SOUTH HOLLAND DISTRICT COUNCIL

LAQM AIR QUALITY MANAGEMENT ANNUAL PROGRESS REPORT

BV/AQ/AGGX3969266/2648

MAY 2010

DOCUMENT CONTROL SHEET

Issue/Revision	Issue 1	Final		
Remarks	Draft for Comment			
Date	May 2010	June 2010		
Submitted to				
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Project number	AGGX3969266	AGGX3969266		
File reference	BV/AQ/Draft	BV/AQ/2648		

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Executive Summary

Part IV of the Environment Act 1995 places a statutory duty on local authorities to review and assess the air quality within their area and take account of Government Guidance when undertaking such work. This Progress Report is a requirement of the Fourth Round of Review and Assessment and is a requirement for all local authorities; with a reporting schedule of end of April 2010. The Report has been undertaken in accordance with the Technical Guidance LAQM.TG (09) and associated tools (as updated in 2010).

This Progress Report considers all new monitoring data and assesses the data against the Air Quality Objectives. It also considers any development changes that may have an impact on air quality as well as updating on any relevant strategy and policy changes.

Having considered the latest monitoring data and development updates, it is concluded that the air quality objectives for benzene, 1, 3-butadiene, carbon monoxide, lead, nitrogen dioxide, PM_{10} and sulphur dioxide will be met. On the basis if the Progress Report findings, there is no requirement to undertake a detailed assessment for any pollutant.

In response to the conclusions of the Updating and Screening Assessment 2009, a Detailed Assessment will commence in 2010 to consider fugitive PM_{10} emissions for two turkey farms in Spalding.

Proposed actions arising from the Progress Report are as follows:

- Continue with current monitoring programme of NO_2 and PM_{10};
- Progress to a 2011 Annual Progress Report by April 2011.

1 Introduction

1.1 Description of Local Authority Area

The district of South Holland comprises the principal town of Spalding surrounded by the small towns of Holbeach, Little Sutton, Sutton Bridge and Crowland. The rest of the district is rural in character.

The main source of air pollution in the district is road traffic emissions from major roads, notably the A16, A17 and A151 which connect South Holland with north Lincolnshire and the Humber estuary, and south west Lincolnshire. There are currently no Air Quality Management Areas (AQMAs) declared in South Holland.

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 (LA) 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 included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running 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	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

South Holland District Council undertook the first round of review and assessment of air quality between 1998 and 2001 (Stages 1, 2 and 3). The Stage 2 report recommended further assessment of NO_2 and PM_{10} emissions in the Port Sutton Bridge Area and NO_2 emissions along the A17 at Holbeach and Sutton Bridge. The Stage 3 report concluded that predicted concentrations of NO_2 and PM_{10} would be met at these locations and no AQMA was required. The conclusions of the First Round were that all Air Quality Objectives were expected to be met by the target dates based on the available information at that time.

The first phase of the second round of review and assessment, the Updating and Screening Assessment (USA), was completed in August 2003 and this provided an update with respect to air quality issues within South Holland. The USA 2003 concluded that no Detailed Assessment of air quality was required. The Progress Reports 2004 and 2005 similarly concluded that all Objectives were expected to be met. A new continuous monitoring site was established in 2003 at Monkhouse School in Spalding to monitor PM_{10} and NO_2 concentrations, and assess emissions from Spalding Power Station.

The first phase of the third round of review and assessment, the USA, was completed in June 2006 and this provided a further update with respect to air quality issues within South Holland. The USA 2006 concluded that all objectives were expected to be met and no Detailed Assessment was required. In 2007 and 2008 South Holland District Council submitted Annual Progress Reports for air quality. The reports considered the latest monitoring data and concluded that no significant changes in pollutant concentrations had occurred and there were no predicted exceedences of air quality objectives.

The fourth round 2009 USA provided a further update on local air quality and concluded that the air quality objectives for benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide and sulphur dioxide would be met and that there was no requirement to undertake a detailed assessment for these pollutants. However, South Holland District Council confirmed that there were two poultry farms in the local authority area which met the relevant criteria and with relevant exposure with respect to the PM_{10} objectives.

It was proposed that South Holland District Council progress to a Detailed Assessment (for PM_{10} at two poultry farm locations; Fleet Fen Farm Poultry Unit and Chapel Road Poultry Unit) in addition to the 2010 Annual Progress Report.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

This section provides details of automatic monitoring carried out in 2009, the year covered by this report.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref (x,y)	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)*
Spalding Monkhouse School	Urban Background	523168, 322454	NO_2, PM_{10}	No	Y – 1	25
Westmere School	Urban Background	547264, 321709	NO_2, O_3, PM_{10}	No	Y - 14	190

