SOUTH HOLLAND DISTRICT COUNCIL

LAQM AIR QUALITY MANAGEMENT

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 (AQS) 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 updated, it is concluded that the air quality objectives for all pollutants will be met. There is no requirement to undertake a Detailed Assessment for these pollutants.

Proposed actions from the Annual Progress Report are as follows:

- Continue the monitoring programme at current locations for NO_2 or PM_{10} to enable continued demonstration of compliance with air quality objectives.
- Proceed to an Updating and Screening Assessment to be completed by April 2012

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1 Introduction

1.1 Description of Local Authority Area

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

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

1.2 Purpose of Progress Report

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

They are not intended to be as detailed as USA reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Strategy (AQS) 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 Strategy 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). They are shown in Table 1. This table shows the objectives in units of micrograms 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 - AQS objectives Included in Regulations for the Purpose of LAQM in England

Pollutant	Concentration	Measured as	Date to be Achieved by
Benzene (C_6H_6)	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene (C_4H_6)	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon Monoxide (CO)	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen Dioxide (NO_2)	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (Gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur Dioxide (SO_2)	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

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

The first phase of the Second Round of Review and Assessment, the USA, was completed in August 2003 and this provided an update with respect to air quality issues in the District. The USA 2003 concluded that no Detailed Assessment of air quality was required. The Progress Reports 2004 and 2005 similarly concluded that all AQS objectives were expected to be met. A new continuous monitoring site was established in 2003 at Monkhouse School in Spalding to monitor PM_{10} and NO_2 concentrations, and assess emissions from Spalding Power Station.

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

The Fourth Round 2009 USA provided a further update on local air quality and concluded that the objectives for benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide and sulphur dioxide would be met and that there was no requirement to undertake a Detailed Assessment for these pollutants. However, the Council confirmed that there were two poultry farms in Spalding that met the relevant criteria and with relevant exposure with respect to the PM_{10} objectives. It was therefore proposed that the Council progress to a Detailed Assessment for PM_{10} at these two poultry farm locations (Fleet Fen Farm Poultry Unit and Chapel Road Poultry Unit) in addition to the 2010 Annual Progress Report.

The Detailed Assessment, which was completed in May 2011, focused on Fleet Fen Farm, near Holbeach, which was considered to be the worst-case scenario due to the farm capacity and proximity of sensitive properties downwind. The report concluded that emissions of PM_{10} from the turkey-rearing units at Fleet Fen Farm did not present a significant risk of breaching the PM_{10} AQS objectives, and that there was no need to declare an AQMA.

The Progress Report 2010 concluded that results at all monitoring sites still complied with the AQS objectives, apart from one kerbside site which exceeded the annual mean NO_2 objective. However, there was no relevant exposure near the site to warrant further consideration.

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.

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

- Spalding Monkhouse; and
- Westmere School.

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

There is additionally monitoring of ozone (O_3) measured by ultra violet absorption at the Westmere School site. Ozone is a trans-boundary pollutant; the sources of ozone are frequently spatially distant from the measured site of the concentrations. Ozone is not prescribed in the Regulations for LAQM and is therefore reported here for information only.

