



West Lindsey District Council LAQM Progress Report 2014

Bureau Veritas

August 2015



Move Forward with Confidence

Document Control Sheet

Issue/Revision	Issue 1	Issue 2
Remarks	Draft	FINAL
Date	August 2014	August 2015
Submitted to	[REDACTED]	[REDACTED]
Prepared by	[REDACTED]	[REDACTED]
Signature	[REDACTED]	[REDACTED]
Approved by	[REDACTED]	[REDACTED]
Signature	[REDACTED]	[REDACTED]
Project number	8382204	
File reference	2925	

Disclaimer

This Report was completed by Bureau Veritas on the basis of a defined programme of work and terms and conditions agreed with the Client. Bureau Veritas' confirms that in preparing this Report it has exercised all reasonable skill and care taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project.

Bureau Veritas accepts no responsibility to any parties whatsoever, following the issue of the Report, for any matters arising outside the agreed scope of the works.

This Report is issued in confidence to the Client and Bureau Veritas has no responsibility to any third parties to whom this Report may be circulated, in part or in full, and any such parties rely on the contents of the report solely at their own risk.

Unless specifically assigned or transferred within the terms of the agreement, the consultant asserts and retains all Copyright, and other Intellectual Property Rights, in and over the Report and its contents.

Any questions or matters arising from this Report should be addressed in the first instance to the report author.

Local Authority Officer	[REDACTED]
Address	West Lindsey District Council Guildhall Marshall's Yard Gainsborough Lincs DN21 2NA
Telephone	[REDACTED]
E-mail	[REDACTED]
Report Reference number	Annual Progress Report 2014
Date	August 2015

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 Annual Progress Report is a requirement of the Fifth Round of Review and Assessment and is a requirement for all local authorities. The Report has been undertaken in accordance with the Technical Guidance LAQM.TG (09) and associated tools.

This Annual Progress Report considers all new monitoring data and assesses the data against the Air Quality Strategy (AQS) objectives. It also considers any changes that may have an impact on air quality.

Updated monitoring for nitrogen dioxide (NO₂) showed that there were no exceedences of the AQS objectives at any of the monitoring locations within the District. Automatic data for SO₂ shows that the air quality objectives continue to be met.

West Lindsey District Council have reviewed local developments in the District and have confirmed that there are none which are likely to impact upon air quality which have not previously be assessed.

The proposed actions arising from the 2014 Annual Progress Report are as follows:

- Continue NO₂ diffusion tube and continuous monitoring in the District to identify future changes in pollutant concentrations; and
- Proceed to Updating and Screening Assessment (USA) in 2015.

Table of Contents

1	Introduction	4
1.1	Description of Local Authority Area	4
1.2	Purpose of Progress Report	4
1.3	Air Quality Objectives	4
1.4	Summary of Previous Review and Assessments	6
2	New Monitoring Data	8
2.1	Summary of Monitoring Undertaken	8
2.2	Comparison of Monitoring Results with Air Quality Objectives	15
3	New Local Developments	25
3.1	Road Traffic Sources	25
3.2	Other Transport Sources	25
3.3	Industrial Sources	25
3.4	Commercial and Domestic Sources	26
3.5	New Developments with Fugitive or Uncontrolled Sources	26
4	Local / Regional Air Quality Strategy	28
5	Planning Applications	29
6	Air Quality Planning Policies	30
7	Local Transport Plans and Strategies	33
8	Climate Change Strategies	35
9	Implementation of Action Plans	37
10	Conclusions and Proposed Actions	38
10.1	Conclusions from New Monitoring Data	38
10.2	Conclusions relating to New Local Developments	38
10.3	Proposed Actions	38
11	References	39

List of Tables

Table 1.1 - Air Quality Objectives included in Regulations for the purpose of LAQM in England	5
Table 2.1 - Details of Automatic Monitoring Sites	10
Table 2.2 - Details of Non- Automatic Monitoring Sites	14
Table 2.3 - Results of Automatic Monitoring for NO ₂ : Comparison with Annual Mean Objective	16
Table 2.4 - Results of Automatic Monitoring for NO ₂ : Comparison with 1-hour Mean Objective	17
Table 2.5 - Results of NO ₂ Diffusion Tubes 2013	19
Table 2.6 - Results of NO ₂ Diffusion Tubes (2008 to 2013)	20
Table 2.7 - Results of Automatic Monitoring for SO ₂ : Comparison with Objectives	23

List of Figures

Figure 2.1 - Map of Automatic Monitoring Site	9
Figure 2.2 - Map of Non-Automatic Monitoring Sites - Gainsborough	12
Figure 2.3 - Map of Non-Automatic Monitoring Sites – Market Rasen	13
Figure 2.4 - Trends in Annual Mean NO ₂ Concentrations Measured at the Automatic Monitoring Site	16

Appendices

Appendix 1	QA/QC Data
------------	------------

1 Introduction

1.1 Description of Local Authority Area

The District of West Lindsey is predominantly rural in character and has the town of Gainsborough as its administrative centre.

The main sources of air pollution that give rise to concern for compliance in the District are emissions from road traffic on major roads, notably the A159, A631 and A156. There are currently no Air Quality Management Areas (AQMAs) in West Lindsey.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy (AQS) 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 AQMA and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

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

They are not intended to be as detailed as Updating and Screening Assessment Reports, nor 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 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. This table shows the objectives in units of micrograms per cubic metre $\mu\text{g}/\text{m}^3$ (milligrams 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 $\mu\text{g}/\text{m}^3$	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 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 $\mu\text{g}/\text{m}^3$	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
Particulate Matter (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

Round of Assessment	Conclusions
Round 1	<p>The First Round of Review and Assessment took place between 1998 and 2000. The First Round was a three-stage process which assessed the sources of seven air pollutants of concern to health: benzene, 1,3 butadiene, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂) particulate matter (PM₁₀) and sulphur dioxide (SO₂). The conclusions of the First Round were that all AQS objectives were expected to be met by the target dates based on the available information at that time.</p>
Round 2	<p>The USA was the first phase of the Second Round of Review and Assessment. Similar to stage one of the first round, there was consideration of the seven pollutants of concern to health and an assessment was made as to whether AQS objectives for these pollutants would be met. West Lindsey District Council completed this in October 2003, with the conclusion that no Detailed Assessment of air quality was required. All AQS objectives were expected to be met. The Annual Progress Report (APR) 2004 provided an update on air quality since the USA and similarly concluded that all air quality objectives were expected to be met. Recommendations were made with respect to installation of new diffusion tube monitoring sites.</p>
Round 3	<p>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 West Lindsey. The USA concluded that all objectives were expected to be met and no Detailed Assessment was required.</p> <p>In 2007 and 2008, West Lindsey District Council submitted annual Progress Reports for air quality. The reports considered the latest (2006 and 2007) monitoring data and concluded that no significant changes in pollutant concentrations had occurred and there were no predicted exceedences of air quality objectives. As such no Detailed Assessment was required.</p>

