



2012 Air Quality Updating and Screening Assessment for Lewes District Council

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

February 2013



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Executive Summary

The Lewes Updating and Screening Assessment (USA) 2012 was undertaken to identify those parts of the district that may be at risk of exceeding the national objectives for several pollutants including nitrogen dioxide.

The atmospheric emission sources in Lewes District Council have been examined and those aspects that have changed since the last round of review and assessment have been identified. Recent monitoring data and screening modelling tools have been used to assess compliance with the national air quality objectives.

Results taken from passive monitoring using diffusion tubes have indicated that South Way, part of the gyratory system in Newhaven, was at risk of exceeding the set objective level for nitrogen dioxide ($40 \mu\text{g}/\text{m}^3$ annual mean) and would therefore require a Detailed Assessment to be undertaken.

Lewes District Council have previously concluded in the 2011 Progress Report that we would undertake a further detailed assessment to establish if the Air Quality Objective (AQO) for nitrogen dioxide, when measured as an annual mean, is being exceeded in the Newhaven gyratory area. We have now finalised the details of this Detailed Assessment and have submitted to DEFRA on the 18th February 2013.

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1 Introduction

1.1 Description of Local Authority Area

The Lewes District is essentially split into two areas, in the north a predominantly rural area centred on Lewes, to the south a coastal strip where several towns merge into one urban area. This southern strip includes Telscombe Cliffs in the west, Peacehaven, Newhaven, Bishopstone and Seaford in the east.

The District has a population in the region of 91,000. The total area is 29,000 hectares. Lewes is the main town and the principal administrative and commercial centre within the District; it is also the County Town of East Sussex.

Major roads in the district include the A27 which runs east to west and bypasses Lewes. Lewes is a nodal point for several regional and local roads, including the A27, A26 and A275. Whilst the coastal strip of towns is served predominantly by the A26 and the A259.

Those living and working in the district enjoy an environment of exceptionally high quality. There are many ancient woodlands, chalk grasslands, heathlands and water meadows. This is reflected in the large number of Sites of Special Scientific Interest, National Nature Reserves and other forms of designation. Following the Secretary of States decision on 31 March 2009 just over half of Lewes district is now part of the South Downs National Park including the town of Lewes.

This high quality environment is a real economic and cultural asset, tourism is a major local industry worth over £60 million a year. Agriculture remains a major user of land within the district. Other businesses include brickworks, waste disposal facilities, scrap yards, a working port and several relatively large industrial estates in Lewes, Newhaven, Seaford, Peacehaven and in a variety of rural locations.

The Lewes District Council Local Plan contains a number of policies designed to ensure that the air quality effects of development proposals are fully assessed and to encourage the adoption of traffic reducing measures. Lewes District Council adopted

the Air Quality Action Plan (AQAP) for Lewes town in June 2009. The AQAP states 28 measures that will tackle the air quality in and around Lewes town centre, a number of these actions have since been implemented and good progress has been made and reported to DEFRA since 2009. A number of the measures also have far reaching remits that will have positive impacts on air quality district wide.

1.2 Purpose of Report

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

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

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

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

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

1.4 Summary of Previous Review and Assessments

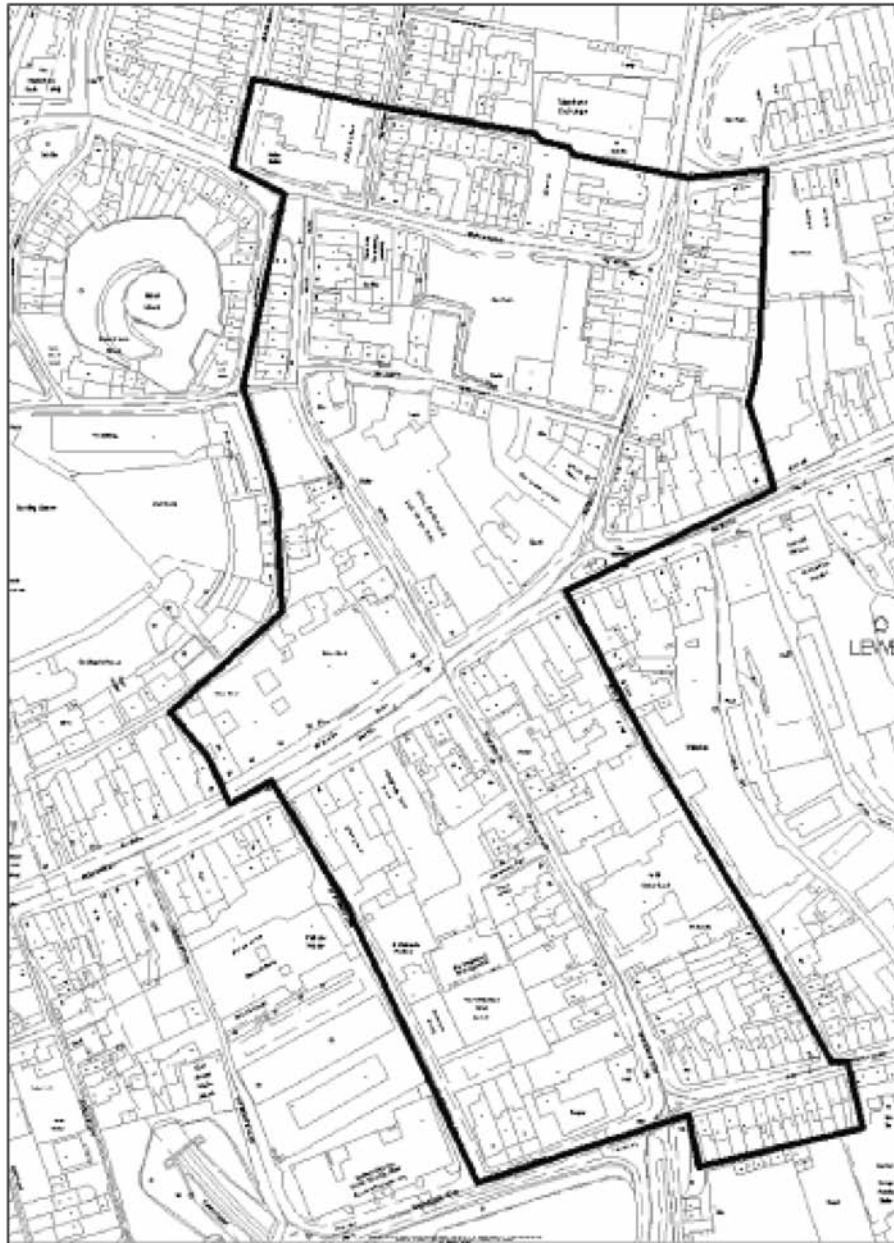
- First review and assessment round was completed in July 2000, concluded national air quality objectives were unlikely to be exceeded.
- Second round of Review and Assessment completed in September 2004, identified a need for a detailed assessment of air quality.
- Detailed Assessment (DA) undertaken in April 2005, predicted exceedence for the annual mean of nitrogen dioxide in Fisher Street, Lewes.
- AQMA declared for Lewes town centre in June 2005. See Figure 1.1
- Third round of Review and Assessment was completed in August 2006. Identified potential exceedences of the annual mean air quality objective for nitrogen dioxide in Market Street, Lewes, a road already within the existing AQMA area. An exceedance of the nitrogen dioxide annual mean objective was also indicated at Southway in Newhaven.
- Fourth round of Review and Assessment was completed in November 2008. The findings of progress report were accepted, however the DA was not accepted.

