



West Lindsey District Council Updating Screening and Assessment 2012

Bureau Veritas Air Quality



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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.

The Updating and Screening Assessment (USA) provides an update with respect to air quality issues within the administrative area. The USA has included consideration of new monitoring data and emissions sources, in addition to any significant changes to existing emission sources identified in the previous rounds. The USA monitoring data is assessed against the Air Quality Objectives and whether any exceedences have occurred.

Updated monitoring showed that there were no exceedences of the Air Quality Objectives within the district in 2011. Passive and continuous monitoring methods have shown that NO₂ concentrations have fallen at all monitoring locations from the 2010 concentrations. Data capture within West Lindsey District Council was limited for 2011, with all sites requiring annualisation.

There were no newly identified sources within the district.

The proposed actions are as follows:

- Continue to monitor air quality within the district;
- Continue with current diffusion tube program with the aim of continuing good data capture for the remainder of 2012;
- Proceed to a Progress Report in 2013.

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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 source of air pollution in the district is emissions from road traffic on major roads, notably the A159, A631 and A156. There is currently no Air Quality Management Areas in West Lindsey.

1.2 Purpose of 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 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) and 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

West Lindsey District Council undertook the First Round of Review and Assessment 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, lead, NO₂, PM₁₀ and SO₂. The conclusions of the First Round were that all Air Quality Strategy (AQS) objectives were expected to be met by the target dates based on the available information at that time.

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.

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.

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.

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.

West Lindsey District Council

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.

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 2011, 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 NO_x and NO₂ levels using a chemiluminescence analyser, as well as SO₂ levels, using an ultra-violet fluorescence (UVF) analyser.

AQM Services undertake the data management of the Gainsborough Cemetery station. AQM Services have ratified the data for 2011. The Quality Assurance/Quality Control (QA/QC) procedures applied by AQM Services are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures.

Details of the continuous monitoring sites are provided in Table 2.1 below, while the location is shown in Figure 2.1.

