3a and 2.3b, and Figures 2.10a and 2.10b for the monitored trends.

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

Location	Within AQMA?	Proportion of year with valid data 2010 %	Annual mean objective ($\mu g/m^3$)	Annual mean concentrations ($\mu g/m^3$)		
				2008	2009	2010
Lyndhurst	Y	100	40	**46**	**46**	**46**
Totton	Y	94	40	30	28	28
Marchwood	N	97	40	23	19	21

Figure 2.10a Trends in Annual Mean Nitrogen Dioxide Concentrations (objective concentration: 40$\mu g/m^3$)

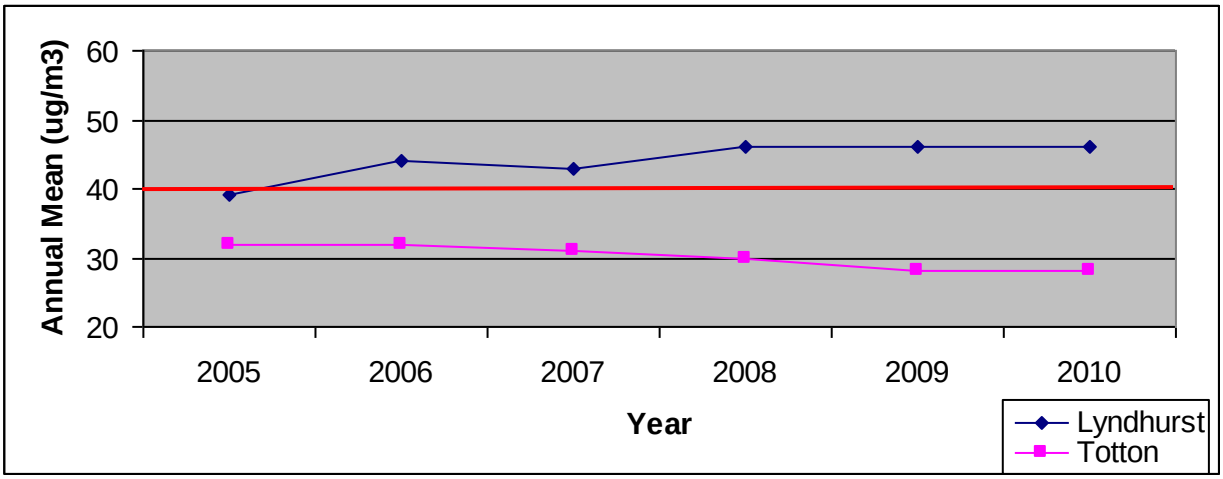
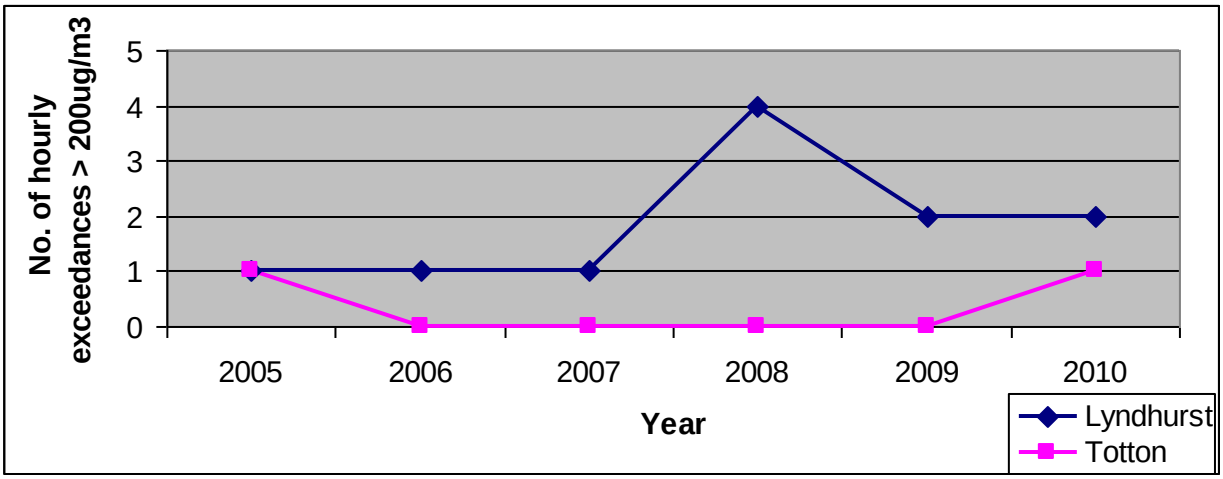


Table 2.3b Results of Nitrogen Dioxide Automatic Monitoring: Comparison with 1-hour Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Hourly objective number of exceedences > 200 $\mu g/m^3$	Number of exceedences of hourly mean (200 $\mu g/m^3$)		
				2008	2009	2010
Lyndhurst	Y	100	18	4	2	2
Totton	Y	94	18	0	0	1
Marchwood	N	97	18	0	0	0

Figure 2.10b Trends in Nitrogen Dioxide Hourly Mean Objective (objective level: 18 hourly exceedances > 200μg/m^3)



The automatic monitoring sites show an exceedence of the annual mean objective at the Lyndhurst site, but no exceedences at the Totton or Marchwood sites. 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 which resulted in the declaration of the air quality management area. Overall there has been a general increase over the monitoring period, with the same monitored concentration over the past three years (2008-2010) of 46μg/m^3. The trend data for Totton shows a slight decrease in the annual mean concentration for nitrogen dioxide since monitoring started in 2005. 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.

Diffusion Tube Monitoring Data

The results from the nitrogen dioxide diffusion tube monitoring sites for 2010 are shown in Table 2.4a, while Table 2.4b shows the results from 2008 - 2010. 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 Appendices B and C.

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

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes 2010

Location	Within AQMA ?	Data Capture 2010 %	Annual mean concentrations 2010 (μg/m^3) Adjusted for bias
Lyndhurst			
Lyndhurst Rd, Goose Green	N	100	24.83
1, Foxlease Terrace, Shrubbs Hill Rd	N	100	33.07
Shrubbs Hill Rd	N	100	33.80
The Orchards, Shrubbs Hill Rd	N	100	**42.62**
Shrubbs Hill Rd	N	100	34.29
Little Queens, Shrubbs Hill Rd	N	100	23.26
Queens House	N	100	23.76
School, High St.	Y	100	26.90
15, High St.	Y	100	***53.67**
14, High St. (analyser - triplicate)	Y	100	***46.36**
16, High St.	Y	100	***44.55**
2a, Romsey Rd	Y	100	***43.63**
22, Romsey Rd	N	85	25.98
28, High St.	Y	100	29.83
65, High St.	Y	100	*36.54
2, Gosport Lane	N	100	39.14
Lyndhurst Park Hotel	N	100	27.20
Baytree Cottage, Bournem'th Rd	N	100	31.33

Note;
Bias corrected using national correction factor 0.92 (2010)
**Bias corrected using a local correction factor of 0.92 (locations within street canyon).*
Appendix B gives the explanation to the use and selection of bias correction factors.

Location	Within AQMA ?	Data Capture 2010 %	Annual mean concentrations 2010 (µg/m^3) Adjusted for bias
Totton			
Reynolds Dale (opp no. 8)	N	92	19.94
68, Junction Rd	N	100	24.10
Junction Rd (analyser - triplicate)	Y	100	27.38
30, Junction Rd	Y	100	27.13
23, Junction Rd	Y	72	32.72
25, Junction Rd	Y	100	26.83
26, Rumbridge St.	Y	85	29.82
2, Eling Lane	Y	100	29.18
Elingfield Court, High St.	N	100	27.63
55, High St.	N	100	29.27
114, Commercial Rd	N	100	27.71
34, Salisbury Rd	N	92	26.71
7a, Water Lane	N	85	21.94
83, Ringwood Rd	N	100	27.90
Ringwood Rd / Maynard Rd roundab't	Y	85	28.56
Asda roundab't	Y	100	28.86
1, Rose Rd	N	100	25.45
31, Bartrum Rd	N	100	24.72
53, Main Rd	N	100	25.95

Note;
Bias corrected using a local correction factor of 0.76.
Appendix B gives the explanation to the use and selection of bias correction factors.

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations 2010 (µg/m^3) Adjusted for bias
Marchwood			
11, Bilberry Drive	N	100	17.99
Shorefield Rd	N	100	25.41
3 Magazine Lane (adj)	N	100	20.92
9, Boardwalk Way	N	100	22.75
Autumn Road	N	100	19.43
Marchwood School, Twiggs Lane	N	100	20.95

Note;
Bias corrected using a local correction factor of 0.89
Appendix B gives the explanation to the use and selection of bias correction factors.

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations 2010 ($\mu g/m^3$) Adjusted for bias
Other locations			
A31, Stoney Cross	N	92	34.73
Chaffey Close, Ringwood	N	100	25.42
Queen Street, Lymington	N	100	35.74
Queen Street / Lymington	N	*23	**34.82
Rockbourne School	N	92	10.78
Teachers Way, Holbury	N	100	15.29
Jubilee Hall, The Square, Fawley	Y (for SO_2)	100	18.10
School field, Beaulieu	N	100	13.16

Note;
Bias corrected using a national correction factor of 0.92 (2010).
** this location had a monitoring tube exposed from September 2010 – May 2011 which equates to 23% data capture during the 2010 monitoring year, however over the exposure period the data capture was 100%. This data was included due to conclusions drawn in the Progress Report 2011 with regards to the monitoring sites in Queen Street, Lymington.*
******* *denotes annualised data determined using Technical Guidance LAQM.TG(09)[1] (Box 3.2) Estimation of annual mean concentrations from short term monitoring data. Monitored data covered the period 28/09/10 – 13/05/11. Calculations shown in Appendix B*

Table 2.4b Results of Nitrogen Dioxide Diffusion Tube 2008 - 2010

Location	Within AQMA?	Annual mean concentrations (μg/m^3) Adjusted for bias		
		2008	2009	2010
Lyndhurst				
Lyndhurst Rd, Goose Green	N	23.97	22.56	24.83
1, Foxlease Terrace, Shrubbs Hill Rd	N	31.56	32.79	33.07
Shrubbs Hill Rd	N	33.78	35.26	33.80
The Orchards, Shrubbs Hill Rd	N	38.92	**40.33**	**42.62**
Shrubbs Hill Rd (Hillmead)	N	32.95	34.21	34.29
Little Queens, Shrubbs Hill Road	N	19.63	22.56	23.26
Queens House	N	21.52	22.98	23.76
School, High St.	Y	28.05	27.67	26.90
15, High St.	Y	**52.34**	**48.92**	**53.67**
14, High St.	Y	**47.02**	**46.42**	**46.36**
16, High St.	Y	**45.12**	**46.83**	**44.55**
2a, Romsey Rd	Y	**41.96**	**42.34**	**43.63**
12, Romsey Rd	N	23.79	24.73	site re-located
22, Romsey Rd	N	28.09	29.06	25.98
28, High St.	Y	30.62	30.95	29.83
65, High St.	Y	35.46	34.00	36.54
2, Gosport Lane	N	36.46	**42.12**	39.14
Lyndhurst Park Hotel	N		25.00	27.20
Baytree Cottage, Bournem'th Rd	N	27.46	29.41	31.33