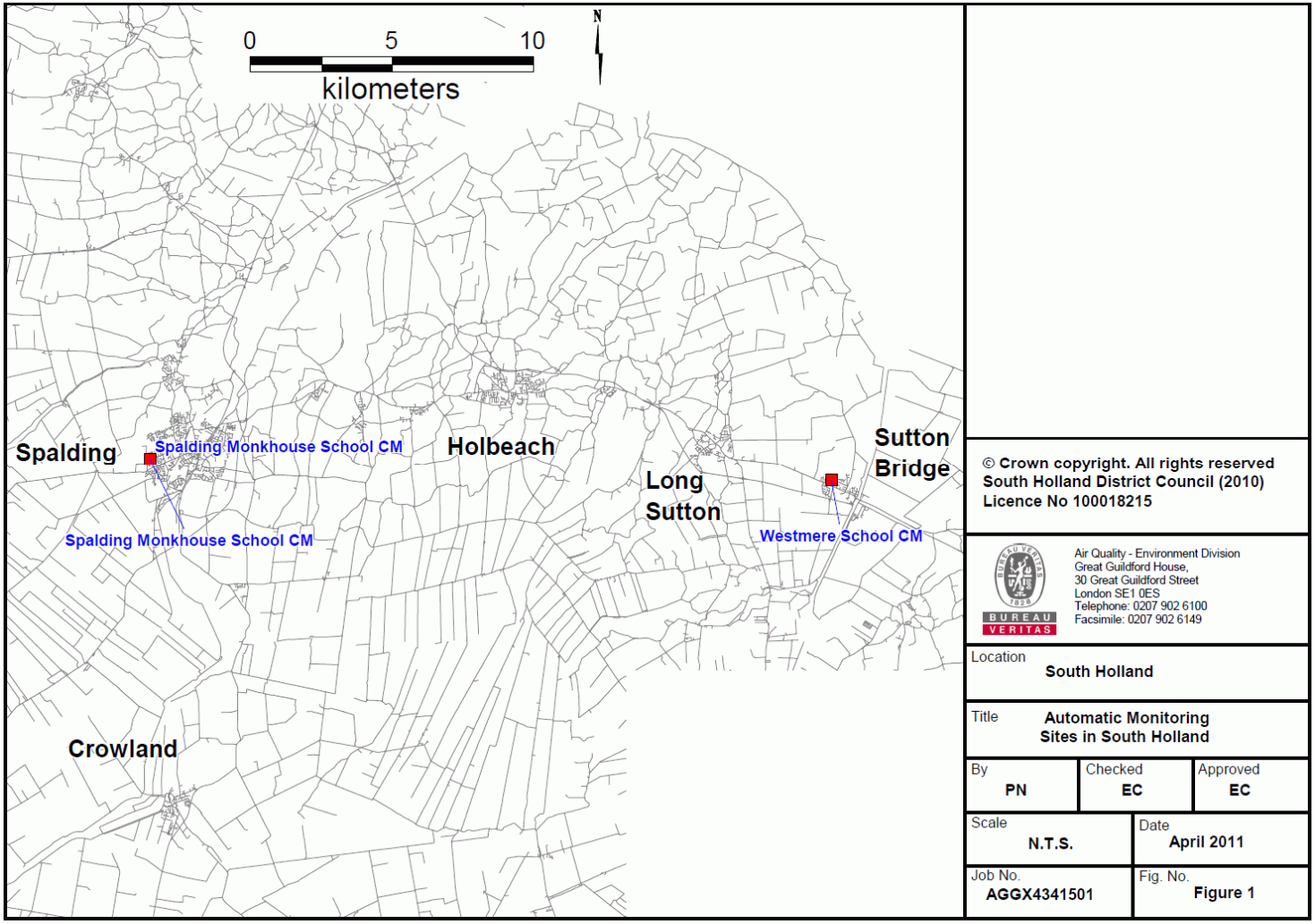
South Holland District Council contracts data management for their continuous analysers to AEA. The Quality Assurance/Quality Control (QA/QC) procedures employed by AEA are equivalent to the UK Automatic Urban and Rural Network (AURN) procedures.

Details of the continuous monitoring sites are provided in Table 2 below.

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 (m) (N/A if not applicable)
Spalding Monkhouse School	Urban Background	523168, 322454	NO_2, PM_{10}	No	Y – 1	25
Westmere School	Urban Background	547264, 321709	NO_2, O_3, PM_{10}	No	Y - 14	190

Figure 1 - Map of Automatic Monitoring Sites



2.1.2 Non-Automatic Monitoring

South Holland District Council undertook monitoring using passive NO_2 diffusion tubes at 15 sites in 2010, including four new sites installed since the LAQM Progress Report 2010:

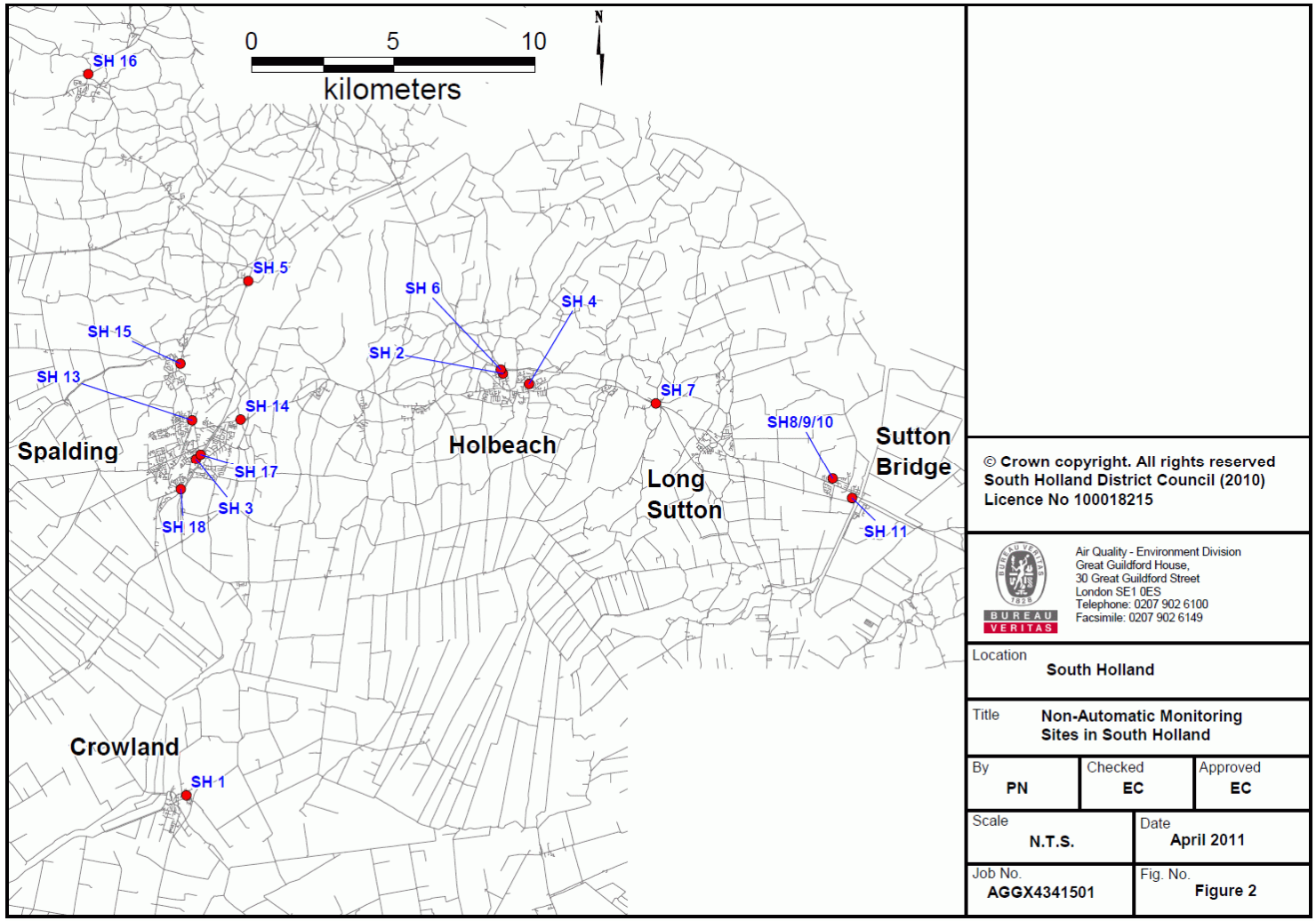
- Site 15 - Church Street, Pinchbeck
- Site 16 – Bicker Road, Donington
- Site 17 – High Road, Spalding
- Site 18 – Hawthorn Bank, Spalding