Figure 2.1 Map of Automatic Monitoring Sites

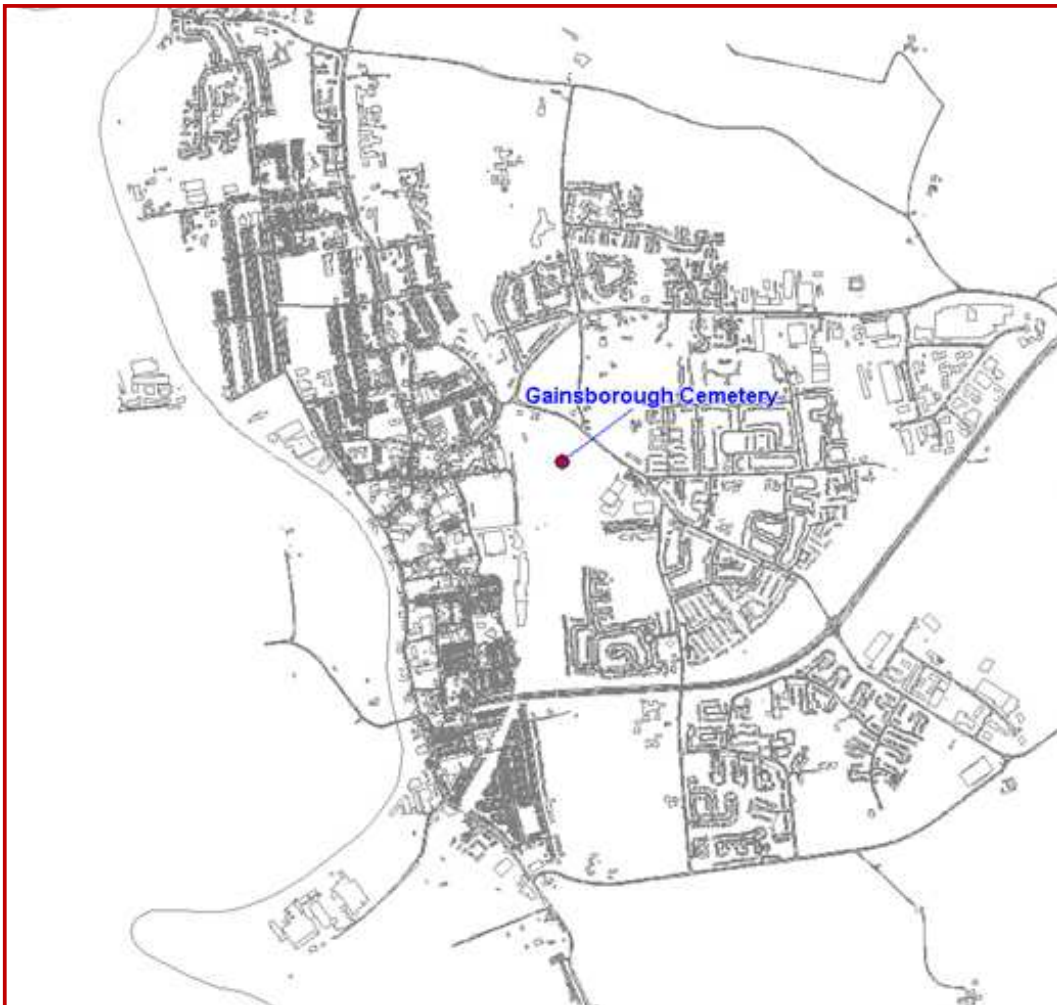


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	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 using diffusion tubes at 13 sites in 2011. Data capture at all locations was below 75%, therefore data have been annualised to take account of the impact of weather variations across the year.

One diffusion tube has been re-located due to the removal of the lamp post it was previously sited on. Tube WL7 at 3 Lea Road is now located outside of 2b Lea Road.

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

Diffusion tubes in 2011 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. WASP data rounds 112 through to 115 (January to December 2011) ESG have scored 100%, meaning that all of resulted submitted are deemed to be satisfactory based upon the z-score of $< \pm 2$.

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 for this laboratory and preparation method was 0.84 (March 2012). West Lindsey District Council have a co-location site with the Gainsborough Cemetery continuous analyser. The 2011 monitoring data is not sufficient to calculate the local bias-adjustment factor; therefore the national bias adjustment factor has been used in the results presented here.

For previous data, years 2007 to 2010, the bias adjustment factors have been taken from the Council's previous LAQM annual reports. The factors used were 1.20 (2007), 1.21 (2008), 0.99 (2009) and 0.83 (2010).

Figure 2.2 Maps of Non-Automatic Monitoring Sites





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 (Y/N)	Relevant Exposure? (Y/N 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	Y - 7.8	2.9	No
WL2	Roadside	481688	389770	NO ₂	No	No	Y - 20.1	1.6	Yes
WL3/4/5	Background	482021	389974	NO ₂	No	Yes	N	13.8	No
WL6	Kerbside	481500	390400	NO ₂	No	No	Y - 1.7	0.2	No
WL7	Roadside	481526	389077	NO ₂	No	No	Y - 0	8.6	No
WL8	Roadside	483062	389224	NO ₂	No	No	Y - 11.2	15.9	No
WL9	Roadside	510840	388610	NO ₂	No	No	Y - 32.4	10.2	No
WL10	Roadside	510851	388475	NO ₂	No	No	Y - 1.2	6.9	No
WL11	Roadside	510681	389675	NO ₂	No	No	Y - 15.1	1.7	Yes
WL12	Background	479811	392738	NO ₂	No	No	Y - 51.0	2.0	No
WL13	Roadside	481555	389891	NO ₂	No	No	Y - 5.91	2.22	No

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

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

- the annual mean of $40\mu\text{g}/\text{m}^3$, and
- the 1-hour mean of $200\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year.

Automatic Monitoring Data

The ratified annual monitoring results for 2007 – 2011 for the automatic monitoring site is shown in Table 2.3 while Figure 2.3 shows the trend in NO_2 annual mean.