Round of Assessment	Conclusions
Round 4	<p>In 2009, West Lindsey District Council undertook a USA, as part of the Fourth Round of Review and Assessment, which concluded that all air quality objectives continued to be met. There was no requirement for a Detailed Assessment. The USA recommended that an additional NO₂ diffusion tube was installed at a relevant receptor location on Lea Road in Gainsborough. This was due to 2008 results for the Lea Road roadside diffusion tube being close to the annual mean objective for NO₂.</p> <p>In 2010 and 2011, West Lindsey District Council produced Annual Progress Reports, as part of the Fourth Round of Review and Assessment. The reports concluded that all air quality objectives would be met; as such there was no requirement for a Detailed Assessment.</p>
Round 5	<p>The fifth rounds of Review and Assessment began with the 2012 USA. This report concluded that all air quality objectives would be met; as such there was no requirement for a Detailed Assessment. The 2013 progress report concluded that all air quality objectives would be met and therefore there was no need to proceed to a Detailed Assessment.</p>

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 2013, the year covered by this report.

Automatic monitoring is undertaken at one location in West Lindsey. The analysers were installed at the Gainsborough Cemetery in 2001 as part of the EDF (Electricité de France) Programme to monitor emissions from the Trent Valley power stations. This site is operated and maintained by nearby West Burton Power Station in the neighbouring borough of Bassetlaw.

The station monitors nitrogen oxides (NO_x) and NO₂ levels using a chemiluminescence analyser, as well as SO₂ levels, using an ultra-violet fluorescence (UVF) analyser.

Details of the continuous monitoring site are provided in Table 2.1 below, whilst its location is shown in Figure 2.1.

Figure 2.1 - Map of Automatic Monitoring Site

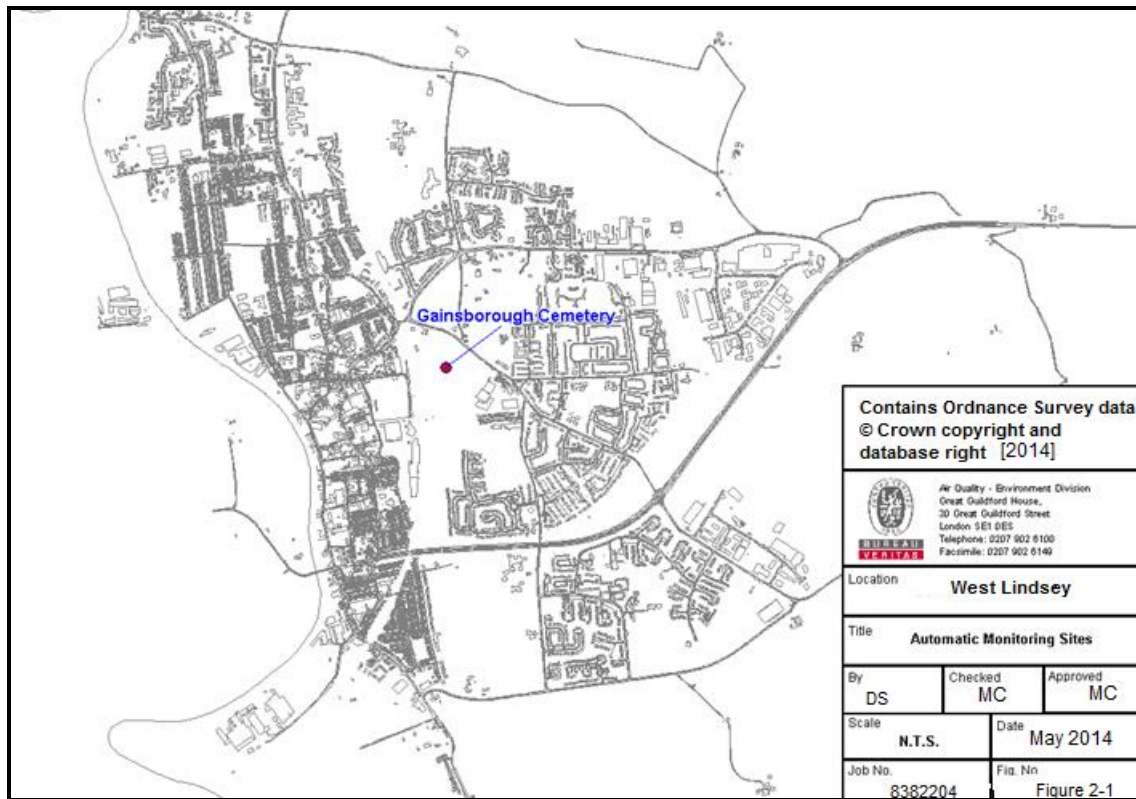


Table 2.1 - Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Reference Y OS Grid Reference		Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
Gainsborough Cemetery	Urban Background/Industrial	482021	389974	NO ₂ , SO ₂	No	Chemiluminescence analyser, ultra-violet fluorescence (UVF) analyser	No	N/A	No

2.1.2 Non-Automatic Monitoring Sites

West Lindsey District Council undertook non-automatic monitoring for NO₂ using diffusion tubes at 13 sites in 2013. There has been no change in the monitoring locations since the 2012 USA.

Data capture at all locations was 100% therefore no annualisation is required.

A triplicate set of diffusion tubes was co-located at the Gainsborough Cemetery automatic monitoring site. Details of the non-automatic monitoring sites are shown in Table 2.2, and locations provided in Figures 2.2 and 2.3.

Diffusion tubes in 2013 were prepared and analysed by Environmental Services Group (ESG). The tube preparation method is 50% TEA in Acetone. ESG participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis. This provides strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre. In the WASP inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, ESG currently holds the highest rank of a 'Satisfactory laboratory'.

