West Lindsey District Council

Updating And Screening Assessment 2015

Bureau Veritas Air Quality

August 2015

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Document Control Sheet

Issue/Revision	Issue 1	Issue 2
Remarks	DRAFT	FINAL
Date	August 2015	August 2015
Submitted to	[redacted]	[redacted]
Prepared by	[redacted]	[redacted]
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Project number	6286500	6286500

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2015 Updating and Screening Assessment for West Lindsey District Council

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

August, 2015

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Report Reference number	Updating and Screening Assessment 2015
Date	August 2015

Executive Summary

Part IV of the Environmental At 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 Updating and Screening Assessment is a requirement of the Sixth Round of Review and Assessment and is a requirement for all local authorities. The report has been undertaken in accordance with the Defra Technical Guidance LAQM.TG(09) and associated tools (as updated in 2014).

This Updating and Screening Assessment considers all new monitoring data and assesses the data against the Air Quality Strategy (AQS) objectives. It also considers any changes that may have had an impact upon air quality.

Updated monitoring completed in 2014 showed that there were no exceedences of the AQS objectives at any location within the District and there were no newly identified sources within the District.

Results from diffusion tube monitoring showed that Nitrogen Dioxide (NO_2) concentrations in 2014 decreased at all monitoring sites compared to 2013. Continuous monitoring results for 2014 indicate that both the annual mean objective and the 1-hour mean objective for NO_2 were met at the monitoring location, with a decrease in concentration from 2013 to 2014.

The proposed actions arising from the completion of the 2015 Updating and Screening Assessment are as follows:

- Continue to monitor NO_2 concentrations across the District using diffusion tubes to identify future changes in pollutant concentration; and
- Proceed to an Annual Progress Report in 2016.

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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 sources of air pollution that give rise to concern relating to compliance within the District are emissions from road traffic on major roadways; notably the A159, A631 and the A156. There are currently no Air Quality Management Areas (AQMAs) located within the District.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy (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.

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

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (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 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/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 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/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

Table 1.2, below provides a summary of the previous rounds of Review and Assessment.

Table 1.2: Summary of Previous Review and Assessments

Round of Assessment	Conclusions
Round 1	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 (NO_2) particulate matter (PM_{10}) and sulphur dioxide (SO_2). 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.
Round 2	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.
Round 3	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

Round of Assessment	Conclusions
	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.
Round 4	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 NO_2 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 NO_2. 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.
Round 5	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. The 2014 Progress Report concluded that there were no exceedences of any of the air quality objectives, therefore there was no need to proceed to a Detailed Assessment.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Continuous automatic monitoring is undertaken at one location within the District. The monitoring site was installed at the Gainsborough Cemetery in 2001 as part of the Electricite de France (EDF) monitoring programme to monitor emissions from the Trent Valley Power stations. The site is operated and maintained by the nearby West Burton Power Station in the neighbouring borough of Bassetlaw.

The station monitors Nitrogen Oxides (NO_x) and Nitrogen Dioxide (NO_2) using a chemiluminescence analyser, and also Sulphur Dioxide (SO_2) levels using an ultra-violet fluorescence (UVF) analyser.

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

Figure 2.1: Map of Automatic Monitoring Site

Legend

Automatic Monitoring Site

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Location

West Lindsey District Council

Title

Automatic Monitoring Site: Gainsborough Cemetery

By	Approved
PB	JC
Scale	**Job Ref**
Not To Scale	6271169
Date	**Figure No.**
August 2015	**2.1**

Table 2.1: Details of Automatic Monitoring Sites: Gainsborough Cemetery

Site Name	Site Type	X OS Grid Ref	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	289974	NO_2, SO_2	No	Chemiluminescence analyser, UVF analyser	No	N/A	No

2.1.2 Non-Automatic Monitoring Sites

During 2014 West Lindsey District Council monitored NO_2 at 11 separate locations using passive diffusion tubes. There has been no change in the monitoring locations since the 2014 Annual Progress Report.

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 diffusion tube locations are provided in Figure 2.2 and Figure 2.3.

