WEST LINDSEY DISTRICT COUNCIL

LAQM ANNUAL PROGRESS REPORT 2011

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Executive Summary

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

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

Having considered the latest monitoring data and development updates, it is concluded that the air quality objectives for benzene, 1, 3-butadiene, carbon monoxide, lead, particulates (PM_{10}), nitrogen dioxide (NO_2) and sulphur dioxide will be met. There is no requirement to undertake a Detailed Assessment for any pollutant.

Proposed actions arising from this Progress Report are as follows:

- Continue with the current locations to monitor NO_2 in order to enable continued demonstration of compliance with air quality objectives. Efforts should be made to improve data capture.

- Proceed to an Updating and Screening Assessment in 2012.

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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 are road traffic emissions from major roads, notably the A159, A631 and A156. There is currently no Air Quality Management Area (AQMA) in West Lindsey.

1.2 Purpose of Progress Report

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

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) in England are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1. This table shows the objectives in units of microgrammes per cubic metre (µg/m^3). For carbon monoxide the units used are milligrammes per cubic metre (mg/m^3). Table 1 includes the number of permitted exceedences in any given year (where applicable).

Table 1 - Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England

Pollutant	Concentration	Measured as	Date to be Achieved by
Benzene (C_6H_6)	16.25 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Running annual mean	31.12.2010
1,3-Butadiene (C_4H_6)	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide (CO)	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 (NO_2)	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 (SO_2)	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

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, NO_2, PM_{10} and SO_2. The conclusions 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 Updating and Screening Assessment (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 a Detailed Assessment of air quality was not required, as 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 NO_2 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 APRs 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 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, West Lindsey District Council undertook an APR, as part of the Fourth Round of Review and Assessment. This concluded that all air quality objectives would be met. 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 2010, 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 NO_2 levels using a chemiluminescence analyser, as well as SO_2 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 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.

Details of the continuous monitoring sites are provided in Table 2 below, while the location is shown in Figure 1.