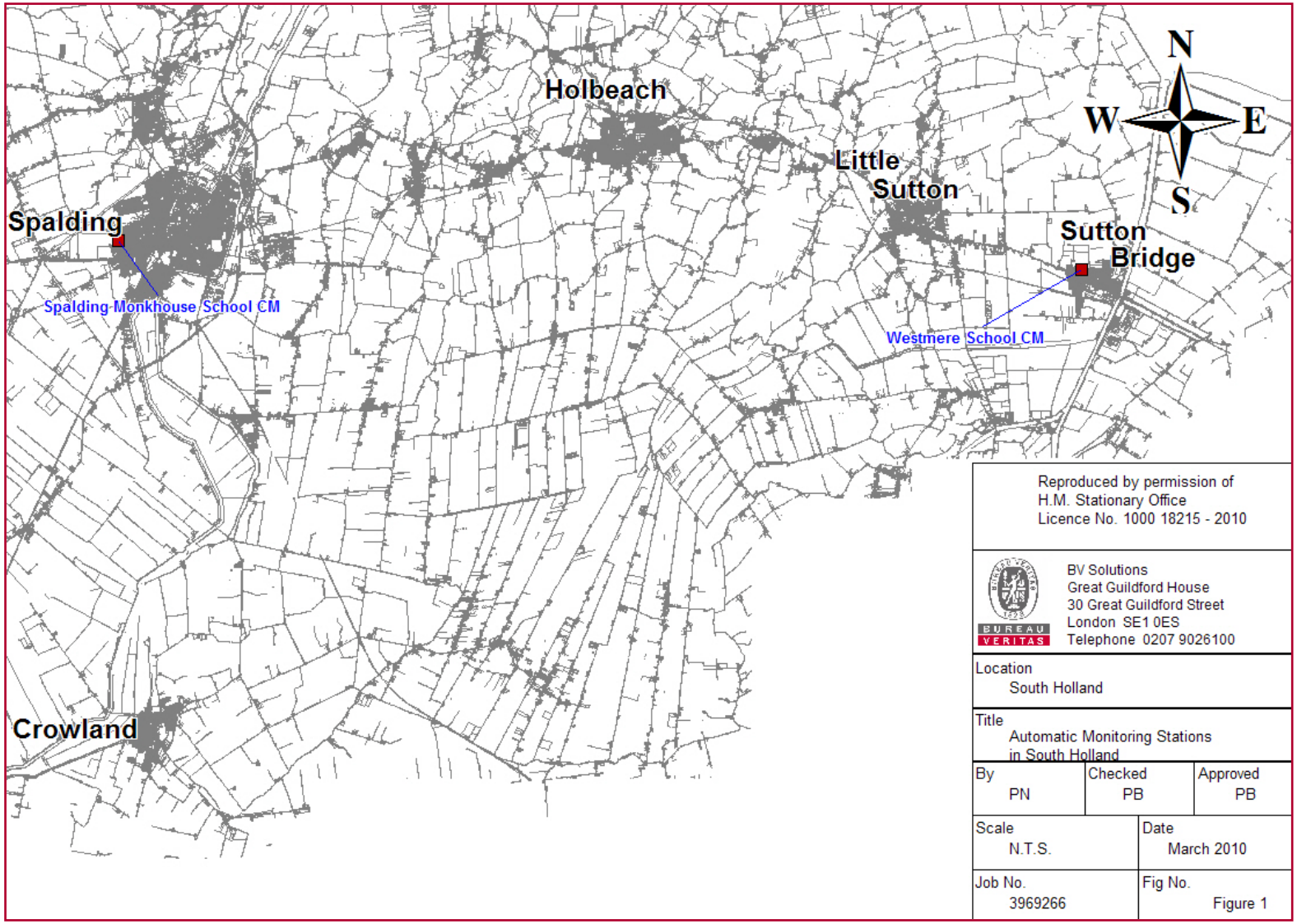
There is currently automatic monitoring of NO_2 undertaken by South Holland District Council at two locations in the area using a chemiluminescence analyser: Spalding Monkhouse and Westmere School.

Continuous monitoring of PM_{10} is also undertaken at these sites using a Tapered Element Oscillating Microbalance (TEOM).

There is additionally monitoring of ozone measured by ultra violet absorption at the Westmere School site. Ozone is a transboundary pollutant; the sources of ozone are frequently spatially distant from the measured site of the concentrations. Ozone is not prescribed in the Regulations for LAQM.

South Holland District Council contract data management for their continuous analysers to AEA. The Quality Assurance/Quality Control (QA/QC) procedures employed by AEA are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures.