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

Legend

Diffusion Tube Site

Air Quality
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Location

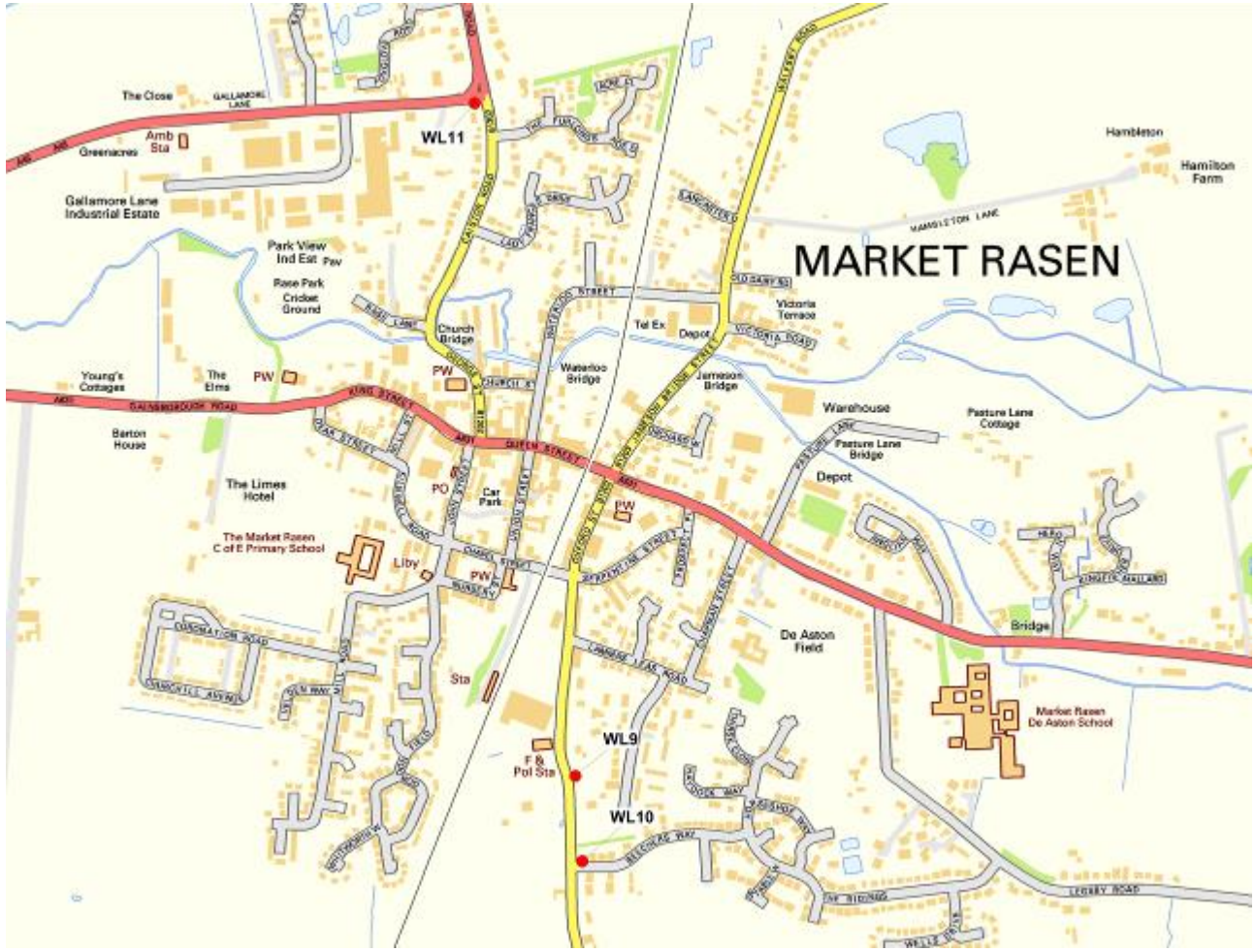
West Lindsey District Council

Title

Non-Automatic Monitoring Sites: Gainsborough

By	Approved
PB	JC
Scale	**Job Ref**
Not To Scale	6286500
Date	**Figure No.**
August 2015	**2.2**

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



Legend

Diffusion Tube Site

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Location	**West Lindsey District Council**
Title	**Non-Automatic Monitoring Sites: Market Rasen**
By PB	**Approved** JC
Scale Not To Scale	**Job Ref** 6286500
Date August 2015	**Figure No.** **2.3**