Figure 1 - Map of Automatic Monitoring Site

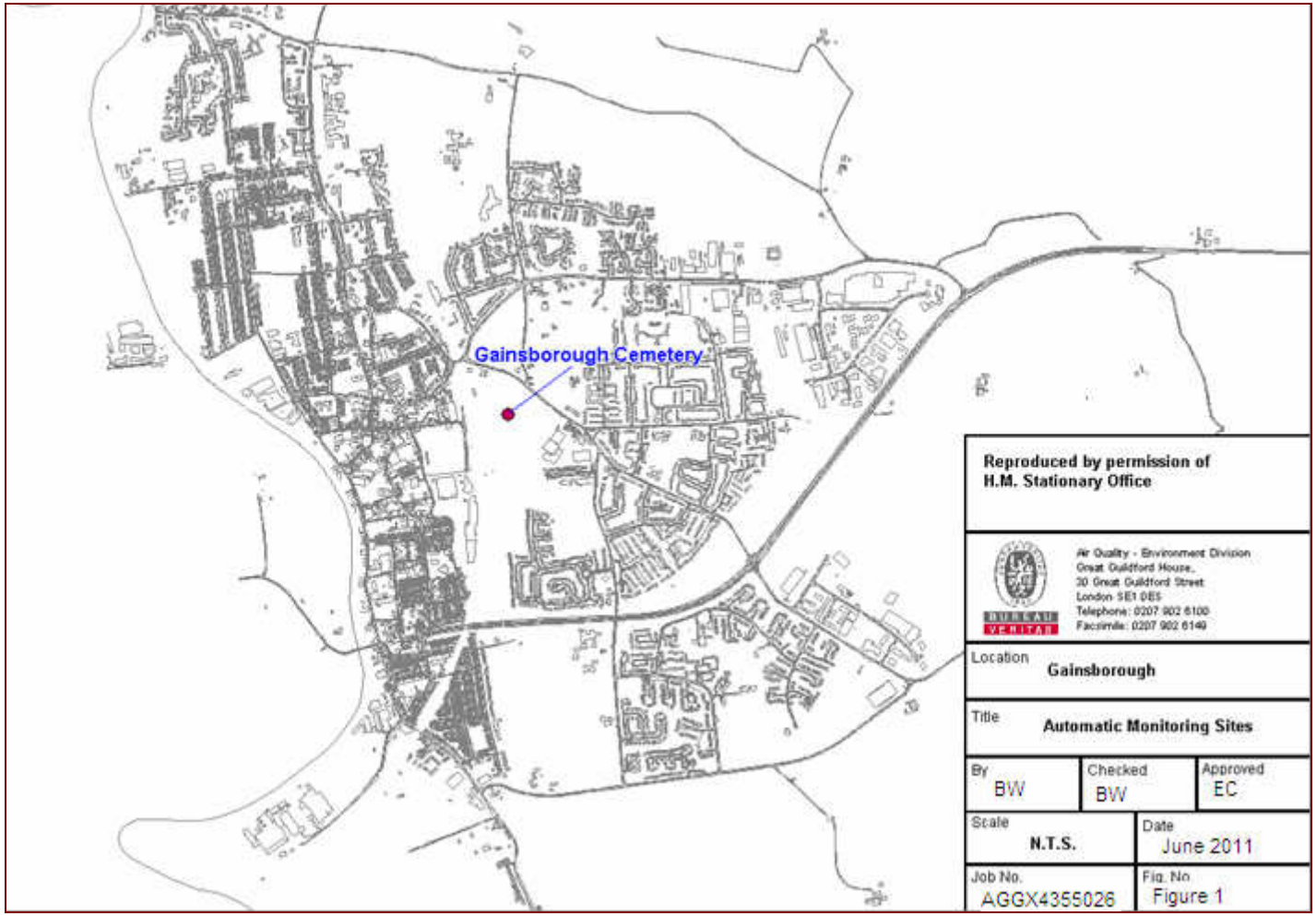


Table 2 - Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Reference (X, Y)		Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with Distance (m) to Relevant Exposure)	Distance to Kerb of Nearest Road (N/A if not applicable)	Does this Location Represent Worst-case Exposure?
Gainsborough Cemetery	Urban Background / Industrial	482021	389974	NO_2, SO_2	No	No	N/A	No

2.1.2 Non-Automatic Monitoring

West Lindsey District Council undertook non-automatic monitoring using diffusion tubes at 11 sites in 2010. There have been no changes in the diffusion tube monitoring network since last year. A triplicate set of diffusion tubes were co-located at the Gainsborough Cemetery automatic monitoring site.

Diffusion tubes in 2010 were prepared and analysed by ESG Limited. The tube preparation method is 50% TEA in Acetone. Details of the monitoring sites are shown in Table 3, and locations provided in Figure 2 and Figure 3.