A DA for Newhaven was carried out in 2008 which identified marginal exceedences of the annual mean for nitrogen dioxide. The original DA for Newhaven was submitted to DEFRA and its consultants for appraisal in November 2008. The report was criticised on a number of grounds including the meteorological data and modeling methodology.

In response to this feedback Lewes District Council re-ran the model using the requested data and re-issued the details including an amended conclusion in an addendum to the original DA. This addendum concluded that no relevant receptors were exceeding the AQO for nitrogen dioxide when measured as an annual mean. The findings of the resubmitted DA were finally approved in March 2010.

Further data collected and reported in 2010 and the 2011 Progress report once again showed exceedences of the AQO for nitrogen dioxide at a number of monitoring sites located adjacent to the Newhaven gyratory. DEFRA requested a further DA using this data. Further modeling work was carried out in 2011 and this DA was submitted to DEFRA on the 18th February 2013 and is currently awaiting submission and approval.

Figure 1.1 Map of AQMA Boundaries



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Air Quality Management
Area
Lewes Town Centre (No.1) Order 2005.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Lewes District Council has historically undertaken continuous monitoring of air quality pollutants at two roadside locations, Telscombe Cliffs and West Street, Lewes (within the AQMA).

In February 2010 the Telscombe Cliffs site was decommissioned and mothballed until a new site became available. In March 2011 a new site was acquired at Denton Primary School, Newhaven. This principle aim of this site is to monitor the emissions from the Newhaven ERF. It monitors the same species as before, PM10 (particulates with an aerodynamic diameter of 10 microns or less), NOx, and ozone with the addition of a new FDMS PM2.5 (particulates with an aerodynamic diameter of 2.5 microns or less). The data from this site is reported in section 2.2 of this document.

In February 2011 the power supply for the West Street site was terminated. A new roadside site was identified within the AQMA and the site was re-commissioned in early June 2011. The data from this site is reported in section 2.2 of this document.

In December 2010 the Sussex Air temporary moni-

toring station was installed adjacent to the A26, Newhaven. This installation monitored the roadside emissions of PM10, NOx, CO and ozone. This data is reported in section 2.2 of this document.

At both of the fixed monitoring stations nitrogen dioxide is measured using a chemiluminescence analyser, a Horiba APNA Ambient NOx Monitor, whilst PM10 is measured using a RP TEOM (Series 1400a). The PM 2.5 (Denton School only) is measured using a Thermo Scientific TEOM 1400ab 8500 FDMS.

The calibrations and filter change data is sent to Environment Research Group based at Kings College, London (ERG) every two weeks. ERG collect the data from the stations on a daily basis, verifying the data against other monitoring stations in the south-east and ratifying it using the calibration information supplied. Local Site Operations (LSO) duties are carried out by trained officers from the Environment Team within Lewes District Council's Planning and Environmental Health department.

Historically PM10 data has been adjusted using a correction factor of 1.3. In line with latest guidance this data will now be adjusted using the VCM provided by Kings College London.

Figure 2.1 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 (N/A if not applicable)	Worst-case Location ?
LS2 – Lewes Town West Street (Decommissioned Feb 2011)	Roadside	X 541510 Y 110264	NO2 Pm10 (by teom)	Y	Y (10m)	2m	Y
LS5 – Lewes Town West Street (commissioned May 2011)	Roadside	X 541543 Y 110245	NO2 Pm10 (by teom)	Y	Y(2m)	2m	Y
Sussex Mobile Lab	Roadside	X 544741 Y 102264	NO2 PM10 (by teom) Ozone	N	N	6m	Y
LS4 – Denton School, Newhaven	Urban background	X 545109 Y 102482	NO Pm10 /2.5 (by teom/FDMS) Ozone	N	Y(10m)	20m	N

Figure 2.2 Map of Automatic Monitoring Sites Newhaven

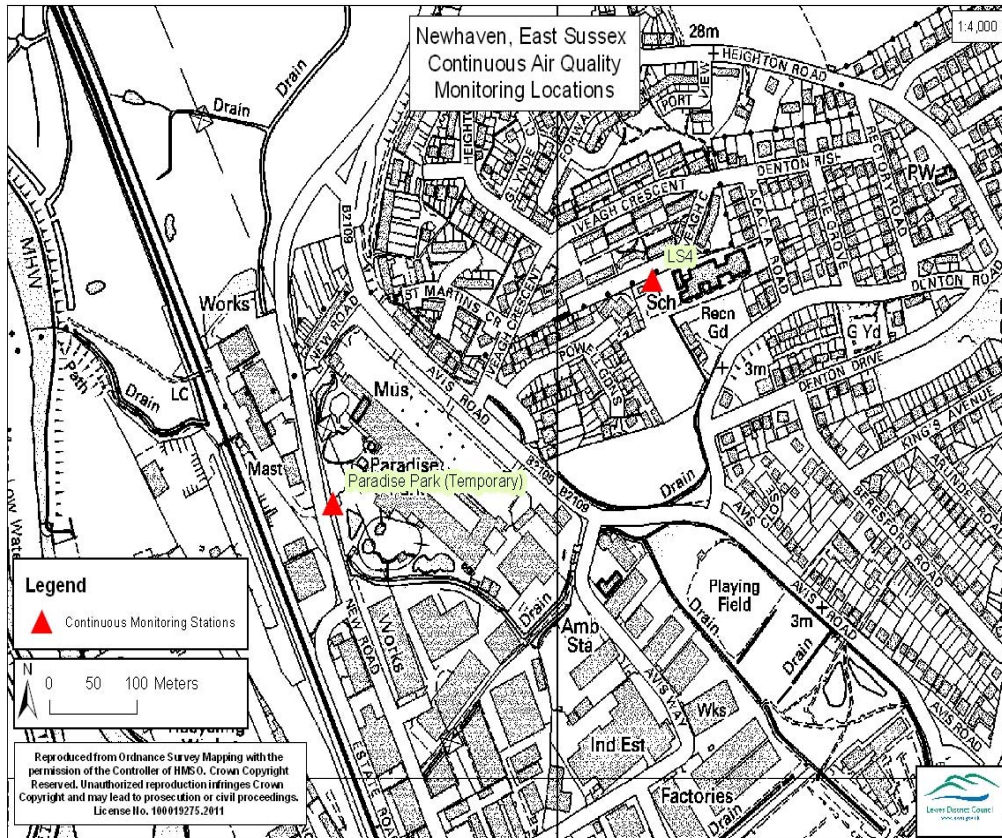
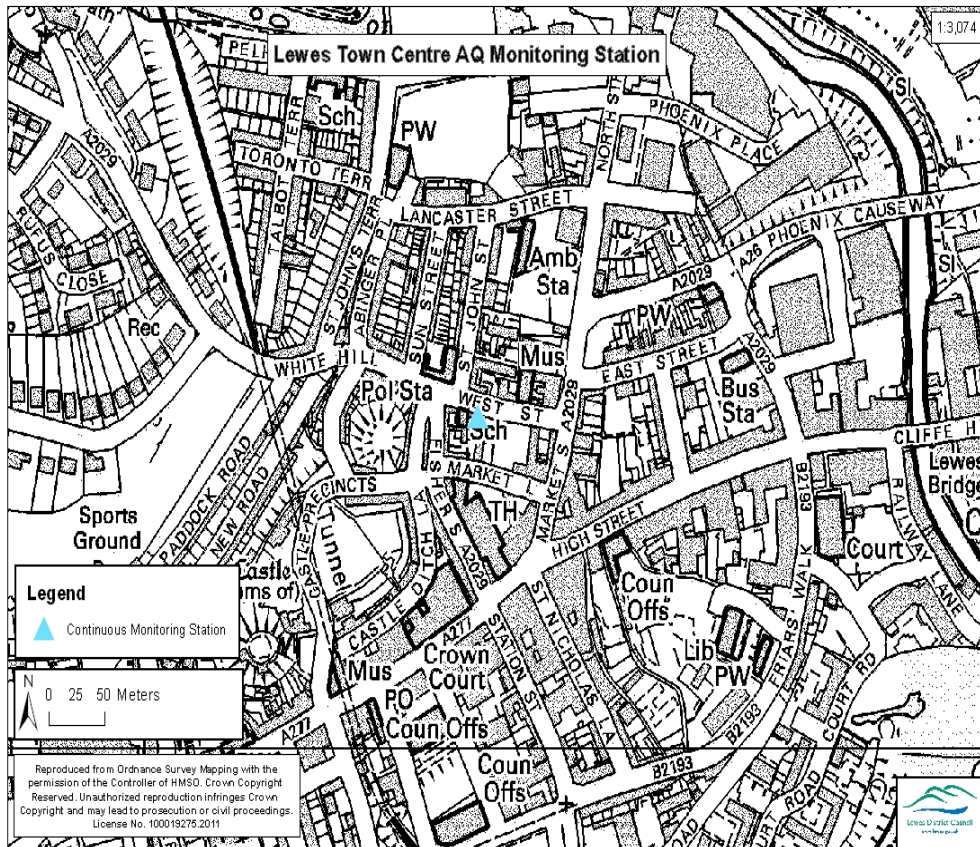