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 (m) *(N/A if not applicable)*	Does this location represent worst-case exposure?
WL1	Roadside	481721	389935	NO_2	N	N	Yes (7.8)	2.9	No
WL2	Roadside	481688	389770	NO_2	N	N	Yes (20.1)	1.6	Yes
WL3/4/5	Background	482021	389974	NO_2	N	Yes	No	13.8	No
WL6	Kerbside	481500	390400	NO_2	N	N	Yes (1.7)	0.2	No
WL7	Roadside	481526	389077	NO_2	N	N	Yes (0)	8.6	No
WL8	Roadside	483062	389224	NO_2	N	N	Yes (11.2)	15.9	No
WL9	Roadside	510840	388610	NO_2	N	N	Yes (32.4)	10.2	No
WL10	Roadside	510851	388475	NO_2	N	N	Yes (1.2)	6.9	No
WL11	Roadside	510681	389675	NO_2	N	N	Yes (15.1)	1.7	Yes
WL12	Background	479811	392738	NO_2	N	N	Yes (51.0)	2.0	No
WL13	Roadside	481555	389891	NO_2	N	N	Yes (5.9)	2.22	No

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

There are two AQS objectives for NO_2, namely:

- The annual mean of 40 µg/m^3; and
- The 1-hour mean of 200 µg/m^3 not to be exceeded more than 18 times per year.

Automatic Monitoring Data

The annual mean monitoring results from 2008 to 2014 for the Gainsborough Cemetery automatic monitoring site are shown in Table 2.3, and the results of the monitoring station in comparison with the AQS 1-hour mean objective are shown in Table 2.4.

Data capture was good during 2014, therefore annualisation was not required for the monitoring data.

Results for 2014 indicate that both the annual mean objective and the 1-hour objective were met at the continuous monitoring location. Figure 2.4 shows the trend in annual mean NO_2 concentrations from 2008 to 2014 at the the Gainsborough Cemetery monitoring site. There has not been any exceedence of the annual mean objective at the monitoring site during the monitoring periods with a continuous decline experienced every year in annual mean concentration from 2010.

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

Site Name	Site Type	Within AQMA?	Data Capture for Full Calendar Year 2014 (%)	Annual Mean NO_2 Concentration (µg/m^3)						
				2008	2009	2010	2011	2012	2013	2014
WL1	Background	N	99.04	17.7	16.5	17.6	16.2	16.0	15.2	13.8