Figure 2 - Map of Non-Automatic Monitoring Sites – Gainsborough

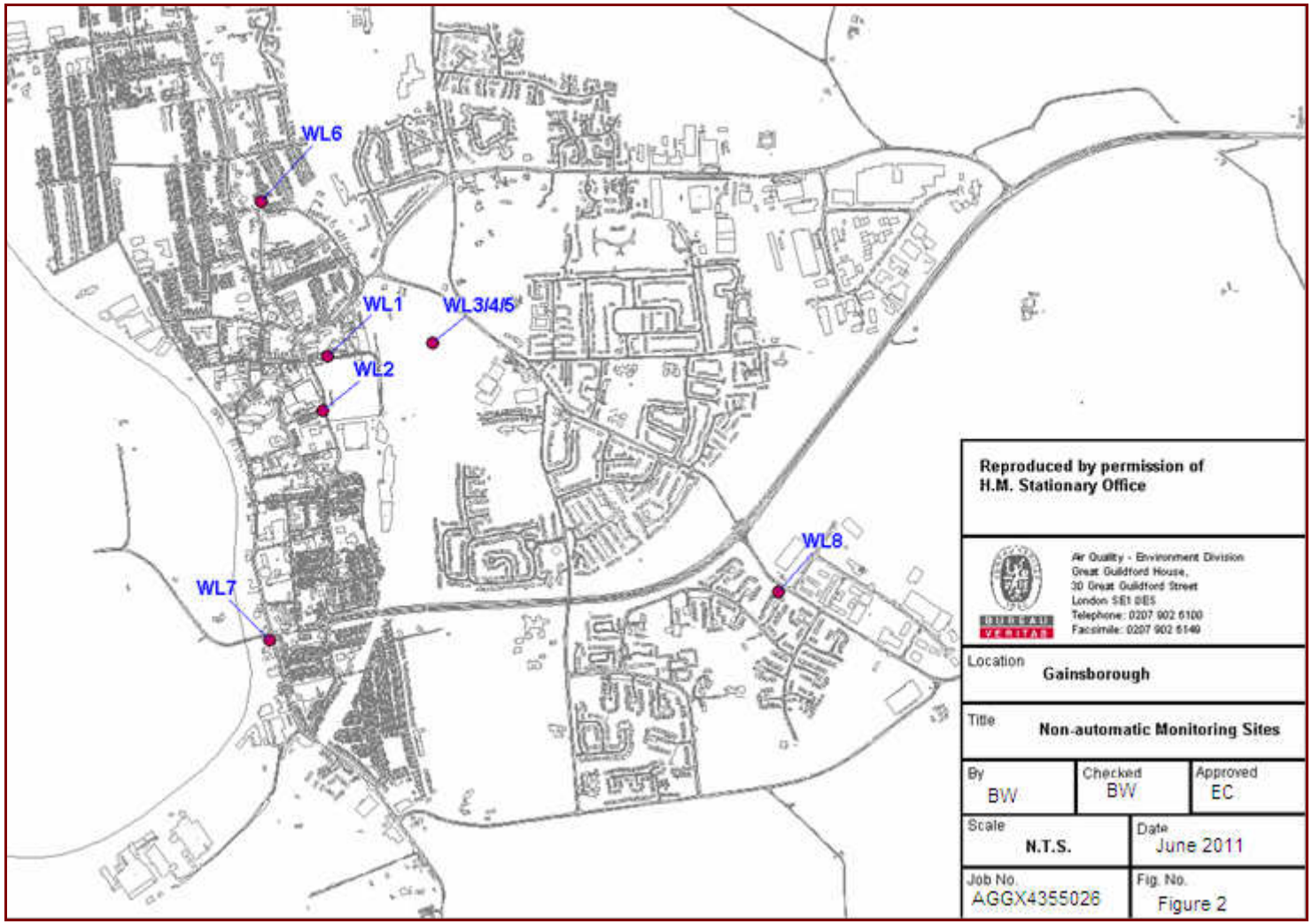


Figure 3 - Map of Non-Automatic Monitoring Sites – Market Rasen

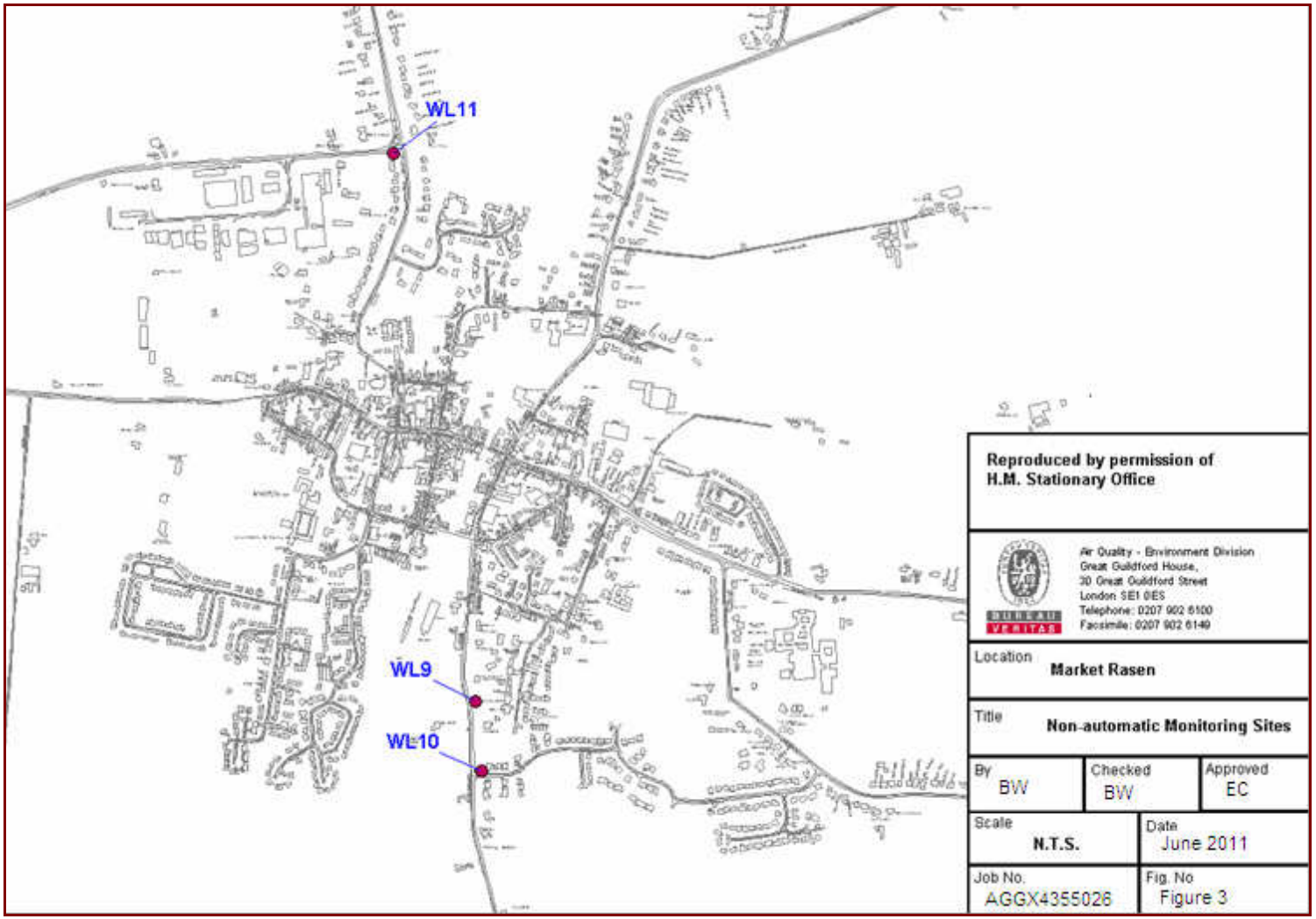


Table 3 - Details of Non- Automatic Monitoring Sites

Site Name	Location	Site Type	OS Grid Reference (X, Y)		Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to Kerb of Nearest Road (N/A if not applicable)	Worst-Case Location?
WL1	19 Spring Gardens, Gainsborough	Roadside	481702	389935	NO_2	No	Y - 7.8	2.9	No
WL2	58 Etherington Street, Gainsborough	Roadside	481688	389770	NO_2	No	Y - 20.1	1.6	Yes
WL3/4/5	Gainsborough Cemetery, Gainsborough	Background	482021	389974	NO_2	No	N	13.8	No
WL6	Cherry Tree, Gainsborough	Background	481500	390400	NO_2	No	Y - 1.7	0.2	No
WL7	3 Lea Road, Gainsborough	Roadside	481526	389077	NO_2	No	Y - 0	8.6	No
WL8	Marshall Way, Gainsborough	Roadside	483062	389224	NO_2	No	Y - 11.2	15.9	No
WL9	Lamas Leas Lane, Market Rasen	Roadside	510840	388610	NO_2	No	Y - 32.4	10.2	No
WL10	Beeches Way, Market Rasen	Roadside	510851	388475	NO_2	No	Y - 1.2	6.9	No
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	Roadside	510681	389675	NO_2	No	Y - 15.1	1.7	Yes