Figure 2.2 - Map of Non-Automatic Monitoring Sites - Gainsborough

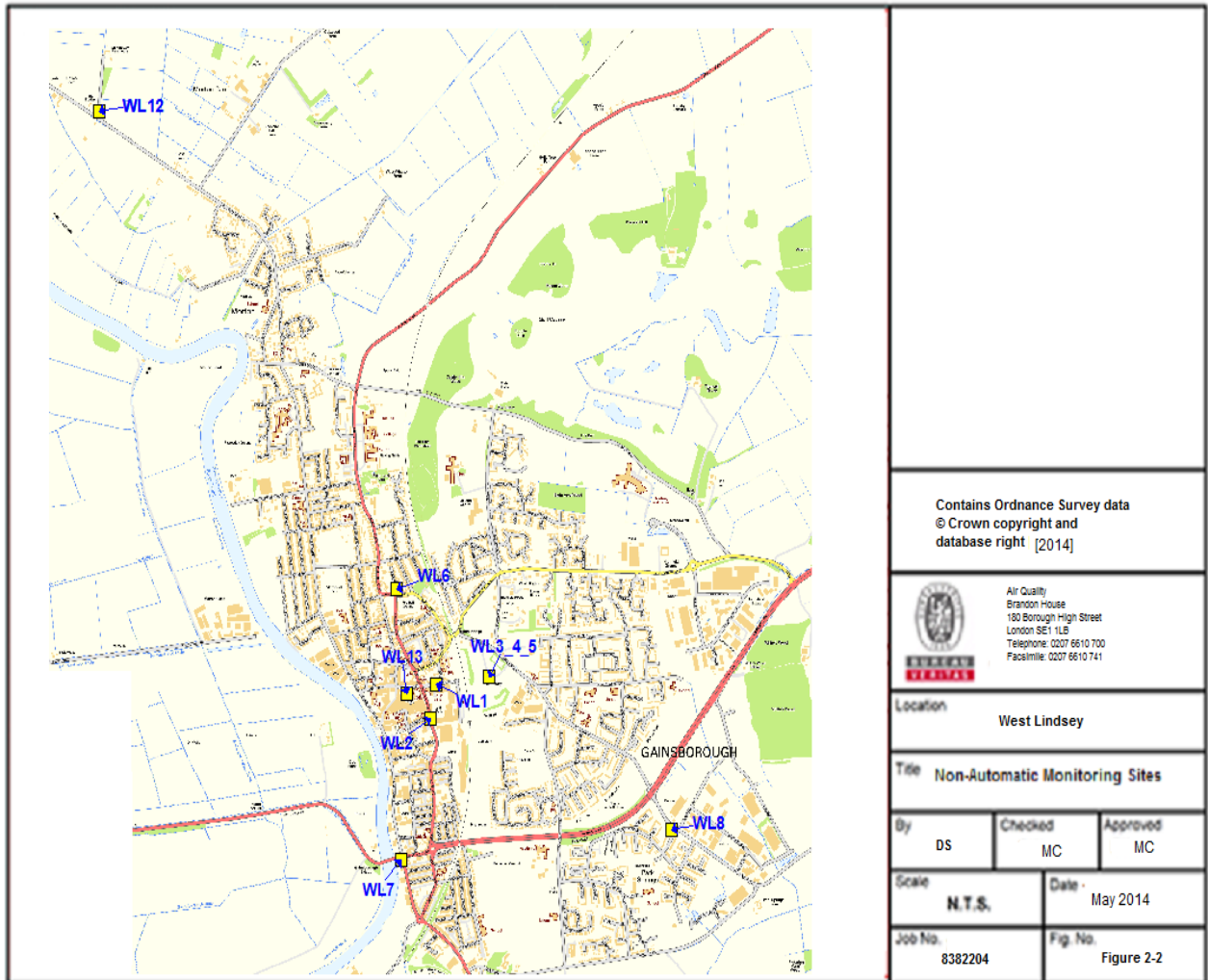


Figure 2.3 - Map of Non-Automatic Monitoring Sites – Market Rasen

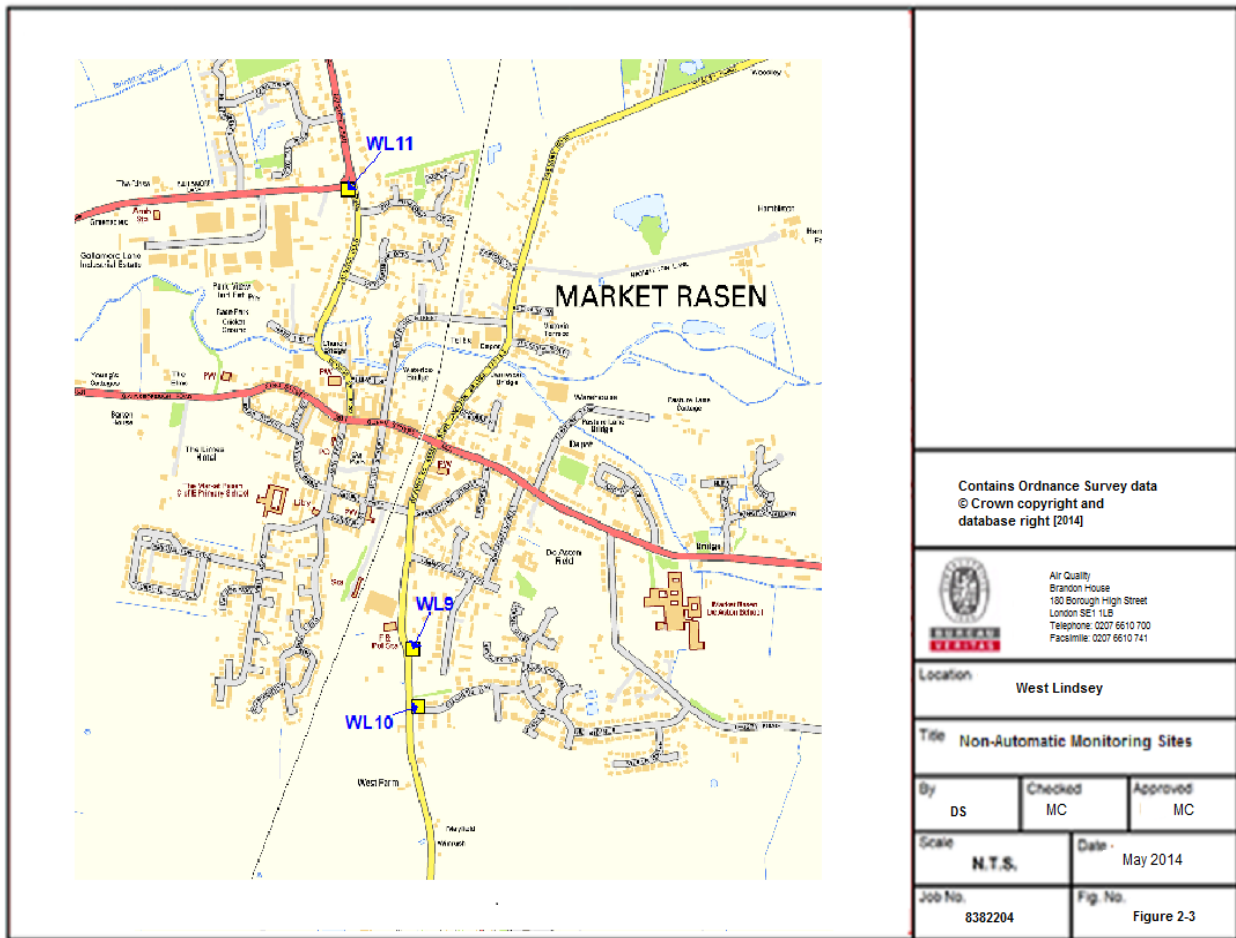


Table 2.2 - Details of Non- Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Yes/No)	Relevant Exposure? (Yes/No with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
WL1	Roadside	481721	389935	NO ₂	No	No	Yes-7.8	2.9	No
WL2	Roadside	481688	389770	NO ₂	No	No	Yes-20.1	1.6	Yes
WL3/4/5	Background	482021	389974	NO ₂	No	Yes	No	13.8	No
WL6	Kerbside	481500	390400	NO ₂	No	No	Yes-1.7	0.2	No
WL7	Roadside	481526	389077	NO ₂	No	No	Yes-0	8.6	No
WL8	Roadside	483062	389224	NO ₂	No	No	Yes-11.2	15.9	No
WL9	Roadside	510840	388610	NO ₂	No	No	Yes-32.4	10.2	No
WL10	Roadside	510851	388475	NO ₂	No	No	Yes-1.2	6.9	No
WL11	Roadside	510681	389675	NO ₂	No	No	Yes-15.1	1.7	Yes
WL12	Background	479811	392738	NO ₂	No	No	Yes-51.0	2.0	No
WL13	Roadside	481555	389891	NO ₂	No	No	Yes-5.91	2.22	No

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO₂)

There are two Air Quality Objectives for nitrogen dioxide, namely:

- the annual mean of 40µg/m³, and
- the 1-hour mean of 200µg/m³ not to be exceeded more than 18 times a year.

Automatic Monitoring Data

The annual monitoring results for 2008 through to 2013 for the automatic monitoring site are shown in Table 2.3 while Figure 2.4 shows the trend in annual mean NO₂.

The annual mean NO₂ is well below the objective, with concentrations continuing to show a decreasing trend. The monitor is located at a background location relative to the assessment of impacts associated with emissions releases from the Trent Valley power stations. Results show that closure and/or improvement in emissions management of these facilities is resulting in lower concentrations of NO₂. The results from the monitor do not in themselves provide information regarding the impacts of road traffic and this should be born in mind when looking at trends in the data for the continuous monitoring location.