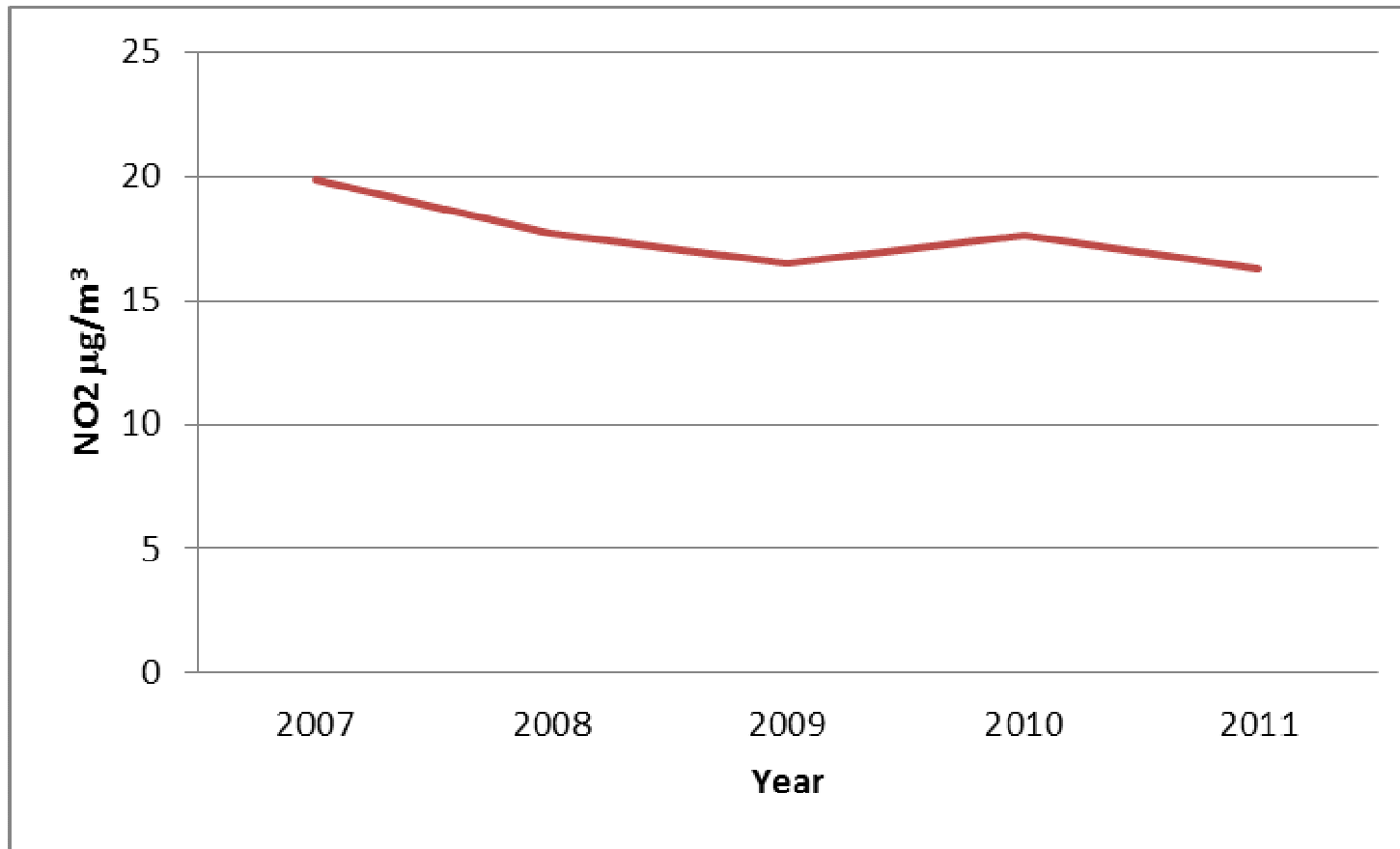
The annual mean is well below the objective for NO_2 , with concentrations falling from the 2010 concentrations.

With respect to the hourly mean objective, no exceedences of the short-term objective were recorded at the Gainsborough Cemetery monitoring sites in 2011.

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 %	Valid Data Capture 2011 %	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
					2007	2008	2009	2010	2011
WL1	Background	N	99%	99%	19.9	17.7	16.5	17.6	16.2

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites



The above figure shows the annual mean NO₂ concentrations from 2007 through to 2011. The highest concentrations were observed in 2007, from which a gradual fall in concentrations was observed through to 2009. A slight increase was then observed in the 2010 concentrations. The 2011 monitoring results have shown a decrease in concentrations back to close to those observed in 2009.