WL12	Walkerith	Background	-	-	NO_2	No	-	-	No
WL13	Heaton Street, Gainsborough	Roadside	-	-	NO_2	No	-	-	

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

2.2.1.1 Automatic Monitoring Data

The ratified annual monitoring results for 2008 – 2010 for the automatic monitoring site are shown in Table 4 and Table 5, while Figure 4 shows the trend in NO_2 annual mean.

Data capture for 2010 was good and no annualisation was required.

The 2010 data show concentrations at this monitoring site continue to meet both the annual mean and short-term objectives. There were no exceedences of the 1-hour standard during 2010.

Monitoring of NO_2 has been undertaken at the Gainsborough Cemetery background location since 2001. NO_2 levels have remained relatively constant over this period.

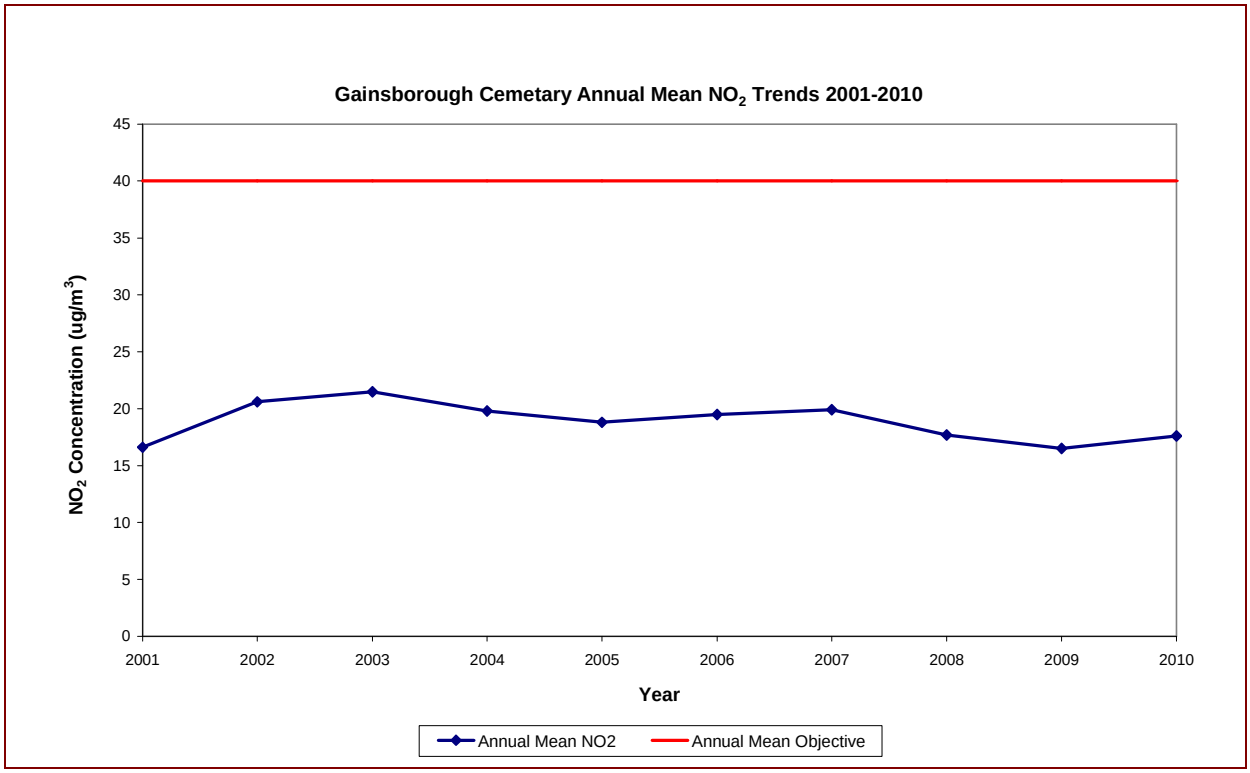
Table 4 - Results of NO_2 Automatic Monitoring - Comparison with Annual Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for Monitoring Period %	Data Capture for Full Calendar Year 2010 %	Annual Mean Concentrations (µg/m^3)		
					2008	2009	2010
WL1	Gainsborough Cemetery	No	97	97	17.7	16.5	17.6