Figure 2.3 Map of Automatic Monitoring Sites Lewes LS5 West street



2.1.2 Non-Automatic Monitoring Sites

The Council also monitors NO₂ using diffusion tubes across the district. The monitoring is undertaken using diffusion tubes supplied and analysed by Bristol Scientific Services, though this will be carried out by Gradko from 2012 onwards. Details relating to the quality control and assurance of this monitoring can be found in Appendix A.

Historically a tube has been co-located at the continuous monitoring site LS2 (now LS5) and is <0.50m from the inlet to the Horiba APNA

Ambient NO_x Monitor. Currently a tube is also co-located at LS4 <0.50m from the inlet to the Horiba APNA Ambient NO_x monitor. The bias adjustment factor of 0.83 has been used as calculated from the 2011 collocation study as supplied by the DEFRA helpdesk as operated by Bureau Veritas. In 2011 one additional tube has been located adjacent to the A26, this tube is referenced as New Road, Newhaven.

All monitoring data have been ratified following the methods described in LAQM.TG(09).

Figure 2.2a Map of Non-Automatic Monitoring Sites Newhaven

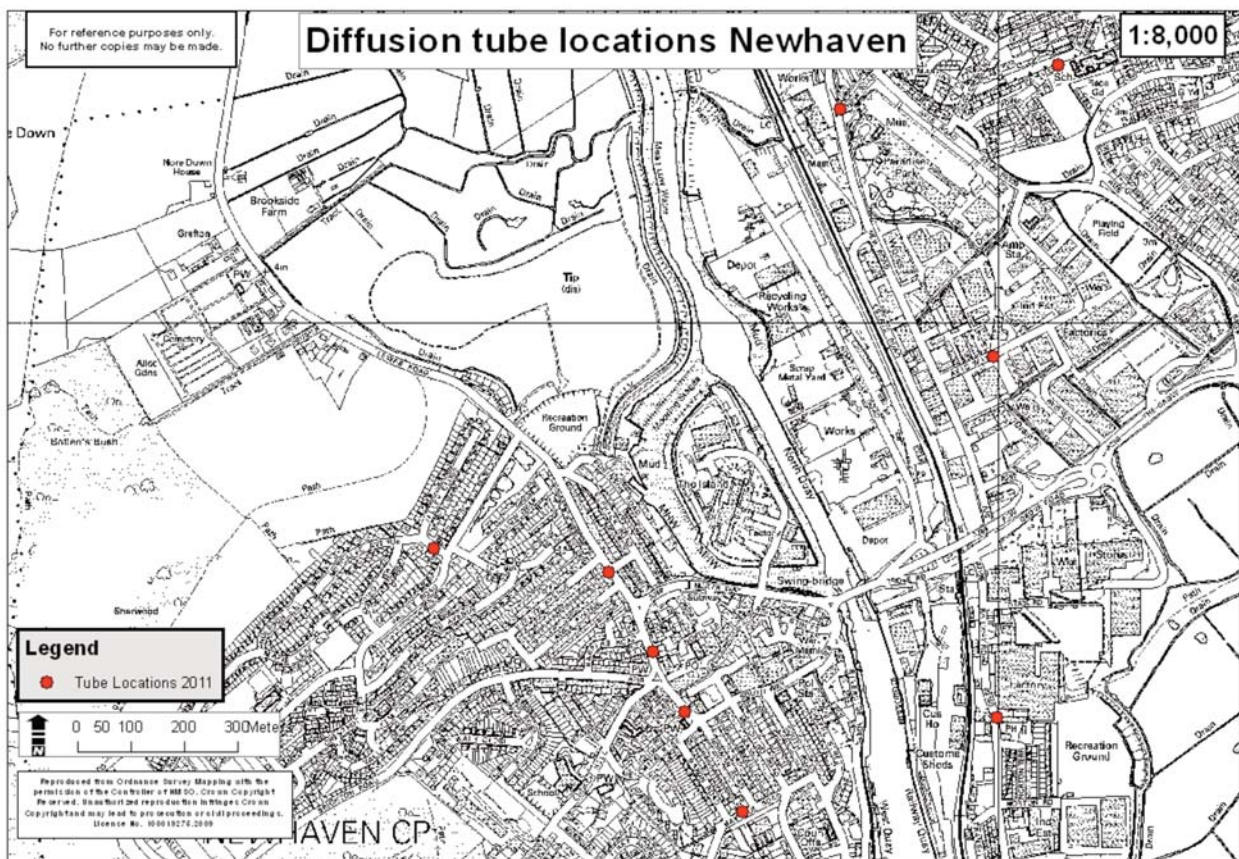


Figure 2.2b Map of Non-Automatic Monitoring Sites Lewes

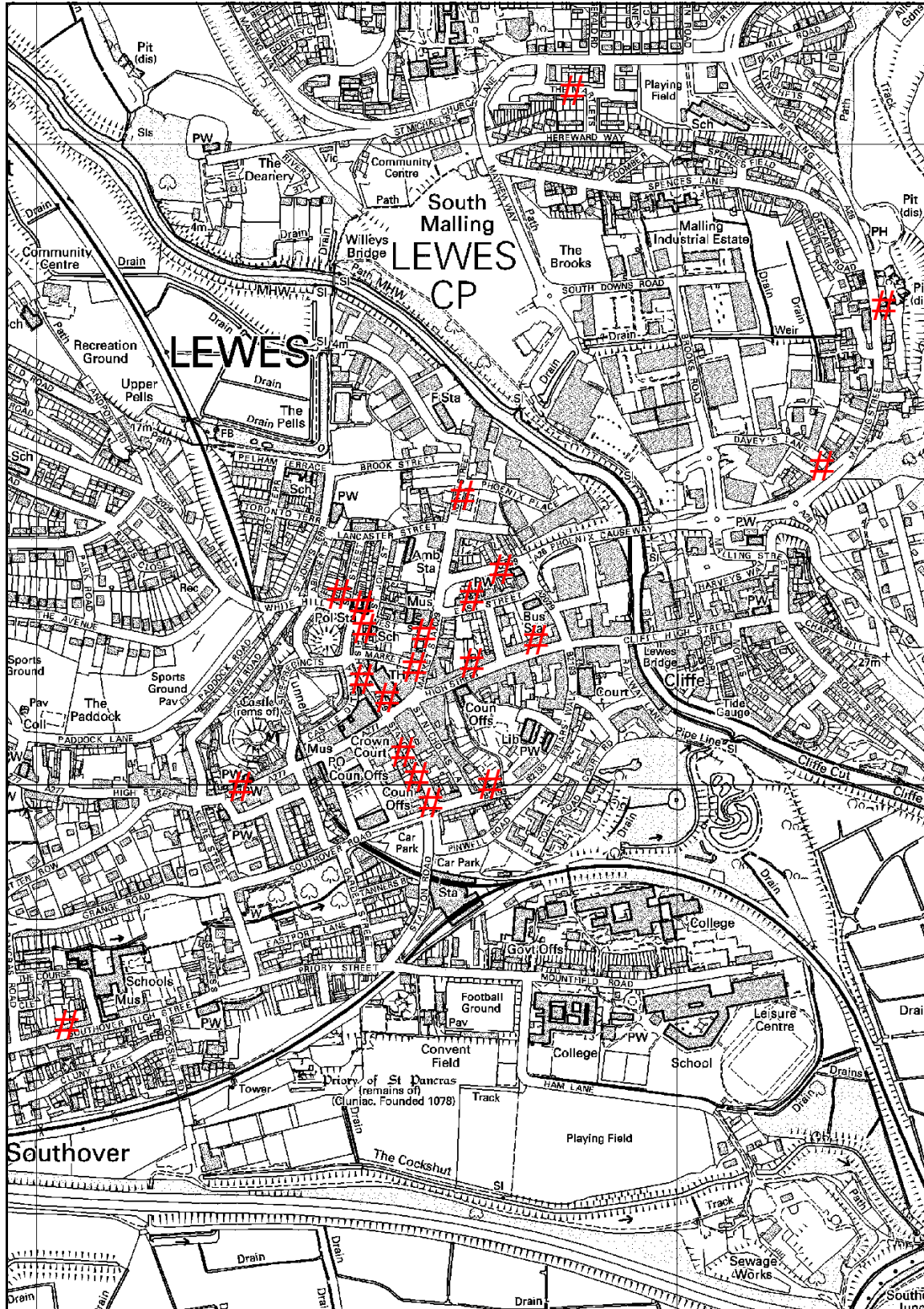


Figure 2.2c District wide Non-Automatic Monitoring Sites

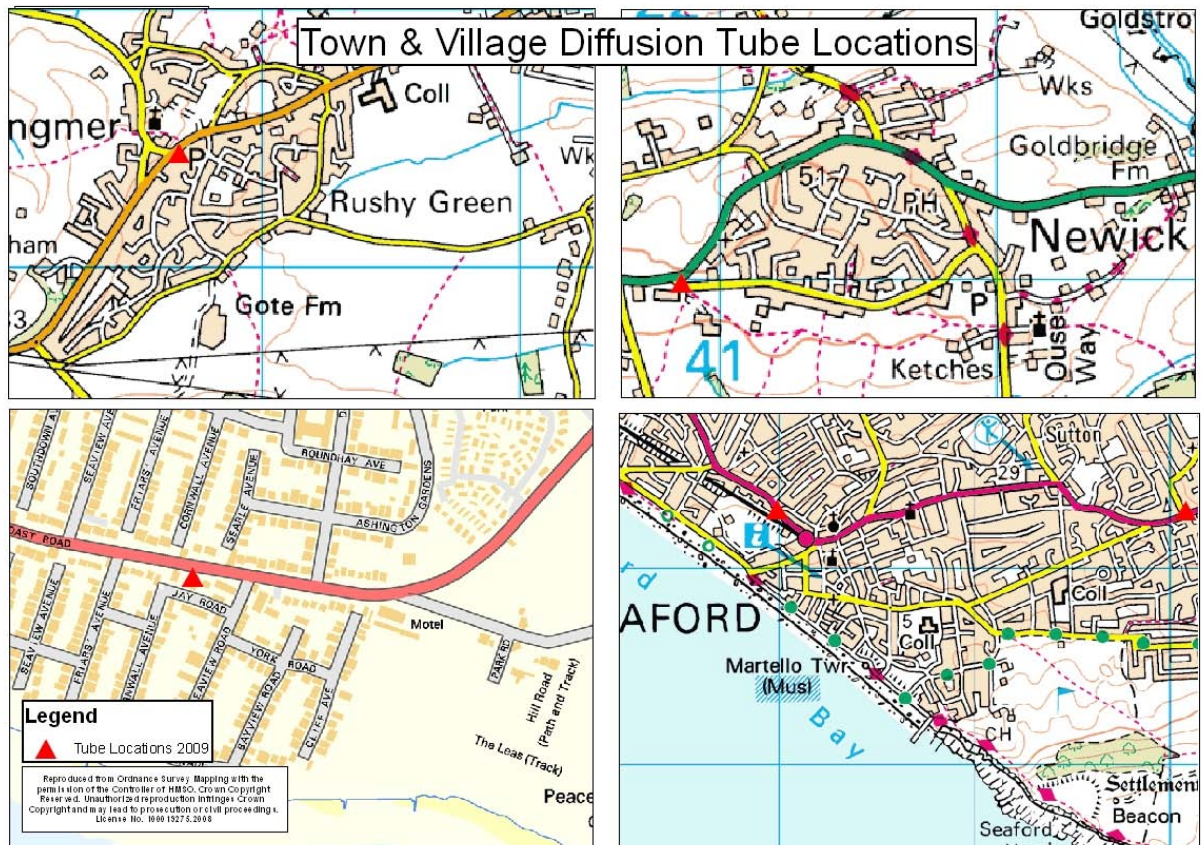


Table 2.2 Details of Non-Automatic Monitoring Sites

Tube Number	Location	In AQMA?	Type and m to kerb	X	Y	Pollutant	Relevant Y/N with distance(m) to relevant exposure)	Worst case Location?
1	Fisher Street - West	AQMA - Lewes	K (1)	541528	110141	NO ₂	N	Y
2	Fisher Street - East	AQMA - Lewes	K (1)	541540	110806	NO ₂	N	Y
3	18 Fisher Street	AQMA - Lewes	K (1)	541504	110234	NO ₂	Y(1m)	Y
4	Station Street	AQMA - Lewes	K (1)	541603	110001	NO ₂	Y(1m)	Y
5	Station St/Lansdown Place	AQMA - Lewes	R (2)	541540	110130	NO ₂	N	Y
6	Westgate,High Street	AQMA - Lewes	K (1)	541285	109969	NO ₂	Y(5m)	Y
7	West Street AQMS	AQMA - Lewes	R (2)	541511	110263	NO ₂	Y(10m)	
8	Mount Pleasant	AQMA - Lewes	R (2)	541478	110277	NO ₂	Y(10m)	Y
9	West St/Market St	AQMA - Lewes	K (1)	541611	110243	NO ₂	Y(5m)	Y
10	Market Street	AQMA - Lewes	K (0.5)	541598	110174	NO ₂	Y(5m)	Y
11	204 High Street	Lewes	R (2)	541667	110176	NO ₂	Y(3m)	Y
12	North Street	Lewes	K (1)	541643	110376	NO ₂	Y(5m)	
13	School Hill	Lewes	K(1)	541770	116210	NO ₂	N	Y
14	Little East Street	Lewes	R(2)	541726	110335	NO ₂	Y (1m)	Y
15	East Street	Lewes	K (1)	541669	110282	NO ₂	Y (0m)	Y
16	Lansdown Place	Lewes	R (1.5)	541780	110030	NO ₂	Y(2m)	
17	Southover High St.	Lewes	K (1)	541055	109617	NO ₂	Y (1m)	Y
18	Cuilfail Tunnel/A26	Lewes	R (5)	542233	110493	NO ₂	Y (1m)	
19	159 Malling St	Lewes	K (1)	542316	110726	NO ₂	Y(5m)	Y
20	Malling Close	Lewes	BG	542254	110806	NO ₂	Y(10m)	
21	Clare Rd	Lewes	BG	541842	110654	NO ₂	Y(10m)	