Diffusion tubes in 2010 were prepared and analysed by Gradko International Limited. The tube preparation method is 50% TEA in Acetone. Details of the non-automatic monitoring undertaken in the district are presented in Table 3.

Table 3 - Non- Automatic Monitoring Sites

Site No	Location	Site Type	X	Y	Pollutant Monitored	In AQMA	Relevant Exposure	Distance to Kerb of Nearest Road	Worse Case
SH 1	21 Millfield Gardens	Background	524388	310520	NO_2	N	Y - 6.8	2.9	Y
SH 2	Nutten Stoven	Kerbside	535595	325453	NO_2	N	Y - 5.6	21.8	N
SH 3	Priory Road	Background	524734	322403	NO_2	N	Y - 38.4	<2	N
SH 4	46 The Hollies	Background	536523	325078	NO_2	N	Y - 8.4	0.2	N
SH 5	Station Road	Roadside	526585	328726	NO_2	N	Y - 24.9	1.5	Y
SH 6	103 Boston Road	Kerbside	535525	325589	NO_2	N	Y - 25.7	9.5	Y
SH 7	Field End	Roadside	541013	324393	NO_2	N	Y - 5.9	<2	N
SH8/9/10	Westmere (Triplicate)	Background	547264	321709	NO_2	N	Y - 69.4	61.2	N
SH 11	Metalair Site	Roadside	547957	321013	NO_2	N	N	<2	Y
SH 13	Pinchbeck Road	Kerbside	524595	323793	NO_2	N	Y - 20.7	0.7	Y
SH 14	Springfields Roundabout	Kerbside	526309	323820	NO_2	N	Y - 54.2	11	Y
SH 15	Church Street, Pinchbeck	Roadside	524182	325804	NO_2	N	Y - 0	1.5	Y
SH 16	Bicker Road, Donington	Roadside	520917	336064	NO_2	N	Y - 7.5	16.5	Y
SH 17	High Road, Spalding	Roadside	524892	322571	NO_2	N	Y - 0	1.5	Y
SH 18	Hawthorn Bank, Spalding	Roadside	524191	321328	NO_2	N	Y - 1.5	3	Y

Figure 2 - Map of Non-Automatic Monitoring Sites



2.2 Comparison of Monitoring Results with Air Quality Strategy 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 sites are shown in Table 4 and Table 5, while Figure 3 shows the trend in NO_2 annual mean.

Results for both sites have been annualised as data capture was less than 75%. Details of the annualisation are given in Appendix A.

The annual mean is well below the objective for NO_2, although there has been an increasing trend at the Westmere School site in the last four years. With respect to the hourly mean objective, no exceedences of the short-term objective were recorded at the Spalding Monkhouse or Westmere School monitoring sites in 2010.