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 %	Valid Data Capture 2011 %	Number of Exceedences of Hourly Mean (200 µg/m ³)				
					2007	2008	2009	2010	2011
WL1	Background	No	99%	99%	0	0	0	0	0

Diffusion Tube Monitoring Data

The nitrogen dioxide diffusion tube data are summarised in Table 2.5. The full dataset (monthly mean values) are included in Appendix A. Data capture was less than 75% at all monitoring locations throughout 2011, as such, the data has been annualised in accordance with Box 3.2 of LAQM TG (09). Details on the annualisation process are provided in Appendix A.

There were no locations in West Lindsey District where the NO₂ annual mean Air Quality Objective of 40µg/m³ was exceeded during 2011.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor =0.84)
								2011 ($\mu\text{g}/\text{m}^3$)
WL1	19 Spring Gardens, Gainsborough	Roadside	N	N	3	Y	N	12.4 ^a
WL2	58 Etherington Street, Gainsborough	Roadside	N	N	4	Y	N	13.6 ^a
WL3, WL4, WL5	Gainsborough Cemetery, Gainsborough	Background	N	Triplicate and co-located	4	Y	N	9.0 ^a
WL6	Cherry Tree, Gainsborough	Background	N	N	4	Y	N	12.0 ^a
WL7	3 Lea Road, Gainsborough	Roadside	N	N	4	Y	N	16.7 ^a
WL8	Marshall Way, Gainsborough	Roadside	N	N	4	Y	N	10.9 ^a
WL9	Lamas Leas Lane, Market Rasen	Roadside	N	N	1	Y	N	9.9 ^b
WL10	Beeches Way, Market Rasen	Roadside	N	N	4	Y	N	8.3 ^a
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	Roadside	N	N	4	Y	N	10.0 ^a
WL12	Walkerith	Background	N	N	4	Y	N	9.8 ^a
WL13	Heaton Street	Roadside	N	N	4	Y	N	15.0 ^a

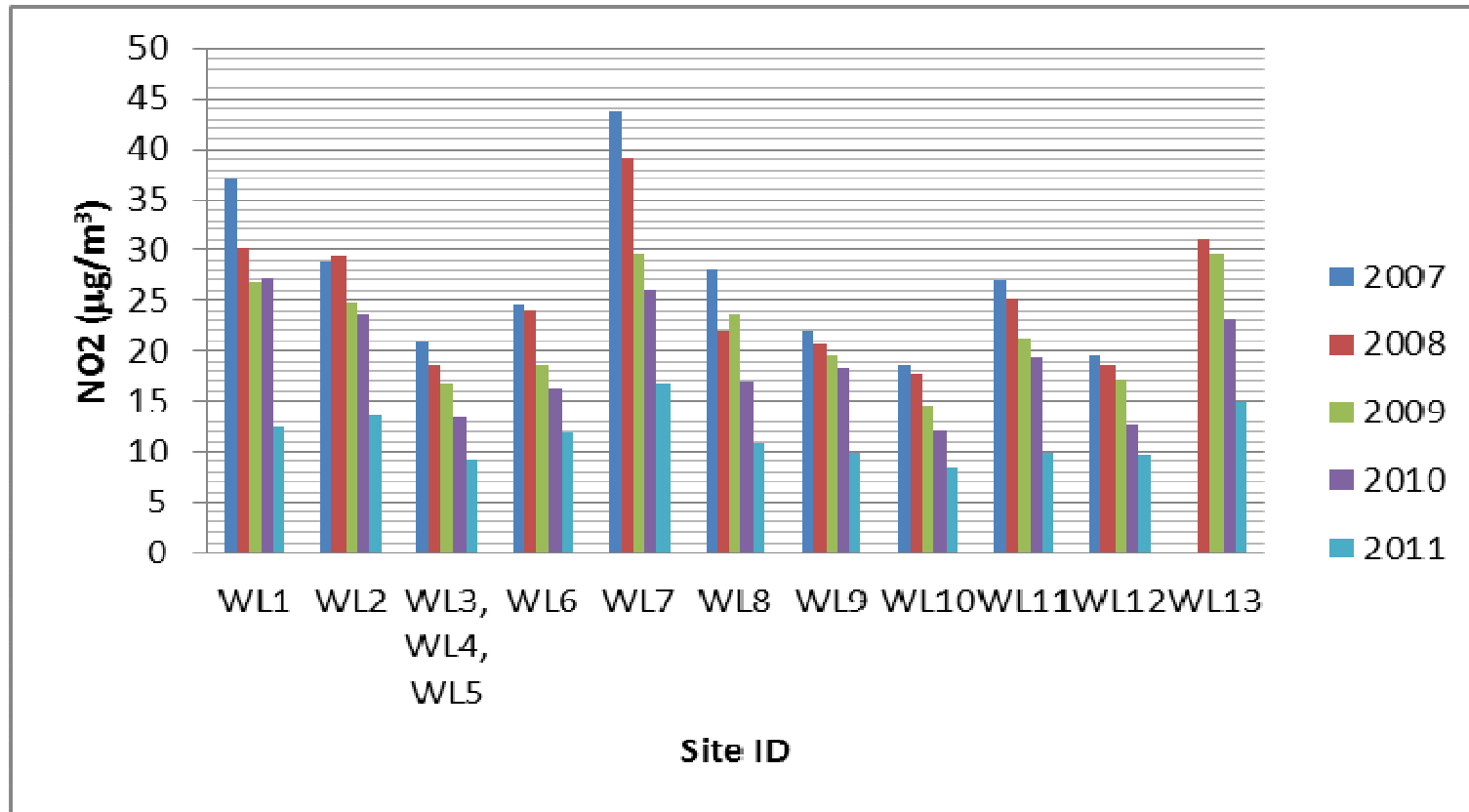
^a Means "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