Figure 1 Map of Automatic Monitoring Sites



2.1.2 Non-Automatic Monitoring

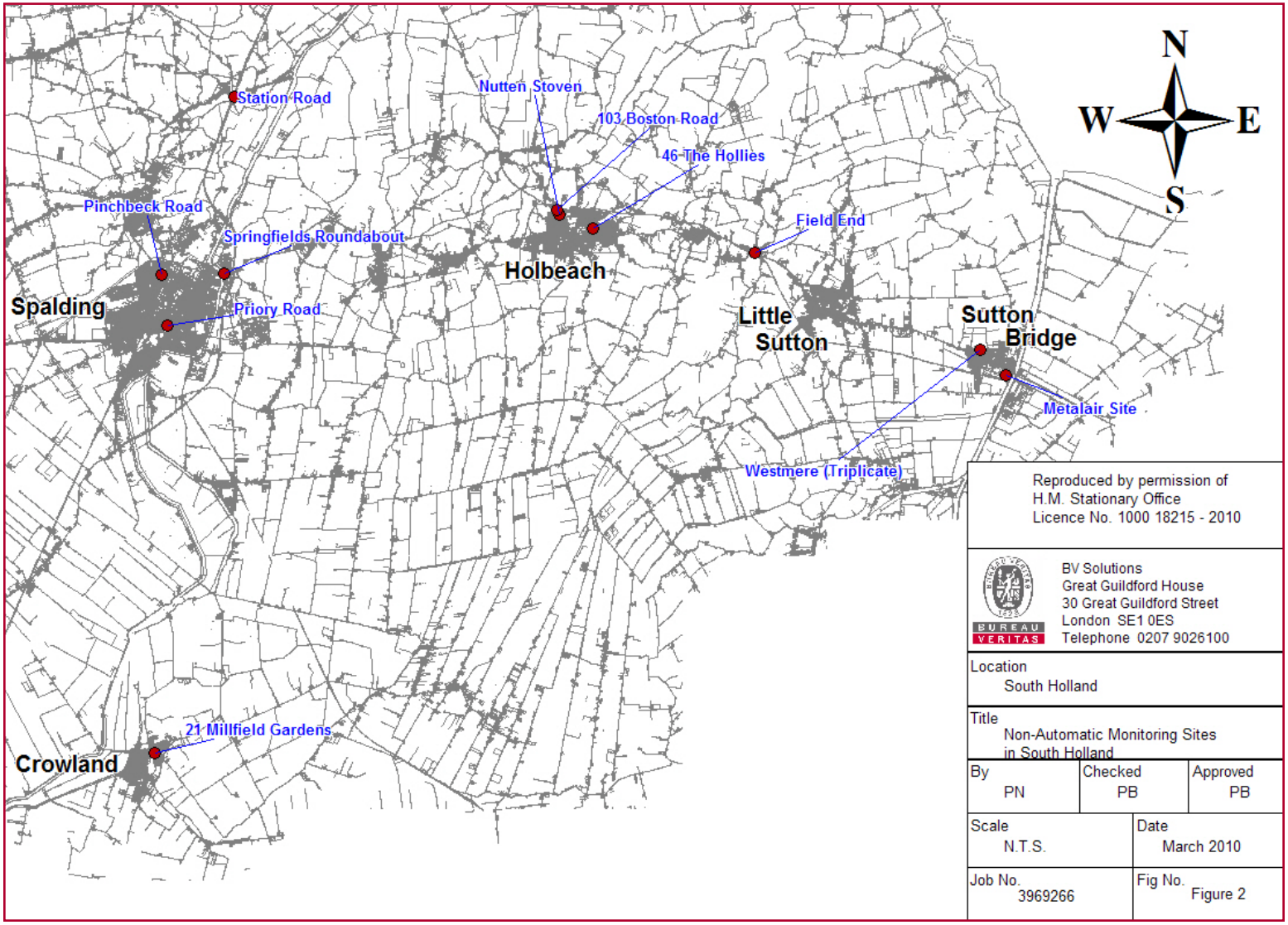
South Holland District Council undertook monitoring at 11 NO_2 diffusion tubes sites in 2009. There have been no changes in tube numbers or locations since the USA 2009.

Details of the non-automatic monitoring undertaken in the district are presented in Table 2.2.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site No.	Location	Site Type	X	Y	Pollutant monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to Kerb of Nearest Road *(N/A if not applicable)*
SH 1	21 Millfield Gardens	Background	524388	310520	NO_2	N	Y - 6.8	2.9
SH 2	Nutten Stoven	Kerbside	535595	325453	NO_2	N	Y - 5.6	21.8
SH 3	Priory Road	Background	524734	322403	NO_2	N	Y - 38.4	92.2
SH 4	46 The Hollies	Background	536523	325078	NO_2	N	Y - 8.4	0.2
SH 5	Station Road	Roadside	526585	328726	NO_2	N	Y - 24.9	1.5
SH 6	103 Boston Road	Kerbside	535525	325589	NO_2	N	Y - 25.7	9.5
SH 7	Field End	Roadside	541013	324393	NO_2	N	Y - 5.9	25.6
SH8/9/10	Westmere (Triplicate)	Background	547264	321709	NO_2	N	Y - 69.4	61.2
SH 11	Metalair Site	Roadside	547957	321013	NO_2	N	N	116
SH 13	Pinchbeck Road	Kerbside	524595	323793	NO_2	N	Y - 20.7	0.7
SH 14	Springfields Roundabout	Kerbside	526309	323820	NO_2	N	Y - 54.2	11

Figure 2 Map of Non-Automatic Monitoring Sites



2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The ratified annual monitoring results for 2007 – 2008, and provisionally ratified results for 2009 these sites is shown in Table 2.3a. The annual mean is well below the objective for NO_2, although there has been an increasing trend at the Westmere School site in the last three years. The data capture for Spalding Monkhouse was less than 90% and has been annualised. Details of the annualisation are given in Appendix A.

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

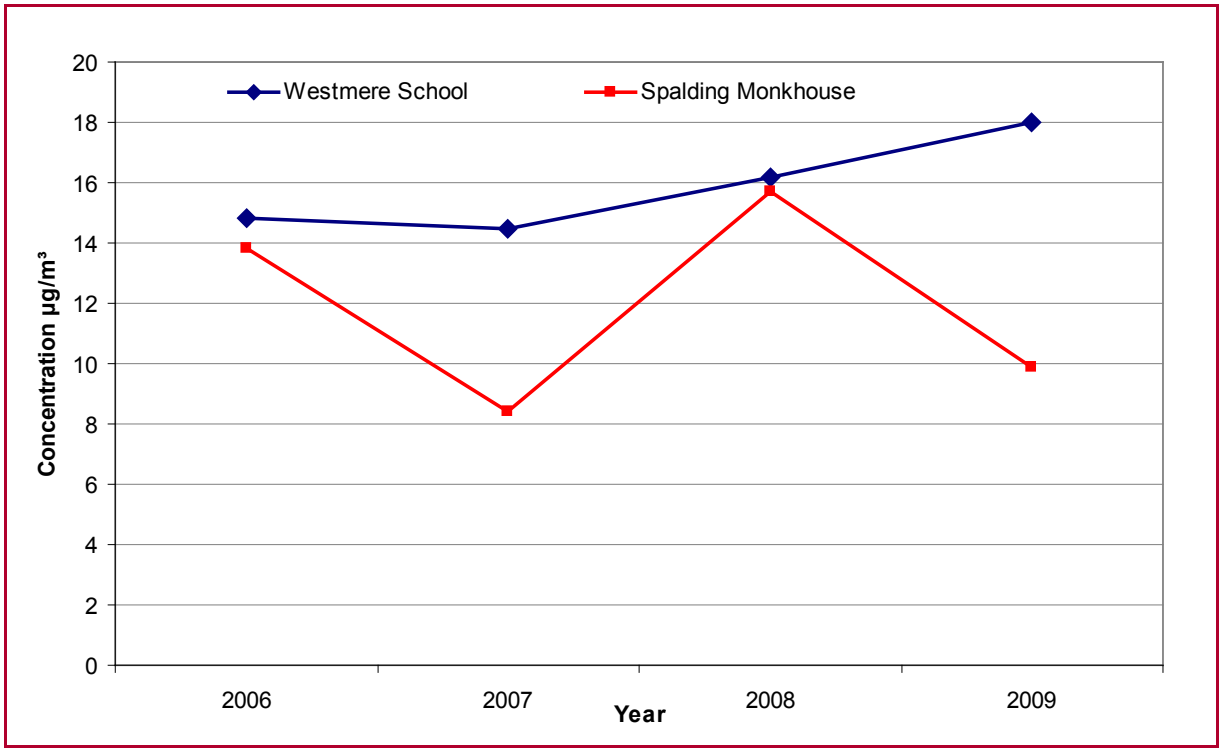
Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (μg/m^3)		
					2007	2008	2009
SH1	Spalding Monkhouse	No	80.4	80.4	8.4	15.7	9.9
SH2	Westmere School	No	96	96	14.5	16.2	18