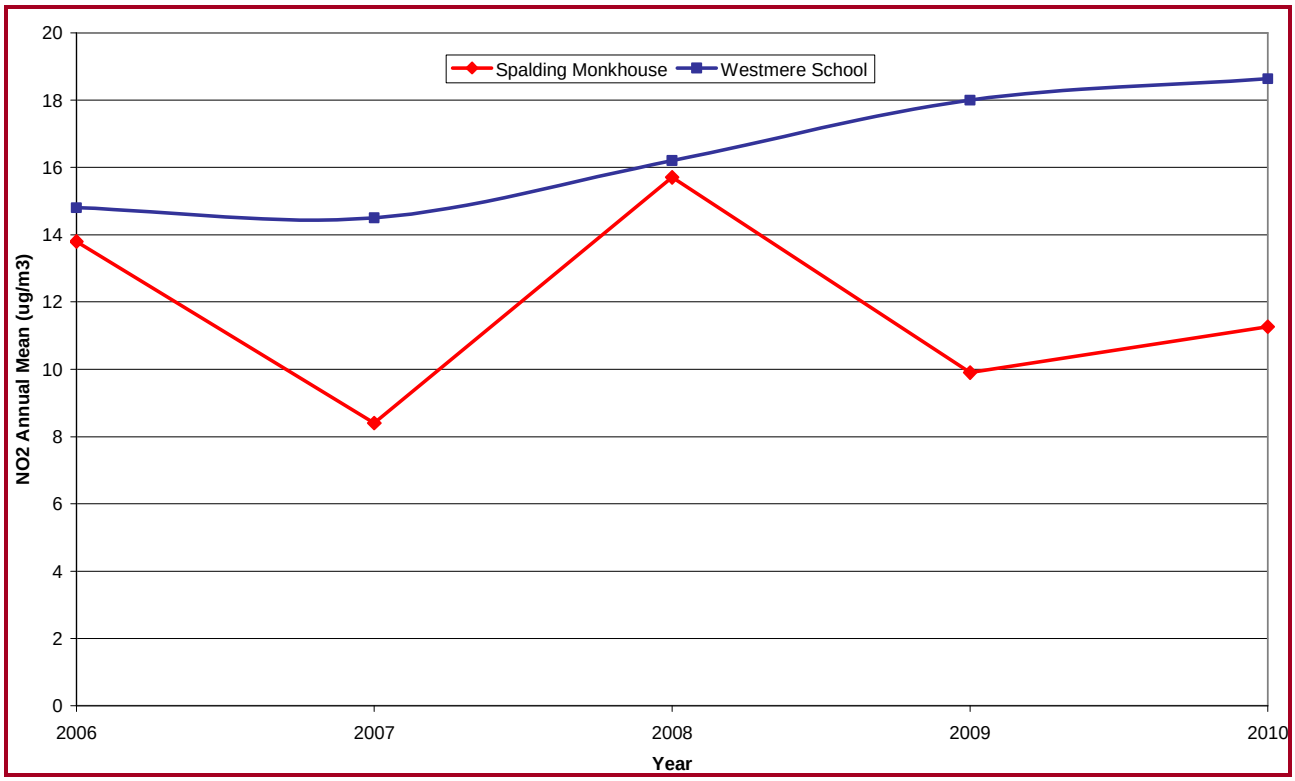
Table 4 - Results of NO_2 Automatic Monitoring - Comparison with Annual Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for Full Calendar Year 2010 %	Annual Mean Concentrations (µg/m^3)		
				2008	2009	2010
SH1	Spalding Monkhouse	No	73%	15.7	9.9	11.3 *
SH2	Westmere School	No	70%	16.2	18.0	18.6 *
In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3 * Annualised as less than 75% data capture						

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

Site ID	Location	Within AQMA?	Data Capture for Full Calendar Year 2010 %	Number of Hourly Means > 200 µg/m^3 *		
				2008	2009	2010
SH1	Spalding Monkhouse	No	73%	0	0	0 (63)
SH2	Westmere School	No	70%	0	0	0 (156.5)
In bold, exceedence of the NO_2 hourly mean AQS objective (200 µg/m^3 – not to be exceeded more than 18 times per year) * If the period of valid data is less than 90% of a full year, the 99.8th percentile of hourly means is shown in brackets						

Figure 3 - Trends in Annual Mean NO_2 Concentration 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 4 shows the trend in NO_2 annual mean.

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. South Holland District Council has a triplicate diffusion tube collocation at their continuous NO_2 analyser at Westmere School in Sutton Bridge. However, as seen above, data capture in 2010 for the analyser was only 70% and applying a local bias factor was not deemed appropriate in this case.

Therefore, the national bias adjustment spreadsheet[1] has been used to determine the factor for Gradko using a 50% TEA in acetone method for 2010. The bias factor given is 0.99 (based on 17 studies), which has been used to correct the diffusion tube data. Bias factors from previous years were extracted from the LAQM progress report 2010.

As data capture for tubes SH15 and SH18 was less than 75%, data have been annualised based on results from the closest AURN background continuous analysers. Further details on the derivation of the bias correction and annualisation are shown in Appendix A. The full No2 diffusion tube dataset (monthly mean values) are included in Appendix B.