Location	Within AQMA?	Annual mean concentrations (μg/m^3) Adjusted for bias		
		2008	2009	2010
Totton				
Reymolds Dale (opp 8)	N	21.81	18.01	19.94
68, Junction Rd	N	25.59	21.18	24.10
Junction Rd (analyser)	Y	30.51	27.00	27.38
30, Junction Rd	Y	32.64	27.16	27.13
23, Junction Rd	Y	**42.23**	33.23	32.72
25, Junction Rd	Y		24.54	26.83
26, Rumbridge St.	Y	35.20	26.43	29.82
2, Eling Lane	Y	36.31	28.62	29.18
Elingfield Court, High St.	N	35.29	26.67	27.63
55, High St.	N		26.46	29.27
114, Commercial Rd	N	37.35	28.51	27.71
34, Salisbury Rd	N	31.20	24.33	26.71
7a, Water Lane	N	24.59	19.13	21.94
83, Ringwood Rd	N	36.85	25.68	27.90
Ringwood Rd / Maynard Rd roundab't	Y	35.09	28.85	28.56
Asda roundab't	Y	36.63	29.18	28.86
1, Rose Rd	N	31.19	23.55	25.45
31, Bartrum Rd	N		21.64	24.72
53, Main Rd	N	29.24	21.91	25.95

Location	Within AQMA?	Annual mean concentrations (μg/m^3) Adjusted for bias		
		2008	2009	2010
Other locations				
11, Bilberry Drive, Marchwood	N	19.10	15.92	17.99
Shorefield Rd, Marchwood	N	26.12	21.60	25.41
3 Magazine Lane, Marchwood (adj)	N	22.84	17.46	20.92
9, Boardwalk Way, Marchwood	N	24.46	17.71	22.75
Autumn Road, Marchwood	N	20.96	18.33	19.43
Marchwood School, Twiggs Lane	N	23.21	20.71	20.95
A31, Stoney Cross	N	**42.82**	33.62	33.97
Chaffey Close, Ringwood	N	30.76	25.69	24.87
Queen St, Lymington	N		*36.34	35.75
Queen St, Lymington	N			*34.06
Rockbourne School	N	9.51	8.41	10.55
Teachers Way, Holbury	N	15.99	12.68	14.96
Jubilee Hall, The Square, Fawley	N	20.45	16.68	17.71
School field, Beaulieu	N	11.81	9.58	12.88

Note;
** denotes annualised data determined using Technical Guidance LAQM.TG(09)[1] (Box 3.2) Estimation of annual mean concentrations from short term monitoring data.*

It should be noted that diffusion tube trends have not been shown graphically, as the diffusion tube preparation method was changed in 2009, therefore comparisons may not be accurate or useful.

The diffusion tube monitoring sites show 5 sites that have exceeded the nitrogen dioxide annual mean objective. All these sites are located in Lyndhurst.

The sites at 14, 15 and 16 High Street and 2a Romsey Road are all 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 2009 (as stated in the Progress Report 2009).

It is noted that the site at Gosport Lane which monitored an exceedance in 2009 of 42.12µg/m^3 monitored an annual mean concentration below the objective during 2010 at 39.14µg/m^3. This site is borderline in the monitored concentrations during 2010.

There are no other sites which have reported borderline monitoring results during 2010.

Overall the monitoring locations in Lyndhurst have shown both slight increases and decreases in the reported results over the period 2009 – 2010. However, the majority (75%) of other locations have shown an increase in the monitored annual mean concentration for nitrogen dioxide over the period 2009-2010.

2.2.2 PM_{10}

New Forest District Council monitored for particulate matter (PM10) automatically at three sites; Holbury, Totton and Sway during 2010. A further site at Marchwood is operated by Marchwood Power however the results are publically available and therefore the results are also included.

As previously stated the Sway site was operational between June 2010 and November 2010 for the purposes of completing a Detailed Assessment. The site and monitoring results (as reported in the Detailed Assessment) have been reported within this Progress Report for completeness although it is noted that the results are predicted from the monitoring collated over a 5 month monitoring period.

The monitoring and modelling results and conclusions from the Sway site have been reported independently of this Progress Report within a Detailed Assessment (due for submission to Defra).

There are two objectives for PM10 (as stated in Table 1.1), an annual mean and a 24-hour mean. The annual mean is set at 40μg/m^3 and the 24-hour objective is set at 50μg/m^3 not to be exceeded more than 35 times a year.

There were no exceedences of the PM10 objectives at Holbury, Totton or Marchwood during 2010.

The monitoring results are detailed below. The results from the automatic PM10 monitoring sites for the years 2008 - 2010 are shown in Tables 2.5a and 2.5b for the annual and 24-hour means with the trends shown in Figures 2.11a and 2.11b.

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

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Annual mean objective (μg/m^3)	Annual mean concentrations (μg/m^3)		
				2008	2009	2010
Holbury	N	100	40	17	16	18
Totton	N	93	40	23	22	23
Marchwood	N	92	40	25	24	30
Sway	N	*94	40			21

Note;
*Monitoring data collated June – November 2010.

Figure 2.11a Trends in Annual Mean PM_{10} Concentrations (objective concentration: 40μg/m^3)

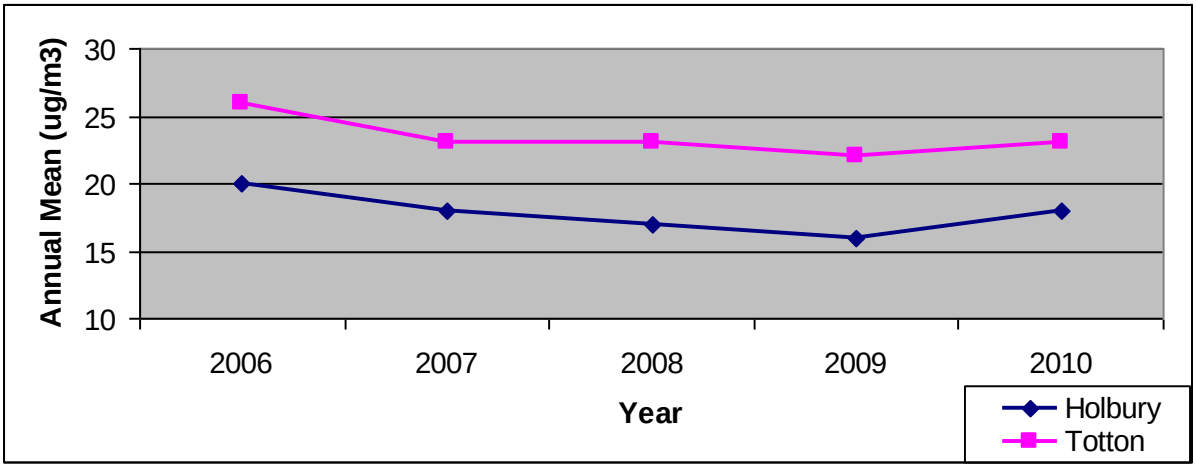
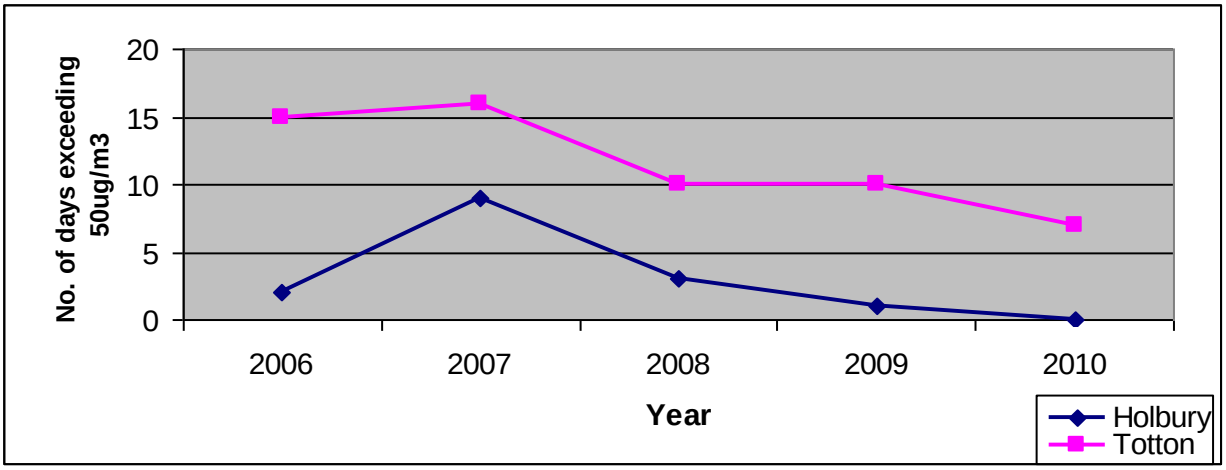


Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2010 %	24 hour objective number of exceedences > 50 μg/m^3	Number of exceedences of daily mean objective (50 μg/m^3) *If data capture < 90%, include the 90th %ile of daily means in brackets.*		
				2008	2009	2010
Holbury	N	100	35	3	1	0
Totton	N	93	35	10	10	7
Marchwood	N	92	35	19	7 (38)	13
Sway	N	*94	35			4

Note;
*Monitoring data collated June – November 2010.

Figure 2.11b Trends PM_{10} in 24-hour Mean Objective (objective level: 35 24hr exceedances > 50μg/m^3)



None of the monitoring sites exceeded the objectives set for PM_{10}. The Holbury and Marchwood sites represent relevant public exposure however the Totton site is at a roadside location and not considered relevant public exposure.

The trend data for the automatic monitoring sites at Holbury and Totton both show similar increases and decreases over the period 2006-2010. Overall both sites have shown a general decrease in the annual mean, with a slight increase in 2010, whilst the number of days exceeding 50 μg/m^3 has shown an overall decrease over the period 2006-2010.

2.2.3 Sulphur Dioxide

New Forest District Council monitored sulphur dioxide automatically at two sites during 2010; 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.

There were no exceedences of the sulphur dioxide objectives at the monitoring sites during 2010.

The results from the automatic sulphur dioxide monitoring sites for the years 2008 - 2010 are shown in Tables 2.6a, 2.6b and 2.6c for the 24 hour, hourly and 15 minute means respectively and are detailed below. Figure 2.12 shows the trends in the 15-min mean objective for sulphur dioxide.