Table 5 - Results of NO_2 Automatic Monitoring - Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for Monitoring Period %	Data Capture for Full Calendar Year 2010 %	Number of Hourly Means > 200 µg/m^3 *		
					2008	2009	2010
WL1	Gainsborough Cemetery	No	97	97	0	0	0

Figure 4 - Trends in Annual Mean NO_2 Concentration Measured at Automatic Monitoring Sites



2.2.1.2 Diffusion Tube Monitoring Data

Results from the nitrogen dioxide diffusion tube sites for the past three years are provided in Table 6, while Figure 5 shows the trend in NO_2 annual mean.

West Lindsey District Council undertook monitoring of NO_2 by diffusion tubes at 11 locations within the district. The full dataset (monthly mean values) are included in Appendix B.

Data capture for the year was below the 75% criterion due to staffing issues. Annualisation was therefore necessary. This was carried out using the method outlined in Box 3.2 of Technical Guidance LAQM.TG(09). The sites used and derived factors for each site are summarised in Appendix A.

With regard to the application of a bias adjustment factor for the diffusion tubes, the LAQM.TG(09) and the LAQM Support website recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites. West Lindsey District Council has a triplicate diffusion tube collocation at their continuous NO_2 analyser at Gainsborough Cemetery in Sutton Bridge. However, as seen above, data capture in 2010 for the collocated diffusion tubes was only 50% and applying a local bias factor was not deemed appropriate in this case.

Therefore, the bias adjustment figure was derived from the national bias adjustment calculator sheet available on the LAQM Support website[1]. The bias adjustment factor for 2010 is 0.83. Bias factors from previous years were taken from the LAQM progress report 2010.

[1] Available for download at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

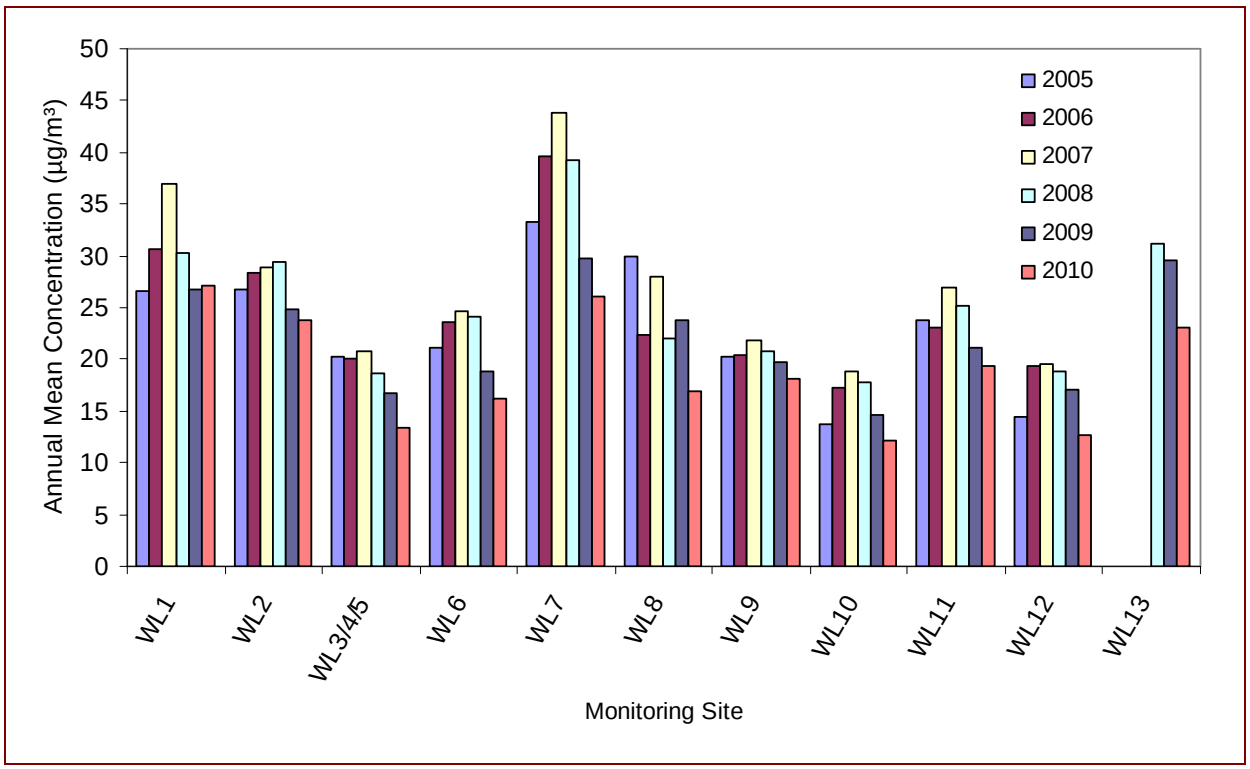
The annualised and bias adjusted results show that compliance with the annual mean objective was achieved at all monitoring locations in 2010. Results in recent years indicate that the NO_2 concentration is falling at most of the monitoring locations, as shown in Figure 5.