Annualised and bias corrected results show that there were no exceedences of the NO_2 annual mean AQS objective in 2010. The exceedence measured at site SH13 in 2009 was discussed in the Progress Report 2010, which concluded that there was no requirement to proceed to a Detailed Assessment as there was no exposure within 20m of the site, and the

[1] National Diffusion Tube Bias Adjustment Factor Spreadsheet v 04/11 – Available for download at http://laqm.defra.gov.uk/

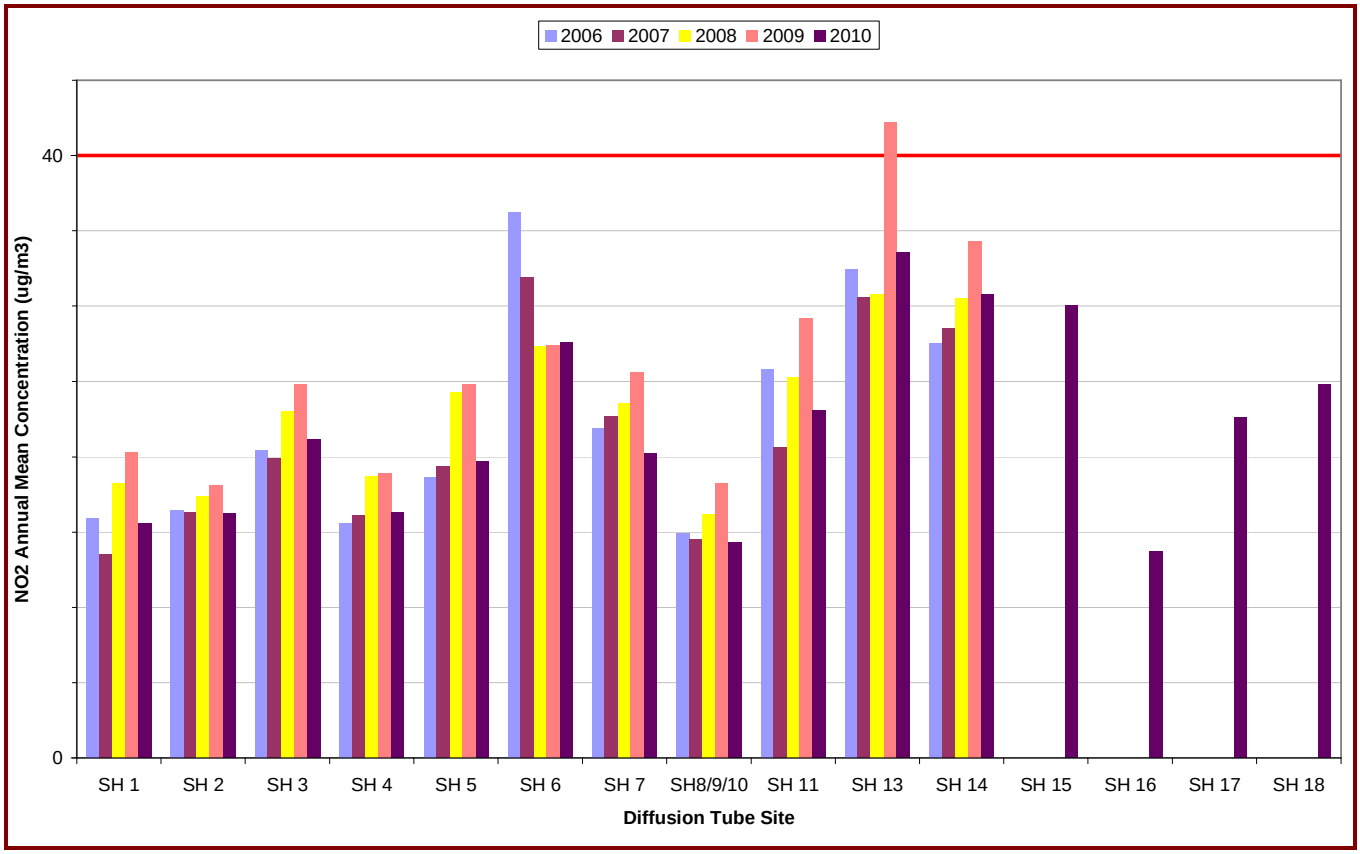
bias adjustment factor was unusually high. 2010 result confirm that there is no risk of exceeding the objective at this location.

Table 6 - Results of Nitrogen Dioxide Diffusion Tube Monitoring

Site ID	Location	Within AQMA ?	Data Capture for Full Calendar Year 2010 %	Annual Mean Concentrations (µg/m^3)		
				2008 (Bias Factor: 1.13)	2009 (Local Bias Factor: 1.33)	2010 (National Bias Factor: 0.99)
SH 1	21 Millfield Gardens	N	100%	18.2	20.3	15.6
SH 2	Nutten Stoven	N	83%	17.4	18.1	16.3
SH 3	Priory Road	N	100%	23	24.8	21.2
SH 4	46 The Hollies	N	100%	18.7	18.9	16.3
SH 5	Station Road	N	100%	24.3	24.8	19.7
SH 6	103 Boston Road	N	100%	27.3	27.4	27.6
SH 7	Field End	N	100%	23.5	25.6	20.3
SH8/9/10	Westmere (Triplicate)	N	100%	16.2	18.2	14.3
SH 11	Metalair Site	N	92%	25.3	29.2	23.1
SH 13	Pinchbeck Road	N	100%	30.8	**42.2**	33.5
SH 14	Springfields Roundabout	N	92%	30.5	34.3	30.8
SH 15	Church Street, Pinchbeck	N	58%	-	-	30.0
SH 16	Bicker Road, Donington	N	75%	-	-	13.7
SH 17	High Road, Spalding	N	75%	-	-	22.6
SH 18	Hawthorn Bank, Spalding	N	50%	-	-	24.6

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Figure 4 - Trends in Annual Mean NO_2 Concentration at Diffusion Tube Monitoring Sites



2.2.2 Particulates (PM_{10})

The ratified PM_{10} monitoring results for 2008 – 2010 for the automatic monitoring sites are shown in Table 7 and Table 8.