^b Means data capture too low to calculate a reliable annualised figure <3 months.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2007 (Bias Adjustment Factor = 1.20)	2008* (Bias Adjustment Factor = 1.21)	2009* (Bias Adjustment Factor = 0.99)	2010* (Bias Adjustment Factor = 0.83)	2011 (Bias Adjustment Factor = 0.84)
WL1	Roadside	N	36.9	30.2	26.8	27.2	12.4
WL2	Roadside	N	28.9	29.4	24.9	23.7	13.6
WL3, WL4, WL5	Background	N	20.8	18.6	16.7	13.4	9.0
WL6	Background	N	24.7	24.1	18.8	16.2	12.0
WL7	Roadside	N	43.8	39.2	29.7	26.1	16.7
WL8	Roadside	N	28.0	22.0	23.8	16.9	10.9
WL9	Roadside	N	21.9	20.7	19.7	18.2	9.9
WL10	Roadside	N	18.8	17.7	14.6	12.2	8.3
WL11	Roadside	N	27.0	25.1	21.2	19.4	10.0
WL12	Background	N	19.6	18.8	17.1	12.7	9.8
WL13	Roadside	N	-	31.1	29.6	23.0	15.0

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



From the above figure it can be seen that a reduction in NO₂ concentrations was observed at all monitoring locations in 2011. This is a continuation of a decreasing trend in NO₂ concentrations observed at most locations since 2008.

2.2.2 Sulphur Dioxide

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

- the 1-hour mean of $350\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year;
- the 24-hour mean of $125\mu\text{g}/\text{m}^3$ not to be exceeded more than 3 times a year, and
- the 15-minute mean of $266\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year.

The 2011 monitoring data for Gainsborough Cemetery shows that the SO_2 objectives are being met.

Table 2.7 Results of Automatic Monitoring of SO₂: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2011 %	Number of Exceedences (percentile in bracket $\mu\text{g}/\text{m}^3$)		
					15-minute Objective (266 $\mu\text{g}/\text{m}^3$)	1-hour Objective (350 $\mu\text{g}/\text{m}^3$)	24-hour Objective (125 $\mu\text{g}/\text{m}^3$)
WL1	Background	N	99.5	99.5	0	0	0

2.2.3 Summary of Compliance with AQS Objectives

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 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Technical Guidance TG(09) defines narrow congested streets to have the following:

Daily traffic flow (AADT) of around 5,000 vehicles per day

- Congested street is one that has slow moving traffic that is frequently stopping and starting throughout the day.
- A narrow street is one with residential properties within 2 m of the kerb and buildings on both sides of the road

No roads have been identified as meeting these criteria.