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

Table 2.6a Results of Sulphur Dioxide Automatic Monitoring: Comparison with Objectives

Location	Within AQMA?	Data Capture 2010 %	24-hour objective number of exceedences > 125μg/m^3	Number of exceedences of daily mean objective (50 μg/m^3) *If data capture < 90%, include the 99th %ile of daily means in brackets.*		
				2008	2009	2010
Holbury	N	98	3	0	0	0
Fawley	Y	97	3	0	0	0

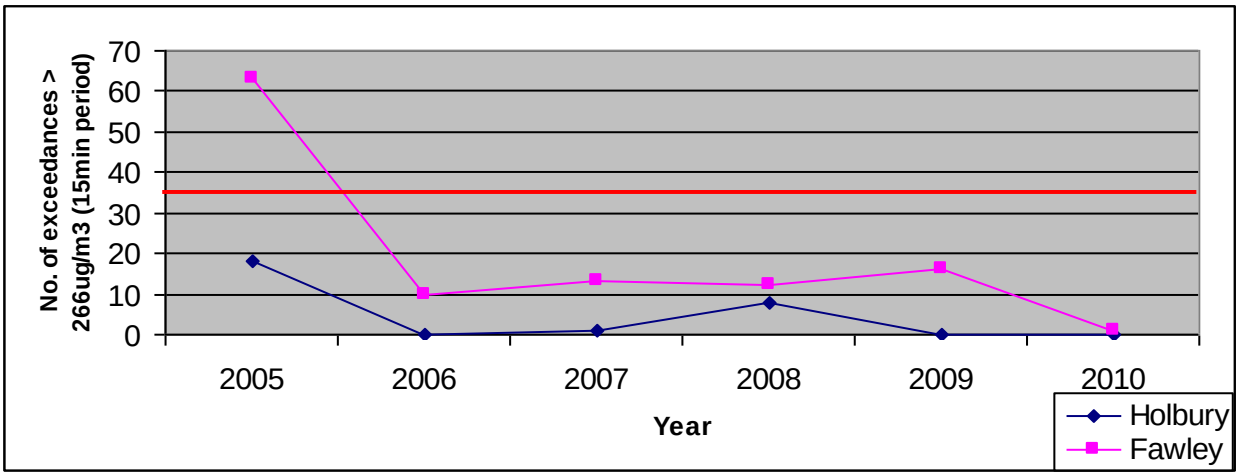
Table 2.6b Results of Sulphur Dioxide Automatic Monitoring: Comparison with Hourly Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Hourly objective number of exceedences > 350 μg/m^3	Number of exceedences of daily mean objective (50 μg/m^3) *If data capture < 90%, include the 99.7th %ile of daily means in brackets.*		
				2008	2009	2010
Holbury	N	98	24	0	0	0
Fawley	Y	97	24	0	0	0

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

Location	Within AQMA?	Data Capture 2010 %	15-min objective number of exceedences > 266 μg/m^3	Number of exceedences of daily mean objective (50 μg/m^3) *If data capture < 90%, include the 99.9th %ile of daily means in brackets.*		
				2008	2009	2010
Holbury	N	98	35	8	0	0
Fawley	Y	97	35	12	16	1

Figure 2.12 Trends in Sulphur Dioxide 15-min Mean Objective (objective level: 35 15-min exceedances > 266μg/m^3)



None of the monitoring sites exceeded the objectives set for sulphur dioxide during 2010. The monitoring sites all 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 below the objective of 35 exceedances per year.

No trend data is presented for the hourly and 24-hour mean objectives for sulphur dioxide due to the consistently low results over the monitoring period 2005-2010.

2.2.4 Other pollutants monitored

New Forest District Council has not monitored any other pollutants in its district during 2010.

2.2.5 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 the AQMA, and **will need to proceed to a Detailed Assessment**, for Shrubbs Hill Road, Lyndhurst. This Detailed Assessment is currently being undertaken and due for submission to Defra during 2010.

3 New Local Developments

3.1 Road Traffic Sources

New Forest District Council confirms that there are no new road traffic sources within its district which may impact on air quality since the Updating and Screening Assessment 2009.

3.2 Other Transport Sources

New Forest District Council confirms that there are no other transport sources within its district which may impact on air quality since the Updating and Screening Assessment 2009.

3.3 Industrial Sources

New Forest District Council confirms that there are no new industrial sources within its district which may impact on air quality since the Updating and Screening Assessment 2009.

However New Forest District Council is in the process of being consulted on a scoping report concerning a proposal for a new distillate oil-fired open cycle gas turbine plant at the current RWE npower Power Station at Fawley. The scoping report states that the new plant would be commissioned in 2015 coinciding with the current plant closing under the Large Combustion Plant Directive.

At this stage of the planning process an air quality assessment has yet to be completed, therefore this proposed development is only noted as a possible new industrial installation.

3.4 Commercial and Domestic Sources

New Forest District Council confirms that there are no new commercial or domestic sources within its district which may impact on air quality since the Updating and Screening Assessment 2009.

3.5 New Developments with Fugitive or Uncontrolled Sources

New Forest District Council confirms that there are no new developments with fugitive or uncontrolled sources within its district which may impact on air quality since those noted in the Progress Report 2010.

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 Local / Regional Air Quality Strategy

New Forest District Council has, to date, not produced a local Air Quality Strategy. Currently efforts are being directed towards the three Air Quality Management Areas within the district.

However the Council understands the importance of a district wide Air Quality Strategy, therefore the Council will begin work towards an Air Quality Strategy within 2012, and would aim to produce a local Air Quality Strategy document during 2013.

No regional Air Quality Strategy has been produced.

5 Planning Applications

The following sites are noted of interest with regards to air quality and planning in the New Forest district:

Bridge Street, Lymington

In the Progress Report 2010 a site in Lymington, adjacent to the Lymington River and Bridge Street, was noted as having planning permission for mixed development since 2005. However the site had not been developed and only a road had been built on site in order to fulfil the planning permission.

The situation has not progressed following the submission of the Progress Report 2009. However a revised application is likely to be received for the site for mixed development; mainly housing (~200 properties) and commercial space. Currently the developer is in the process of producing an agreed scoping document with New Forest District Council for the required Environmental Impact Assessment, which will include an air quality assessment. 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 (particulate matter) during construction.

Eling Wharf, Totton

Eling Wharf is a 15 hectare 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 (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.

A planning application has not been submitted for the site. The Council is currently considering a scoping report and air quality will be assessed as part of the Environmental Impact Assessment which will be included with the planning application. However it is thought such a large development is worth noting within the Progress Report even at this early stage of the planning process.

Asda, Totton

A further planning application has been approved (in 2010) for the redevelopment of the car park servicing Asda supermarket in Totton. This site is adjacent to the Air Quality Management Area (AQMA) in Totton however traffic accessing the supermarket may travel through the AQMA.

The redeveloped car park will increase the number of parking spaces by 35 to a total of 534. An air quality assessment was commissioned by the developers and undertaken by independent air quality consultants. The assessment concluded that the development during construction would have a minor adverse to insignificant impact on local air quality and post development would have an insignificant impact on local air quality. The pollutants assessed were nitrogen dioxide and particulate matter (including dust).

To date work has not started on this development.

New Forest District Council can confirm there are no other planning applications that have been approved or have not yet been approved that could impact upon air quality in its District apart from those noted above and in section 3.3 (RWE npower - distillate oil-fired open cycle gas turbine plant).

6 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 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 and Fawley AQMAs.

- 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 . . . . “

  This policy also refers directly to Planning Policy Statement (PPS) 23.

7 Local Transport Plans and Strategies

Hampshire County Council's new Local Transport Plan (LTP) 2011 – 2031[5] was formally approved by the County Council in February 2011.

The LTP[5] (2011-2031) 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 setting out planned expenditure on transport over the period April 2011 to March 2014.

Particular attention is given to the impacts of transport within Hampshire, including those on air quality and climate change, with aims 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)

Within the current LTP[5] there is no reference to specific Air Quality Management Areas within the New Forest district which is expected due to the period of time this LTP now covers (20 years).

However New Forest District Council continues to work well with Hampshire County Council at a local level, looking specifically at the Air Quality Management Areas and local 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. However larger 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.

8 Climate Change Strategies

Due to restructuring within New Forest District Council, the responsibility for climate change has moved from the Chief Executives Department to the Property Services directorate (Energy and Environment Officer). The New Forest District Council has not produced a Climate Change Strategy, however the Councils' policies concerning climate change and the commitment to reduce its' greenhouse gas emissions are within a Green Audit Action Plan.

The Green Audit Action Plan aims to reduce greenhouse emissions from Council owned transport and buildings and encourages its staff to be aware of emissions through travel options, driving and energy use. Furthermore, the Council is also committed through the Green Audit Action Plan to be involved and a lead player in local communities and businesses in their responsibilities to reduce greenhouse emissions.

9 Implementation of Action Plans

A summary of the three 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 dependant 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 three Action Plans for Totton, Lyndhurst and Fawley is given in Table 9.1.

Table 9.1 Action Plan Progress

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.). Requires detailed transport and AQ modelling	**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.

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
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
3	Installation of variable messaging system (VMS)	Reduce traffic through AQMA. Encourage motorists to turn off engines	County Council	n/a	n/a	Traffic surveys to monitor vehicle numbers in AQMA and those turning off engines. Monitoring NO_2.	2–4μgm^{-3}	Option included in feasibility study by HCC	Feasibility study indicated the option was potentially favourable but would require detailed transport and AQ modelling.	**Option discounted** (cost) No further progression of modelling work.	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.	2-4 μgm^{-3}	Option included in feasibility study by HCC	Feasibility study indicated the option was potentially favourable.	**Completed** Continuous for surveys. 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.