With respect to the hourly mean objective, no exceedences of the short-term objective were recorded at the Gainsborough Cemetery monitoring site in 2013.

Table 2.3 - Results of Automatic Monitoring for NO₂: Comparison with Annual Mean Objective

Ste ID	Site Type	Within AQMA?	Data Capture for full calendar year 2013 %	Annual Mean Concentration (µg/m ³)					
				2008	2009	2010	2011	2012	2013
WL1	Background	No	97.4	17.7	16.5	17.6	16.2	16.0	15.2

Figure 2.4 - Trends in Annual Mean NO₂ Concentrations Measured at the Automatic Monitoring Site

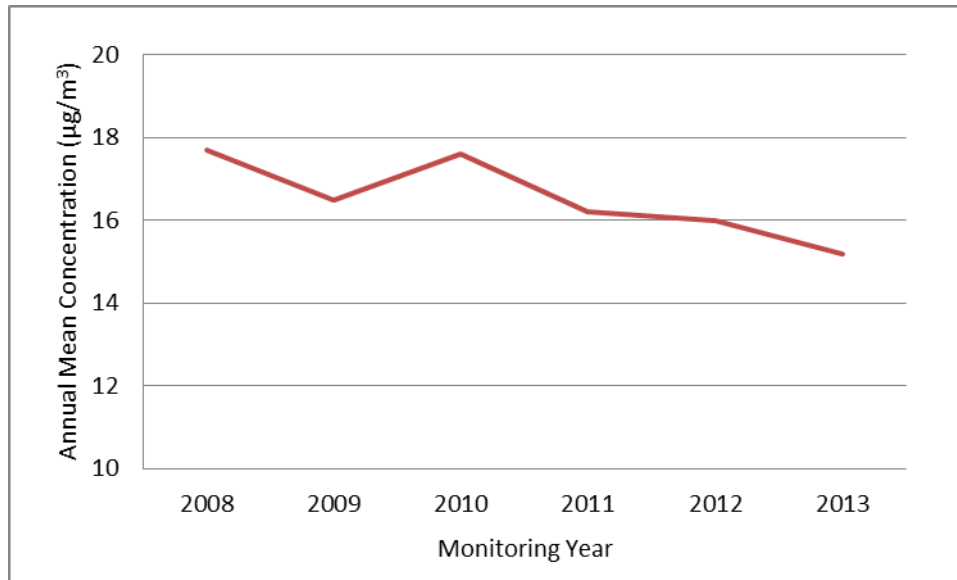


Figure 2.4 shows the annual mean NO₂ concentrations from 2008 through to 2013. This shows that over the period annual mean concentrations have been relatively stable, with slight peaks observed in 2008 and 2010. There was very little change in annual mean concentration between 2011 and 2012 and a slightly decrease in 2013.

Table 2.4 - Results of Automatic Monitoring for NO₂: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Data Capture for full calendar year 2013 %	Number of Hourly Means > 200µg/m ³					2013
				2008	2009	2010	2011	2012	
WL1	Background	No	97.4	0	0	0	0	0	0

Diffusion Tube Monitoring Data

Diffusion tube data obtained for the year 2013 are summarised in Table 2.5. The full dataset (monthly mean values) are included in Appendix A. Data capture was nearly 100% at most monitoring locations throughout 2013, therefore, no annualisation has been required.

There were no locations in West Lindsey District where the annual mean NO₂ Air Quality Objective of 40 µg/m³ was exceeded during 2013.