With respect to the hourly mean objective, no exceedences of the short-term objective were recorded at the Spalding Monkhouse or Westmere School monitoring sites in 2009.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Number of Exceedences of hourly mean (200 μg/m^3) (If the period of valid data is less than 90% of a full year, the 99.8th percentile of hourly means is shown in brackets)		
					2007	2008	2009
SH1	Spalding Monkhouse	No	80.4	80.4	0	0	0 (61)
SH2	Westmere School	No	96	96	0	4	0

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.



Diffusion Tube Monitoring Data

The nitrogen dioxide diffusion tube data were available for the period January – December 2009 and are summarised in Table 2.4. With regard to the application of a bias adjustment factor for the diffusion tubes, the LAQM.TG (09) and Review and Assessment Helpdesk recommends use of a local bias adjustment factor where available and relevant to diffusion tube sites. South Holland District Council has a triplicate diffusion tube collocation at their continuous NO_2 analyser at Westmere School in Sutton Bridge. A local bias adjustment factor for 2009 of 1.33 has been calculated from this collocation study and applied to South Holland District Council's diffusion tube results. The default Bias adjustment for Gradko (0.99) has also been used to correct the tubes for comparison purposes. The local bias study has previously been used in the Council's review and assessment process to correct the diffusion tubes, and it has generally been conservative, however, in 2009 it is clearly much higher than the default factor. Further details on the derivation of the bias correction are shown in Appendix A.

The full dataset (monthly mean values) are included in Appendix B.

Data capture for the year was good, meeting the minimum 75% criterion and no annualisation was required.

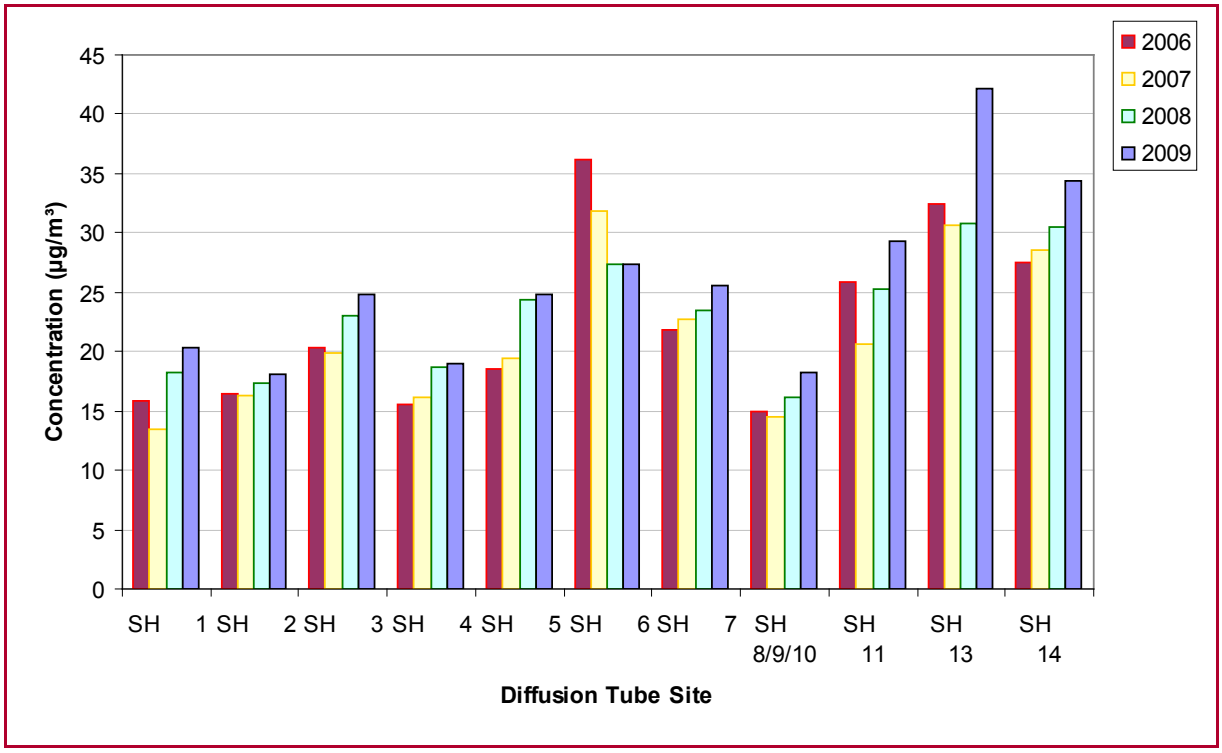
Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m^3)			
					2007 (Bias Factor: 0.99)	2008 (Bias Factor: 1.13)	2009 (Local Bias Factor: 1.33)	2009 (Default Bias Factor 0.99)
SH1	21 Millfield	N	100	100	13.5	18.2	20.3	15.1
SH2	Nutten Stoven	N	92	92	16.3	17.4	18.1	13.5
SH3	Priory Road	N	92	92	19.9	23.0	24.8	18.4
SH4	46 Hollies	N	100	100	16.1	18.7	18.9	14.1
SH5	Station Road	N	100	100	19.4	24.3	24.8	18.4
SH6	103 Boston Road	N	92	92	31.9	27.3	27.4	20.4
SH7	Field End	N	92	92	22.7	23.5	25.6	19.0
SH8/9/10	Westmere	N	100	100	14.5	16.2	18.2	13.5
SH11	Metalair	N	100	100	20.6	25.3	29.2	21.7
SH13	Pinchbeck Road	N	100	100	30.6	30.8	**42.2**	31.3
SH14	Springfields	N	100	100	28.5	30.5	34.3	25.5