22	9 Southway	Newhaven	K (1)	544338	101388	NO ₂	Y(5m)	Y
23	16 Southway	Newhaven	K(1)	544414	101271	NO ₂	Y(5m)	Y
24	8 Bayview Rd	Newhaven	BG	544416	101356	NO ₂	Y(3m)	
25	1 Valley Close	Newhaven	BG	544522	101087	NO ₂	Y(10m)	
26	Avis Way	Newhaven	K (1)	544981	101934	NO ₂	N	
27	Heighton Cr	Newhaven	BG	544908	102704	NO ₂	Y(10m)	
28	Railway Road, Newhaven	Newhaven	K (1)	545072	101251	NO ₂	Y(5m)	
29	Lewes Road	Newhaven	K (2)	544273	101532	NO ₂	Y(5m)	Y
30	A259 South Cst Rd	Peacehaven	R (1.5)	542175	100673	NO ₂	Y(10m)	Y
31	A272 Allington Rd	Newick	R (3)	540868	120995	NO ₂	N	
32	High St	Ditchling	K (0.5)	532605	115201	NO ₂	Y(5m)	Y
33	A259 Chyngton Gdns	Seaford	R (1.5)	550077	99291	NO ₂	Y(10m)	Y
34	New Road, Newhaven	Newhaven	R (1)	544703	102400	NO ₂	Y(10m)	Y
35	West Street AQMS (New)	AQMA - Lewes	R (2)	541543	110245	NO ₂	Y(2m)	Y
36	Denton AQMS	Newhaven	BG	545109	102482	NO ₂	Y(20M)	

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Lewes District Council operates a number of diffusive sampling sites. In addition, automatic (chemiluminescent) monitors are permanently located at 2 locations, including within the AQMA, giving hourly readings of nitrogen dioxide concentration. All data have been ratified and extrapolated to cover a full calendar year where necessary, as indicated in the technical guidance TG(09). As table 2.3 illustrates the annual mean for NO₂ has not been exceeded at the West Street, Lewes site. Similarly the Denton School Newhaven site has also not exceeded the annual mean AQO. In addition the 1 hour mean value of 200ug/m³ has also not been exceeded at either location.

The LS5 station located within the Lewes AQMA showed annual mean concentrations of 20.5 µg/m³, which is a year on year decrease. These findings are discussed in more detail in section 8.1, however the decrease reflects not only the change in the monitoring point but also a general reduction in levels of NO₂ within the AQMA as detailed in table 2.6. A data capture rate of 100% was achieved for the 6 months of monitoring from June 2011 to December 2011.

The LS4 station located at Denton School, Newhaven showed a lower annual mean concentration of 12.8 µg/m³ and again at no time did the concentration of the 1 hour mean exceed 200ug/m³. This site was commissioned in March and had a data capture rate of 98%.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Annual Mean Concentration □ g/m ³			
					2008* ^c	2009* ^c	2010* ^c	2011 ^c
West Street LS2 (Decommissioned Feb 2011)	Roadside	Y	100%	12%	25.1	26.2	28.7	26.3 (Annualised 18.9)
West Street LS5 (commissioned June 2011)	Roadside	Y	100%	50%	NA	NA	NA	18.3 (Annualised 20.50)
Denton School Newhaven LS4(comm -issioned March 2011)	Urban Background	N	98%	75%	NA	NA	NA	12.8 (Annualised 11.76)
Sussex Mobile Paradise Park(comm -issioned Jan 11 – June 11)	Roadside	N	94%	50%	NA	NA	NA	10.5 (Annualised 7.88)