With regard to the short term objective, there is a potential risk of exceedence if concentrations are greater than 60 µg/m³. As no site exceeded the annual mean objective in 2010; the short term objective is expected to be met.

Table 6 - Results of Nitrogen Dioxide Diffusion Tube Monitoring

Site ID	Location	Within AQMA ?	Data Capture for Monitoring Period %	Data Capture for Full Calendar Year 2010 %	Annual Mean Concentrations (µg/m³)		
					2008 (National Bias Factor = 1.21)	2009 (National Bias Factor = 0.99)	2010 (National Bias Factor = 0.83)
WL1	19 Spring Gardens, Gainsborough	N	50%	50%	30.2	26.8	27.2
WL2	58 Etherington Street, Gainsborough	N	42%	42%	29.4	24.9	23.7
WL3, WL4, WL5	Gainsborough Cemetery, Gainsborough	N	50%	50%	18.6	16.7	13.4
WL6	Cherry Tree, Gainsborough	N	50%	50%	24.1	18.8	16.2
WL7	3 Lea Road, Gainsborough	N	8%	8%	39.2	29.7	26.1
WL8	Marshall Way, Gainsborough	N	50%	50%	22.0	23.8	16.9
WL9	Lamas Leas Lane, Market Rasen	N	50%	50%	20.7	19.7	18.2
WL10	Beeches Way, Market Rasen	N	50%	50%	17.7	14.6	12.2
WL11	53 Caistor Rd/ Gallimore Lane, Market Rasen	N	50%	50%	25.1	21.2	19.4
WL12	Walkerith	N	50%	50%	18.8	17.1	12.7
WL13	Heaton Street	N	33%	33%	31.1	29.6	23.0

Figure 5 - Trends in Annual Mean NO_2 Concentration Measured at Diffusion Tube Monitoring Sites



2.2.2 Sulphur Dioxide

Monitoring of SO_2 has been undertaken by EDF at the Gainsborough Cemetery site since 2001. Data capture for 2010 was good and no annualisation was required.

Sulphur dioxide concentrations in 2010 at the Gainsborough background site met the three objectives: 15 minute, hourly and 24-hour mean concentration. There were no recorded exceedences of any of the objectives.

Table 7 - Results of SO_2 Automatic Monitoring - Comparison with Objectives

Site ID	Location	Within AQMA ?	Data Capture for Monitoring Period %	Data Capture for Full Calendar Year 2010 %	Number of *		
					15 Minute Means > 266µg/m^3	Hourly Means > 350 µg/m^3	Daily Means > 125 µg/m^3
WL1	Gainsborough Cemetery	No	95	95	0	0	0

2.2.3 Summary of Compliance with AQS Objectives

Monitoring of nitrogen dioxide with a continuous analyser was undertaken by EDF at the Gainsborough Cemetery during 2010. Concentrations of NO_2 continue to meet the annual mean and short term objectives.

Sulphur dioxide is also monitored at the Gainsborough Cemetery site by EDF. Results for 2010 show there were no exceedences of the 15-minute, 1- hour or 24- hour mean objectives.

West Lindsey District Council also undertook monitoring of NO_2 using diffusion tubes at 11 locations during 2010. Annualised data show no exceedences of the annual mean objective. Concentrations largely indicate an improvement in air quality on previous years.

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

West Lindsey District Council confirms no new road traffic sources have been identified since the Updating and Screening Assessment 2009.

3.2 Other Transport Sources

West Lindsey District Council confirms no new other transport sources have been identified since the Updating and Screening Assessment 2009.

3.3 Industrial Sources

West Lindsey District Council confirms no new industrial sources have been identified since the Updating and Screening Assessment 2009.

3.4 Commercial and Domestic Sources

West Lindsey District Council confirms no new commercial and domestic sources have been identified since the Updating and Screening Assessment 2009.

3.5 New Developments with Fugitive or Uncontrolled Sources

West Lindsey District Council confirms no new fugitive or uncontrolled sources have been identified since the Updating and Screening Assessment 2009.

West Lindsey District Council confirms that there have been no new or newly identified local developments since the Updating and Screening Assessment 2009, which may have an impact on air quality within the Local Authority area.

4 Local / Regional Air Quality Strategy

West Lindsey District Council has not produced a local air quality strategy, but is involved in the development of a county-wide Climate Change Strategy which is being drawn up by Lincolnshire County Council and partners, which 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.

5 Planning Applications

Gainsborough was designated a Growth Point in 2008, with the aim of increasing the population of Gainsborough to approximately 36,000 through the creation of three urban sustainable expansion areas (incorporating residential, commercial, leisure and employment facilities). These expansion areas were identified in the Gainsborough Masterplan as designated Northern, Eastern and Southern extensions. The Eastern Extension is associated with 2,138 dwellings; and planning applications are expected in 2013. The Northern Extension has the capacity for 2,247 dwellings and planning applications are expected in the upcoming months.