Data for 2010 have been VCM corrected; full details are available in Appendix A.

Results for 2010 are well below the annual mean and daily mean PM_{10} AQS objectives at both sites.

Table 7 - Results of PM_{10} Automatic Monitoring - Comparison with Annual Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for Full Calendar Year 2010 %	Annual Mean Concentrations (µg/m^3)		
				2008 (TEOM × 1.3)	2009 (TEOM × 1.3)	2010 (VCM)
SH1	Spalding Monkhouse	No	90%	19.0	16.5	17.3
SH2	Westmere School	No	87%	16.8	16.0	16.9
In bold, exceedence of the PM_{10} annual mean AQS objective of 40µg/m^3						

Table 8 - Results of PM_{10} Automatic Monitoring - Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA ?	Data Capture for Full Calendar Year 2010 %	Number of Daily Means > 50µg/m^3 *		
				2008 (TEOM × 1.3)	2009 (TEOM × 1.3)	2010 (VCM)
SH1	Spalding Monkhouse	No	90%	1	1 (22.4)	0
SH2	Westmere School	No	87%	1	0	0 (39.4)
In bold, exceedence of the PM_{10} daily mean AQS objective (50 µg/m^3 – not to be exceeded more than 35 times per year)						
* If data capture < 90%, the 90.4th percentile of daily means is included in brackets						

2.2.3 Other Pollutants Monitored

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

Ozone is a trans-boundary pollutant; the sources of ozone are frequently spatially distant from the measured site of the concentrations. This pollutant is not a prescribed air quality objective for LAQM and therefore, results are provided for information only.

Data capture for 2010 was 86% and the maximum of 8-hour running means exceeded 100µg/m³ on 10 occasions during the year. The objective permits 10 exceedences per year and therefore the objective was met.

Table 9 - Results of Automatic Monitoring for Ozone - Comparison with Objectives

Location	Within AQMA ?	Description	% Data capture 2010	Number of Exceedences in 2010
SH2	No	Maximum 8-hour running mean > 100 µg/m^3	86%	10
In bold, exceedence of the ozone AQS objective (100µg/m^3 10 exceedences allowed per year)				

2.2.4 Summary of Compliance with AQS Objectives

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

South Holland District Council also monitored NO_2 with diffusion tubes at 15 sites across the District, and 2010 concentrations were below the annual mean NO_2 AQS objective at all sites.

PM_{10} monitoring was undertaken at the Spalding Monkhouse and Westmere School monitoring station by TEOM. The data were VCM corrected and there were no exceedences of the objectives at either site.

South Holland District Council also monitors ozone at the Westmere School air quality monitoring site. Although ozone is a trans-boundary pollutant and not prescribed for LAQM, the data has been included and shows the ozone concentrations met the objective in 2010.

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

3 New Local Developments

3.1 Road Traffic Sources

Spalding to Peterborough bypass (A1073) has been opened, replacing the old A1073, which is being reclassified. Therefore, the old A1073 has significantly less traffic due to the opening of the new bypass, which will have a beneficial impact on air quality along this road.

The Environmental Statement completed as part of the scheme, had concluded that the impact on air quality as a whole was predicted to improve.

3.2 Other Transport Sources

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

3.3 Industrial Sources

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

3.4 Commercial and Domestic Sources

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

3.5 New Developments with Fugitive or Uncontrolled Sources

As discussed in Section 1.4, South Holland District Council has previously identified as a potential source of particulates, at two turkey farms with over 145,000 bird capacity and proceeded to a Detailed Assessment, which was completed in May 2011 with the conclusions that there was no need to declare an AQMA near the poultry farms.

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

4 Local / Regional Air Quality Strategy

South Holland District Council has not produced a local air quality strategy. Details of the East Midlands Regional Strategy were discussed in the Progress Report 2010. There have been no changes since last year.

5 Planning Applications

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

6 Air Quality Planning Policies

Policies contained within the South Holland District Council Local Plan and related to air quality have been discussed in the Progress Report 2010. There have been no changes since last year.

7 Local Transport Plans and Strategies

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

The 3rd LTP was approved by the Council's Executive in March 2011 and has been recommended for adoption by the Full Council at their meeting on 20th May 2011.

With the uncertainty around national transport policy and funding following the change in government in 2010, a 'light touch' approach has been taken for the LTP3. This has involved simply rolling forward the policies and strategies from the 2nd LTP (2005/6 – 2010/11) for a further 2 years i.e. to cover the years 2011/12 and 2012/13. During this time, work will commence on developing the 4th Lincolnshire LTP taking into account the emerging national transport policies and funding arrangements.