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

*Annual mean concentrations for previous years are optional.

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Number of Exceedences of Hourly Mean (200 g/m ³)				
					2007* ^c	2008* ^c	2009* ^c	2010* ^c	2011 ^c
West Street LS2(Decommissioned Feb 2011)	Roadside	Y	100%	12%	0	0	0	0	0
West Street LS5 (commissioned June 2011)	Roadside	Y	100%	50%	NA	NA	NA	NA	0
Denton School Newhaven LS4	Urban Back-ground	N	98%	75%	NA	NA	NA	NA	0
Sussex Mobile Paradise Park(comm-issioned Jan 11 – June 11)	Roadside	N	94%	50%	NA	NA	NA	NA	0

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets

Diffusion Tube Monitoring Data

Lewes District Council operate diffusion tube monitoring at 36 locations throughout the district. They are a representative mixture of kerbside, roadside and urban background. In 2011, 7 sites met or exceeded the AQO for NO₂ when measured as an annual mean concentration of 40 µg/m³, these are highlighted in table 2.5.

A total of 3 of these tubes are located within the existing AQMA. The tube referenced LDC 34 currently sits on the boundary of the AQMA some 25 metres to the east. This tube represents relevant exposure as the façade of 204 and 205 High

Street are both residential properties. Tube referenced LDC School Hill located 115 metres further away also exceeded the annual mean but importantly does not represent relevant exposure.

The two further tubes that exceeded the AQO annual mean for nitrogen dioxide are both located on the Newhaven gyratory, these tubes also exceeded 40 µg/m³ in 2006, 2009, 2010 and now in 2011. This data is currently being used to carry out a detailed assessment in the Newhaven area in order to establish if any relevant receptor locations are exceeding the AQO for nitrogen dioxide when measured as an annual mean.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Location	Site Type	Within AQM A?	TriPLICATE or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	NO₂ Annual mean concentration (Bias Adjustment factor = 0.83 2011 (g/m³))
LDC 12 Valley Close - Newhaven	Background	N	N	92.0%	NA	N	13.0
LDC 10 - 9 Southway - Newhaven	Roadside	N	N	92.0%	NA	N	40.9
LDC - 16 Southway - Newhaven	Roadside	N	N	92.0%	NA	N	43.4
LDC 11 - Lewes Rd - Newhaven	Roadside	N	N	92.0%	NA	N	30.6
LDC 7 - Willow Estate, Avis Way - Newhaven	Roadside	N	N	92.0%	NA	N	23.1
LDC 8 - 8 Bay View Rd - Newhaven	Background	N	N	84.0%	NA	N	17.1
LDC 5 - 11 Malling St - Lewes	Background	N	N	92.0%	NA	N	15.5
LDC 6 - 17 Clare Road - Lewes	Background	N	N	92.0%	NA	N	15.4
LDC 25 - Westgate Chapel	Roadside	N	N	92.0%	NA	N	33.4
LDC 26 - Mount Pleasant	Roadside	Y	N	92.0%	NA	N	26.6
LDC 27 - West St Police Station	Roadside	Y	N	75.0%	Y	N	24.6
LDC - 18 Fisher Street	Roadside	Y	N	92.0%	NA	N	27.4