A bias adjustment factor has been applied to the data, which is an estimate of the difference between diffusion tube concentrations and continuous monitoring, the latter assumed to be a more accurate method of monitoring. The Technical Guidance LAQM.TG(09) provides guidance with regard to the application of a bias adjustment factor to correct diffusion tubes. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

The national bias factor reported in the version v03_14 of the national database of co-location studies conducted for tubes prepared (50% TEA in acetone) and analysed by ESG during 2013 was 0.80, this bias factor is based upon 28 studies.

West Lindsey District Council has a co-location site with the Gainsborough Cemetery continuous analyser. The diffusion tubes results were then adjusted using the local bias factor of 0.80 reported from the Gainsborough Cemetery co-location site which was the same as the national bias factor.

Table 2.5 - Results of NO₂ Diffusion Tubes 2013

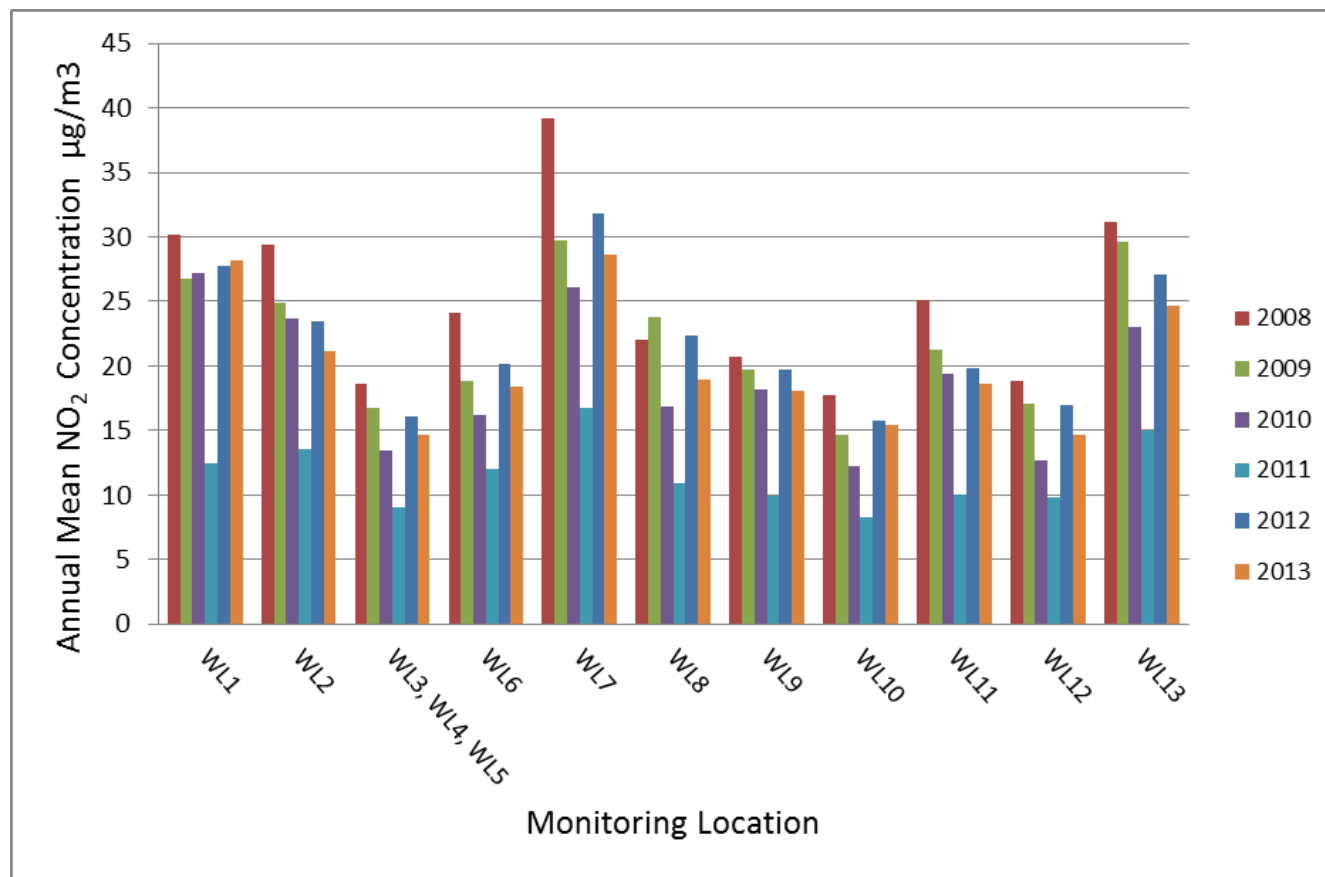
Site ID	Location	Site Type	Within AQMA?	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.80
WL1	19 Spring Gardens, Gainsborough	Roadside	No	12	28.9
WL2	58 Etherington Street, Gainsborough	Roadside	No	12	21.7
WL3*	Gainsborough Cemetery, Gainsborough	Background	No	12	14.9
WL4*	Gainsborough Cemetery, Gainsborough	Background	No	12	15.2
WL5*	Gainsborough Cemetery, Gainsborough	Background	No	12	15.2
WL6	Cherry Tree, Gainsborough	Background	No	12	18.8
WL7	3 Lea Road, Gainsborough	Roadside	No	11	29.4
WL8	Marshall Way, Gainsborough	Roadside	No	12	19.4
WL9	Lamas Leas Lane, Market Rasen	Roadside	No	12	18.6
WL10	Beeches Way, Market Rasen	Roadside	No	12	15.8
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	Roadside	No	12	19.1
WL12	Walkerith	Background	No	11	15.1
WL13	Heaton Street	Roadside	No	12	25.4

* Co-location site with the Gainsborough Cemetery continuous analyser.