Figure 2.4: Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

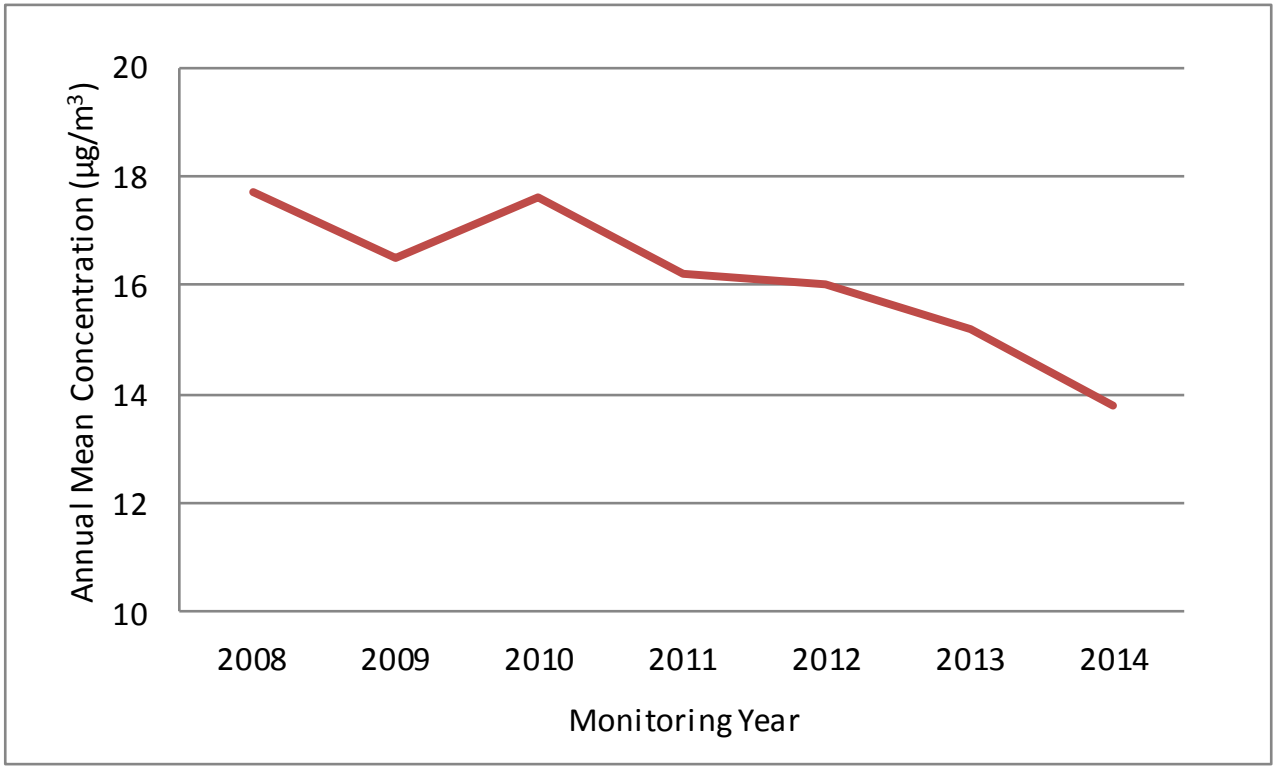


Table 2.4: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site Name	Site Type	Within AQMA?	Data Capture for Full Calendar Year 2014 (%)	Number of Hourly Means >200 µg/m^3						
				2008	2009	2010	2011	2012	2013	2014
WL1	Background	N	99.04	0	0	0	0	0	0	0

Diffusion Tube Monitoring Data

The NO_2 diffusion tube data is summarised in Table 2.5 and the full dataset including monthly mean values are included in Appendix A: QA/QC Data, Table A1.

Results from the year 2014 have been bias adjusted using the local bias adjustment factor. The data capture for 2014 was very good at all sites therefore annualisation was not required at any sites. Full details of the bias adjustment and diffusion tube QA/QC procedure are provided in Appendix A: QA/QC Data.

There were no monitoring sites that exceeded the AQS annual mean objective in 2014, this is in line with previous year's results. In comparison to concentrations recorded in 2013, all monitoring locations experienced a decrease in concentration.

Table 2.5: Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Site Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Data Capture 2014 (Number of Months)	Confirm if data has been distance corrected (Y/N)	2014 Annual Mean Concentration ($\mu g/m^3$) - Bias Adjustment factor = 0.79
WL1	19 Spring Gardens, Gainsborough	Roadside	N	N	12	N	24.6
WL2	58 Etherington Street, Gainsborough	Roadside	N	N	12	N	19.5
WL3/4/5	Gainsborough Cemetery, Gainsborough	Background	N	Triplicate and co-located	12	N	14.1
WL6	Cherry Tree, Gainsborough	Background	N	N	12	N	17.7
WL7	3 Lea Road, Gainsborough	Roadside	N	N	12	N	26.9
WL8	Marshall Way, Gainsborough	Roadside	N	N	11	N	19.0
WL9	Lamas Leas Lane, Market Rasen	Roadside	N	N	12	N	17.4
WL10	Beeches Way, Market Rasen	Roadside	N	N	12	N	12.8
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	Roadside	N	N	12	N	18.2
WL12	Walkerith	Background	N	N	12	N	13.7
WL13	Heaton Street	Roadside	N	N	11	N	23.7

Table 2.6: Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (μg/m^3) – Adjusted for Bias						
			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)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.79)
WL1	Roadside	N	30.2	26.8	27.2	12.4	27.7	28.9	24.6
WL2	Roadside	N	29.4	24.9	23.7	13.6	23.4	21.7	19.5
WL3/4/5	Background	N	18.6	16.7	13.4	9.0	16.1	15.1	14.1
WL6	Background	N	24.1	18.8	16.2	12.0	20.2	18.8	17.7
WL7	Roadside	N	39.2	29.7	26.1	16.7	31.8	29.4	26.9
WL8	Roadside	N	22.0	23.8	16.9	10.9	22.3	19.4	19.0
WL9	Roadside	N	20.7	19.7	18.2	9.9	19.7	18.6	17.4
WL10	Roadside	N	17.7	14.6	12.2	8.3	15.7	15.8	12.8
WL11	Roadside	N	25.1	21.2	19.4	10.0	19.8	19.1	18.2
WL12	Background	N	18.8	17.1	12.7	9.8	17.0	15.1	13.7
WL13	Roadside	N	31.1	29.6	23.0	15.0	27.1	25.4	23.7