Outline planning application has been granted for a residential and commercial development on land in Foxby Lane in Gainsborough. Foxby Lane marks the northern boundary to the Southern Extension. The application proposes approximately 2,500 homes, and associated employment in the following classes: B1 Business, B2 – General Community services and facilities: A1 – shops, A2 – financial and professional, A3 – restaurants and cafes, A4 – drinking establishments, A5 – hot food take-aways. Also the development would include on-site residential institutions (D1) and Assembly and Leisure facilities (D2) in a landscape which would include informal open spaces. New access junctions, cycle ways and other associated facilities and infrastructure would need to be constructed.

The potential impact of this development on air quality will be considered in the 2012 Updating and Screening Assessment.

6 Air Quality Planning Policies

The Government introduced a new national planning system through the Planning & Compulsory Purchase Act 2004 which has seen Local Plans replaced by Local Development Frameworks (LDFs) which comprise of a series of Local Development Documents (LDDs). These documents are expected to be more concise than local plans and include a core strategy. These include undertaking a Strategic Environmental Appraisal/Sustainability Appraisal that needs to be undertaken alongside plan preparation, and the need to prepare a Statement of Community Involvement. This Statement identifies how the Council intend to consult on the plan in particular those groups that are traditionally hard to reach.

West Lindsey has joined with other councils within Central Lincolnshire to form a Central Lincolnshire Joint Strategic Planning Committee. As such a core strategy is currently being produced by the Joint Committee. Whilst new development plan documents are being produced, policies within the West Lindsey Local Plan (First Review) 2006 are being 'saved'. The following policies within the Local Plan give consideration to air quality.

Policy NBE 17 – Control if potentially polluting uses

Development that may be liable to cause pollution of water, air or soil or pollution through noise, dust vibration, light, heat or radiation will only be permitted if

i. The health and safety and amenity of users of the site or surrounding land are not put at risk

ii. The quality and enjoyment of the environment would not be damaged or put at risk

iii. Adequate protection and mitigation measures are implemented to ensure that any potential environmental receptors are not put at risk.

Policy Strategy 1 – Development Requiring Planning Permission

Includes the following statement with regard to air quality:

Any other material considerations properly related to regulating the use and development of land, including:

· Protecting general water quality and the quality of groundwater;

· Protecting air quality;

· Protecting land quality from contamination;

· Maximising the use of previously developed land;

· Avoiding utilising land subject to flood risk;

· Creating local distinctiveness.

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 third Local Transport Plan (LTP) has been recommended for adoption in May 2011.

As a result of Gainsborough's designation as a Growth Point, substantial development is proposed for the town over the next 15-20 years. It is currently envisaged that this will take the form of 3 sustainable urban extensions. The southern one has recently been granted planning permission for some 2,500 dwellings.

In support of this growth, the County Council in partnership with West Lindsey District Council has been developing a Transport Strategy for the town. This has involved widespread consultation with the public and interested organisations, together with the appraisal of a wide range of possible transport improvements. As a result, a package of proposals has been identified which includes:

- redevelopment of Lea Road rail station
- upgrade/relocation of bus station
- improvements for cyclists including improved crossing facilities, new cycleways and parking
- improvements at key junctions
- extension of the IntoTown bus service coupled with bus priority measures and improved bus stop infrastructure and realtime information
- roll out of travel plans for schools and local businesses, together with personalised travel planning

8 Climate Change Strategies

West Lindsey District Council signed the Nottingham Declaration on climate change in October 2006, which is a public statement of intent to work with the local community and business to respond to the challenges of climate change.

Lincolnshire County Council and the District Councils are developing a partnership Climate Change Strategy which sets out a framework for action to:

- Raise awareness of the issue of Climate change;
- Reduce corporate greenhouse gas emissions through carbon management plans;
- Reduce greenhouse gas emissions across the country; and
- Plan for and adapt to the predicted impacts of Climate Change

Contained in the East Midlands Regional Plan, March 2009 are a number of Policies on tackling climate change which include;

- Policy 2 – Promoting better design
- Policies 39 and 40 – Energy
- Policies 43-56 – Transport

9 Conclusions and Proposed Actions

A summary of the conclusions regarding new monitoring data and development updates is provided in the following section, along with any proposed actions.

9.1 Conclusions from New Monitoring Data

Monitored of NO_2 has been undertaken in 2010 at Gainsborough Cemetery by EDF and at 11 diffusion tube locations by West Lindsey District Council. Concentrations of NO_2 at all sites met the annual mean and short-term objectives.

Sulphur dioxide is also monitored by EDF at Gainsborough Cemetery. The 2010 results show the 15-minute, 1-hour and 24-hour objectives were met.

Therefore, no Detailed Assessment is required at this time.

9.2 Conclusions relating to New Local Developments

No new developments were identified by West Lindsey District Council since the Updating and Screening Assessment.