Using the default bias corrected concentrations there were no exceedences of the annual mean objective.

Considering the use of the local adjustment factor there was one exceedence of the annual mean objective – SH13 Pinchbeck Road. However, this is a kerbside and has no relevant exposure within 20m. It is not considered that further assessment of this location is required.

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites (local factor applied).



With respect to the hourly NO_2 objective, there could be a potential risk of exceedence of this short-term objective, where the annual mean NO_2 concentration is >60µg/m^3. There are no monitoring sites in the borough with concentrations above or approaching 60µg/m^3.

2.2.2 PM_{10}

Fully ratified annual monitoring results of PM_{10} for 2007 – 2008, and provisionally ratified results for 2009 are displayed in Table 2.5a. Data for 2009 have been VCM – corrected; however, the mean using the old correction factor is shown in brackets for comparative purposes with previous years' concentrations. There is a caveat with the VCM-corrected data due to the low data capture of the reference sites and the distance between the reference sites and both monitoring stations.

Data capture at the Spalding Monkhouse site was less than 90% and has been annualised. Further details of the VCM corrections and annualisation are given in Appendix A. The annual mean concentrations are below the PM_{10} annual mean objective.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu g/m^3$)		
					2007	2008	2009
SH1	Spalding Monkhouse	No	84.7	84.7	20.4	19.0	15.6 (16.8)
SH2	Westmere School	No	98.8	98.8	18.8	16.8	16 (16.4)

With regard to the short-term PM_{10} objective, data for 2007 – 2009 are shown in Table 2.5b. There have been no exceedences of the 24-hour mean objective of 50$\mu g/m^3$ in 2009 at the Westmere School monitoring site. There was one exceedence of the short-term objective at the Spalding Monkhouse monitoring location (35 exceedences are permitted per annum). There has been an improvement on previous years 2007 and 2008 with a continued reduction in PM_{10} concentrations.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2009 %	Number of Exceedences of daily mean objective (50 $\mu g/m^3$) (If data capture < 90%, the 90th percentile of daily means is included in brackets).		
					2007	2008	2009
SH1	Spalding Monkhouse	No	84.7	84.7	7	1	1(22.4)
SH2	Westmere School	No	98.8	98.8	3	1	0

2.2.3 Other pollutants monitored

In addition to the PM_{10} and NO_2 automatic analysers, South Holland District Council also monitors ozone at the Westmere School.

Data capture for 2009 was 92.6% and the maximum rolling eight-hour mean objective was exceeded on 3 occasions during the year. The objective permits 10 exceedences of 100µg/m³ per annum and therefore the objective was met.

2.2.4 Summary of Compliance with AQS Objectives

South Holland District Council undertook monitoring of NO_2 by automatic analyser at Spalding Monkhouse and Westmere School; concentrations met both the annual mean objective and the short term hourly objectives.

South Holland District Council also monitored NO_2 with diffusion tubes and using the local bias factor only one site exceeded the annual mean NO_2 objective. This was a kerbside site with no relevant exposure. Comparison of the local bias and default national bias suggest the local bias is conservative. Applying the default factor suggests no exceedences of the annual mean NO_2 objective.

PM_{10} monitoring was undertaken at the Spalding Monkhouse and Westmere School monitoring station by TEOM. The data were VCM corrected and there were no exceedences of the objectives at either site. However, there are limited FDMSs in the east of England and the model uses FDMS data from distances greater than 50 miles.

South Holland District Council also monitors ozone at the Westmere School air quality monitoring site. Although ozone is a transboundary pollutant and not prescribed for LAQM, the data has been included and shows the ozone concentrations met the objective in 2009.

South Holland District council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

No new road traffic sources have been identified.

3.2 Other Transport Sources

No new other transport sources have been identified since the USA 2009.

3.3 Industrial Sources

No new industrial sources have been identified since the USA 2009.

3.4 Commercial and Domestic Sources

No new commercial and domestic Sources have been identified since the USA 2009.

3.5 New Developments with Fugitive or Uncontrolled Sources

South Holland District Council has previously identified as a potential source of particulates, a turkey farm at Fleet Fen Farm, Spalding as possessing capacity for 145,000 turkeys.

A second Turkey farm at Chapel Road in Spalding has been identified as a potential source of particulates, and has a 145,000 bird capacity.

Both farms are operated by Bernard Matthews and South Holland District Council is due to commence monitoring to provide data for Detailed Assessment as recommended in the 2009 USA.