Relevant strategies and initiatives within the LTP2, which have potentially beneficial impacts on air pollution from transport sources, through reduction in traffic congestion and modal shift, include:

- **Community Travel Zones**

Community Travel Zones (and the complimentary Rural Priorities Initiatives in rural areas) is aimed at reducing congestion and improving safety by providing promotion of and improvements to walking, cycling and public transport infrastructure. Measures aimed at achieving this include footway schemes, pedestrian crossing improvements, cycleways, street lighting and traffic calming initiatives. LTP2 prioritises rolling out such initiatives across the 10 largest urban areas in the County.

- **Improvements to Public Transport**

LTP2 continues the expansion of the rural InterConnect and CallConnect bus services across the County. In addition, coverage of the IntoTown town services is also being extended into other urban areas.

- **Parking Enforcement**

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

- **School Travel Plans**

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

- **Employee Travel Plans**

The County Council continues to encourage businesses to develop Employee Travel plans to increase the numbers of staff walking, cycling and using public transport both to

and from work, and whilst travelling at work. Travel plans are required in support of all major development proposals.

8 Climate Change Strategies

South Holland District Council is involved in the development of a county-wide Climate Change Strategy which is being developed by Lincolnshire County Council in partnership with all Lincolnshire District Councils, which will set out a framework for action to:

- Raise awareness of the issue of Climate Change and its impact on Lincolnshire.
- Reduce corporate greenhouse gas emissions through carbon management plans
- Reduce greenhouse gas emissions across the county
- Plan for and adapt to the predicted impacts of Climate Change

9 Implementation of Action Plans

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

10 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.

10.1 Conclusions from New Monitoring Data

In 2010, South Holland District Council monitored continuous NO_2 and PM_{10} concentrations at Spalding Monkhouse and Westmere School. The concentrations at both sites met both the annual mean and short term AQS objectives fro each pollutant.

Nitrogen dioxide was also monitored by diffusion tubes at 15 sites in the District. There were no exceedences of the annual mean NO_2 AQS objective in 2010.

In addition, ozone was also monitored at the Westmere School site in 2010 and although this is a trans-boundary pollutant not prescribed in Regulations for LAQM purposes, the concentrations have been assessed and found to meet the objective

10.2 Conclusions Relating to Local Developments

A Detailed Assessment was completed in May 2011 for PM_{10} at turkey farms previously identified as potential sources of fugitive particulate emissions. The Detailed Assessment concluded that no AQMA was required at these locations.

10.3 Other Conclusions

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

10.4 Proposed Actions

- Continue monitoring programme at current monitoring locations for NO_2 or PM_{10} to enable continued demonstration of compliance with air quality objectives.
- Proceed to an Updating and Screening Assessment to be completed by April 2012.

11 References

- Local Air Quality Management Technical Guidance LAQM.TG(09). February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland
- 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
- South Holland District Council Annual Progress Report 2010
- South Holland District Council Updating and Screening Assessment 2009
- 2nd Local Transport Plan: Progress Report 2008. Lincolnshire County Council, 2008.
- East Midlands Regional Plan March 2009. Government Office for the East Midlands, 2009

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tubes in 210 were prepared and analysed by Gradko International Limited. The tube preparation method is 50% TEA in Acetone. In February 2008, practical guidance was issued by Defra and the Devolved Administrations to harmonise the different steps in UK diffusion tube methodology. The current tube preparation methodology used by Gradko is included within the guidance and no subsequent change was required.

Factor from Local Co-location Studies (if available)

Although there are triplicate NO_2 diffusion tubes co-located with the urban background continuous monitoring station at Westmere School, results from the continuous monitoring analyser were not deemed robust enough to determine a local bias factor, due to low data capture (<75%).

Discussion of Choice of Factor to Use

The national bias adjustment factor from the bias adjustment spreadsheet (v04/11) available on the LAQM Support website was used to correct diffusion tube results. This provided a bias adjustment factor of 0.99 for this laboratory and methodology for 2010.

PM_{10} Monitoring Adjustment

The Westmere and Spalding Monkhouse PM_{10} analysers are TEOMs and require correction using the VCM-model as outlined in LAQM.TG (09). The settings used for this correction are provided in Table 10 and Table 11.

Table 10 - Summary of Westmere School VCM Settings

Summary	Text /Value
Site Name	Westmere School
Organisation	South Holland DC
Start Date	01/01/2010
End Date	31/12/2011
TEOM data already corrected with 1.3 factor	Yes
EPA Constant A	3
EPA Constant B	1.03
Instrument Temperature	25
Instrument Pressure	1013
Instrument reports to local ambient readings	3
Timescale	Hourly
Pressure Site	Average of that recorded by 3 FDMSs at Leicester Centre, Nottingham Centre and Sandy Roadside.
Temperature Site	Average of that recorded by 3 FDMSs at Leicester Centre, Nottingham Centre and Sandy Roadside.
FDMS Site 1	Leicester Centre
FDMS Site 2	Nottingham Centre
FDMS Site 3	Sandy Roadside