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
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	
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 local policies / schemes to improve transport - road, rail, cycling etc . . within Totton town centre (incl. AQMA) and surrounding areas	Continuous	Scheme of interest - Local Development Scheme

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
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. Option in feasibility study by HCC.	Feasibility study indicates no further improvements could be made within AQMA **Funding received for public transport survey by LA**	April **2012** for transport survey	Feasibility study advised option would not improve pollution concentrations
8	Improvements to cycle routes	Encourage cycling and reduce number of trips in cars	County Council	Completed	Depends on funding	Travel surveys	< 1 μgm^{-3}	Initially understood no plans to extend cycle routes through AQMA	New cycle route through AQMA agreed by district council. **Funding received for public transport survey by LA**	April **2012** for transport survey	Cycle route relies on developers contributions

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
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	**Funding received for public transport survey by LA**	April **2012** for transport survey	
10	Review car parking in Totton	Reduce journeys through AQMA	County Council / District Council	Completed	Completed	Car parking surveys	< 1 μgm^{-3}	Within Urban Design Framework Option included in feasibility study by HCC.	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	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}	Option included in feasibility study by HCC on the BATs corner junction, plus directing traffic to Totton from surrounding road networks	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.	**Option discounted** (no reduction in NO_2 $conc^{ns}$)	Feasibility study advised option would not improve pollution concentrations

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
12	Areas for 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**	
13	Development of Asda travel plan	Reduce journeys through AQMA	Asda / District Council	2009 - 2011	2012	Travel surveys	< 1 μgm^{-3}	Asda has a travel plan	Updating of travel plan. Planning approval to extend store and car park by 34 spaces.	2012	To discuss the use of the free Asda car park (in Totton centre) with the store and the way they manage users

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
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.	2012	Links into work being undertaken by the Council concerning climate change and sustainability
15	Vehicle emission testing	Emission test vehicles travelling through AQMA	District Council	2011	2012	n/a	< 1 μgm^{-3}	None			Further investigation with regards to emission testing provided by VOSA
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)	

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
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	Traffic surveys to assess traffic movements and monitoring NO_2*	Unknown	Option is not supported following a scrutiny review at County Council in 2008	None	**Option discounted** (cost and environmental impacts)	Option not feasible after scrutiny review – environmental impacts and costs
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*	1–2 μgm^{-3}	None with regards to physical junction alterations. Investigations into the use of long vehicle detection technology.	Long vehicle detection in the High St. on the approach to the junction installed allowing for periods when the left hand green filter can be permanently on improving traffic flow in AQMA.	**Option to alter junction layout discounted** (cost) **Option to install long vehicle detection completed**	The durations when the left hand green filter is in use may be expanded into weekday peak periods. Currently in use weekends and weekday off peaks.

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	2011 (if scheme is to be implemented)	2012 (if scheme is to be implemented)	Traffic surveys to assess traffic movements and monitoring NO_2*	1-5 μgm^{-3}	Initial air quality and traffic modelling work completed.	Further air quality and transport modelling work completed (additional traffic gating system). Air quality improvements predicted but unfavourable vehicle flows.	**Option discounted** (impact on traffic flows)	Additional traffic gating systems discounted due to impacts on vehicle flows through Lyndhurst.
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 in 2011 – awaiting results	**Continuous**	HCC traffic survey showed a low percentage of illegal HGV's (~7% of all HGV's) travelling down High St.

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
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		**Completed**	System is only used when traffic is congested on A337 and the traffic signs are available for use.
6	Enforcing current parking restrictions	Improve flow of traffic through Lyndhurst	District Council	Continuous	Continuous	Enforcement figures and monitoring NO_2*	< 1μgm^{-3}	None		Meet by April 2011	Further work required. Meet with traffic wardens to discuss options
7	Review signage around Lyndhurst	Ensure vehicles reach their destination quickly	County Council	20101	2012	Visitor surveys	< 1μgm^{-3}	7.5t restriction signage reviewed		Sept 2012	Some minor amendments to current 7.5t restriction signs required. Require review of signs into car park off Gosport Lane

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
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	**Continuous**	
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	**Continuous**	To link the school travel plan with air quality work at the district council
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**	

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
11	Review bus routes	Reduce congestion	County Council	Continuous	Continuous	Travel surveys to assess use of public transport and monitoring NO_2*	< 1 μgm^{-3}	Bus priority lane to improve bus flows in Lyndhurst. Free bus for tourists travelling into New Forest on train during summer season	To review progress and effectiveness of scheme to date	**Bus priority lane** (Shrubbs Hill Road) **completed**	Option unlikely to reduce NO2 emissions greatly, but encourages use of public transport into and through Lyndhurst.
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	Review cycle routes	**Completed**	
13	Review car parking	Assess parking requirements	District Council	6 months	1 year	Travel surveys and monitoring NO_2*	< 1 μgm^{-3}	None		December 2011	

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
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.	2012	Links into work being undertaken by the Council concerning climate change and sustainability
15	Vehicle emission testing	Emission test vehicles travelling through AQMA	District Council	2011	2012	n/a	< 1 μgm^{-3}	None			Further investigation with regards to emission testing provided by VOSA
16	Investigate use of absorbing paving surface	Reduce NO_2 concentrations	District Council	n/a	n/a	Monitoring using diffusion tubes and continuous analyser		Option discounted due to lack of positive outcomes from trials with other LA's		**Option discounted** (technology not viable)	

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
17	Increase public awareness of air quality	Publicise air quality throughout district	District Council	Continuous	Continuous	n/a	< 1 μgm^{-3}	Update website	Improve website and profile of air quality	**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	

Fawley – *SO_2 15 minute 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	Relocation of industrial premises	Removes source from relevant exposure	Industry and EA	n/a	n/a	n/a	n/a	n/a	n/a	**Option discounted** (cost)	Not a realistic option for progression Possible closure of power station after 2015.
2	Changes to industrial process technology	Reduces SO_2 emissions	Industry and EA	n/a	n/a	n/a	n/a	n/a	n/a	**Option discounted** (cost)	Not a realistic option for progression Small plant upgrades likely.
3	Installation of emission abatement equipment; (i) SRU 3/4 (Super Claus units) (ii) FCCU	Reduces SO_2 emissions from refinery	Exxon-Mobil and EA	Within permit improvement programme (i) submit plan by 30.09.10 (ii) submit plan by 31.03.08	(i) Not due (ii) Gathering base data	Continuous monitoring of SO_2	Annual exceedences not to exceed 35 per year for the 15 min mean objective	(i) Plan not due (ii) Plan submitted on time	(i) Plan expected to be submitted on time (ii) Plan implemented after unit returned to service in March 2010	(i) Depends on plan but probably by 2015 (ii) By 2012	15 min mean objective met since 2006.

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
4	Changes in industrial operating pattern	Reduces SO_2 emissions from refinery	Exxon-Mobil	Continuous	Continuous	Continuous monitoring of SO_2	Annual exceedences not to exceed 35 per year for the 15 min mean objective	System in operation. 61 'risk' periods identified by ExxonMobil during 2010, may have resulted in a switch from oil to gas. (compares to 183 'risk' periods in 2009)	Assess the success of the system	**Continuous**	System in operation and will continue for the foreseeable future. Written into permit as a procedure. 1 exceedance of the 15 minute mean objective for 2010

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
5	Changes in industrial fuel; Energy study incl. conversion of SP4 to burn gas	Reduces SO_2 emissions from refinery	Exxon-Mobil and EA	Within permit improvement programme Submit plan by 31.12.08	In progress as additional gas, from efficiencies elsewhere, become available	Continuous monitoring of SO_2	Annual exceedences not to exceed 35 per year for the 15 min mean objective	Agreed that wholly gas firing was not feasible – non-gas balance to be very low sulphur liquid fuel which provides same outcome.	Implement-ation of plan.	2013	Plan may be modified to allow limited liquid fuel use but this will not affect total SO_2 release permitted. 15 min mean objective met since 2006.
6	Reduction in emissions from refinery (i) reduction in mass emissions (ii) introduction of bubble limit (iii) air quality management plan	Reduces SO_2 emissions from refinery	Exxon-Mobil and EA	(i) In permit. Immediate effect, reductions until 2016 (ii) In permit. Immediate effect (iii) Within permit improvement programme Submit plan by 30.09.08	(i) Not due for completion (ii) Completion (iii) Completion	Continuous monitoring of SO_2	Annual exceedences not to exceed 35 per year for the 15 min mean objective	(i) Proposals being reviewed (ii) Implemented (iii) Plan submitted and implemented	(i) Plan to be agreed and implemented (ii) n/a (iii) n/a	(i) Depends on plan (ii) **Completed** (iii) **Completed**	(iii) Plan includes provision for review

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
7	Enforcement of permitted conditions	To reduce likelihood of non-permitted emissions	EA	Continuous	Continuous	Reported unauthorised releases and enforcement actions taken	Annual exceedences not to exceed 35 per year for the 15 min mean objective	n/a	n/a	**Continuous**	
8	Working with EA and industry	To improve communication and reduce emissions	District Council	Continuous	Continuous	n/a	n/a	Informal meetings concerning specific issues		**Continuous**	
9	Areas for industrial developments	Assess impact of developments on air quality	District Council	Continuous	Continuous	n/a	n/a	Planning assessed for air quality impacts, including provision of air quality GIS maps to planning	To continually assess method of working is appropriate	**Continuous**	
10	Increase public awareness of air quality	Publicise air quality throughout district	District Council	Continuous	Continuous	n/a	n/a	Updated website		**Continuous**	
11	Review air quality monitoring	Ensure correct locations are being monitored	District Council	Continuous	Continuous	n/a	n/a	n/a	Continuous assessment of monitoring location.	**Continuous** Review every January	

Overall the progression of the Action Plans has been limited over 2010 due in part to reduced funding being available from Hampshire County Council and New Forest District Council.

The Totton and Lyndhurst Actions Plans are transport related and therefore rely heavily on the involvement of the highway authority; Hampshire County Council. 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 finally accepted however it was acknowledged that the study lacked detail with regards to the option assessments. The feasibility study recommendations are noted in Table 9.1.

Whilst the feasibility study did recommend some further detailed monitoring work, it has been agreed with Hampshire County Council that no further transport studies or works will be undertaken at this time due to no exceedances of the nitrogen dioxide annual mean being monitored in Totton since 2008. 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. The Local Authority will maintain the progress of smarter options with the view to improve public health in Totton.