South Holland District Council has not identified any new or previously unidentified local developments which may impact on air quality in the Local Authority area.

4 Local / Regional Air Quality Strategy

South Holland District Council has not produced a local air quality strategy, but is involved in the development of a county-wide Climate Change Strategy which is being developed by Lincolnshire County Council and partners, which will additionally bring about air quality benefits.

The East Midlands Regional Strategy (March 2009) has a number of Core objectives. With regards to air quality Policy 36 requires Local Development Framework and strategic public bodies to:

- Contribute to the reduction of air pollution
- Consider the potential impacts of development and increased traffic levels on air quality
- Consider the impacts of developments and increased traffic levels on nature conservation sites in the region and adopt mitigation measures to address these impacts

5 Planning Applications

No major planning applications have been identified likely to have significant impacts on local air quality.

6 Air Quality Planning Policies

The South Holland District Council Local Plan (adopted July 2006) set out the planning policies to guide and control new development in the District until 2021. The Local Plan contains the following policy in relation to air pollution.

Policy SG13 - Pollution and Contamination
"Planning permission will only be permitted for development proposals which:
1) do not cause unacceptable levels of pollution of the surrounding area by noise, light, toxic or offensive odour, airborne pollutants or by the release of waste products;
2) provide, as necessary, appropriate treatment of land to clean up pollution and contamination."

The Planning and Compulsory Purchase Act 2004 identified a number of revisions to the planning process and in particular a new approach to the preparation of development plans. The system of Structure and Local Plans has been replaced. The new system introduces Local Development Frameworks (LDF) to replace Local Plans; Structure Plans have been replaced by Regional Strategies. Under the new planning system the statutory development plan for the District therefore consists of the following:

- East Midlands Regional Plan prepared by the East Midlands Regional Assembly;
- Local Development Framework (LDF) prepared by the District Council.

To date the Council has produced a Local Development Scheme (LDS) 2007 - 2010, which is a project plan setting out what new documents will be produced and the timetable for their production. In addition a Statement of Community involvement was adopted by the Council in December 2006 which outlines how the Council intends to ensure that all sections of the community have the opportunity to participate in the planning process. During the preparation of the LDF, the Local Plan policies have been saved. The current Local Development Scheme and local planning guidance in South Holland, is currently undergoing review.

The East Midlands Regional Plan (March 2009) is the broad development strategy which covers development and regeneration for the East Midlands until 2026. The Regional Plan (RSS8) has broad priorities for sustainable development with the region:

- **Housing**

The provision of targets of affordable and general housing; particularly focusing development on former brownfield sites. It also considers the emergence of the new Growth Points throughout the region.

- **Economy and Regeneration**

The East Midlands Development Agency Regional Economic Strategy has been incorporated into the Regional Strategy.

- **Natural and Cultural Resources**

Targets of relevance to air quality included the revision of policies on waste reduction, renewable energy and energy efficiency, regional policies on mineral extraction and the promotion of "green infrastructure".

- **Regional Transport Strategy**

The principle focus was the introduction or revision of policies to reduce the need to travel, reduce the rate of traffic growth, promote and enhance public transport and only increase highway provision when other options have been excluded.

The aim of the Regional Strategy is to provide the framework against which planning policies and strategies can be prepared.

7 Local Transport Plans and Strategies

South Holland District Council works together with Lincolnshire County Council on local transport issues including the implementation of Local Transport Plan (LTP) measures in the district.

Relevant strategies and initiatives within the 2nd LTP (2005/6 – 2010/11), which have potentially beneficial impacts on air pollution from transport sources, through reduction in traffic congestion and modal shift, include:

- **Community Travel Zones**

Community Travel Zones (and the complimentary Rural Priorities Initiatives in rural areas) is aimed at reducing congestion and improving safety by providing promotion of and improvements to walking, cycling and public transport infrastructure. Measures aimed at achieving this include footway schemes, pedestrian crossing improvements, cycleways, street lighting and traffic calming initiatives. The 2nd LTP prioritises rolling out such initiatives across the 10 largest urban areas in the County.

- **Improvements to Public Transport**

The 2nd LTP continues the expansion of the rural InterConnect and CallConnect bus services across the County. In addition, coverage of the IntoTown town services is also being extended into other urban areas.

- **Parking Enforcement**

Discussions continue into the introduction of Civil (formerly Decriminalised) Parking Enforcement across the County, with a view to implementing a scheme during 2011/12.

- **School Travel Plans**

All but 2 of Lincolnshire's LEA schools now have an approved School Travel Plan (at 31st March 2010) and as a result have benefited from government grants and other funding to help implement the plans. This has been used on a variety of projects, including cycle storage, pedestrian shelters and new entrances for cyclists and pedestrians. Across the county, surveys suggest that the trend in the growth of car use has now halted and there are examples of where this is now declining.

- **Employee Travel Plans**

The County Council continues to encourage businesses to develop Employee Travel plans to increase the numbers of staff walking, cycling and using public transport both to and from work, and whilst travelling at work. Travel plans are required in support of all major development proposals.

8 Climate Change Strategies

South Holland District Council is in the process of producing an Environmental and Climate Change Strategy for the district and is involved in the development of a county-wide Climate Change Strategy which is being developed by Lincolnshire County Council and partners.

Environment and Climate change is one of the headline challenges in the Lincolnshire Local Area Agreement. Key to this was the establishment of a Lincolnshire Environment and Climate Change Action Partnership. For Lincolnshire local authorities the Nottingham Declaration on climate change is being used as a way of driving the process.