West Lindsey 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

West Lindsey 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 HGVs.

A road with a high flow of buses or HGVs would be one where the proportion of these vehicles would be greater than 20%.

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

3.4 Junctions

The Technical Guidance TG(09) states that if a junction requires assessment the following criteria will be met.

- 'Busy' Junctions are those with more than 10,000 vehicles per day.
- Relevant exposure within 10 m of the kerb

West Lindsey 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

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

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

The assessment considers both NO₂ and PM₁₀ emissions at bus stations that are not enclosed with >2500 movements per day.

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

4 Other Transport Sources

4.1 Airports

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

4.2 Railways (Diesel and Steam Trains)

The assessment for stationary trains considers SO₂ emissions, while the assessment for moving diesel trains considers NO₂ emissions

4.2.1 Stationary Trains

West Lindsey 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

Rail lines with a heavy traffic of diesel passenger trains are listed in the Technical Guidance TG (09).

West Lindsey 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)

The assessment for shipping considers SO₂ emissions at busy ports with 5,000 and 15,000 movements per year and relevant exposure within 250 metres

West Lindsey 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

The assessment of industrial installations considers all of the regulated pollutants, although those most at risk of requiring further work are SO₂, NO₂, PM₁₀ and benzene.

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

West Lindsey 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.

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

West Lindsey 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

West Lindsey 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

The assessment considers benzene with respect to the 2010 objective.

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

5.3 Petrol Stations

The specified criteria for petrol stations requiring assessment as stated in the Technical Guidance TG (09) is a petrol station with the following:

- Annual throughput of more than 2,000m³ of petrol per annum
- A busy road nearby, with more than 30,000 vehicles per day

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

5.4 Poultry Farms

Studies have been conducted by the Environment Agency, Department for Environment Northern Ireland and a local authority. From the studies the following guidance has been produced as to assessment of poultry farms.

- Farms housing in excess of:
 - 400,000 birds if mechanically ventilated
 - 200,000 birds if naturally ventilated
 - 100,000 birds for any turnkey unit
- Relevant exposure within 100m of the poultry units.

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

The assessment considers both PM₁₀ and NO₂ objectives

West Lindsey District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

West Lindsey District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The assessment considers SO₂ emissions (only) from significant areas of residential properties that use solid fuel to heat their houses. ‘Significant’ areas are those of about 500 x 500 m with more than 50 houses burning coal/smokeless fuel as their primary source of heating. PM₁₀ from domestic solid fuel burning is covered under the Biomass combustion – combined impacts section above.

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

7 Fugitive or Uncontrolled Sources

The assessment of fugitive and uncontrolled sources considers the PM₁₀ objectives. This included consideration to quarries, landfill sites, opencast coal mining, waste transfer sites, and materials handling (i.e. ports, major construction sites). Only locations not covered by previous rounds of review and assessment, or where there is new relevant exposure, require consideration. In the case of proposed new sources, these are only required to be considered if planning approval has been granted.

West Lindsey 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 USA of new monitoring data shows that there were no exceedences of the air quality objectives in West Lindsey in 2011.

Based on the 2011 monitoring data there is no requirement for a Detailed Assessment.

8.2 Conclusions from Assessment of Sources

The review of sources of pollution within the West Lindsey District Council area did not identify any new sources likely to result in any exceedences of the Air Quality Objectives and as such there was no requirement for a Detailed Assessment to be undertaken.

8.3 Proposed Actions

The Updating and Screening Assessments considered new monitoring data and a review of emission sources in the area. There were no recorded exceedences of the air quality objectives for West Lindsey District Council in 2011. The review identified no new sources likely to result in any exceedences.

Data capture was limited at all locations in 2011, with results obtained from September onwards. West Lindsey District Council should continue to monitor the use of diffusion tubes to ensure that the current trend of good data capture continues for the remainder of 2012.

The proposed actions are as follows:

- Continue to monitor air quality within the district;
- Continue with current diffusion tube program with the aim of continuing good data capture for the remainder of 2012;
- Proceed to a Progress Report in 2013.

9 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 Annual Progress Report 2011
- West Lindsey District Council Updating and Screening Assessment 2009

Appendices

Appendix A: QA/QC Data

Appendix B: DMRB Calculations

Appendix A: QA:QC Data

Factor from Local Co-location Studies (if available)

West Lindsey District Council do have a co-located site, however data capture for 2011 was too low to produce a reliable local bias-adjustment factor.