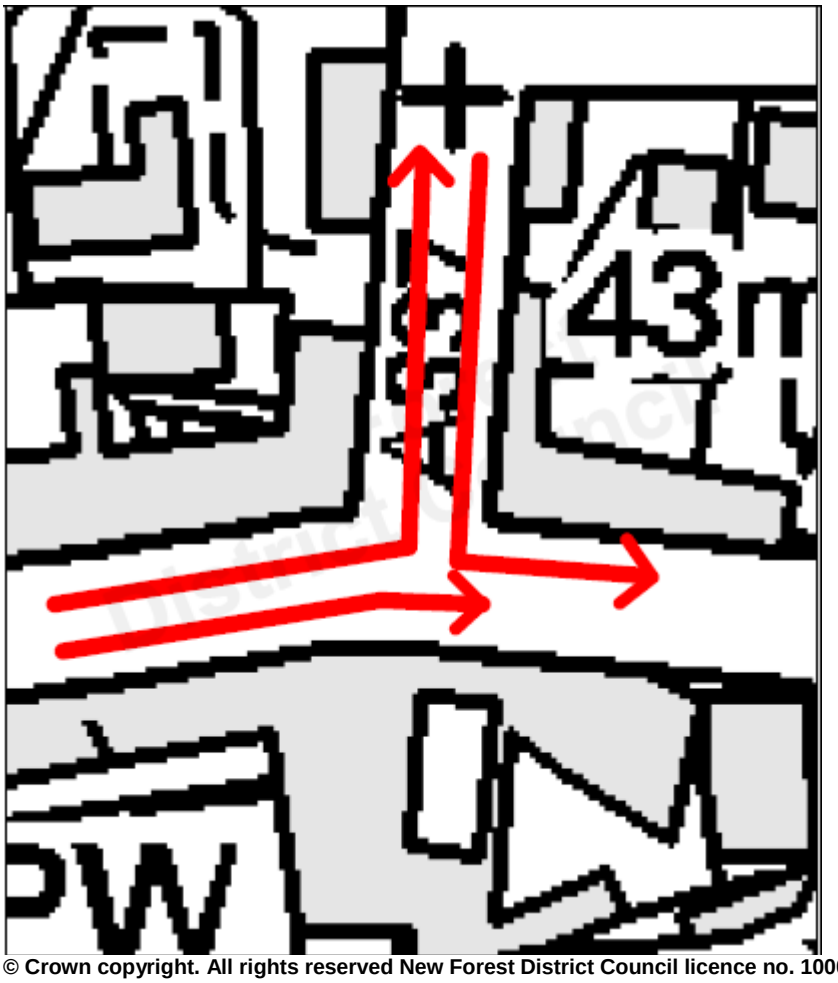
The Council has considered whether to start the process of revoking the Air Quality Management Area in Totton. However due to the requirement to collate further monitoring data and the possibility of a development at Eling Wharf (as detailed in Section 5) it is considered appropriate at this time to maintain the current Air Quality Management Area in Totton. If future monitoring shows no exceedances of the nitrogen dioxide annual mean objective and there is evidence that the development (should it progress) will have minimal impact on localised nitrogen dioxide then the Council will seek to revoke the Air Quality Management Area.

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.

One transport option which has progressed well and may develop further is the long vehicle detection system which is located at the top of the High Street before the street canyon and the junction with the A337. 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 9.1.

Figure 9.1 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).

Currently the system is in operation during weekends, overnight and off peaks, however it is hoped to introduce the system more frequently to improve traffic flow.

It should be noted that air quality modelling has indicated that this system may only have a negligible impact on nitrogen dioxide concentrations. However discussions with transport planners, local members and the public support this option as traffic flow is improved. In addition the real time analyser is located at the junction, therefore any reductions in nitrogen dioxide concentrations will be monitored.

It is acknowledged that the few smaller transport options which have been implemented (VMS routing, bus lane in Shrubbs Hill Road and the long vehicle detection) 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 in order to pursue the nitrogen dioxide annual mean objective.

Fawley Action Plan

The Fawley Action Plan concerns an industrial source and has progressed well. This is due to work by the Environment Agency and Esso Refinery. The Environment Agency has included conditions within the Esso Refinery's Pollution Prevention and Control (PPC) permit which are aimed at reducing sulphur dioxide emissions from the site as a whole and from individual plant.

Furthermore the refinery has a link to the Council's real time analyser in Fawley and takes any necessary action in the event that sulphur dioxide concentrations start to increase, for example by switching from oil to gas to reduce the likelihood of exceedances of the sulphur dioxide objectives. This plan has also been written into the refinery's permit conditions.

Due to no exceedances of the 15-min mean objective for sulphur dioxide being monitored within the Fawley Air Quality Management Area since 2005, the Council will be producing a Detailed Assessment in due course with a view proceed to revoking the Fawley Area Quality Management Area. This course of action is supported by the Environment Agency.

It is likely that the Detailed Assessment would include modelling work. This would be required to show whether the operational changes made at the refinery are sufficient to prevent an exceedance of the 15-min mean objective for sulphur dioxide if similar weather conditions to those observed in 2005 were to recur. It was the combined effect of weather conditions, crude oil throughput and refinery operations which resulted in the exceedance of the 15-min mean objective for sulphur dioxide in 2005.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Throughout 2010 monitoring for nitrogen dioxide, particulate matter (PM10) and sulphur dioxide has been undertaken throughout the New Forest district. The only pollutant monitored as exceeding air quality objectives is nitrogen dioxide for the annual mean objective.

The exceedances for the nitrogen dioxide annual mean objective were monitored using an automatic analyser and diffusion tubes at locations in Lyndhurst. Within the Air Quality Management Area in Lyndhurst the automatic analyser and 4 diffusion tube locations monitored exceedances. These diffusion tube sites are located at 14, 15 and 16 High Street and 2a Romsey Road. These sites have consistently exceeded the annual mean objective since 2006.

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 facade of a residential building.

The site in Shrubbs Hill Road is adjacent to a two lane one-way system leading into the Lyndhurst Air Quality Management Area which at times gets congested with traffic entering Lyndhurst. The diffusion tube is located at this point to ensure routes leading to the Air Quality Management Area are monitored.

Shrubbs Hill Road has been subject to air quality modelling work in the past which although determined concentrations close to the annual mean objective for nitrogen dioxide, did not predict an exceedance. However since 2009, a bus lane has operated along the left hand lane of the one-way system in Shrubbs Hill Road. This has resulted in a greater frequency of traffic congestion in the right hand lane, which is the lane closest to the diffusion tubes in Shrubbs Hill Road. It should be noted that this is the only exceeding monitoring location in Shrubbs Hill Road.

The exceedance in Shrubbs Hill Road was first monitored in 2009 and was only marginally over the objective of 40µgm^{-3} at 40.33µgm^{-3} however the monitored exceedance in 2010 is higher at 42.62µgm^{-3}. The Progress Report 2009 stated that a Detailed Assessment would be undertaken for this location. Unfortunately this work has yet to be completed however a Detailed Assessment will be progressed for this location. It is hoped such work will be completed in 2012. Further monitoring using diffusion tubes will continue at this location in the meantime.

In the Progress Report 2009 a further diffusion tube monitoring location was exceeding the annual mean objective for nitrogen dioxide outside the current Air Quality Management Area: Gosport Lane, Lyndhurst. This site has been a monitoring location for the past 4 years. Whilst previous results have been in the mid 30's µgm^{-3} the 2009 result was notably higher at 42.12µgm^{-3} however it decreased in 2010 to 39.14µgm^{-3}.

The Progress Report 2009 concluded that the location needed to proceed to a Detailed Assessment. Unfortunately this work was not completed, although monitoring continued at this location and an additional location was erected in Gosport Lane during 2010.

Following the 2010 diffusion tube results, New Forest District Council took advice from the Local Air Quality Management Helpdesk with regards to proceeding to a Detailed Assessment for this site. It advised that there was no requirement at this time to proceed to a Detailed Assessment for Gosport Lane, Lyndhurst, however this site is considered borderline and a diffusion tube should remain at the site with monitoring continuing (Appendix E).

A further site in Queen Street, Lymington was also identified as proceeding to a Detailed Assessment following the Updating and Screening Assessment 2009, due to the likely exceedance of the annual mean objective for nitrogen dioxide. This was as a result of the number of vehicles (obtained via a short manual count) accessing a narrow street with residential properties close to the kerb. The road would not be described as congested, but free flowing at reduced speeds.

Therefore during 2009 a diffusion tube was located within Queen Street to obtain monitoring data for nitrogen dioxide concentrations, with an additional site being erected in Queen Street in 2010. The monitoring locations are on building façades and represent relevant public exposure.

The 2010 diffusion tube monitoring results have shown that the area is not exceeding the annual mean objective for nitrogen dioxide with results of 35.75µgm^{-3} and 34.06µgm^{-3} (this site is an estimated annual mean concentration determined from the three months of monitoring results using the Technical Guidance LAQM.TG(09)[1]). Therefore following advice from the Local Air Quality Management Helpdesk (Appendix E), this site will not be proceeding to a Detailed Assessment at this time. Monitoring using diffusion tubes will continue in Queen Street, Lymington to ensure the Council is satisfied that the location is unlikely to exceed the annual mean objective for nitrogen dioxide.

It is noted that the diffusion tube site at Stoney Cross (A31) was relocated in 2010. This moves the duplicate site onto the façade of a residential building closer to the A31. Such a change may finally determine whether there may be an issue with nitrogen dioxide concentrations at this location.

As noted in the Progress Report 2009, the 2010 diffusion tube monitoring results in Totton have decreased substantially due to the application of a low (0.76) local bias correction factor (in 2009 the local bias correction factor was 0.73). Advise from the Local Air Quality Management Helpdesk recommended the use of the local bias correction for the Totton sites as there was no reason not to; the automatic site operated well reporting similar annual results to previous years and the locations of the diffusion tube monitoring sites were comparable to the automatic site.

Therefore again the low local bias correction factor was used for Totton. It should be noted that even with the application of the national bias correction factor (0.92) none of the diffusion tube sites in Totton would exceed the annual mean objective for nitrogen dioxide.

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 2009. However the Council has decided to maintain the current Air Quality Management Area. This is to obtain further monitoring data to ensure nitrogen dioxide concentrations continue to be below the annual mean objective for nitrogen dioxide.

Furthermore due to the potential development of a large brownfield site in Totton (Eling Wharf) the Council has decided to maintain the current Air Quality Management Area. Should monitoring concentrations of nitrogen dioxide still remain below the annual mean objective and the air quality assessment associated with the potential development determines that the impact on nitrogen dioxide concentrations will be minimal, the Council will consider revoking the current Air Quality Management Area in Totton. Therefore monitoring using the automatic analyser and diffusion tubes will continue in Totton.

Overall the monitoring locations in Lyndhurst have shown both slight increases and decreases in the reported diffusion tube monitoring results over the period 2009 – 2010. Although the automatic monitor has shown a consistent result of 46μgm^{-3} between 2008 and 2010. However, the majority (75%) of other diffusion tube monitoring locations throughout the district have shown an increase in the monitored annual mean concentration for nitrogen dioxide over the period 2009-2010.

It is noted that there are no monitored exceedances of the particulate matter (PM_{10}) objectives at any of the monitoring sites during 2010. However it should be noted that the Detailed Assessment for Sway concerning poultry farms (completed in 2010 and due for submission in Defra) has concluded that the Council should be declaring an Air Quality Management Area with regards to the 24-hour mean objective for PM_{10}.

This conclusion is based on modelling outcomes, based on the monitoring undertaken over a 5 month period. The monitored results (reported in this Progress Report) did not show an exceedance of the air quality objectives for particulate matter.

Monitoring results at Fawley have not shown an exceedance of the sulphur dioxide 15 minute mean objective for 5 years. This is due in part to permit conditions for the Esso refinery and the alarm system set up between the automatic analyser and refinery, enabling action to be taken by the refinery should monitored sulphur dioxide concentrations increase.

Therefore it has been decided to proceed to a Detailed Assessment with a view to revoke the current Air Quality Management Area in Fawley.