The Community Strategy for Lincolnshire identifies the Environment and Climate change as a cross-cutting issue. Within the Economic Development section, the following specific actions are agreed:

- 4A. To work in partnership to provide sustainable solutions to environmental issues, including reducing our energy needs and making best use of renewable technologies e.g. biomass and biofuels
- 4B. To minimise waste production and increase recycling and reuse
- 4C. To work in partnership to address climate change and manage flood risk

The East Midlands Regional Plan includes policies covering the regional priorities of energy reduction and efficiency, and local carbon energy generation.

Among its Core Strategy objectives are
a) The reduction of the causes of climate change through:

- Maximising resources efficiency and level of renewable energy generation
- Making the best use of existing infrastructure
- Promoting sustainable design and construction
- Ensuring new developments, particularly major traffic generating uses are located to reduce the need for travel especially by private car

b) The reduction of the impacts of climate change through:

- Reducing heat island effects in city centres
- Provision of carbon sinks
- Providing sustainable drainage and managing flood water

In particular two policies covering climate change and development are incorporated:

Policy 39: Energy reduction and efficiency:
The baseline study indicated that energy use was increasing, mostly for industrial and commercial users. As a consequence the Regional Plan directs Development Plan Documents to include policies which promote and encourage the energy supply for new developments to include a portion from renewable or decentralised sources. New developments should be close to existing infrastructure and accessibility to minimise private car use. Developments should reflect energy conservation through design and incorporation of lay out and small scale renewable electricity generation. The development of district heating systems is encouraged; to reduce carbon emissions and approach carbon neutrality.

Policy 40: Low carbon energy generation:
Local authorities, electricity generators and other public bodies should promote the development of Combined Heat and Power and district heating infrastructure and the development of a distributed energy network utilising low carbon and renewable energy.

Local Authorities need to give consideration of such developments with respect to the suitability in the landscape and proximity of the users, the availability of surplus industrial land close to the existing transport network, and the development of policies which encourage renewable energy to meet the regional targets whilst safeguarding older installations and potential sources in former power stations and mines

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

In 2009, South Holland District Council monitored continuous NO_2 concentrations at Spalding Monkhouse and Westmere School. Data from Spalding Monkhouse were annualised due to data capture below recommended levels. The concentrations at both sites met both the annual mean and short term NO_2 objectives.

Nitrogen dioxide was also monitored by diffusion tubes at 11 sites in the district. There were no exceedences of the annual mean objective, with the exception of one kerbside site (when utilising the local bias adjustment factor) but there was no relevant exposure to warrant further consideration.

South Holland District Council also undertook continuous monitoring of PM_{10} by TEOM at the Spalding Monkhouse and Westmere School monitoring sites in 2009. The data were VCM corrected and data from Spalding Monkhouse were annualised and both found to meet the annual mean and short term PM_{10} objectives.

In addition, ozone was also monitored at the Westmere School site in 2009 and although O_3 is a transboundary pollutant not prescribed in Regulations for LAQM purposes, the concentrations have been assessed and found to meet the objective.

9.2 Conclusions relating to New Local Developments

Two previously identified turkey farms in Spalding were assessed in the USA 2009 as potential sources of fugitive PM_{10} emissions and these will be assessed in a detailed assessment in 2010 through PM_{10} monitoring.

9.3 Other Conclusions

No new planning applications have been identified which are likely to have a significant impact an air quality.

9.4 Proposed Actions

- Continue monitoring programme at current monitoring locations for NO_2 or PM_{10} to enable continued demonstration of compliance with air quality objectives.
- Proceed to a Progress Report in April 2011.

10 References

- Local Air Quality Management Technical Guidance LAQM.TG(09). February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland
- Local Air Quality Management Policy Guidance LAQM.PG(09). February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland
- Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users, Report to Defra and the Devolved Administrations , Feb 2008
- South Holland District Council Updating and Screening Assessment 2009
- South Holland District Council Annual Progress Report 2008
- Second Local Transport Plan: Progress Report 2008. Lincolnshire County Council
- East Midlands Regional Plan March 2009. Government Offices for the East Midlands, 2009

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tubes in 2009 were prepared and analysed by Gradko International Limited. The tube preparation method is 50% TEA in Acetone. In February 2008, practical guidance was issued by Defra and the Devolved Administrations to harmonise the different steps in UK diffusion tube methodology. The current tube preparation methodology used by Gradko is included within the guidance and no subsequent change was required.

Factor from Local Co-location Studies (if available)

A local bias correction factor was determined using the co-located diffusion tubes at the urban background site of Westmere School. The summary of the bias correction calculation is shown below:

Table A.1 Summary of Local Bias Adjustment

Co-location Westmere School (based on 12 periods of data)	
Bias factor A	1.33 (1.06-1.79)
Bias B	-25% (-44% - 6%)
Diffusion Tubes Mean:	14 µg/m³
Mean CV (Precision):	6
Automatic Mean:	18
Data Capture for periods used:	96%
Adjusted Tubes Mean:	18 (14-24) µg/m³

Discussion of Choice of Factor to Use

The co-location site, as in previous review and assessment stages, has been used to derive a local bias correction factor. The default bias correction from the Review and Assessment spreadsheet (version 310310) is 0.99. The local factor of 1.33 would suggest the tubes have greatly under-read the ambient concentration of NO_2, the default correction factor suggests the opposite. Both bias adjustment calculations have been reported to assess compliance with the annual mean NO_2 objective. The locally derived bias correction provides a degree of conservatism i.e. is a more worse-case result.

PM_{10} Monitoring Adjustment

The Westmere PM_{10} and Spalding Monkhouse analysers are TEOMs and require correction using the VCM-model as outlined in LAQM.TG (09). The settings used for this correction as shown in Tables A.2 and A.3.