Figure 2.5: Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

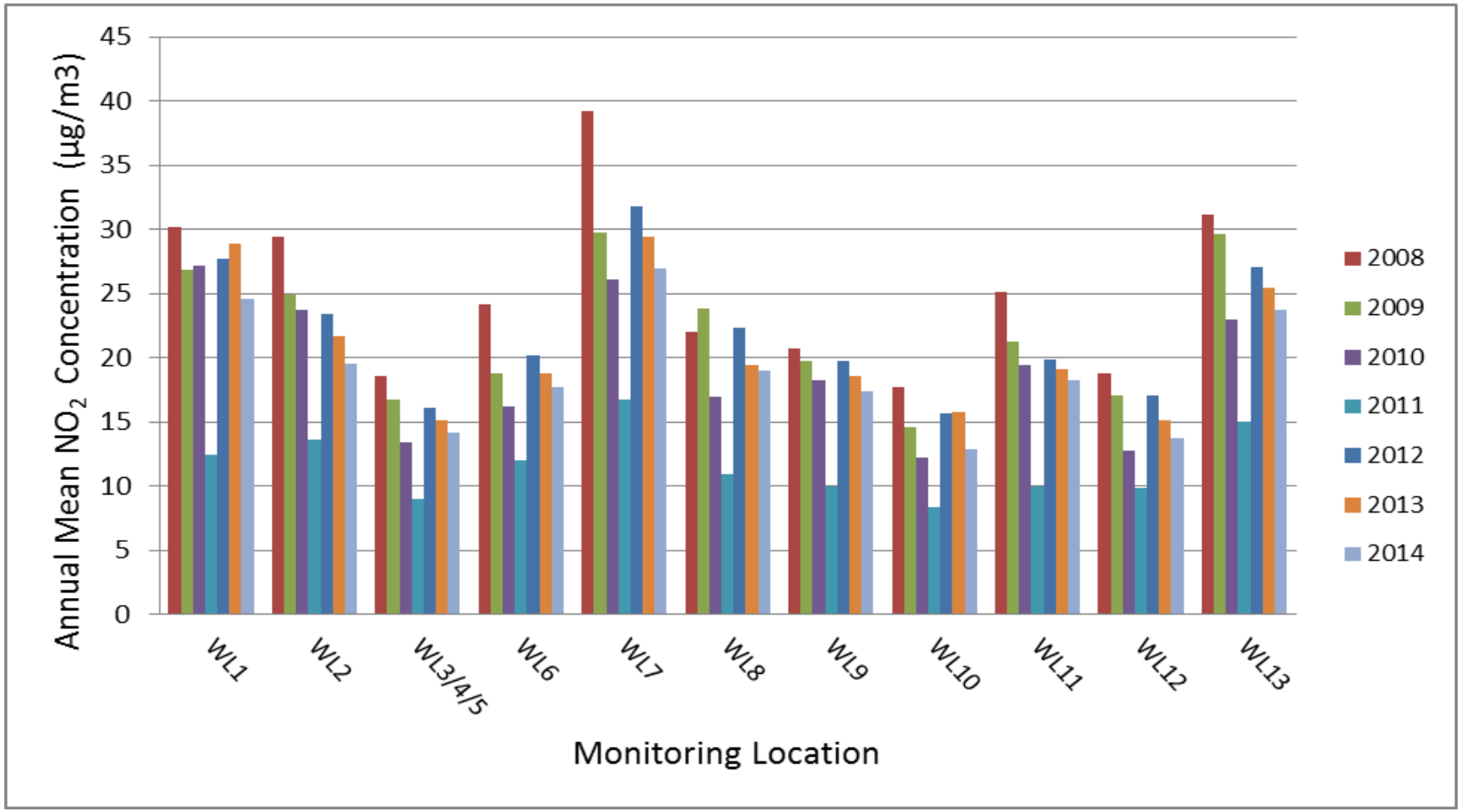


Figure 2.5 above shows the trend in NO_2 concentration for all diffusion tube monitoring sites located in West Lindsey. Concentrations at all monitoring sites have decreased from 2013 to 2014, and many of the sites recorded their lowest concentration within the monitoring period with the exception of 2011; during which all sites experienced low data capture and required annualisation.