Before the Air Quality Management Area is revoked the Council needs to be satisfied that the 15 minute mean objective would not be exceeded during similar weather conditions to those that occurred in 2005, resulting in 63 exceedances of the 15 minute mean. Furthermore the Detailed Assessment would also need to take into account the proposed distillate oil-fired open cycle gas turbine plant on the site of the current Power Station to the east of Fawley village (the refinery is located to the north and west). The decision to proceed to a Detailed Assessment is supported by the Environment Agency who regulates the refinery (and power station).

10.2 Conclusions relating to New Local Developments

No new local developments are identified that require a more detailed consideration in the next Updating and Screening Assessment (2012).

It is noted that RWE npower is likely to be applying to install a distillate oil-fired open cycle gas turbine plant on the site of their current Power Station at Fawley. At this stage of the planning process an air quality assessment has yet to be completed, therefore this proposed development is only noted as a possible new industrial installation.

Therefore at this time, this new development does not need to proceed to a Detailed Assessment.

10.3 Other Conclusions

New Forest District Council will consider the production of an Air Quality Strategy in the near future.

There are no current approved planning applications which may impact upon air quality. However planning applications are due to be received concerning a mixed development in Lymington and a distillate oil-fired open cycle gas turbine plant in Fawley. A further proposal for a mixed development on a brown field site in Totton (Eling Wharf) is in the very early stages of the planning process. All of these developments will require an air quality assessment as part of the Environmental Impact Assessment to be submitted 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.

New Forest District Council will continue to work with Hampshire County Council with regards to transport issues within the Air Quality and Action Plans and Local Transport Plans within its District.

The Action Plans related to transport in Totton and Lyndhurst have been progressing slowly. However through good working relations with the transport authority (Hampshire County Council) the transport options have been initially assessed for feasibility.

Due to no exceedances of the nitrogen dioxide annual mean objective being monitored in Totton, it is likely that Hampshire County Council (highway authority) will not progress any further transport related schemes or feasibility studies.

In Lyndhurst it has been concluded that the feasibility of all transport schemes have been exhausted and the major transport related schemes cannot be progressed due to issues relating to costs, increased congestion and environmental impacts. Some smaller transport related schemes have either been implemented or are progressing. It has been concluded that these smaller transport related schemes will not significantly reduce nitrogen dioxide concentrations to below the annual mean objective.

It is acknowledged that the smarter (and non-transport related) options in both Totton and Lyndhurst require further work to forward their progression.

The Fawley Action Plan has progressed well due to the Environment Agency and the Esso refinery's commitment to address the issue of short term sulphur dioxide emissions. With reductions in sulphur dioxide emissions being written into the refinery's process permit conditions and with no exceedances of the 15-min mean objective for sulphur dioxide being monitored for 5 years, the Council will be proceeding to a Detailed Assessment with a view to revoke the Air Quality Management Area in Fawley.

10.4 Proposed Actions

The monitoring data for 2010 has identified the requirement to proceed to a Detailed Assessment for one site for the monitored exceedance of the nitrogen dioxide annual mean objective. This site is:

- Shrubbs Hill Road, Lyndhurst

Should the Detailed Assessments confirm a likely exceedance of the nitrogen dioxide annual mean objective, at the locations noted above, then the Council is likely to either declare a further Air Quality Management Area in Lyndhurst or amend the boundaries of the existing Air Quality Management Area in Lyndhurst.

New Forest District Council will not be proceeding to Detailed Assessment for two sites previously identified. These sites are:

- Queen Street, Lymington
- Gosport Lane, Lyndhurst

This is following further monitoring and advice for the Local Air Quality Management helpdesk.

The current Air Quality Management Areas will remain in Lyndhurst and Totton. However with five years of monitoring data showing no exceedance of the 15-min mean objective for sulphur dioxide, New Forest District Council will proceed to a Detailed Assessment for Fawley with a view to revoke the Air Quality Management Area.

New Forest District Council will be submitting a Detailed Assessment to Defra with regards to:

- Particulate matter (PM_{10}) in Sway (Progress Report refers) for an area of relevant public exposure in the vicinity of two poultry farms and a waste transfer station.

This report was written by AEA and requires clarification before submission.

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

- Continue working on Action Plans for Lyndhurst, Totton and Fawley
- Produce a Detailed Assessment by July 2012 for:
  - *Shrubbs Hill Road, Lyndhurst* (nitrogen dioxide annual mean objective)
- Produce a Detailed Assessment by December 2012 for:
  - *Fawley Air Quality Management Area*
- Progress the PM_{10} at Sway to declare an Air Quality Management Area by December 2012
- Produce a district wide Updating and Screening Assessment by May 2012

11 References

1. ***DEFRA.*** Local Air Quality Management. Technical Guidance LAQM.TG(09)

2. www.newforest.gov.uk/index.cfm?articleid=6372

3. http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v06_11.xls

4. http://laqm.defra.gov.uk/documents/AEA_DifTPAB_v04.xls

5. http://www3.hants.gov.uk/transport/local-transport-plan.htm

Appendices

Appendix A: Part A permitted processes within New Forest district

Appendix B: QA/QC Data

Appendix C: Local bias correction factor spreadsheets

Appendix D: Full details of nitrogen dioxide diffusion tube results

Appendix E: Response from Local Air Quality Management helpdesk

Appendix A: Part A permitted processes within New Forest district

Operator/Site Name	Current Environmental Permit Number	Previous authorisation number(s) if applicable
Esso, Fawley Refinery	BR6996IC	AF8009, CA6610
ExxonMobil Chemical Limited	ZP3839MG	AL0524, AL0567, AL0559, AJ3000
Npower Cogen/Fawley Refinery CHP	QP3536LT	BE8547
Cognis UK Ltd	BR8271IC	AG1042, AK4486, AK4494, AK6861
Pyros Environmental Ltd (High Temperature Incinerator)	HP3835UZ	AG8047 (Shanks Chemical Services)
Pyros Environmental Ltd (MBM Plant)	TP3935UL	BH8314 (Shanks Chemical Services)
Nalco	BS5827IX	-
Polimeri Europa UK Ltd	BR8263IE	AF7053, AK5539, AK5547
Veolia/Marchwood Treatment Works	NP3833UE	-
Veolia/Marchwood Energy Recovery Facility	BJ7093IY	-
Marchwood Power Station	BL6217IM	-
RWE npower/Fawley Power Station	WP3536LZ	AA3115
BH (CHP) UK Ltd/ Hythe CHP plant	BK1732IQ	-

Appendix B: QA:QC Data

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 (2010) was 0.92. This was obtained from the Local Air Quality Management (Defra) website[3].

Factor from Local Co-location Studies

Three different local bias correction factors were determined for the data for 2010. These were as follows;

Details of Bias Correction Factors

Location	Bias Correction Factor
Totton	**0.76**
Lyndhurst (street canyon)	**0.92**
Marchwood	**0.89**

The local bias correction factors have been determined using calculations supplied by the Local Air Quality Management (Defra) website[4] and are shown in Appendix C for each location.

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 2010 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 2010 diffusion tube data are shown below;

Details of Bias Correction Factors

Location	Bias Correction Factor	Local / National
Totton	**0.76**	Local
Lyndhurst (street canyon)	**0.92**	Local
Lyndhurst	**0.92**	National
Marchwood	**0.89**	Local
Remaining sites	**0.92**	National

It is noted that the local bias correction factor for Lyndhurst (0.92) is the same as the national correction factor, whilst at Marchwood the local correction factor is similar to the national correction factor. Totton is much lower at 0.76, which is a similar result to 2009 with a local correction factor of 0.73.

The impact on the uncorrected nitrogen dioxide diffusion tube results for Totton has resulted in nitrogen dioxide concentrations being significantly below the annual mean objective, whereas previous years showed higher concentrations with some locations exceeding the annual mean objective for nitrogen dioxide.

Following advise from the Local Air Quality Management Helpdesk it was decided to use the local bias correction for the Totton sites as there was no cause not to; the automatic site operated well reporting similar annual results to previous years and the locations of the diffusion tube monitoring sites were comparable to the automatic site location.

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. Data reported from 2007 has been corrected by a factor of 1.3 which was an accepted correction method prior to 2008.

Short-term to Long-term Data adjustment

A new nitrogen dioxide diffusion tube was located in Queen Street, Lymington during 2010 (reference; Queen Street 2) following the requirement to proceed to a Detailed Assessment. Monitoring was undertaken for 3 monitoring periods during 2010 from 28/09/2010 – 22/12/2010 with monitoring continuing into 2011.

Technical Guidance LAQM .TG(09)[1] (Box 3.2) advises on a procedure to estimate the annual mean concentration from short-term monitoring data, in this case 28/09/10 – 13/05/11. The table below details results from long term monitoring AURN sites, which have been used to determine a ratio of 0.955 for the new Queen Street site.

Site	Site Type	Annual Mean (2010) / µgm^{-3}	Period Mean (28/09/10-13/05/11) / µgm^{-3}	Ratio (Am/Pm)
Southampton	Urban background (AURN)	44.7	41.1	1.09
Portsmouth	Urban background (AURN)	21.6	26.3	0.82
			Average	**0.955**

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

Site	Monitored mean / µgm^{-3}	Monitored mean x ratio (0.955)	Bias correction factor	Reported result / µgm^{-3}
Queen Street (2)	39.63	37.85	0.92	34.82

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 Casella Measurement who hold the service contract for the Council (and EnviroTech in the case of the Marchwood site). The engineer is also available for call outs if the site appears to be malfunctioning.

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

The Council contracts National Physical Laboratory 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 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 2010 showed good precision with the exception of Totton in the last monitoring period in 2010.

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)[1].