Location	Site Type	Within AQM A?	TriPLICATE or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	NO ₂ Annual mean concentration (Bias Adjustment factor = 0.83) 2011 (g/m ³)
LDC 36 - Fisher St West	Roadside	Y	N	92.0%	NA	N	43.8
LDC 1 - Fisher Rd East	Roadside	Y	N	92.0%	NA	N	48.3
LDC 29 - Market St	Roadside	Y	N	92.0%	NA	N	42.8
LDC 28 - West St/Market St	Roadside	Y	N	92.0%	NA	N	24.2
LDC 31 - North St	Roadside	N	N	92.0%	NA	N	21.6
LDC 33 - Cuiffail Tunnel/Thomas St	Roadside	N	N	92.0%	NA	N	32.9
LDC 4 - 159 Malling St - Lewes	Roadside	N	N	92.0%	NA	N	33.2
LDC - 6 East Street (NEW from Mar 07)	Roadside	Y	N	92.0%	NA	N	26.0
LDC 30 - Little East St	Roadside	Y	N	92.0%	NA	N	24.3
LDC - School Hill (NEW from Mar 07)	Roadside	N	N	92.0%	NA	N	40.5
LDC 34 - 204 High St	Roadside	N	N	75.0%	Y	N	54.2
LDC 35 - Walmer Lane/Lansdowne Terrace	Roadside	Y	N	92.0%	NA	N	20.5
LDC 23 - Station St/Lansdown Terrace	Roadside	Y	N	92.0%	NA	N	27.2
LDC 14 - Station Rd - Lewes	Roadside	Y	N	92.0%	NA	N	36.5
LDC 37 - 27 Station St (inside)	Roadside	Y	N	50.0%	Y	N	22.3

Location	Site Type	Within AQM A?	TriPLICATE or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	NO ₂ Annual mean concentration (Bias Adjustment factor = 0.83) 2011 (g/m ³)
Newhaven - AQ monitoring Station	Background	N	N	66.0%	Y	N	12.1
New Road (Newhaven)	Roadside	N	N	50.0%	Y	N	22.4
ESCC 9 - South Coast Rd (Cornwall Ave)- Peacehaven	Roadside	N	N	92.0%	NA	N	20.2
ESCC 20 - A259 Seaford (nr Chynyton Gardens)	Roadside	N	N	92.0%	NA	N	34.3
ESCC 21 - A259 Seaford (nr St Crispans)	Roadside	N	N	92.0%	NA	N	21.9
ESCC 23 - Railway Rd - Newhaven	Roadside	N	N	92.0%	NA	N	22.8
ESCC 24 - 35 Heighton Crescent - Denton	Background	N	N	92.0%	NA	N	15.9
ESSCC 2 - Ringmer Village Hall	Roadside	N	N	92.0%	NA	N	24.3
ESCC 17 - A272 Allington Rd - Newick	Roadside	N	N	92.0%	NA	N	19.1
ESCC 18 - High St - Ditchling	Roadside	N	N	92.0%	NA	N	29.0
ESCC 22 - Southover High St - Lewes	Roadside	N	N	84.0%	NA	N	32.3

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
^{*}Annual mean concentrations for previous years are optional.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2011)

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) g/m ³					% change year on year 2010 /11
			2008* (Bias Adjustment Factor = 0.72)	2009* (Bias Adjustment Factor = 0.85)	2010* (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.83)		
LDC 12 Valley Close - Newhaven	Background	N	15.5	15.6	17.3	13.0	-24.9	
LDC 10 - 9 Southway - Newhaven	Roadside	N	34.3	42.2	44.9	40.9	-8.9	
LDC -16 Southway - Newhaven	Roadside	N	41.2	47.6	51.2	43.4	-15.2	
LDC 11 - Lewes Rd - Newhaven	Roadside	N	30.1	35.1	36.5	30.6	-16.2	
LDC 7 - Willow Estate, Avis Way - Newhaven	Roadside	N	21.9	25.4	26.7	23.1	-13.5	
LDC 8 - 8 Bay View Rd - Newhaven	Background	N	17.6	22.8	24.1	17.1	-29.0	
LDC 5 - 11 Malling St - Lewes	Background	N	15.9	17.7	18.7	15.5	-17.1	
LDC 6 - 17 Clare Road - Lewes	Background	N	15.2	18.0	18.0	15.4	-14.4	
LDC 25 - Westgate Chapel	Roadside	N	35.4	39.9	41.7	33.4	-19.9	
LDC 26 - Mount Pleasant	Roadside	Y	22.7	29.1	28.0	26.6	-5.0	

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) g/m ³					% change year on year 2010 /11
			2008* (Bias Adjustment Factor = 0.72)	2009* (Bias Adjustment Factor = 0.85)	2010* (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.83)		
LDC 27 - West St Police Station	Roadside	Y	27.6	36.1	33.6	24.6	-26.8	
LDC - 18 Fisher Street	Roadside	Y	25	32.7	32.8	27.4	-16.5	
LDC 36 - Fisher St West	Roadside	Y	44.3	53.6	53.5	43.8	-18.1	
LDC 1- Fisher Rd East	Roadside	Y	43.9	56.1	57.9	48.3	-16.6	
LDC 29 - Market St	Roadside	Y	37.4	51.9	47.2	42.8	-9.3	
LDC 28 - West St/Market St	Roadside	Y	25.3	29.5	29.4	24.2	-17.7	
LDC 31 - North St	Roadside	N	21.8	27.3	26.6	21.6	-18.8	
LDC 33 - Cuilfail Tunnel/Thomas St	Roadside	N	28.2	33.3	32.0	32.9	2.8	
LDC 4 - 159 Malling St - Lewes	Roadside	N	29.9	35.5	37.8	33.2	-12.2	
LDC - 6 East Street (NEW from Mar 07)	Roadside	Y	28.1	31.5	33.8	26.0	-23.1	
LDC 30 - Little East St	Roadside	Y	23.9	30.2	27.0	24.3	-10.0	
LDC - School Hill (NEW from Mar 07)	Roadside	N	38.6	45.2	43.8	40.5	-7.5	
LDC 34 - 204 High St	Roadside	N	44.3	59.9	55.3	54.2	-2.0	