Diffusion Tube Bias Adjustment Factors

The diffusion tubes in 2011 were prepared and analysed by Environmental Services Group (ESG). The tube preparation method is 50% TEA in Acetone. The national bias factor for this laboratory and preparation method was 0.84 (March 2012) based on 22 studies.

Discussion of Choice of Factor to Use

Due to the poor data capture from the co-location study it was not possible to derive a local bias factor. Therefore the national bias adjustment calculator has been used.

PM Monitoring Adjustment

No PM₁₀ monitoring is undertaken within the District.

Short-term to Long-term Data adjustment

Twelve NO₂ diffusion tubes data capture was less than 75% for the data for 2011. Eleven tubes were annualised using the procedure in TG(09) Box 3.2. Four sites were used to derive the annualisation factors; these sites were the closest background sites within range and had a data capture of at least 90%. A summary of annualisation factors is shown in Table A1.

The twelfth diffusion tube's data failed to meet data capture criterion. However the data has not been annualised because the single month of available data is too low to derive a reliable annualised value.

Data capture was good at the continuous monitoring location for both SO₂ and NO₂, therefore no annualisation of the data was required.

Table A1 Summary of Annualisation Factors for Diffusion Tube annualisation

Monitoring Location		Raw Average- µg/m ³	Annualisation Factor Chesterfield	Annualisation Factor Hull Freetown	Annualisation Barnsley Gawbar	Annualisation Sheffield Centre	Average Annualisation	Annualised Diffusion tube Concentration (not bias corrected) - µg/m ³
WL1	19 Spring Gardens, Gainsborough	17.0	0.804	0.846	0.907	0.924	0.870	14.8
WL2	58 Etherington Street, Gainsborough	17.3	0.920	0.887	0.975	0.983	0.941	16.2
WL3, WL4, WL5	Gainsborough Cemetery, Gainsborough	10.6	0.920	0.887	0.975	0.983	0.941	10.0
WL6	Cherry Tree, Gainsborough	13.3	0.920	0.887	0.975	0.983	0.941	12.5
WL7	3 Lea Road, Gainsborough	10.3	0.920	0.887	0.975	0.983	0.941	9.7
WL8	Marshall Way, Gainsborough	15.2	0.920	0.887	0.975	0.983	0.941	14.3
WL9	Lamas Leas Lane, Market Rasen	16.3		0.865	1.506	1.277	1.216	19.8
WL10	Beeches Way, Market Rasen	13.8	0.920	0.887	0.975	0.983	0.941	12.9
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	12.5	0.920	0.887	0.975	0.983	0.941	11.8
WL12	Walkerith	10.5	0.920	0.887	0.975	0.983	0.941	9.8
WL13	Heaton Street	12.6	0.920	0.887	0.975	0.983	0.941	11.9

QA/QC of automatic monitoring

AQM Services undertake the data management of the Gainsborough Cemetery station. AQM Services have ratified the data for 2010. The Quality Assurance/Quality Control (QA/QC) procedures applied by AQM Services are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures.

QA/QC of diffusion tube monitoring

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. WASP data rounds 112 through to 115 (January to December 2011) ESG have scored 100%, meaning that all of resulted submitted are deemed to be satisfactory based upon the z-score of $< \pm 2$. The tube precision for the NO₂ Annual Field Inter-comparison at Marylebone Road was rated as 'Good'.

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Table A2 Monthly NO₂ Concentrations

Site	Jan	Feb	Mar	April	May	June	July	Aug	Sept	October	Nov	Dec
WL1										15.1	19.3	16.6
WL2									12.9	17.7	24.4	14.0
WL3, WL4, WL5									8.6	9.7	13.4	10.8
WL6									7.8	9.3	15.1	21.0
WL7									8.2	11.1	13.1	8.8
WL8									10.2	13.5	21.1	15.8
WL9												16.3
WL10									11.1	12.1	18.5	13.3
WL11									10.2	11.3	16.9	11.7
WL12									8.4	9.9	12.8	10.7
WL13									10.5	12.1	14.9	13.0