2.2.2 Particulate Matter (PM_{10})

West Lindsey District Council does not undertake any monitoring of PM_{10}.

2.2.3 Sulphur Dioxide (SO_2)

There are three AQS objectives for SO_2, namely:

- The 1-hour mean of 350 µg/m^3, not to be exceeded more than 24 times per year;
- The 24-hour mean of 125 µg/m^3, not to be exceeded more than 3 times per year; and
- The 15-minute mean of 266 µg/m^3 not to be exceeded more than 35 times per year.

The 2014 SO2 monitoring data for the Gainsborough Cemetery automatic monitor is shown in Table 2.7, it is shown that all AQS objectives for SO_2 are currently being met.

Table 2.7: Results of Automatic Monitoring of SO_2: Comparison with Annual Mean Objectives

Site ID	Site Type	Within AQMA?	Data Capture for Full Calendar Year 2014 % (15-minute Means)	Number of Exceedences of		
				15-minute Objective (266 μg/m^3)	1-hour Objective (350 μg/m^3)	24-hour Objective (125 μg/m^3)
WL1	Background	N	97.5	0	0	0

2.2.4 Benzene (C_6H_6)

West Lindsey District Council does not undertake any monitoring of Benzene.

2.2.5 Other pollutants monitored

No other pollutants were monitored within West Lindsey District Council during 2014.

2.2.6 Summary of Compliance with AQS Objectives

The updated monitoring for 2014 shows that the NO_2 and SO_2 AQS objectives continue to be met at all monitoring locations within West Lindsey District Council.

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

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

Average Annual Daily Traffic flow (AADT) of around 5,000 vehicles per day:

- A congested street is one that has slow moving traffic that is frequently stopping and starting throughout the day; and
- A narrow street is one with residential properties within 2m 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 of 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

Defra 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; and
- Relevant exposure within 10m 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 NO_2 and PM_{10} emissions at bus stations that are not enclosed and have greater than 2,500 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 SO_2 emissions, while the assessment for moving trains considers NO_2 emissions. If there are no railways carrying diesel or steam trains in the local authority area, there is no need to proceed further with this section.

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

Railway lines with a heavy traffic of diesel passenger trains are listed within the Defra Technical Guidance TG(09). Of the railways listed, none pass through West Lindsey.

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)

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 SO_2, NO_2, PM_{10} 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

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

5.3 Petrol Stations

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

- An annual throughput of more than 2,000m^3 of petrol; and

- 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 Environmental Agency, Department for Environment Northern Island and a local authority. From the studies completed the following guidance has been produced as to the assessment of poultry farms:

- Identify any farms housing in excess of:
  - 400,000 birds if mechanically ventilated;
  - 200,000 birds if naturally ventilated; and
  - 100,000 birds for any turkey farm.
- Establish whether there is any relevant exposure within 100m of the poultry farms.

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

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

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 PM_{10} objectives, this includes considerations to quarries, landfill sites, opencast coal mining, waste transfer sites and materials handling (i.e. ports, major construction sites). Only locations not covered by the 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.

An application has been approved for a Waste Transfer Facility located at Longwood Road, Gainsborough (PL/0112/14). The site is to be used as a temporary storage station for all wastes before they are sorted and transferred off-site for recycling and re-use at other facilities. West Lindsey District Council has not opposed the site on environmental terms and an environmental permit has been issued for the operations at the site, ensuring that the site does not negatively impact the local area.

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

A review of 2014 passive NO_2 monitoring data from the District has identified no exceedences of the AQS objectives at any monitoring location within West Lindsey. This is in line with previous years monitoring data. In comparison with 2013 annual mean concentrations a decrease in concentration was experienced at all monitoring sites in 2014 compared to 2013.

Continuous monitoring was undertaken for both NO_2 and SO_2 during 2014 at one location. The results indicate that both the annual mean objective and the 1-hour AQS objectives for NO_2 were met at the monitoring location, and the 1-hour mean, 24-hour mean and 15-minute AQS objectives for SO_2 were met at the monitoring location.

Based on the results of monitoring completed in 2014 there is no requirement to proceed to a Detailed Assessment at any monitoring location.