Appendix C: Local bias correction factor spreadsheets

Totton

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	30/12/2009	18/01/2010	47.25	46.71	49.06	48	1.2	3	3.1
2	18/01/2010	23/02/2010	40.72	42.18	44.16	42	1.7	4	4.3
3	23/02/2010	16/03/2010	41.22	39.75	39.64	40	0.9	2	2.2
4	16/03/2010	14/04/2010	34.04	38.79	30.56	34	4.1	12	10.3
5	14/04/2010	11/05/2010	32.87	35.42	34.95	34	1.4	4	3.4
6	11/05/2010	08/06/2010	32.7	34.91	34.95	34	1.3	4	3.2
7	08/06/2010	07/07/2010	29.06	22.89	26.63	26	3.1	12	7.7
8	07/07/2010	05/08/2010	25.64	24.28	24.89	25	0.7	3	1.7
9	05/08/2010	03/09/2010	28.82	28.9	33.09	30	2.4	8	6.1
10	03/09/2010	28/09/2010	34.42	36.53	33.69	35	1.5	4	3.7
11	28/09/2010	27/10/2010	32.42	34.32	31.67	33	1.4	4	3.4
12	27/10/2010	25/11/2010	43.21	34.75	35.45	38	4.7	12	11.7
13	25/11/2010	21/12/2010	51.9	48.82	44.06	48	3.9	8	9.8

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

Automatic Method

Period Mean	Data Capture (% DC)
38.1	100
36.8	95
31	83
26.4	100
29	100
28	100
18	90
15	87
19	99
23	100
27.9	100
28.2	100
42.4	66
Overall survey -->	

Data Quality Check

Tubes Precision Check	Automatic Monitor Data
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	or Data Capture
Good precision	Good Overall DC

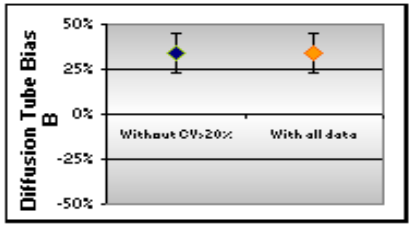
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: TOTTON

Precision: 13 out of 13 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A: 0.76 (0.71 - 0.83)
Bias B: 31% (20% - 42%)
Diffusion Tubes Mean: 35 μgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 27 μgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 27 (25 - 29) μgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A: 0.76 (0.71 - 0.83)
Bias B: 31% (20% - 42%)
Diffusion Tubes Mean: 35 μgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 27 μgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 27 (25 - 29) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Lyndhurst

Checking Precision and Accuracy of Triplicate Tubes

netcen

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	30/12/2009	18/01/2010	48.25	48.4	50.36	49	1.2	2	2.9	42.7	100	Good	Good
2	18/01/2010	18/02/2010	49.73	46.09	55.48	50	4.7	9	11.8	44.7	100	Good	Good
3	18/02/2010	16/03/2010	44.45	48.64	50.8	48	3.2	7	8.0	46.2	100	Good	Good
4	16/03/2010	15/04/2010	50.03	50.95	47.7	50	1.7	3	4.2	46.6	100	Good	Good
5	15/04/2010	10/05/2010	44.85	46.32	46.32	46	0.8	2	2.1	50.3	100	Good	Good
6	10/05/2010	08/06/2010	50.61	46.04	55.53	51	4.7	9	11.8	53.4	100	Good	Good
7	08/06/2010	12/07/2010	42.64	43.42	50.37	45	4.3	9	10.6	44.9	100	Good	Good
8	12/07/2010	03/08/2010	49.77	56.81	50.79	52	3.8	7	9.5	42.1	100	Good	Good
9	03/08/2010	01/09/2010	47.09	57.23	47.44	51	5.8	11	14.3	37.6	100	Good	Good
10	01/09/2010	29/09/2010	52.17	51.84	53.52	53	0.9	2	2.2	41.4	100	Good	Good
11	29/09/2010	27/10/2010	45	46.97	76.72	56	17.8	32	44.1	45.8	95	Poor Precision	Good
12	27/10/2010	24/11/2010	46.15	47.09	46.6	47	0.5	1	1.2	46.0	100	Good	Good
13	24/11/2010	21/12/2010	55.76	59.33	58.18	58	1.8	3	4.5	55.7	97	Good	Good
										Overall survey -->		Good precision	Good Overall DC

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

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Lyndhurst

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%

Bias calculated using 12 periods of data

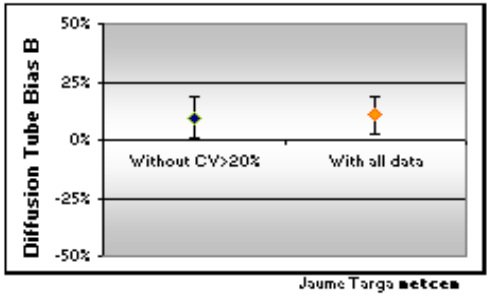
Bias factor A	0.92 (0.85 - 1)
Bias B	9% (0% - 17%)
Diffusion Tubes Mean:	50 µgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	46 µgm^{-3}
Data Capture for periods used:	99.75%
Adjusted Tubes Mean:	46 (42 - 50) µgm^{-3}

Precision 12 out of 13 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
WITH ALL DATA

Bias calculated using 13 periods of data

Bias factor A	0.91 (0.85 - 0.99)
Bias B	10% (1% - 18%)
Diffusion Tubes Mean:	50 µgm^{-3}
Mean CV (Precision):	8
Automatic Mean:	46 µgm^{-3}
Data Capture for periods used:	99.384
Adjusted Tubes Mean:	46 (43 - 50) µgm^{-3}



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Marchwood

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	30/12/2009	20/01/2010	33.72		37.86	36	2.9	8	26.3	32.4	100	Good	Good
2	20/01/2010	15/02/2010	32.63	27.34	31.71	31	2.8	9	7.0	27.5	99	Good	Good
3	15/02/2010	16/03/2010	26.29		26.61	26	0.2	1	2.0	26.4	100	Good	Good
4	16/03/2010	14/04/2010	19.29	20.05	19.97	20	0.4	2	1.0	19	96	Good	Good
5	14/04/2010	11/05/2010	24.04	24.63	26.97	25	1.5	6	3.8	24	83	Good	Good
6	11/05/2010	08/06/2010	18.71	18.96	19.08	19	0.2	1	0.5	18	98	Good	Good
7	08/06/2010	09/07/2010	14.74	13.7	16.75	15	1.6	10	3.9	12	97	Good	Good
8	09/07/2010	05/08/2010	11.44	10.96	11.04	11	0.3	2	0.6	8	100	Good	Good
9	06/08/2010	31/08/2010	18.74	17.73	16.26	18	1.2	7	3.1	11	96	Good	Good
10	31/08/2010	28/09/2010	21.5	22.28	21.38	22	0.5	2	1.2	15	99	Good	Good
11	28/09/2010	25/10/2010	22.57	20.15	21.85	22	1.2	6	3.1	19.7	99	Good	Good
12	25/10/2010	22/11/2010	20.93	19.37	20.84	20	0.9	4	2.2	19.5	100	Good	Good
13	22/11/2010	22/12/2010	37.38	39.4	38.91	39	1.1	3	2.6	37.9	97	Good	Good
										Overall survey -->		Good precision	Good Overall DC

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

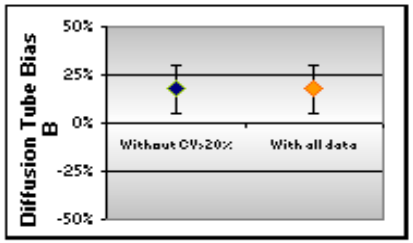
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	MARCHWOOD

Precision 13 out of 13 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 13 periods of data	
Bias factor A	0.89 (0.8 - 1)
Bias B	12% (0% - 24%)
Diffusion Tubes Mean:	23 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	21 μgm^{-3}
Data Capture for periods used:	97%
Adjusted Tubes Mean:	21 (19 - 23) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 13 periods of data	
Bias factor A	0.89 (0.8 - 1)
Bias B	12% (0% - 24%)
Diffusion Tubes Mean:	23 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	21 μgm^{-3}
Data Capture for periods used:	97%
Adjusted Tubes Mean:	21 (19 - 23) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Appendix D: Full details of nitrogen dioxide diffusion tube 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
30/12/09-18/01/10	35.51	43.63	43.72	51.48	41.07	31.62
18/01/10 – 18/02/10	29.66	39.93	47.21	45.22	39.34	25.54
18/02/10 – 16/03/10	27.08	35.06	35.81	45.29	35.28	27.56
16/03/10 – 15/04/10	22.97	33.17	30.8	35.96	21.33	24.08
15/04/10 – 10/05/10	31.14	33.57	34.54	44.53	33.21	28.16
10/05/10 – 08/06/10	25.68	37.72	41.55	51.87	37.92	25.66
08/06/10 – 12/07/10	22.39	27.35	31.95	36.44	28.28	17.7
12/07/10 – 03/08/10	21.86	30.07	35.75	39.9	38.12	20.64
03/08/10 – 01/09/10	26.29	28.51	30.21	43.14	41.71	20.94
01/09/10 – 29/09/10	25.63	40.07	36.63	48.26	41.3	24.26
29/09/10 – 27/10/10	24.41	31.29	31.12	47.42	36.85	24.08
27/10/10 – 24/11/10	26.76	33.05	32.51	45.8	39.95	25.25
24/11/10 – 21/12/10	31.55	53.89	45.82	66.88	50.11	33.17
Average	**26.99**	**35.95**	**36.74**	**46.32**	**37.27**	**25.28**

Exposure dates	Site							
	Queens House	Lyndhurst School	15 High Street	14 High Street (Analyser)	(Analyser)	(Analyser)	Analyser average	16 High Street
30/12/09-18/01/10	31.08	37.2	54.13	48.25	48.4	50.36	49.00	46.26
18/01/10 – 18/02/10	26.35	32.64	76.97	49.73	46.09	55.48	50.43	46.25
18/02/10 – 16/03/10	29.33	33.21	64.39	44.45	48.64	50.8	47.96	49.48
16/03/10 – 15/04/10	23.89	25.95	48.16	50.03	50.95	47.7	49.56	47.66
15/04/10 – 10/05/10	27.2	26.55	62.19	44.85	46.32	46.32	45.83	44.4
10/05/10 – 08/06/10	24.28	27.12	61.28	50.61	46.04	55.53	50.73	56.68
08/06/10 – 12/07/10	20.45	23.54	38.7	42.64	43.42	50.37	45.48	34.26
12/07/10 – 03/08/10	22.12	25.04	48.47	49.77	56.81	50.79	52.46	56.42
03/08/10 – 01/09/10	24.51	26.13	55.71	47.09	57.23	47.44	50.59	52.86
01/09/10 – 29/09/10	23.07	30.81	59.07	52.17	51.84	53.52	52.51	51.68
29/09/10 – 27/10/10	24.32	27.27	53.19	45	46.97	76.72	56.23	40.54
27/10/10 – 24/11/10	24.08	29.69	53.38	46.15	47.09	46.6	46.61	50.74
24/11/10 – 21/12/10	35.08	35.03	82.81	55.76	59.33	58.18	57.76	52.32
Average	**25.83**	**29.24**	**58.34**				**50.40**	**48.43**

Exposure dates	Site							
	2a, Romsey Rd	22, Romsey Rd	28 High St.	28 High St.	28 High St. average	65, High St	Gosport Lane	Park Hotel
30/12/09-18/01/10	54.13	36.33	41.07	39.74	40.41	50.66	46.53	35.82
18/01/10 – 18/02/10	52.26	31.9	35.04	39.61	37.33	43.83	34.69	31.27
18/02/10 – 16/03/10	49.57	33.69	35.63	37.26	36.45	45.38	41.89	29.77
16/03/10 – 15/04/10	47.12	31.61	32.72	33.25	32.99	34.63	42.27	27.56
15/04/10 – 10/05/10	52.01	34.81	36.69	33.21	34.95	41.87	42.7	28.25
10/05/10 – 08/06/10	53.61	34.4	31.45	29.22	30.34	42.23	48.55	28.68
08/06/10 – 12/07/10	33.66	21.92	26.05	24.15	25.10	30.77	42.83	21.09
12/07/10 – 03/08/10	37.79	23.32	27.52	29.79	28.66	33.56	37.24	27.75
03/08/10 – 01/09/10	39.66	25.82	28.51	29.93	29.22	27.99	36.69	28.63
01/09/10 – 29/09/10	49.9	32.55	35.83	35.46	35.65	40.74	47.75	30.61
29/09/10 – 27/10/10	41.93		28.75	32.02	30.39	35.5	41.56	26.86
27/10/10 – 24/11/10	45.17		31.63	35.79	33.71	37.55	48.77	31.14
24/11/10 – 21/12/10	59.79	39.11	35.63	16.86	26.25	51.6	41.62	36.95
Average	**47.43**	**28.24**			**32.42**	**39.72**	**42.55**	**29.57**