Table 11 - Summary of Spalding Monkhouse VCM Settings

Summary	Text /Value
Site Name	Spalding Monkhouse
Organisation	South Holland DC
Start Date	01/01/2010
End Date	31/12/2011
TEOM data already corrected with 1.3 factor	Yes
EPA Constant A	3
EPA Constant B	1.03
Instrument Temperature	25
Instrument Pressure	1013
Instrument reports to local ambient readings	3
Timescale	Hourly
Pressure Site	Average of that recorded by 3 FDMSs at Leicester Centre, Nottingham Centre and Sandy Roadside.
Temperature Site	Average of that recorded by 3 FDMSs at Leicester Centre, Nottingham Centre and Sandy Roadside.
FDMS Site 1	Leicester Centre
FDMS Site 2	Nottingham Centre
FDMS Site 3	Sandy Roadside

Short-Term to Long-Term Data Adjustment

Data capture for NO_2 at the Spalding Monkhouse continuous monitoring site and at diffusion tube sites SH15 and SH18 was less than 75%. Therefore, average concentrations at these sites have been annualised to estimate the annual mean equivalent concentration, based on the methodology described in Technical Guidance LAQM.TG(09) Box 3.2.

The following AURN sites were selected to annualise the NO_2 data: Market Harborough and Wicken Fen, both Rural Background sites. Summary data for each is shown in Table 12

Table 12 - Results of the Short-term to Long-term Adjustment (Annualisation)

Site	Market Harborough			Wicken Fen			Average Annualisation Factor
	Annual Mean 2010 Am (µg/m^3)	Period Mean Pm (µg/m^3)	Annualisation Factor (Am / Pm)	Annual Mean 2010 Am (µg/m^3)	Period Mean Pm (µg/m^3)	Annualisation Factor (Am / Pm)	
SH15 (DT)	18.3	18.7	0.982	19.9	20.1	0.994	0.988
SH18 (DT)		18.3	0.999		19.7	1.013	1.006
Spalding Monkhouse School (CM)		21.1	0.867		19.9	1.002	0.935

DT = Diffusion Tube

CM = Continuous Monitoring

QA/QC of Automatic Monitoring

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

QA/QC of Diffusion Tube Monitoring

Gradko International Ltd currently holds UKAS accreditation and participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO_2 diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. In 2010 the Inter-Comparison rating for Gradko was “Good”. The full 2010 WASP rounds have not yet been made available. However, for the latest rounds (covering April 2009 to April 2010), Gradko performance was “Good”.

Appendix B – Monitoring Data

Table 13 - 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	Annualised	Bias Adjusted
SH 1	29.6	30.9	19.4	10.3	8.5	7.5	8.0	7.5	12.6	16.0	17.6	21.1	12	100%	15.7		15.6
SH 2	25.1	25.7		14.2	26.3		9.5	10.1	10.5	10.1	15.5	17.3	10	83%	16.4		16.3
SH 3	35.5	31.8	25.3	15.2	13.6	12.3	14.2	14.2	19.7	21.2	23.2	30.4	12	100%	21.4		21.2
SH 4	30.1	23.7	20.1	11.7	10.7	7.4	9.4	9.9	11.3	16.1	21.2	25.9	12	100%	16.4		16.3
SH 5	28.6	29.3	24.5	15.9	13.5	12.4	16.2	14.2	18.9	19.4	20.2	25.7	12	100%	19.9		19.7
SH 6	42.8	41.9	33.5	25.5	23.1	22.5	17.2	22.7	20.0	26.3	27.3	31.5	12	100%	27.9		27.6
SH 7	32.4	30.2	25.9	16.5	12.7	15.1	19.7	16.9	17.6	16.6	17.8	24.1	12	100%	20.5		20.3
SH8	27.6	21.8	20.4	10.2	7.0	7.0	9.4	8.3	8.5	11.6	16.4	18.1	12	100%	13.8		13.7
SH9	25.9	30.5	21.8	11.5	8.0	7.0	9.2	7.9	10.3	12.3	13.5	21.7	12	100%	15.0		14.8
SH10	26.5	26.0	19.2	10.1	7.4	7.0	10.5	7.9	10.6	12.8	15.2	22.2	12	100%	14.6		14.5
SH 11		38.3	30.0	19.4	16.9	19.4	16.3	19.8	18.4	24.3	25.9	27.5	11	92%	23.3		23.1
SH 13	49.9	44.9	38.4	33.3	23.3	23.2	32.6	28.4	32.6	30.5	25.5	44.0	12	100%	33.9		33.5
SH 14	64.5	53.0	38.4	22.9	22.2	19.9	20.5	18.3	21.3	27.0		33.7	11	92%	31.1		30.8
SH 15				27.2	29.5	22.9			31.7	30.9	35.9	36.4	7	58%	30.6	30.3	30.0
SH 16				12.5	12.6	9.7	11.4	10.4	14.7	15.5	17.9	20.4	9	75%	13.9		13.7
SH 17				21.2	18.9	20.4	24.0	17.1	24.1	21.8	24.4	33.6	9	75%	22.8		22.6
SH 18				20.7	19.5		17.7			23.0	28.7	39.0	6	50%	24.8	24.9	24.6