8.2 Conclusions from Assessment of Sources

An application has been received and approved for a waste transfer facility within West Lindsey. An environmental permit has been issued for this facility and no complaints have been received, therefore it is concluded that a Detailed Assessment relating to this source is not required.

8.3 Proposed Actions

The proposed actions from the 2015 Updating and Screening Assessment are as follows:

- Continue to monitor NO_2 concentrations across the District using diffusion tubes to identify future changes in pollutant concentration; and
- Proceed to an Annual Progress Report in 2016.

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
- 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
- National Diffusion Tube Bias Adjustment Spreadsheet, version 03/15 published in March 2015
- http://laqm.defra.gov.uk/documents/LAQM-WASP-Rounds-121--124-and-AIR-PT-Rounds-1-3-4-6-(April-2013--February-2015)-NO2-report.pdf
- West Lindsey District Council 2014 Annual Progress Report
- West Lindsey District Council 2013 Annual Progress Report
- West Lindsey District Council 2012 Updating and Screening Assessment

Appendices

Appendix A: QA/QC Data

Appendix A: QA/QC Data

Factor from Local Co-location Studies

There is a co-located triplicate diffusion tube monitoring site (WL 3/4/5) installed at the urban background Gainsborough Cemetery automatic monitoring site. Data capture for both the diffusion tubes and the continuous monitor were good in 2014 and the Local Bias Adjustment Factor was 0.79. An output from the National Diffusion Tube Bias Adjustment Factor Spreadsheet (v.03_15) is given in Figure A1.

Figure A1: Local Bias Correction Factor Output

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	08/01.2014	05/02/2014	25.5	21.7	19.9	22	2.9	13	7.1
2	05/02/2014	05/03/2014	20.8	26.1	22.4	23	2.7	12	6.8
3	05/03/2014	03/04/2014	16.5	21.2	19.2	19	2.4	12	5.9
4	03/04/2014	30/04/2014	16.1	14.7	17.8	16	1.6	10	3.9
5	30/04/2014	28/05/2014	11.4	12.1	12.9	12	0.8	6	1.9
6	28/05/2014	03/07/2014	11.0	10.8	12.1	11	0.7	6	1.7
7	03/07/2014	30/07/2014	21.4	11.8	13.2	15	5.2	34	12.9
8	30/07/2014	29/08/2014	12.0	11.8	11.2	12	0.4	4	1.0
9	29/08/2014	01/10/2014	13.9	18.1	16.5	16	2.1	13	5.3
10	01/10/2014	28/10/2014	19.8	16.2	18.7	18	1.8	10	4.6
11	28/10/2014	03/12/2014	25.9	23.7	23.7	24	1.3	5	3.2
12	03/12/2014	07/01/2015	25.3	21.9	23.1	23	1.7	7	4.3
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
18.48	99.4	Good	Good
18.48	99.55	Good	Good
15.7	99.71	Good	Good
10.92	99.54	Good	Good
10	99.26	Good	Good
8	99.54	Good	Good
10	97.84	Poor Precisior	Good
10	98.33	Good	Good
14	97.1	Good	Good
14	99.69	Good	Good
18.79	99.54	Good	Good
18.48	99.19	Good	Good
Overall survey -->		Good precision	Good Overall

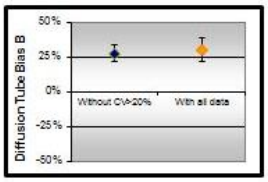
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 11 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A 0.79 (0.75 - 0.83)
Bias B 27% (21% - 33%)
Diffusion Tubes Mean: 18 µgm^{-3}
Mean CV (Precision): 9
Automatic Mean: 14 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 14 (14 - 15) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.78 (0.73 - 0.83)
Bias B 29% (20% - 37%)
Diffusion Tubes Mean: 18 µgm^{-3}
Mean CV (Precision): 11 caution
Automatic Mean: 14 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 14 (13 - 15) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Diffusion Tube Bias Adjustment Factors

Diffusion tube data obtained for the year 2014 was supplied and analysed by Environmental Scientifics Group (ESG), the tubes were prepared using the 50% trithanolamine (TEA) in acetone preparation method. The bias adjustment factor for ESG Glasgow is 0.76 (based on one study, version 06_15) as obtained from the National Bias Adjustment Calculator[1].