Table 2.6 - Results of NO₂ Diffusion Tubes (2008 to 2013)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m ³) - Adjusted for Bias					2013 (Bias Adjustment Factor = 0.80)
			2008 (Bias Adjustment Factor = 1.21)	2009 (Bias Adjustment Factor = 0.99)	2010 (Bias Adjustment Factor = 0.83)	2011 (Bias Adjustment Factor = 0.84)	2012 (Bias Adjustment Factor = 0.82)	
WL1	Roadside	No	30.2	26.8	27.2	12.4	27.7	28.9
WL2	Roadside	No	29.4	24.9	23.7	13.6	23.4	21.7
WL3, WL4, WL5	Background	No	18.6	16.7	13.4	9.0	16.1	15.1
WL6	Background	No	24.1	18.8	16.2	12.0	20.2	18.8
WL7	Roadside	No	39.2	29.7	26.1	16.7	31.8	29.4
WL8	Roadside	No	22.0	23.8	16.9	10.9	22.3	19.4
WL9	Roadside	No	20.7	19.7	18.2	9.9	19.7	18.6
WL10	Roadside	No	17.7	14.6	12.2	8.3	15.7	15.8
WL11	Roadside	No	25.1	21.2	19.4	10.0	19.8	19.1
WL12	Background	No	18.8	17.1	12.7	9.8	17.0	15.1
WL13	Roadside	No	31.1	29.6	23.0	15.0	27.1	25.4

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



The above figure shows the annual mean NO₂ concentrations at the diffusion tube locations from 2008 through to 2013. There was an increase in annual mean concentration seen across the monitoring sites from 2011. Note that in 2011 all monitoring sites required annualisation due to poor data capture. During 2013 the annual mean concentrations were slightly lower than those recorded in 2012 at most of the monitoring locations. There are no monitoring sites within the District where the annual mean objective was exceeded.

2.2.2 Sulphur Dioxide (SO₂)

There are three Air Quality Objectives for sulphur dioxide, namely:

- the 1-hour mean of 350µg/m³, not to be exceeded more than 24 times a year;
- the 24-hour mean of 125µg/m³ not to be exceeded more than 3 times a year, and
- the 15-minute mean of 266µg/m³ not to be exceeded more than 35 times a year.

The 2013 monitoring data for Gainsborough Cemetery shows that the SO₂ objectives are being met (Table 2-7).

Table 2.7 - Results of Automatic Monitoring for SO₂: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Data Capture for full calendar year 2013 % (15-minute Means)	Number of:		
				15-minute Means > 266µg/m ³	1-hour Means > 350µg/m ³	24-hour Means > 125µg/m ³
WL1	Background	No	94.2	0	0	0

2.2.3 Summary of Compliance with AQS Objectives

The updated monitoring for 2013 shows that the AQS Objectives continue to be met at all monitoring locations across the District. The automatic monitoring has showed a continuing decrease in annual mean NO₂ concentrations.

West Lindsey 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

Local Air Quality Management (LAQM) requires local authorities to consider the following:

- Narrow congested streets with residential properties close to the kerb;
- Busy streets where people may spend one hour or more close to traffic;
- Roads with a high flow of buses and/or Heavy Goods Vehicles (HGVs);
- Junctions;
- New roads constructed since the last Updating and Screening Assessment;
- Roads with significantly changed traffic flows; and
- Bus or coach stations.

West Lindsey District Council confirms that there are no new/newly identified road traffic sources in the borough.

3.2 Other Transport Sources

Local Air Quality Management (LAQM) requires local authorities to consider the following:

- Airports;
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with relevant exposure within 15m;
- Locations with a large number of movements of diesel locomotives and long term relevant exposure within 30m; and
- Shipping ports.

West Lindsey District Council confirms that there are no new/newly identified non-road transport sources in the borough.

3.3 Industrial Sources

Local Air Quality Management (LAQM) requires local authorities to consider the following:

- Industrial Installations: new or proposed;
- Industrial installations: existing where emissions have increased substantially or relevant exposure introduced;
- Major fuel storage depots;
- Petrol stations; and
- Poultry farms.

West Lindsey District Council confirms that there are no new/newly identified industrial sources in the borough.

3.4 Commercial and Domestic Sources

Local Air Quality Management (LAQM) requires local authorities to consider the following:

- Biomass combustion plant – individual installations;
- Areas where the combined impact of several biomass combustion sources may be relevant; and
- Areas where domestic solid fuel burning may be relevant.

West Lindsey District Council confirms that there are no new/newly identified commercial or domestic sources in the borough.

3.5 New Developments with Fugitive or Uncontrolled Sources

Local Air Quality Management (LAQM) requires local authorities to consider the following:

- Landfill sites;
- Quarries;
- Unmade haulage roads on industrial sites;
- Waste transfer stations; and
- Any other potential sources of fugitive particulate emissions.

West Lindsey District Council confirms that there are no new/newly identified fugitive or uncontrolled sources in the borough.

West Lindsey 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.

West Lindsey 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

West Lindsey District Council has not produced a local air quality strategy, but along with the other Lincolnshire Authorities it has signed up to the Nottingham Declaration to reduce climate change. This will additionally bring about air quality benefits. The Council also continues to work with other Lincolnshire authorities on regional air quality issues through the Lincolnshire Environmental Protection Liaison Group.

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 should:

- 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.

The East Midlands Regional Plan was formally revoked by the Regional Strategy for the East Midland (Revocation) Order on the 12th April 2013.

5 Planning Applications

West Lindsey District Council has not identified any planning applications which are likely to impact air quality in the District.

6 Air Quality Planning Policies

West Lindsey District Council in conjunction with the City of Lincoln and North Kesteven District Council are working towards developing The Central Lincolnshire Local Development Framework. In June 2012 the Central Lincolnshire Joint Strategic Planning Committee approved for public consultation on the first part of the draft Core Strategy. This was followed in January 2013 with the second part of the draft Core Strategy.

These two documents contain the following objectives which are relevant to Air Quality:

General Policies:

Tackling Climate Change: Objective 2

To reduce the causes and impacts of climate change and to promote low carbon living by:

- Minimising carbon emissions through the location and design of development;
- Promoting energy conservation, energy efficiency and low carbon technologies;
- Promoting access by public transport, cycling and walking;
- Promoting the use of local services, resources and products to reduce “carbon miles”; and
- Promoting adaptation and resilience to climate change, including reduced flood risk.

Policy CL2 – Tackling Climate Change

- Promote an overall pattern of settlement and growth that minimises the need for unnecessary travel, as set out in the Spatial Strategy for Growth;
- Promote modal shift from the car to less carbon intensive modes of transport through appropriate investment, infrastructure provision and the design of development;
- Promote a reduction in energy use in line with the Energy Hierarchy;

- Promote the use and development of low carbon and renewable energy to meet identified targets for Central Lincolnshire; and
- Require that the design of development minimises carbon emissions relating to its use of energy and other resources, and encourages low carbon lifestyles by the occupants and users of the development;

Policy CL3 – Renewable and Low Carbon Energy

- Zero Carbon Development – proposals for residential and non-residential development required to have energy efficient design and where appropriate low carbon energy generation associated with the development;
- District Heating/CHP – proposals for new residential and commercial development will where appropriate and viable be expected to incorporate or connect to a Combined Heat and Power or District heating network;
- Community schemes and micro-generation – support provided to community-led renewable and low carbon energy and heat generation projects, planning permission will normally be granted for micro-generation technologies, provided that any adverse impacts can be mitigated.