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) g/m ³				% change year on year 2010 /11
			2008* (Bias Adjustment Factor = 0.72)	2009* (Bias Adjustment Factor = 0.85)	2010* (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.83)	
LDC 35 - Walmer Lane/Lansdowne Terrace	Roadside	Y	21.4	27.9	29.4	20.5	-30.3
LDC 23 - Station St/Lansdown Terrace	Roadside	Y	27.5	32.4	33.1	27.2	-17.8
LDC 14 - Station Rd - Lewes	Roadside	Y	35.4	40.2	39.8	36.5	-8.3
LDC 37 - 27 Station St (inside)	Roadside	Y	21.5	26.7	29.4	22.3	-24.1
Newhaven - AQ monitoring Station	Background	N	NA	NA	NA	12.1	NA
New Road (Newhaven)	Roadside	N	NA	NA	NA	22.4	NA
ESCC 9 - South Coast Rd (Cornwall Ave)- Peacehaven	Roadside	N	25.1	29.8	27.0	20.2	-25.2
ESCC 20 - A259 Seaford (nr Chynoton Gardens)	Roadside	N	33.5	47.3	39.5	34.3	-13.2
ESCC 21 - A259 Seaford (nr St Crispans)	Roadside	N	25.1	32.2	33.7	21.9	-35.0
ESCC 23 - Railway Rd - Newhaven	Roadside	N	22.4	32.3	32.0	22.8	-28.8

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) g/m ³					% change year on year 2010 /11
			2008* (Bias Adjustment Factor = 0.72)	2009* (Bias Adjustment Factor = 0.85)	2010* (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.83)		
ESCC 24 - 35 Heighton Crescent - Denton	Background	N	15	22.2	18.0	15.9	-11.7	
ESSCC 2 - Ringmer Village Hall	Roadside	N	22.6	30.2	29.4	24.3	-17.3	
ESCC 17 - A272 Allington Rd - Newick	Roadside	N	20.2	27.7	25.7	19.1	-25.7	
ESCC 18 - High St - Ditchling	Roadside	N	18.9	38.9	36.7	29.0	-21.0	
ESCC 22 - Southover High St - Lewes	Roadside	N	29.5	43.0	38.9	32.3	-17.0	

2.2.2 PM10

During 2011 Lewes District Council have monitored for PM10 at two continuous monitoring locations, R & P Teom monitors were permanently located in Lewes town centre (LS2 and LS5), within the AQMA, and also at Denton School, Newhaven giving hourly readings of PM10 concentration. All data have been ratified, and extrapolated to cover a full calendar year where necessary, as indicated in the TG(09).

LS5 like LS2 is a roadside location within the AQMA, however the closest residential receptors to LS5 are within 1 metre. This site achieved a 90%

data capture rate for the 6 month monitoring period. The annual mean for PM10 for this period is 19.7 g/m³. During the same period there was 1 exceedence of the 24-Hour Mean (50 g/m³) air quality objective.

The Denton School site is a background location, primarily located to monitor any potential emissions from the newly commissioned incinerator. This site achieved a 75% data capture rate for the 9 month monitoring period. The annual mean for PM10 for this period is 17.2 g/m³. During the same period there was 1 exceedence of the 24-Hour Mean (50 g/m³) air quality objective.

Table 2.7 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration g/m ³				
						2007* ^c	2008* ^c	2009* ^c	2010* ^c	2011 ^c
West Street LS2(Decommissioned Feb 2011)	Roadside	Y	100%	12%	Y	NA	25	24	21	2011 ^c
West Street LS5 (commissioned June 2011)	Roadside	Y	90%	50%	Y	NA	NA	NA	NA	19.7 (Annualised 17.14)
Denton School Newhaven LS4	Urban Background	N	78%	75%	Y	NA	NA	NA	NA	17.2 (Annualised 15.23)
Sussex Mobile Paradise Park(commissioned Jan 11 – June 11)	Roadside	N	94%	50%	Y	NA	NA	NA	NA	30.4 (Annualised 26.45)

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

* Optional

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 g/m ³)				
						2007*	2008*	2009*	2010*	2011
West Street LS2(Decommissioned Feb 2011)	Roadside	Y	100%	12%	Y	NA	4 (28) 90 th percentile	2 (35) 90 th percentile	4 (31) 90 th percentile	1 (27) 90 th percentile
West Street LS5 (commissioned June 2011)	Roadside	Y	90%	50%	Y	NA	NA	NA	NA	1 (27) 90 th percentile
Denton School Newhaven LS4	Urban Background	N	78%	75%	Y	NA	NA	NA	NA	1 (26) 90 th percentile
Sussex Mobile Paradise Park(commissioned Jan 11 – June 11)	Roadside	N	94%	50%	Y	NA	NA	NA	NA	17

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

^c if data capture is less than 90%, include the 90th percentile of 24-hour means in brackets

* Optional

2.2.3 Sulphur Dioxide

We do not currently monitor for sulphur dioxide. There have been no significant changes to potential sources of this pollutant since the last updating and screening assessment carried out in 2006 that concluded that no further action was required.

2.2.4 Benzene

We do not currently monitor for benzene. There have been no significant changes to potential sources of this pollutant since the last updating and screening assessment carried out in 2006 that concluded that no further action was required.

2.2.5 Other pollutants monitored

Lewes District Council monitor for ozone and have an automatic (chemiluminescent) analyser permanently located at the Denton School Newhaven LS4 site. The pollutant ozone is a trans boundary pollutant and is not a listed objective of the Air Quality Regulations for the purpose of Local Air Quality Management and as such the results of this monitoring will not be included in this report. Since March 2011 we have also monitored for PM 2.5 at the Denton School, Newhaven (LS4). This data is not presented in this report but like the ozone readings is available at www.sussex-air.net.

2.2.6 Summary of Compliance with AQS Objectives

Lewes District Council has measured concentrations of nitrogen dioxide above the annual mean objective at relevant locations outside of the AQMA. The four locations identified are 2 tube locations adjacent to the Newhaven gyratory and 2 tube locations adjacent to the existing Lewes town centre AQMA.

The Lewes town centre tubes are situated outside of the current AQMA. Though tube referenced LDC 34 represent relevant exposure it is only marginally beyond the current AQMA boundary (25 metres). The School Hill tube does not currently represent relevant exposure. These findings are discussed in more detail in section 8.

The two tube locations adjacent to the Newhaven gyratory have once again exceeded the AQO for nitrogen dioxide when measured as an annual mean. These findings are discussed in more detail in section 8.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Lewes District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

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

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

3.3 Roads with a High Flow of Buses and/or HDVs.

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

3.4 Junctions

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

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

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

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

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

4 Other Transport Sources

4.1 Airports

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

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

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

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

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

5 Industrial Sources

5.1 Industrial Installations

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

North Quay, Newhaven - Energy Recovery Facility (ERF) – The commissioning of this facility commenced in June 2011 and finally became fully operational in October 2011. A full air quality impact assessment was carried out and submitted in support of the original planning application LW/05/2292 in 2005.

The air quality impact assessment was carried out using Atmospheric Dispersion Modelling System (ADMS) and considered the emissions from the ERF chimney stacks over a receptor grid of 21km². The results of this assessment predicted a worst case modelled incremental annual average NO₂ of 2.5 g/m³. When added to the background NO₂ and monitored levels of NO₂ in the Newhaven and wider area the predicted concentrations fell below the AQO for NO₂ when measured as an annual mean.

The emissions arising from the increased HDV traffic servicing the facility were modelled using the Design Manual for Roads and Bridges (DMRB) screening tool, this predicted a very small incremental concentration of 0.8 g/m³ at a worst case residential receptor adjacent to the A26.

There continues to be a great deal of interest relating to the emissions from the ERF. In response to this Lewes District Council secured S106 monies to site a continuous monitoring station in the Newhaven area in order to monitor NO₂, PM₁₀ and PM_{2.5}. The data collected from this continuous monitoring station is included in this report and thus far the levels monitored have not exceeded any of the relevant Air Quality Objectives.