[1] National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 06/15 published in June 2015.

Discussion of Choice of Factor to Use

The diffusion tube data has been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube concentration and continuous monitoring, the latter assumed to be a more accurate method of monitoring. The Defra Technical Guidance LAQM.TG(09) provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

With regard to the application of a bias adjustment factor for diffusion tubes, the Defra Technical Guidance LAQM.TG(09) and the LAQM Helpdesk[2] recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

The local bias adjustment factor is 0.79. The triplicate monitoring sites had good data capture in 2014 (100% diffusion tubes, 99.04% automatic monitor) with good precision for all but one period. It was decided to use the local bias adjustment for the 2014 data. For comparison, the national bias adjustment factor for the laboratory for 2014 was 0.76 based on one study, taken from the National Bias Adjustment Calculator.

For previous years data presented (2008 to 2013), the bias adjustment factors have been taken from the Council's previous LAQM reports. The factors used were 1.21 (2008), 0.99 (2009), 0.83 (2010), 0.84 (2011), 0.82 (2012), 0.80 (2013).

PM Monitoring Adjustment

West Lindsey District Council does not complete any PM_{10} monitoring within the District.

Short-term to Long-term Data Adjustment

Data capture at all diffusion tube monitoring locations was greater than 75% in 2014, therefore annualisation of the results was not required.

[2] Laqm.defra.gov.uk

QA/QC of Automatic Monitoring

AQM Services undertake the data management of the Gainsborough Cemetery monitoring 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

ESG Glasgow is a UKAS accredited laboratory and participates in the AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP))[3] for NO_2 tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations are reported to a high level of accuracy. The laboratory follows the procedures set out in the Harmonisation Practical Guidance.

In the latest available WASP/AIR-PT results, rounds WASP 124 (January to March 2014), AIR-PT AR001 (April to May 2014), AR003 (June to July 2014) and AR004 (October to November 2014) ESG Glasgow has scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ±2.

[3] http://laqm.defra.gov.uk/documents/LAQM-WASP-Rounds-121--124-and-AIR-PT-Rounds-1-3-4-6-(April-2013--February-2015)-NO2-report.pdf

Table A1: Monthly NO_2 Concentrations – Diffusion Tube Sites (2014)

Site Ref	2014 NO_2 Concentrations µg/m^3													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Count	Average
WL1	42.4	43.7	26.3	26.1	23.7	19.4	22.8	22.2	25.4*	31.1	40.6	49.9	12	31.1
WL2	29.1	31.5	25.0	22.3	19.3	16.1	18.5	15.9	22.5	28.4	35.1	32.0	12	24.6
WL3	25.5	20.8	16.5	16.1	11.4	11.0	21.4	12.0	13.9	19.8	25.9	25.3	12	18.3
WL4	21.7	26.1	21.2	14.7	12.1	10.8	11.8	11.8	18.1	16.2	23.7	21.9	12	17.5
WL5	19.9	22.4	19.2	17.8	12.9	12.1	13.2	11.2	16.5	18.7	23.7	23.1	12	17.6
WL6	30.9	28.3	24.3	14.5	13.3	14.1	14.8	13.3	19.6	26.0	34.3	36.1	12	22.5
WL7	36.8	35.7	38.2	29.8	28.9	28.8	35.3	31.1	32.9	32.7	42.7	35.7	12	34.1
WL8	23.0	-	24.7	21.2	39.8	15.1	13.9	16.6	17.6	24.9	31.8	35.4	11	24.0
WL9	31.3	23.9	21.4	21.6	16.8	14.4	18.8	17.1	20.5	19.1	31.0	29.0	12	22.1
WL10	20.3	19.6	16.4	16.9	12.6	9.7	12.0	12.9	14.4	14.9	22.1	23.2	12	16.2
WL11	24.1	20.7	25.6	19.6	18.7	17.9	21.9	28.7	25.5	18.7	26.3	28.1	12	23.0
WL12	26.2	24.5	18.4	17.1	11.2	9.4	10.6	8.7	12.0*	24.3	25.7	20.3	12	17.4
WL13	43.6	34.7	32.7	-	23.7	19.6	22.4	17.7	25.7	28.3	41.4	39.8	11	30.0

* - Diffusion tubes were found to have spiders inside them, as a result the data should be treated as cautious