Policy CL10: Transport

- The Central Lincolnshire Authorities will support and promote an efficient and safe transport network which offers a range of transport choices for the movement of people and goods, reduces the need to travel by car and encourages use of alternatives such as walking, cycling and public transport;
- These could include measures such as reducing traffic speeds, removing through traffic, managing parking, the further development of strategic walking and cycling networks and providing additional infrastructure.

A Quality Environment: Objective 14

To protect, conserve and enhance Central Lincolnshire's natural resources, including water, soils, air quality and dark skies, through appropriate planning and management

Policy CL23 – A Quality Environment

- Protect the quality, character and diversity of Central Lincolnshire’s environment, by:
- Positive and sustainable management of the natural and historic environment and natural resources, including landscapes, green infrastructure, biodiversity, geodiversity, air, water, soils, dark skies and areas of tranquillity.

Gainsborough Policies:

Policy G1 – Strategy for Growth in the Gainsborough Area

- Growth in the Gainsborough area will be delivered through a co-ordinated and sustainable approach to planning and development based on the Core Strategy’s Vision and Objectives for the Gainsborough area. This approach integrates housing, economic, regeneration, transport, green infrastructure and environmental policy to achieve major housing and economic growth linked to infrastructure improvements, whilst protecting and enhancing Sleaford’s environmental quality and character;
- Promote a sustainable and high quality transport system for the Gainsborough area to tackle issues of carbon emissions, traffic congestion particularly within and around the Town Centre, air quality and accessibility, including investment to achieve modal shift to public transport, cycling and walking alongside necessary highways improvements.

7 Local Transport Plans and Strategies

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

The 4th LTP (2013/14 to 2022/23) was adopted in April 2013. The 4th LTP builds on the strategies and policies adopted during the first 3 LTPs with the implementation plan covering the period 2013/14 and 2014/15 for which firm funding allocations have been received from the Department for Transport. It is planned that the implementation plan will be updated once the impact of future funding is known.

The 4th LTP Objectives are as follows:

- To assist the sustainable economic growth of Lincolnshire, and the wider region, through improvements to the transport network;
- To improve access to employment and key services by widening travel choices, especially for those without access to a car;
- To make travel for all modes safer and, in particular, reduce the number and severity of road casualties;
- To maintain the transport system to standards which allow safe and efficient movement of people and goods;
- To protect and enhance the built and natural environment of the county by reducing the adverse impacts of traffic, including HGVs;
- To improve the quality of public spaces for residents, workers and visitors by creating a safe, attractive and accessible environment;
- To improve the quality of life and health of residents and visitors by encouraging active travel and tackling air quality and noise problems; and
- To minimise carbon emissions from transport across the county.

To tackle congestion and to support growth the Council has identified the following schemes:

Major Transport Schemes – Lincoln Eastern Bypass, Lincoln East-West Link, Grantham East-West Relief Road and the Spadling Western Relief Road.

Traffic Management – implementation of the CONFIRM integrated highways management system, reviewing of speed limits, establishment of the new Highways Alliance between Lincolnshire County Council and traffic contractors to improve delivery of highway services.

Public Transport – Into Town bus services for larger urban areas, bus stop improvements.

Walking and Cycling – working with Sustrans Links2School and Connect2 for schemes to improve facilities for cyclists and pedestrians.

Travel Planning – large developments developing framework travel plans, allowing Section 106 funds for capital works and car sharing initiatives.

Sustainable Travel to School – 100% of schools in Lincolnshire having a nationally accredited School Travel Plan in place, investment during the LTP3 allowed for increased cycle storage facilities, footpath enhancements and parent waiting shelters.

Parking – Implementation of Civil Parking Enforcement in December 2012, it is anticipated that this will reduce congestion in urban areas.

Intelligent Transport Systems – updating signal control systems and real time passenger information.

8 Climate Change Strategies

Lincolnshire County Council is working in collaboration with other local authorities in the east Midlands on the 'Planning to Adapt Project'. This project followed the guidelines set out by National Indicator 188 and all local authorities have been working towards level 3.

Lincolnshire County Council declared that it had reached level 3 March 2011. The continuous process of embedding, monitoring and review will continue into 2012. The Project has 3 distinct steps that it has taken to reach level 3, these are;

1. Produced a Local Climate Impacts Profile;
2. Carried out comprehensive risk assessments across council services. A report was produced outlining the results of these risk assessments; and
3. Production of an Adaptation Action Plan, prioritising risks that the council need to embed within current work streams.

The 4th Local Transport Plan has a section addressing Transport and the Environment. The following measures are being pursued in Lincolnshire to address CO₂ emissions.

Encouraging sustainable travel – greater use of walking, cycling and public transport through initiative such as Community Travel Zones and the 'Smarter choices' initiatives such as travel information, travel planning and marketing and promotion.

Alternative Fuels – promotion of alternative fuels such as bio-diesel and ethanol under the Carbon Management Plan, with the use of natural gas and biomethane either as a dual fuel or dedicated basis being the most appropriate technology at the current time. During LTP3 in partnership with Stagecoach East Midlands a pilot scheme was run for biomethane/diesel buses which proved to be successful for bus operations

Reducing Energy Use – more efficient technologies in street lighting, low energy LED signal heads at new traffic light installations, solar powered LED lights at rural bus stops

9 Implementation of Action Plans

West Lindsey District Council has not declared any AQMAs; therefore no action plans have been required.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

The review of 2013 monitoring data found that all monitoring locations had concentrations that remained within the AQS Objective levels. The automatic monitoring for NO₂ has shown a continuation of the slight decreasing trend, and annual mean concentrations remain well below the objective level.

The diffusion tube sites showed good excellent data capture for 2013, with no annualisation required. The annual mean concentration for NO₂ at most sites showed a slightly decrease from the 2012 concentrations.

10.2 Conclusions relating to New Local Developments

West Lindsey District Council have reviewed new local developments and have found none that are likely to impact upon air quality which have not previously been assessed.

10.3 Proposed Actions

Proposed actions arising from the 2014 Annual Progress Report are as follows:

- Continue NO₂ diffusion tube and continuous monitoring in the District to identify future changes in pollutant concentrations; and
- Proceed to an Updating and Screening Assessment (USA) in 2015.