9.3 Proposed Actions

Proposed actions arising from this Progress Report are as follows:

- Continue the current monitoring programme at current monitoring locations to enable continued demonstration of compliance with air quality objectives, ensuring good data capture is achieved for all sites
- Proceed to an Updating and Screening Assessment in 2012

10 References

- Local Air Quality Management Technical Guidance LAQM.TG(09). February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland
- Local Air Quality Management Policy Guidance LAQM.PG(09). February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland
- Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users, Report to Defra and the Devolved Administrations , February 2008
- West Lindsey District Council Annual Progress Report 2010
- West Lindsey District Council Updating Screening Assessment 2009
- Gainsborough (West Lindsey) Growth Point: Programme of Development 2008 – 2026. West Lindsey District Council, October 2008.
- East Midlands Regional Plan March 2009. Government Office for the East Midlands, 2009
- West Lindsey Local Plan (First Review) 2006 saved policies
- Third Local Transport Plan Progress Report 2011, Lincolnshire County Council

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tubes in 2010 were prepared and analysed by ESG Limited. The tube preparation method is 50% TEA in Acetone. In February 2008, practical guidance was issued by Defra and the Devolved Administrations to harmonise the different steps in UK diffusion tube methodology. The 2010 national factor for the laboratory and method was 0.83 (Spreadsheet 04/11).

Discussion of Choice of Factor to Use

The technical guidance LAQM.TG (09) and LAQM Support website recommend use of a local bias adjustment factor where available and relevant to diffusion tube sites. However, as data capture at the triplicate diffusion tubes was only 50% in 2010, the national bias adjustment factor was used.

Short-term to Long-term Data Adjustment

LAQM.TG (09) Box 3.2 provides a method for annualising data; donor sites should fall with 50 miles of the site to be annualised and should be preferably background sites. However, there are no continuous monitors within the 50 mile radius in the AURN or Lincolnshire network which are urban background. The nearest AURN urban background sites relevant to the locations were used, these are summarised in Table A.1 below.

Table A.1 Summary of Annualisation Factors

Site	Uncorrected Diffusion Tube Mean (µg/m^3)	Annualisation Factor					Annualised Concentration (µg/m^3)
		Leaming-ton Spa	North-ampton	Chester-field	Leicester	Average	
WT 1	27.2	1.127	1.265	1.222	1.199	1.203	32.7
WT 2	24.7	1.102	1.200	1.176	1.153	1.158	28.5
WT 3	12.8	1.102	1.200	1.176	1.153	1.158	14.9
WT 4	14.4	1.127	1.265	1.222	1.199	1.203	17.3
WT 5	13.6	1.127	1.265	1.222	1.199	1.203	16.4
WT 6	16.3	1.127	1.265	1.222	1.199	1.203	19.6
WT 7	29.7	0.962	0.930	1.180	1.158	1.058	31.4
WT 8	17.0	1.127	1.265	1.222	1.199	1.203	20.4
WT 9	18.2	1.127	1.265	1.222	1.199	1.203	21.9
WT 10	12.2	1.127	1.265	1.222	1.199	1.203	14.6
WT 11	19.4	1.127	1.265	1.222	1.199	1.203	23.4
WT 12	12.7	1.127	1.265	1.222	1.199	1.203	15.3
WT 13	25.5	1.065	1.102	1.100	1.079	1.087	27.7

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

Environmental Scientifics Group currently holds UKAS accreditation and participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO_2 diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. In 2010 the Inter-Comparison rating for ESG was “Good”. For the WASP rounds that occurred during 2010, ESG performance was ”Good”.

Appendix B – Monitoring Data

Table A.2 - 2010 Passive Monitoring Monthly Mean Measurements (µg/m^3)

Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Count	% Data Capture	Average	Annua-lised	Bias Adjusted
WT 1					23.8	22.1	25.0	28.0	28.0	36.5			6	50%	27.2	32.7	27.2
WT 2					20.4		24.7	21.3	21.3	35.7			5	42%	24.7	28.5	23.7
WT 3					11.5		11.5	11.9	11.9	17.5			5	42%	12.8	14.9	12.3
WT 4					12.3	11.4	11.5	15.8	15.8	19.4			6	50%	14.4	17.3	14.3
WT 5					11.5	11.7	14.5	13.1	13.1	17.8			6	50%	13.6	16.4	13.6
WT 6					12.3	14.0	15.1	16.3	16.3	23.6			6	50%	16.3	19.6	16.2
WT 7					29.7								1	8%	29.7	31.4	26.1
WT 8					14.8	13.3	13.3	18.5	18.5	23.2			6	50%	17.0	20.4	16.9
WT 9					19.5	15.5	15.8	18.4	18.4	21.6			6	50%	18.2	21.9	18.2
WT 10					11.4	10.4	7.3	14.0	14.0	15.9			6	50%	12.2	14.6	12.2
WT 11					22.0	16.5	19.4	18.6	18.6	21.4			6	50%	19.4	23.4	19.4
WT 12					11.5	11.7	10.5	13.1	13.1	16.3			6	50%	12.7	15.3	12.7
WT 13					23.4			25.5	25.5	27.5			4	33%	25.5	27.7	23.0