Totton

Exposure dates	Site						
	Reynolds Dale	68, Junction Rd	Junction Rd (Analyser)	(Analyser)	(Analyser)	Analyser average	30, Junction Rd
30/12/09-18/01/10	37.29	43.9	47.25	46.71	49.06	47.67	53.41
18/01/10 – 23/02/10	30.48	38.11	40.72	42.18	44.16	42.35	41.58
23/02/10 – 16/03/10	27.82	38	41.22	39.75	39.64	40.2	46.85
16/03/10 – 14/04/10	24.63	32.3	34.04	38.79	30.56	34.46	28.07
14/04/10 – 11/05/10	22.7	37.29	32.87	35.42	34.95	34.41	38.3
11/05/10 – 08/06/10	22.05	26.8	32.7	34.91	34.95	34.19	37.51
08/06/10 – 07/07/10		15.22	29.06	22.89	26.63	26.19	22.46
07/07/10 – 05/08/10	15	16.43	25.64	24.28	24.89	24.94	25.42
05/08/10 – 03/09/10	21.47	22.77	28.82	28.9	33.09	30.27	31.87
03/09/10 – 28/09/10	21.1	27.86	34.42	36.53	33.69	34.88	33.71
28/09/10 – 27/10/10	26.09	28.39	32.42	34.32	31.67	32.8	18.82
27/10/10 – 25/11/10	28.63	34.79	43.21	34.75	35.45	37.8	34.1
25/11/10 – 21/12/10	37.62	50.36	51.9	48.82	44.06	48.26	52.04
Average	**26.24**	**31.71**				**36.03**	**35.7**

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
30/12/09-18/01/10	46.92	43.24	51.6	46.5	41.91	48.43	44.63
18/01/10 – 23/02/10	55.29	42.25	44.21	48.92	41.83	54.11	41.69
23/02/10 – 16/03/10	47.94	37.67	47.01	41.71	42.31	47.34	45.59
16/03/10 – 14/04/10		34.36	38.31	41.59	40.37	42.62	39.5
14/04/10 – 11/05/10	41.91	32.27	36.35	37.03	39.83	38.64	34.74
11/05/10 – 08/06/10	43.12	35.54	36.75	37.51	33.82	35.83	36.63
08/06/10 – 07/07/10	33.15	22.28	31.53	31.91	26.49	25.22	26.65
07/07/10 – 05/08/10	36.49	23.25	26.53	28.88	26.73	23.82	26.04
05/08/10 – 03/09/10		40.49		31.75	30.33	30.01	31.35
03/09/10 – 28/09/10	*74.16	32.4	30.57	39.4	31.99	33.18	35.02
28/09/10 – 27/10/10	37.72	35.27	36.06	38.27	34	35.03	35.07
27/10/10 – 25/11/10	40.13	34.65		37.88	36.63	34.22	35.8
25/11/10 – 21/12/10	47.8	45.33	52.7	37.66	46.39	52.13	41.23
Average	**43.05**	**35.31**	**39.24**	**38.39**	**36.36**	**38.51**	**36.46**

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
30/12/09-18/01/10	48.7	37.02	43.48	41.52	41.49	44.32	46.38	40.13
18/01/10 – 23/02/10	*13.97	33.06	38.84	47.69	43.52	40.16	43.35	38.09
23/02/10 – 16/03/10	41.39		39.42		39.97	43.84	41.11	42.91
16/03/10 – 14/04/10	34.16	25.58	31.99	36.3	40.01	29.38	28.78	31.55
14/04/10 – 11/05/10	36.05	28.07	37.29	45.23	36.35	39.96	24.38	36.61
11/05/10 – 08/06/10	32.35	25.78	32.25	38.06	38.59	31.39	28.34	27.62
08/06/10 – 07/07/10	20.82	18.94	29.85	30.92	29.73	24.87	20.52	27.1
07/07/10 – 05/08/10	20.94	14.45	26.33	31.85	34.73	19.65	19.69	22.95
05/08/10 – 03/09/10	28.03	19.93	30.25	35.39	35.03	26.41	24.91	29.93
03/09/10 – 28/09/10	33.5	24.86	33.76		32.75	27.91	32.2	31.26
28/09/10 – 27/10/10	33.13		34.36	34.86	35.47	22.77	31.51	30.76
27/10/10 – 25/11/10	30.62	24.69	41.32	35.54	40.13	33.43	35.13	33.11
25/11/10 – 21/12/10	62.14	65.16	58.12	36.07	45.86	51.11	46.61	51.73
Average	**35.15**	**28.87**	**36.71**	**37.58**	**37.97**	**33.48**	**32.53**	**34.14**

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

Other Sites

Exposure dates	Sites					
	Bilberry Drive	Shorefield Road	Magazine Lane (Analyser)	(Analyser)	(Analyser)	Analyser average
30/12/09 – 20/01/10	36.14	35.22	33.72		37.86	35.79
20/01/10 – 15/02/10	27.87	33.82	32.63	27.34	31.71	30.56
15/02/10 – 16/03/10	26.17	30.48	26.29	92.99	26.61	26.45
16/03/10 – 14/04/10	17.14	21.31	19.29	20.05	19.97	19.77
14/04/10 – 11/05/10	21.83	30.7	24.04	24.63	26.97	25.21
11/05/10 – 08/06/10	15.54	23.77	18.71	18.96	19.08	18.92
08/06/10 – 09/07/10	10.97	18.86	14.74	13.7	16.75	15.06
09/07/10 – 06/08/10	8.39	15.92	11.44	10.96	11.04	11.15
06/08/10 – 31/08/10	11.88	20.52	18.74	17.73	16.26	17.58
31/08/10 – 28/09/10	16.50	22.65	21.5	22.28	21.38	21.72
28/09/10 – 25/10/10	19.49	22.53	22.57	20.15	21.85	21.52
25/10/2010 – 22/11/10	20.47	22.79	20.93	19.37	20.84	20.38
22/11/10 – 22/12/10	30.35	44.07	37.38	39.4	38.91	38.56
Average	**20.21**	**28.55**				**23.28**

Exposure dates	Sites								
	Broadwalk Way	Autumn Road	Marchwood School	Holbury School	Holbury School	Holbury School average	Jubilee Hall, Fawley	Beaulieu	Rockbourne
30/12/09 – 20/01/10	40.81	26.4	32.6	26.4	25.96	26.18	30.15	21.24	18.77
20/01/10 – 15/02/10	34.09	32.92	29.88	21.3	21.41	21.35	21.77	15.82	
15/02/10 – 16/03/10	27.32	21.98	24.63	18.44	19.18	18.81	21.17	11.63	13.01
16/03/10 – 14/04/10	22.69	18.31	22.1	12.33	12.74	12.53	16.79	11.67	10.63
14/04/10 – 11/05/10	20.68	25.22	22.42	14.71	18.26	16.48	21.56	17.79	11.28
11/05/10 – 08/06/10	21.5	19.14	21.66	14.31	13.1	13.7	20.35	11.22	8.76
08/06/10 – 09/07/10	16.2	15.68	18.36	9.57	8.01	8.79	12.61	10.45	7.45
09/07/10 – 06/08/10	12.82	10.74	16.8	7.06	7	7.03	11.03	7.06	6.39
06/08/10 – 31/08/10	19.35	15.8	13.3	9.06	9.2	9.13	14.91	10.57	5.37
31/08/10 – 28/09/10	25.45	21.11	23.32	16.13	16.46	16.29	18.59	11.88	12.8
28/09/10 – 25/10/10	25.22	15.99	21.23	17.6	17.86	17.73	18.9	13.67	14.16
25/10/10 – 22/11/10	23.22	23.98	23.5	16.63	18.78	17.7	19.74	16.36	12.65
22/11/10 – 22/12/10	43	36.58	36.19	29.16	31.57	30.36	28.24	26.68	19.41
Average	**25.56**	**21.83**	**23.54**			**16.62**	**19.68**	**14.31**	**11.72**

Exposure dates	Sites					
	Stoney Cross	Stoney Cross	Stoney cross average	Chaffey Close	Queen St.	Queen St 2
31/12/09 – 19/01/10	45.08	39.07	42.08	37.63	48.78	
19/01/10 – 15/02/10	43.82	42.51	43.17	31.26	47.06	
15/02/10 – 16/03/10	41.79	37.84	39.82	31.99	44.02	
16/03/10 – 13/04/10	26.94	28.3	27.62	29.07	38.41	
13/04/10 – 11/05/10	43.04	36.73	39.89	25.22	48.58	
11/05/10 – 09/06/10	30.21	32.7	31.46	23.27	38.11	
09/06/10 – 09/07/10				*8.1	26.15	
09/07/10 – 05/08/10	30.58	34.97	32.78	18.03	26.99	
05/08/10 – 01/09/10	42.34	38.13	40.24	21.55	33.09	
01/09/10 – 28/09/10	42.17	35.84	39.01	27.99	36.58	
28/09/10 – 26/10/10	37.59	32.31	34.95	23.18	40.13	36.96
26/10/10 – 23/11/10	40.66	38.16	39.41	30.75	38.37	38.12
23/11/10 – 22/12/10	44.24	40.96	42.60	31.63	*74.53	45.33
Average			**37.75**	**27.63**	**41.6**	

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

Appendix E: Response from Local Air Quality Management Helpdesk

Dear Rachel

Thank you for contacting the LAQM helpdesk.

As I mentioned during our telephone conversation the site that is still exceeding in 2010 should undergo a detailed assessment. This can be based on monitoring data but would suggest that the number of monitoring sites is sufficient to cover the area and also one triplicate site should be considered to provide confidence in the data and therefore the assessment's conclusions.

The remaining two sites which no longer exceed do not require detailed assessments but recommend continued monitoring. It should be mentioned in the conclusions of the 2011 Progress Report that although a Detailed Assessment was thought needed, based on 2009 data, more recent data show these sites not to be exceeding. The council should continue to monitor these sites with and should review the need for a Detailed Assessment in future if it is deemed necessary.

Kind regards

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