11 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
- West Lindsey District Council 2012 Updating and Screening Assessment
- West Lindsey District Council 2011 Annual Progress Report
- 4th Lincolnshire Local Transport Plan, 2013/14 – 2022/23, April 2013
- Central Lincolnshire Local Plan, Core Strategy Partial Draft for Consultation, June 2012
- Central Lincolnshire Local Plan, Core Strategy Partial Draft for Consultation Area Policies January 2013
- West Lindsey District Council 2013 Annual Progress Report

Appendices

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The diffusion tubes are supplied and analysed by Environmental Scientifics Group utilising the 50% Triethanolamine (TEA) in acetone preparation method. The bias adjustment factor for 2013 is 0.80 (based on 28 studies, version v03_14).

Factor from Local Co-location Studies (if available)

West Lindsey District Council has a co-location study at the continuous monitoring site, Gainsborough Cemetery. Data capture from both the diffusion tubes and the continuous monitor were good in 2013. The Local Bias Adjustment factor was 0.80.

Checking Precision and Accuracy of Triplicate Tubes

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 $\mu\text{g m}^{-3}$	Tube 2 $\mu\text{g m}^{-3}$	Tube 3 $\mu\text{g m}^{-3}$	TriPLICATE Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	02/01/2013	30/01/2013	25.5	32.0	32.2	30	3.8	13	9.5	24.1	99.3	Good	Good
2	30/01/2013	27/02/2013	24.4	20.9	21.1	22	2.0	9	4.9	16.3	99.7	Good	Good
3	27/02/2013	27/03/2013	19.4	19.0	19.7	19	0.4	2	0.9	16.3	99.6	Good	Good
4	27/03/2013	24/04/2013	13.6	14.0	14.2	14	0.3	2	0.8	12.3	78.0	Good	Good
5	24/04/2013	29/05/2013	13.9	15.3	14.2	14	0.7	5	1.8	12.0	96.4	Good	Good
6	23/05/2013	26/06/2013	14.2	11.9	13.6	13	1.2	9	3.0	9.5	99.7	Good	Good
7	26/06/2013	31/07/2013	13.1	15.2	13.8	14	1.1	8	2.7	11.4	99.5	Good	Good
8	31/07/2013	28/08/2013	15.0	13.8	12.8	14	1.1	8	2.7	11.6	99.7	Good	Good
9	28/08/2013	03/10/2013	17.4	16.8	16.9	17	0.3	2	0.8	13.4	99.6	Good	Good
10	03/10/2013	30/10/2013	16.2	17.4	19.9	18	1.9	11	4.7	12.3	98.2	Good	Good
11	30/10/2013	04/12/2013	23.5	27.2	26.0	26	1.8	6	4.4	24.8	99.4	Good	Good
12	04/12/2013	08/01/2014	21.4	25.1	23.0	23	1.9	8	4.6	16.7	98.1	Good	Good
13													

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

Site Name/ ID: **Gravesham Bkgrd - LawnLane**

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

Overall survey -->

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

Bias calculated using 12 periods of data

Bias factor A **0.8 (0.76 - 0.85)**

Bias B **25% (18% - 32%)**

Diffusion Tubes Mean: **19 $\mu\text{g m}^{-3}$**

Mean CV (Precision): **7**

Automatic Mean: **15 $\mu\text{g m}^{-3}$**

Data Capture for periods used: **97%**

Adjusted Tubes Mean: **15 (14 - 16) $\mu\text{g m}^{-3}$**

Accuracy (with 95% confidence interval)
WITH ALL DATA

Bias calculated using 12 periods of data

Bias factor A **0.8 (0.76 - 0.85)**

Bias B **25% (18% - 32%)**

Diffusion Tubes Mean: **19 $\mu\text{g m}^{-3}$**

Mean CV (Precision): **7**

Automatic Mean: **15 $\mu\text{g m}^{-3}$**

Data Capture for periods used: **97%**

Adjusted Tubes Mean: **15 (14 - 16) $\mu\text{g m}^{-3}$**

(Check average CV & DC from Accuracy calculations)

Good precision

Good Overall

Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

Local Air Quality Management (LAQM) Guidance TG(09) recommends the use of the local bias adjustment factor whenever possible. The local factor has been used to calculate the final bias adjusted results.

Short-term to Long-term Data adjustment

Data capture was over 90% at all monitoring sites in 2013, therefore no annualisation was required.

QA/QC of Automatic Monitoring

AQM Services undertake the data management of the Gainsborough Cemetery station. Calibrations are conducted on a fortnightly basis, in addition to two audits completed per year. The data is quality assured at the end of each year prior to issue.

QA/QC of Diffusion Tube Monitoring

Environmental Scientifics Group (ESG) participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis. This provides strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre.

Monthly NO₂ (µg/m³) Concentrations – Diffusion Tube Sites

Location	Site ID	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Spring Gardens	WL1	49.9	38.2	32.8	23.4	29.0	22.3	59.4	25.6	27.3	26.0	49.9	50.3
Ethenhgton	WL2	41.0	32.0	32.0	24.1	21.9	18.2	18.7	19.1	22.8	24.4	39.9	31.2
Cem 1	WL3	25.5	24.4	19.4	13.6	13.9	14.2	13.1	15.0	17.4	16.2	29.5	21.4
Cem 2	WL4	32.0	20.9	19.0	14.0	15.3	11.9	15.2	13.8	16.8	17.4	27.2	25.1
Cem 3	WL5	32.2	21.1	19.7	14.2	14.2	13.6	13.8	12.8	16.9	19.9	26.0	23.0
Cherry Tree	WL6	35.9	26.2	23.3	20.1	18.3	12.4	18.3	15.9	19.8	25.3	34.6	32.6
Lea Road	WL7		41.9	38.2	33.3	36.0	34.7	35.2	32.7	31.6	35.6	52.9	31.5
Hepton Ind Est	WL8	36.1	28.3	25.1	18.9	17.7	14.8	17.8	18.8	22.9	26.4	36.6	28.0
Lammas	WL9	32.1	29.0	24.7	17.5	21.1	16.5	18.2	15.9	20.6	24.2	33.4	25.5
Beeches	WL10	26.6	20.9	15.3	12.2	17.2	11.9	14.4	14.6	17.4	16.6	30.9	38.9
Galamore	WL11	30.4	29.0	24.5	18.3	21.7	21.1	21	19.4	25.6	22.1	31.1	22.3
Walkerith	WL12	33.2	21.4	17.8	15.5	15.8	11.8		12.0	14.2	18.0	24.7	23.3
Heaton Street	WL13	48.5	34.3	25.3	23.9	24.4	25.5	21.1	26.6	28.6	33.8	46.5	42.2