Lewes District Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

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

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

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

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

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

5.4 Poultry Farms

Lewes District Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Lewes District Council currently knows of one biomass boiler that meets the criteria for assessment. HMP Lewes installed a new boiler in 2008 with a rated output of 230kw and is a Binder wood pellet burning installation. The operator of the plant did not provide the necessary data in time for an assessment to be carried out for inclusion in the 2009 USA. The screening assessment for the plant was submitted in December 2010 and concluded that no detailed assessment would be required.

Lewes District Council confirms that there are no biomass combustion plant in the Local Authority area that require further assessment.

6.2 Biomass Combustion – Combined Impacts

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

6.3 Domestic Solid-Fuel Burning

Lewes District Council covers predominantly rural areas and is dotted with four towns

with more densely populated areas. The four towns include Lewes, Seaford, Newhaven and Peacehaven. These areas were assessed as part of the 2009 USA and it was found that there were no areas of significant domestic fuel use as detailed in Box 5.8, chapter 5 of TG(09).

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

7 Fugitive or Uncontrolled Sources

Lewes District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The annual mean AQO for NO₂ has not been exceeded at neither of the continuous monitoring sites. In addition the 1 hour mean value of 200ug/m³ has also not been exceeded.

The LS5 (formerly referenced LS2) station located within the AQMA showed an annual mean annualised concentration of 18.5 µg/m³. This monitoring station was relocated and commissioned in June 2011. The new location, though within the existing AQMA, is some 30 metres from the historical location of the AQMA continuous monitoring point. Crucially the new location is away from a critical junction that is subject to high levels of queuing and congestion both during peak and off peak travel times. The new location, though roadside, is now adjacent to a road that despite taking the same numbers of vehicle movements is rarely subject to any significant congestion. The considerably lower figure of 18.5 µg/m³ is representative of this change in the nature of the vehicle movements and also highlights the importance of the Fisher Street/White Hill junction in relation to improving air quality within the Lewes AQMA.

The junction priority change proposed with the Lewes AQAP 2009 is to be part funded by previously awarded DEFRA air quality grant monies and these works will take place in Spring 2013 and be carried out by the ESCC who are the Local Transport Authority. Lewes District Council and ESCC will monitor the traffic flow and the levels of NO₂ both before and during the priority change. It is proposed that the priority change be trialled for an 18 month period and the monitoring data analysed to fully determine the impact on air quality and the movement of traffic.

Scenarios carried out in 2011 using EMIT 3.0 investigated the likely benefits the priority change between Fisher Street, Mount Pleasant, and West Street and conservatively estimated that the average speed of traffic on Fisher Street would increase by 5mph and consequently Mount Pleasant would see a reduction of speed by 5mph.

This method was used to simulate improved flow of traffic and a reduction in congestion and queuing in the "canyon" Fisher Street. This work is discussed in more detail in 8.3.

Of the 37 diffusion tube sites seven locations met or exceeded the annual mean concentration of 40 µg/m³. A total of 3 of these tubes are located within the existing Lewes town AQMA. Tube referenced LDC34 measured a year on year decrease of 2% and the School Hill tube showed a reduction of 7.5%. These year on year reductions were in keeping with year on year reductions at all of the town centre tube locations.

As in previous years, the tubes located at 9 and 16 Southway, Newhaven gyratory exceeded the AQO annual mean for nitrogen dioxide. Previous modelling submitted to DEFRA in March 2010, predicted the annual mean AQO for nitrogen dioxide would not be exceeded, these findings were agreed by DEFRA in May 2010. The previous progress report submitted in June 2010 again showed these tubes exceeded the AQO and DEFRA requested a further detailed assessment be carried out. We concluded in the 2011 progress report that we would undertake a further detailed assessment to establish if the AQO for nitrogen dioxide, when measured as an annual mean, is being exceeded in the Newhaven gyratory area.

8.2 Conclusions from Assessment of Sources

With the exception of the Newhaven ERF there have not been any new or significant changes sources identified during this period of review and assessment outside of the existing Lewes AQMA.

8.3 Proposed Actions

The Updating and Screening Assessment has identified that there is no need to proceed to a further Detailed Assessment. Monitoring data has shown that where the national air quality objectives have been exceeded these areas lie within an existing

AQMA, close to the boundary where there is no relevant exposure, or where detailed assessments have recently been and/or are being carried out.

The tubes located adjacent to the existing Lewes AQMA exceed the AQO for nitrogen dioxide when measured as annual mean. As we proposed in the 2011 Progress Report, due to the proximity of these tubes to the current AQMA boundary, and the fact that the current AQAP measures deal with air quality within Lewes town as a whole, there would be no advantage to extending the current boundary. Furthermore our limited resources are currently being used to implement the 28 actions within the AQAP that will also improve the levels of nitrogen dioxide at these monitoring locations.

We have recently carried out more detailed air quality dispersion modeling to more accurately assess the likely reductions in levels of NO₂ within the AQMA as a result of the proposed priority change at Fisher Street. EMIT only considers the specified emissions within a grid square. What EMIT does not do is consider topography, streetscape or indeed meteorological data. It must be remembered that the relation between NO₂ and NO_x is non-linear and determined by photochemistry, is highly location dependent and the EMIT scenario reductions related to NO_x emissions only. As anticipated when the data was fed into ADMS the net reductions in NO₂ were greater, principally because of the "canyon" effect that is experienced in Fisher Street which results in very poor dispersion of air pollution. ADMS has predicted reductions of 2.5 µg/m³ at key receptors within the Lewes AQMA.

As discussed we concluded in the 2011 progress report that we would undertake a further detailed assessment to establish if the AQO for nitrogen dioxide, when measured as an annual mean, is being exceeded in the Newhaven gyratory area. At the time of the writing of this report we have submitted the DA to DEFRA on the 18th February 2013 and are currently awaiting feedback.

9 References

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The Environment Act (1995)

The Environmental Protection Act (1990)

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The method of preparation is 20% TEA in water. The laboratory participate in the Workplace Analysis Scheme for Proficiency (WASP) for nitrogen dioxide tubes and in a field inter-comparison scheme which is controlled by Netcen and

organised by the Health and Safety Laboratory. The tubes are stored and placed with regard to specific quality assurance guidelines. The diffusion tubes are changed on a monthly basis. Travel blanks are supplied regularly throughout the year. The bias adjustment factors are taken form the National Diffusion Tube Adjustment Factor Spreadsheet as provided by the LAQM helpdesk. The adjustment factor for 2011 is 0.83.

2011	R	Wiltshire Council	10	43	35	21.7%	G	0.82
2011	R	Wiltshire Council	11	45	35	26.2%	G	0.79
2011	R	Wiltshire Council	11	44	36	22.9%	G	0.81
2011	B	Pembrokeshire Council	12	7	5	40.5%	P	0.71
2011	K	Marylebone Road Intercomparison	12	119	100	19.0%	G	0.84
2011	UB	LB Waltham Forest	12	38	38	2.5%	S	0.98
2011	R	Bath & North East Somerset	13	64	57	12.5%	G	0.89
2011	R	South Gloucestershire Council	12	31	27	16.6%	G	0.86
2011	R	Brighton and Hove City Council	11	49	34	41.2%	G	0.71
2011		Overall Factor ³ (8 studies 20% in water)					Use	0.83
2011		Overall Factor ³ (1 study)					Use	0.71



Lewes District Council

February 2013