The primary issue is the lack of FDMS in the region; the closest suitable sites selected by the model are at distances greater than 50 miles. FDMS data for the reference sites used by the VCM model also do not have 90% data capture. Re-calculating the correction with FDMS possessing greater data capture would increase the data capture but also the uncertainty in the correction.

Short-term to Long-term Data adjustment

Data capture for NO_2 and PM_{10} at the Spalding Monkhouse monitoring site was less than 90%. The site was operational throughout the year. The annual mean concentration for NO_2 was 10.1µg/m³ and PM_{10} the annual mean concentration (VCM corrected) was14.9 µg/m³.

The following AURN sites were selected to annualise the NO_2 data: Leamington Spa, Northampton, Chesterfield and Leicester Centre. The first three are urban background sites. For annualising the PM_{10} data there are a limited number of FDMS or BAMs in the Midlands; Chesterfield and Leicester Centre were used as reference sites.

Annualisation of NO_2 and PM_{10} data for the Spalding Monkhouse site otherwise followed the procedures in Box 3.2 TG (09). Summary data for each is shown in Tables A.4 and A.5.

QA/QC of automatic monitoring

South Holland District Council contracts data management for their continuous analysers to AEA. The Quality Assurance/Quality Control (QA/QC) procedures employed by AEA are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures.

QA/QC of diffusion tube monitoring

Gradko International Ltd currently holds UKAS accreditation and participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO_2 diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. In 2009 the WASP rating for Gradko was "Good".

Table A.2 Summary of Westmere School VCM Settings

Summary	Text /Value
Site Name	Westmere School
Organisation	South Holland DC
Start Date	01/01/2009
End Date	0/01/2010
TEOM data already corrected with 1.3 factor	No
EPA Constant A	3
EPA Constant B	1.03
Instrument Temperature	25
Instrument Pressure	1013
Instrument reports to local ambient readings	3
Timescale	Daily
Pressure Site	Barking and Dagenham - Rush Green (BG1)
Pressure Site Warning	BP Distant site (134km).
Temperature Site	Barking and Dagenham - Rush Green (BG1)
Temperature Site Warning	TMP Distant site (134km).
FDMS Site 1	Central Beds - Sandy (MD3)
FDMS Site 1 Warning	FDMS1 Data capture 89%. FDMS1 Correction includes unratified data.
FDMS Site 2	Leamington Spa - AURN (LM0)
FDMS Site 2 Warning	FDMS2 Data capture 77%. FDMS2 Correction includes unratified data. Distant FDMS2 site (128km).
FDMS Site 3	Average of remaining sites within range
FDMS Site 3 Warning	FDMS3 Data capture 79%. FDMS3 Correction includes unratified data.

Table A.3 Summary of Spalding Monkhouse VCM Settings

Summary	Text /Value
Site Name	Spalding Monkhouse
Organisation	South Holland DC
Start Date	01/01/2009
End Date	0/01/2010
TEOM data already corrected with 1.3 factor	No
EPA Constant A	3
EPA Constant B	1.03
Instrument Temperature	25
Instrument Pressure	1013
Instrument reports to local ambient readings	3
Timescale	Daily
Pressure Site	Leicester Centre (LC0)
Pressure Site Warning	
Temperature Site	Leicester Centre (LC0)
Temperature Site Warning	
FDMS Site 1	Leicester Centre (LC0)
FDMS Site 1 Warning	
FDMS Site 2	Chesterfield (CS6)
FDMS Site 2 Warning	
FDMS Site 3	Average of remaining sites within range
FDMS Site 3 Warning	

Table A.4 Summary of Spalding Monkhouse NO_2 data

Site	Site Type	Annual Mean	Period Mean	Ratio
Leamington Spa	Urban Background	26.99	28.06	0.96
Northampton		20.61	21.28	0.97
Chesterfield		19.03	19.65	0.97
Leicester Centre	Centre	29.30	29.52	0.99
			Average	0.97

Table A.5 Summary of Spalding Monkhouse PM_{10} data

Site	Site Type	Annual Mean	Period Mean	Ratio
Chesterfield	Urban Background	17.58	16.29	1.08
Leicester Centre	Centre	15.50	15.16	1.02
			Average	1.05

Appendix B: Monthly Diffusion Tube Concentrations

Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
SH 1	37.1	20.5	16.5	12.9	8.0	7.6	8.2	11.7	9.3	20.6	17.4	13.0
SH 2	22.4	14.4	16.7	12.6	8.8	10.7	9.0	9.7	11.7	17.5	16.2	-
SH 3	33.4	23.8	18.3	17.7	11.8	13.8	12.8	13.5	-	22.5	21.2	15.9
SH 4	26.1	25.1	15.1	12.8	7.8	8.0	8.8	10.5	10.5	19.5	13.2	13.3
SH 5	27.3	27.9	19.6	15.8	13.7	13.7	15.3	17.7	16.0	20.4	22.1	13.4
SH 6	27.8	30.2	11.0	27.7	17.7	27.9	13.9	13.6	23.4	-	20.3	12.8
SH 7	-	22.0	20.6	18.8	16.3	11.9	18.2	22.5	15.8	25.5	25.4	14.4
SH 8/9/10	28.5	19.8	13.2	11.7	8.2	6.9	10.4	10.6	8.0	17.9	16.9	11.8
SH 11	36.2	29.6	20.5	22.8	17.1	18.8	17.7	19.4	17.3	27.6	22.1	14.2
SH 13	39.2	44.8	39.5	28.0	24.9	21.4	31.2	31.4	26.2	33.4	37.2	22.5
SH 14	37.3	32.6	25.4	23.9	19.3	25.0	21.3	23.1	22.9	30.6	27.7	20.1